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Editorial

Sugar Addiction: A New Diagnostic Category ?

Manjeet Singh Bhatia
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Addiction is a primary, chronic disorder of brain reward, motivation, memory and related circuitry. *Addiction* is characterized by impairment in behavioral control, craving, inability to consistently abstain, and diminished recognition of significant problems with one's behavior and interpersonal relationships. *Behavioral addiction*[1] (also called *process addiction*[2] or *non -substance-related addiction*[3]) is a recurring compulsion of an individual to engage in some specific activity, despite harmful consequences, as deemed by the user him-self to his individual health, mental state, or social life. Mental health professionals and laymen now believe that behavioral addiction should include psychological dependency on things such as computers, videogames, internet, sex, food and exercise, mobile phones and shopping.[4]

Food addiction is a type of behavioral addiction that is characterized by the compulsive over-consumption of high fat or sugary foods despite adverse consequences.[5,6] The food addicts engage in frequent bouts of craving, binge eating and grazing and this behavior is marked by extreme lack of restraint or control, followed by feelings of guilt and depression.[6] The lifetime prevalence of food addiction in United States is 2.8%.[7] As seen in cocaine or heroin users, 10–20% develop addiction-like symptoms toward hyper-palatable foods.[8]

Although the concept of sugar addiction is gaining momentum, it is also currently a subject of intense debate and no evidence-based consensus has emerged.[9-11] There is now evidence in non-human animals that sugar and sweet reward can even be more rewarding and attractive than addictive drugs, probably owing to an underlying robust neural substrate.[12] Sugar addiction is really important due to its association with obesity[13]and subsequent impairment of social and occupational functioning.

Four important components of addiction i.e. bingeing, withdrawal, craving, sensitization or cross-sensitization are demonstrated behaviorally with sugar.[9] These behaviors are also related to neuro-chemical changes in the brain that occur with addictive drugs. Neural changes include changes in dopamine (increased levels in nucleus accumbens), opioid mu-receptor binding, enkephalin mRNA expression and acetylcholine release in nucleus accumbens (M_1receptors inhibit feeding).[9,11] The intermittent access to sugar can also be a gateway to alcohol use (*Gateway effect)*.

The people often report craving towards sweet foods because of their drug-like psychoactive and mood-altering effects,[11,12] to cope with stress, pain or fatigue, to enhance cognition and/or to ameliorate bad mood.[9-11] Craving-related changes in fMRI have been identified in response to palatable foods, similar to drug craving. This overlap occurred in the hippocampus, insula, and caudate.[13]

Like any other behavioral addiction, food (including sugar) addiction is difficult to be detected as it occurs in isolation and is socially sanctioned. The persons addicted to food can be screened by using Yale Food Addiction Scale (YFAS)[14] and Food Addiction Quiz.[15]

Clinical accounts of "sugar addiction" have been the topic of many best-selling books and the focus for popular diet programs.[16,17] In these accounts, people describe symptoms of withdrawal when they deprive themselves of sugar-rich foods. They also describe food craving, particularly for carbohydrates, chocolate, and sugar, which can trigger relapse and impulsive eating. This leads to a vicious cycle of self-medication with sweet foods that may result in

obesity or an eating disorder.

Early detection is vital to successful recovery. Treatment includes identifying precipitants, trigger foods, nutritional assistance, medication, psychotherapy and behavioral modification. Nutritional counselling includes providing education, keeping a food diary, slowly eliminating trigger foods and replacing harmful foods with useful foods. Fluoxetine is the only psychotropic drug approved by FDA for the treatment of eating disorder, especially bulimia nervosa.[10] The other drugs include varenicline, baclofen, mianserin, trazodone and bupropion.[14] Counselling includes how to cope with cravings, using distractions, building self-esteem and by providing support.

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Presidential Address

Technology and Mental Health: Application in Child Mental Health

Delivered by Deepak Gupta on 19th December, 2015 in
Delhi Psychiatric Society – Silver Jubilee Anniversary Conference at Hotel Taj Mansingh, New Delhi

Respected Dignitaries on the Dias, our chief guest Shri Satyender Ji, Health Minster, Govt of Delhi, DPS Patron Dr Bohra, my friend and past president Dr Manish Kansal, all the senior faculty members, my teachers, executive council members, and my dear colleagues and friends, Good evening.

It is indeed a pleasure and honor to be here and deliver my presidential address in front of this esteemed august gathering at the Silver jubilee Annual Conference of Delhi Psychiatry Society (DPS) as we enter the 25th celebratory Year 2015-2016. My association and Journey with Delhi Psychiatric Society goes back to the year 2000 when I become a DPS member. I fondly look back at those days when I was a senior resident working at GB Pant Hospital with Prof Agnihotri and Prof Jiloha. My journey continued to become a DPS Joint Secretary year 2007-2009 and later General Secretary for the year 2009-2012 followed by becoming a vice president in 2012-2014 and last year DPS President. I am highly blessed to have the support and guidance from the Past Presidents Dr. Jiloha, Dr Wadhawan, Dr Ashwani Kumar, Dr Manish Kansal and all the executive council members over the years. Thank you all very much.

The theme of this Silver Jubilee Annual Conference is **"Technology and Mental Health"** - Applications of technology in the Mental Health Services.

Technology is an inescapable part of our lives today. Man has computers which excel the mathematical efficiency of the human brain a hundred times; has built faster-than-the-speed-of-sound airplanes and spaceships, has been able to connect people living 10,000 kms away by the touch of a button…making the world a global village. Technology has penetrated every aspect of our lives… our brains are getting rewired with techno culture.[1] Just last Midterm CME we spoke about various behavioral addictions with Internet addictions being on the rise. Very recently, India's first internet de-addiction center has also opened by NIMHANS Bangalore followed by Delhi. However, No matter which side of the coin we look at; today's man cannot go unaffected by technology, the good news is that **there seems to be a positive side to it as well…**

This is the purpose for the current theme – Technology and Mental Health. As a practicing child and adolescent psychiatrist for more than a decade, I would like to take the opportunity in my presidential address to highlight Applications of Technology in the Mental Health Science focusing on child and adolescent mental health.[2]

The hands and reach of technology is far and wide with immeasurable power. It is up to us to be able to use this in the most efficient way in order to deliver the most effective services for mental health.

Yes technology has brought health including mental health on a global platform. But let's go back a little bit and review the starting of this revolution. The word ***Telepsychiatry*** was first used in an article by Dwyer in1973. According to the APA[3] in 1998, tele-psychiatry is "the use of electronic communication and information technologies to provide or support clinical psychiatric care at a distance". Further, it has also been referred to as ***'é-mental health'*** which is the use of information and communication technologies to support and improve mental health, including the use of online

resources, social media and smart phone applications.[4]

Therefore, any service provided at a distance through the use of technology becomes tele-psychiatry… any service which is used to **support and improve mental health services.**[5,6]

From this, the question might arise as to what is the need for technology to support and improve mental health services?

1. First and foremost, **to bridge the gap of services between the metropolitans and rural communities!** I would like to quote Our Hónorable Prime Minister Shri Narendra Modi ji from his convocation at NIMHANS in Feb this year. He said, ''superstition often blocked proper treatment and cure for the mentally ill. The field of mental health faces the triple challenge of **agyanta -** lack of knowledge, **a jagrukta** – lack of awareness and **andhshradha –**blind faith.' A 2005 study by the National Commission on Macroeconomics and Health indicated that at least ***71 million people in India*** have a serious mental disorder. Practicing in a country like India, where majority (*70% - Parekh, 2015*)[7] of the population resides in villages and small towns, focussing on only the metropolitan populace does not do justice to our work. In India, Mental health is still considered a taboo and individuals suffering from various disorders are often shunned, without getting sufficient care and knowledge about the same.

   In light of the enormous treatment gap, wherein about 76–85% of serious cases of mental illness in less-developed countries are left untreated,[8] tele-psychiatry, is a promising delivery method to reach millions of individuals in rural and remote India who are unable to access mental health services and whom the mental health system is currently underequipped to serve. Often people come from far off places, looking for hope from us. Technology can help us target such individuals on a regular basis through video conferencing and web therapy – providing useful help. Such platforms can also be utilized to create greater awareness. Once worked on infrastructures, the lack of expertise can be well-managed in a far reaching manner by all of us.
2. **Cost and Time Effective** – this goes without saying that in the fast paced world as ours, time is of the essence. With the use of technology, the world is accessible in the click of a button without leaving the comforts of our workplace. There is ample data supporting the reduction of time and cost aspects while using technology to our advantage. We can also go a step further in saying that with the unpredictable nature of our work, the use of tele-psychiatry is like a pot of gold in times of crisis management – online counselling and suicide interventions can be effectively and successfully administered without losing on precious time.
3. One might question the quality of services provided at various levels of therapy. However, we have Indian as well as international data to support the use of tele-psychiatry at all levels – **Screening and Diagnosis; Intervention as well as regular Follow – ups**. There are diagnos-tic tools and assessment questionnaires that provide a reliable medium to assess and intervene effectively. The interventions can range from giving home plans, providing tele-medicine and data also supports successfully conduction of group sessions.[9-16]
4. A **regular feedback** with the families is a viable option even for out of station clients to ensure a speedy recovery process. Web based surveys have shown to provide reliable and cost effective data as the client as well as the therapist has ample time to fill and assess the form. Also, availability and transfer of information, while maintaining confidentiality, is faster. A simple three line email from a therapist makes the client feel that the therapist is present, listening and thinking about them. Such is the power of technology!

Before we move on, I would like to point out two ongoing researches that made me stop and ponder over our conventional methods of treatment.

First is an ongoing research by Dr. Daniel Fung and Ms. Lim Ashworth from Singapore.[17] They are in the process of creating a humanoid robot to work with children on the Autism Spectrum Disorder. It is postulated that a robot is a **more predictable medium** and can alleviate a certain level of anxiety and stress related to human interactions for a child with Autism spectrum Disorder – what a marvelous piece of technology – imagine the dramatic paradigm shift in the nature of intervention that can follow with a humanoid robot. The second piece of recent research that caught my fancy was by Firth and Torous[18] about smart-phones as mediums of self regulation in cases of schizophrenia. At first, this seemed to be contra-dictory to the symptomology of the disorder, however, studies indicate that the overall retention rate was 92% and patients were adherent to smartphone apps use on average 85% of the time. While the potential benefits of using smartphone technology to enhance care in schizophrenia appears vast, the current evidence base is modest.

Nevertheless, the point I would like to emphasize is that - This is the future – where smartphones and robot are our allies and aid the process of recovery! These are just two studies, I am sure there are many others as well … We must keep up!

From the future, I would like to move back to the present. I have spoken extensively about the various uses of technology in terms of therapy and management of disorders. However, the reaches of technology extend a little further from that.

Being a practicing child psychiatrist myself, I would like to share a standard working day with you.

I start the morning with an email that reaches me every day around 7:30 am enlisting the sessions of the day. My phone calendar helps set reminders and meetings that are beyond my place of practice. On reaching work, I see clients and prescribe them the treatment. With few clicks on my tab, a computerized prescription, mentioning the demographics, diagnosis, improved symptoms, medicine, therapy sessions and date of follow up, comes up which is then printed and given to the family by the time they reach the reception. Along-side, tagging the other therapist involved allows them to view their prescription online and be aquatinted with the case before hand. The payments are all monitored through computer databases which has every client's information. Then from attending families of South Delhi, I can attend to families from Soel Goun in the outskirts of Ahmedabad to a follow up case in Melbourne; back to back through Skype sessions sitting in my office. On the side, through Whatsapp groups and emails, I am able to access any client or professional as well as maintain a close eye on the workings of the center. The CCTV camera at the waiting area helps me make sure the smooth functioning of all three centers from the accessibility of my phone in the car on the way to a meeting. After sessions, attending a conference or giving a lecture with just a photo being updated to the Facebook page informs friends and fellow members of my involvement in certain occasions. After a hard day's work, finishing dinner with my family, my laptop and internet allows me the access to the latest developments and researches of the world – again just with multiple clicks.

I am sorry if I remind you of an apple advertisement, but, technology – everyday – helps me further my practice and give effective help.

If I was to broaden the categories that technology helps my centre, Centre for Child & Adolescent Wellbeing (CCAW), New Delhi, they would primarily be the following:

1. **Clinical Services**: While preparing this report, I was amazed to see how the use of technology has rapidly become an entwined part of my practice.
   (a) Services rendered through Skype sessions started at a mere 11 sessions in 2012 that have now grown to 125 sessions in 2015. The clients have ranged from having ASD concerns to emotional disorders for out station across India and NRI clients. 75% client sustainability has been found to have been maintained.
   (b) Teleconferencing for prescription of telemedicine and short consultations as well as online assessment are useful for regular documentation and efficient planning.
   (c) E – Therapy: In individual sessions, use of internet information and child friendly videos are useful therapy tools and are often used. Also, Skype sessions taken

on a weekly basis show almost equivalent success as compared to a face to face sessions.

(d) Captain Log's Mind Power Builder: A unique Computerized Cognitive Restructuring Program that focuses on training various cognitive abilities of individuals, through computer games. In the past 18 months, we have acquired 2 computer units, 71 children and adolescents have been assessed; 32 have graduated, 22 are active and 1 client is also on a cloud licence for online training. In terms of results, **Paper presented at recent IACMH at Pune Nov 2015,** for managing executive functions, this recent study showed improvement in all executive skills with 20 hours of training; with improved hyperactivity in 73% of children and adolescents.

2. The second area where technology has deep roots is our **Administrative work**. From effectively maintaining databases to making calls to receive and confirm appointments, the admin staff is greatly indebted to technology for smooth day-to-day functioning of the center. Going beyond the basics, I would like to point out two aspects where things have become very comfortable for me as a child psychiatrist.
   (a) First are digital prescriptions. For many years, my clients and professionals have been troubled with decoding my handwriting and many friends here would agree. This fascinating application that allows me to tap and select diagnosis and medicines making a digital prescriptions in under a minute. It's wonderful…everyone is visibly happy. Also I am allowed to tag associated professionals who can follow up on the case accordingly.
   (b) Another important software is PRACTO, which has helped revolutionize the appointment protocols and maintain management services.
3. **Resource Material**
   (a) Social Media – It helps to inform others about the happenings at the organization. Provides greater awareness about Child and Adolescent Mental Health through Facebook pages; Allows opportunities for Marketing and Promotion of a new service or events. Helps reaching out to more people and ultimately creates more visibility in the community.
   (b) There is a website that allows access to the services provided as well as allows us to upload the e-books that we have launched at various occasions in the past.
   (c) There are a multitude of apps available – some of which are very diagnosis specific and can aid the process of therapy. Being updated with such apps that are readily available on every electronic device provides help to clients and professionals alike.
   (d) Research – a very important aspect of our work requires us to be updated with the latest findings in the world and review literature for our ongoing clinical researches. The internet also allows us easy access to eminent journal articles that can be implemented in our services.
   (4) The last aspect which is still an upcoming area where technology has helped touched lives is through **Support Groups** and **Self Help Groups**. We have started groups for parents of Autism and ADHD that use the mediums of Whatsapp groups to communicate. It has been seen that over a period of time, the parents have initiated discussions and have become a support system for each other regardless of regular physical proximity.

While there are many optimistic sides and huge benefits to the use of technology in Mental Health Services, there is no coin which doesn't come with its flipside. Technology can be extremely overwhelming if one is not used to working with it. There is a constant struggle to maintain efficient execution and consistent implementation while maintaining confidentiality – one that I need to be very mindful of. There is also a considerable start

up costs involved, where one needs to be aware and updated of the most beneficial option forward for our setups. Technology can also be synonymous to becoming good friends with the IT professionals as one is very dependent on them for smooth functioning of services.

My speech would be incomplete without mention of **ethical guidelines and principles** involved with using technology in mental health set ups. As our work comprises of very sensitive information, maintaining confidentiality to the family becomes the primary priority. Informed consent as well as withholding certain information considering legal matters is important to be acquainted with. Before using technology, protocols for each structure should be established and adhered to. Also, care has to be taken in order to control for misinterpretation of information. I am fortunate that, we have eminent speakers among us who will be shedding greater light on this subject in the due course of our conference.

In conclusion, **I would like to emphasize that Technology brings revolution…. with technology we aim for accessibility, availability and affordability for one and for all.** The world is waiting for us to reach out and show our potential, the people are waiting for us to take control of the situation; the families are waiting for us to be their hope and answer their prayers.

I would like to end with Microsoft CEO Satya Nadella's words which resonate with my feelings accurately. He says, 'I'm grounded on the role of technology. Ultimately to me it's about the human capital and the human potential. Technology empowers humans to do great things. You have to be optimistic about what technology can do in the hands of humans.' We are a handful of very powerful human beings – let's use our potential and do 'ground breaking things' with technology in the field of mental health.

Thank you very much for your patience and time!

Jai Hind……

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Review Article

Compulsive Hoarding and Caregiver Burden

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Introduction

Researchers Frost and Steketee[1], in their recent book on compulsive hoarding mention that "the boundaries between abnormal and normal become less distinct when hoarding comes into perspective". Now this may happen because of the tendency in nearly everyone to get attached to their possessions and save things. Hence, according to Frost and Steketee,[1] "every individual shares some of the hoarding orientation." Freud[2] described hoarding behavior in his anal personality theory mentioning that anal personality is characterized by three features of obstinacy, orderliness and parsimony. Scholars like Fromm[3] and Salzman[4] thought, hoarding represented an attempt to apply control over one's surroundings to maintain feelings of safety and security. The New York Times in 1941 highlighted what can be known as the very first case for compulsive hoarding which was in 1947, when two elderly brothers from NYC were discovered dead under towers of "stuff". This captivated the scientists to further concentrate on this phenomenon. It was then in 1966, when two geropsychiatrists from England, published a paper in The British Medical Journal, wherein they expounded on 'senile breakdown' wherein, the elderly lived in "a state of squalor and lacked personal hygiene and house cleanliness."[5] Bolman and Katz,[6] utilized the expression "compulsive hoarding" surprisingly to depict "pathological or excessive collecting behavior in humans". Hence, the expression "compulsive" was initially used to recognize saving/gathering, from impulsive or pathological hoarding. In 1975, Dr. Clark and his team wrote an article in 'The Lancet' about similar dirty living conditions among the elderly who experienced syllogomania or the compulsive hoarding of junk[7]. They utilized the expression "Diogenes Syndrome" to depict this condition. In any case, it was just with Frost and Gross's work in 1993[8] that deliberate studies on hoarding started, preceding which amid the 1980s, hoarding was a component of Obsessive Compulsive Personality Disorder (OCPD) symptomology. Research has described hoarding as "(a) the acquisition of, and inability to dispose of, an expansive number of possessions; (b) clutter that blocks exercises for which living spaces were planned; and (c) significant trouble or impairment in working brought on by the hoarding".[9]

Indeed, even after such endeavors, hoarding was always considered as a symptom of Obsessive Compulsive Disorder and was never mentioned in DSM-IV-TR or ICD-10. Likewise, ''the failure to discard worn-out or useless objects even when they have no sentimental value '' is only one of the eight criteria for Obsessive–Compulsive Personality Disorder (OCPD) in DSM-IV-TR. In ICD-10, Anankastic Personality Disorder, an equal analytic category has no inclusion for any such criteria. In spite of the comparability in names, OCD is generally effectively recognized from OCPD by the presence of genuine obsessions and compulsions. DSM-IV-TR states that diagnosis of OCD ought to be considered "particularly when hoarding is in extreme (e.g. gathered heaps of useless articles pose a flame danger and make it troublesome for others to stroll through the house)". Nonetheless, whether, OCD ought to be analyzed in the event that, other prototypical OCD symptoms are truant yet hoarding shows up has confounded clinicians for a considerable length of time. Some of the limitations of DSM IV and DSM IV-TR identified by analysts

that cleared way for DSM V to perceive compulsive hoarding as an undeniable issue are:

— Even though, the OCPD criterion limits conduct to discarding, individuals who hoard report difficulty letting go of belonging by any means, including selling, giving, reusing or loaning.[10]

— The depiction of articles as "exhausted/ useless" is not bolstered by studies on the nature of saved things. Maybe, individuals who hoard seem to gather and accumulate a wide range of articles, including wardrobes loaded with new attire never worn and things still in their unique wrappings.[8]

— The OCPD definition recommends that hoarded things have no sentimental quality. However, extensive exploration proposes that saving happens for nostalgic or sentimental reasons. Saved items provide strong personal identification[11] and emotional attachment.[12]

Hence, due to efforts by the researchers in the field and of hoarding becoming more and more prevalent amongst the masses, the American Psychiatric Association, 2013, came out with the following definition for hoarding disorder in DSM V.[13]

"Hoarding Disorder (HD) is a psychiatric disorder characterized by persistent difficulties discarding possessions, leading to the accumulation of clutter that substantially restricts the use of active living areas, and associated clinically significant distress or functional impairment; these symptoms are not attributable to other medical or psychiatric conditions (American Psychiatric Association, 2013)."

The following symptomology was proposed in DSM V for Hoarding Disorder:

1. "Persistent problems of discarding/separating from belongings, even when they have no genuine value."
2. "This happens because of an apparent need to save things and the pain connected with discarding them."
3. "The symptoms lead to an accumulation of possessions that block and clutter dynamic living spaces and compromise their actual use."
4. "The storing causes clinically significant debilitation in social, world related or other essential territories of functioning."

The DSM V also gives two "specifiers", i.e., features that may or may not be present. These are:

1. Excessive Acquiring: People who hoard frequently can't prevent themselves from procuring things regardless of how hard they attempt. They might either "purchase" or "acquire" free things which have no genuine utilization.
2. Poor Insight: Some, not all, hoarders experience issues understanding the seriousness of their problem. They really stand amazed every now and then, when individuals around them complain about the things they acquire.

Primary versus Secondary Hoarders

After discussing about the phenomenology of hoarding, it is imperative to examine its subtypes as well. The subtypes of hoarding "relate to both the cause of the behavior and how important the things being hoarded are to the hoarder".[14] Secondary hoarders live with great mess or lack of sanitization as a consequence of some other mental or neurological condition, like, Obsessive Compulsive Disorder (OCD), Obsessive Compulsive Personality Disorder (OCPD), or dementia. However, they feel no specific connection to the things that make up the clutter. While primary hoarding may likewise be the consequence of another disorder, the distinction is that primary hoarders have strong sentiments about or feel a sentimental attachment with the things they hoard. Primary hoarders might function normally in different areas of life; they may appear totally "together" all around outside of their homes. In any case, the emotional connections that they have with the articles they accumulate, may be strong to the point that cleaning up may represent unfathomable misfortune, much the same as mourning. Primary hoarders may be more impervious to interventions and they might really lament the loss of their things, making cleanup emotionally burdening for everybody.

Prevalence

A few beginning endeavors to understand the

prevalence of hoarding has depended on inaccurate definitions and measurements of hoarding. However, they did give an introductory insight into the frequency of hoarding related problems. Studies established prevalence rates for OCD and particular OCD symptoms and discovered 14.4% prevalence of hoarding "obsessions" and/or "compulsions" in their sample.[15] A study in the United Kingdom inspected more than 5000 adult members utilizing the self-report adaptation of the Hoarding Rating Scale[16]and observed extreme hoarding manifestations to be 2.3% prevalent with the pervasiveness in men about twice than that for women(4.1% versus 2.1%).[17]

Experts have discovered 4.6% prevalence in Germany with no gender contrasts[18]. Comparable results on gender were found by other scholars as well.[19]A German variant of the Hoarding Rating Scale and the proposed DSM-5 criteria for hoarding disorder was utilized which revealed lower rates of prevalence (5.8%).[20]Another study analyzed the prevalence of self-neglect and hoarding among elderly residents and discovered 4.1% to 5.4% prevalence for men and 2.3% to 5% for women.[21]

An Indian study revealed that out of the 200 participants studied, only 10% of the clients suffered clinically significant hoarding.[22] This is however, less in comparison to the world literature which is, 17%-33%.[23,24] This is however, in line with previous Indian literature, 7%-11%.[25,26]

Onset and Comorbidity

A significant number of studies propose that hoarding is connected with an early age of onset amid youth or puberty. In patients, already diagnosed with OCD, a few studies have discovered the presence of hoarding manifestations connected with an earlier onset compared to those with OCD and no hoarding.[27-29] On the other hand, a few studies have not been able to discover an earlier onset among patients with hoarding and OCD.[30-33] Another study examined a sample of 51 hoarders and found that mild hoarding symptoms started by age 12 for 60% and by age 18 for 80% in their sample.[34] In another study on 44 hoarders about their age of appearance of hoarding symptoms it was found that the onset ages were 16 for acquisition, 18 for trouble discarding, and 21 for clutter.[35] Two different studies, reported older average ages of onset. In a specimen of fifty two hoarders it was found that difficulty in discarding started around age 20, unreasonable acquisition at age 26, and clutter from age 25 to 31.[36] Yet another study likewise discovered to some degree more normal onset age of 29.5 when they asked a small number of elderly hoarders (N=18).[37]

As far as comorbidity is concerned, research has been substantially constrained due to the diagnostic disarray on compulsive hoarding and trouble recognizing hoarding as a symptom from hoarding as a different clinical condition. A study reported 92% hoarders in the sample to possess Axis I or Axis II psychiatric diagnosis.[16] In a study on a large sample of 2.307, the following life time comorbidity for Axis I disorders were recognized: "social phobia(61%), major depressive disorder(51.3%), panic disorder (41%), OCD (35%), PTSD (28.2%), binge eating disorder (28.2%), anorexia nervosa (7.7%), and bulimia nervosa (7.7%)."[38] An Indian study found the participants to be higher on "Axis I (Major Depressive Disorder, Lifetime Suicidal attempts; Bipolar Disorder and General Anxiety Disorder) and Axis II personality disorder (Anxious avoidant; Dependent; Obsessive Compulsive and Depressive)".[22]Apart from these, a few researchers have studied the association between hoarding and ADHD and hypothesized overlapping etiology in ADHD and hoarding.[39] Associations between hoarding and schizophrenia were also found by a few authors.[40]Authors have also studied elevated problems of hoarding amongst people with dementia who suffered impaired decision making.[41]A study observed a woman with focal brain injury in her left orbitofrontal and caudate engaging in hoarding behavior which she found pleasurable.[42] In a unique case of hoarding, hoarding behavior was observed in a 15 year old female who later suffered depression, anxiety, substance abuse and OCD symptoms.[43]Authors also found strong associations among patients with Parkinson's disease(PD) and impulsive-compulsive spectrum disorder and found that hoarding was more prevalent among such patients.[44]

Caregiving

Generally, the individuals who experience the ill effects of mental illness are slandered by society and have confronted unfair treatment. Generally they are subjected to physical, sexual, and financial/

economic abuse, and have unequal access to group assets. This seems to be valid too, towards relatives of the mentally ill who regularly experience these awful encounters. It is thus seen that "mental illness is a family experience-shared together, but suffered separately."[45]A caregiver is in charge of the wellbeing, security, and emotional well- being of the ill. The focus here, are the informal caregivers, people who give continuous care and assistance, without pay, for relatives and friends needing backing because of physical, cognitive, or mental conditions. They can be primary or secondary caregivers, for example, siblings who offer watching over a parent. Informal caregivers may contribute to short-term help for example, taking post a surgery, or long term support for those with decreasing mental and/or physical capacities or other long term wellbeing conditions, such as taking care of their transportation, meal preparation, home maintenance, prescription administration, keeping up individual cleanliness. Likewise, informal caregivers provide social backings through visits and trips. Such exercises keep the mentally ill, socially involved and mentally active.

Haven spoken about on what caregiving is and what it includes, one ought not to turn a blind eye to the fact that caregivers themselves need care. The caregiver too faces "personal/social, physical, emotional, psychological and economicexpenses", which are known as the determinants of caregiver burden.[46] The primary caregiver role, mediated via caregiver burden, is a hazard for an expanding death rate (63%).[47] Experts have constantly stressed that caregivers experience depression, have maladaptive coping and worry about their low quality of life.[48,49,50] This negative impact on the relatives has come to be known as caregiver burden, which incorporates an extensive variety of encounters that a person faces, when put in a position to give emotional and practical care to the other."Caregiver burden has been characterized as a multidimensional reaction to the negative appraisal and perceived stress resulting from dealing with an ill individual. Caregiver burden debilitates the physical, mental, emotional and functional wellbeing of caregivers."[51-54]

Hoarding and Caregiver Burden

Hoarding disorder is no exception in terms of caregiver burden. It has been held true that relatives of hoarders would encounter similar annihilation.[14] Relatives of hoarders frequently express mixed feelings of "frustration, embarrassment, guilt, anger, hostility, resentment, tolerance sympathy, and empathy".[45] Notwithstanding the effect experienced directly by the individuals who hoard, research has recommended that those looking after, or living with a hoarder likewise encounter repercussions of hoarding.[55] Caregivers of hoarders face wellbeing and safety issues and it is for obvious reasons, troublesome and emotionally taxing. Families may think the explanation for the hoarding is laziness, a yearning to be troublesome or just basically that the hoarder just does not care. Studies have highlighted that hoarding can prompt violations of local wellbeing, housing and sanitation laws, which can possibly effect family, caregivers, neighbors, and the community at large.[56] Past research on the basis of qualitative interviews with the caregivers of hoarders had revealed five basic themes.[57] These were: "loss of normal family life, living space and social life, the need for understanding, searching for a meaningful explanation and needing to feel understood, coping with the situation, strategies, weight of responsibility and distress. Outlining theme was support and role division impact on relationships: anger, frustration, and conflict. Outlying these are protective positive qualities: and marginali-zation: social, emotional, and physical."

An internet survey among relatives of hoarders measured them on: "their childhood distress, family strain, and levels of patient rejection attitudes towards their friends and family who hoard."[58] These outcomes showed the accompanying rejection attitudes "level of satisfaction amid youth, trouble making companions, having others over, contentions with folks, strained associations with folks, and humiliation over the state of their guardians' home". Caregivers can also be children living with a hoarder who are perhaps more at risk than their adult counterparts. In the book "Children of Hoarders" it has been noted that such children find it difficult to form friendships as they feel ashamed letting anyone know about their living conditions and also engage in frequent arguments with their parents. They have also highlighted in their book that children living with a hoarder parent before age 21, appraised their childhood to be less happy, whined having less friends coming over and reported more contentions

between them and their parents.[14]The study calls attention to the measure of anguish and torment off springs of hoarders experience around a circumstance where they feel impaired and face internal conflict.

The next section describes the various strains caregivers living with a hoarder bears. These issues require immediate attention from various academicians, clinicians and medical personnel involved in providing the caregiver and the hoarder a respite from the problem and help function normally in their daily lives.

A. Physical Health and Safety Issues

Not only a primary caregiver living with the hoarder faces health and safety issues, a visiting caregiver too faces such issues.The following are the health and safety issues among caregivers of hoarders.[14]

- *Unsanitary Conditions:* With all that clutter around in the house, a great deal of sick-nesses may crop up, making it troublesome for the hoarder and their adored one's to stay fit. Stale food, filthy utensils everywhere throughout the kitchen are just a few of the things that bring forth ailments and distinctive allergies.
- *Pests:* As the clutter gathers, the hoarder loses the inspiration to tidy up the house and therefore, making the house a rearing spot for insect infestations, including rodents, ants, flies and so on, which lead to various illnesses like diarrhea, extreme stomach inconvenience, vomiting, respiratory sensitivities like asthma and so forth.
- *Dust and Mold:* With poor ventilation because of clutter, blocked windows and entryways, the negative health impacts just increase offering ascent to dangerous dust and mold like mycotoxins. The mold spores in an area and the degree of its lethal production may harm the immunes system, the lymphatic system, the CNS.
- *Loss of Accessibility:* The security concerns of the caregivers of hoarders are exceed-ingly traded off as they are compelled to live in a certain situation that is brimming with mess and chaos. Such living spaces raise injury chances for both the caregiver and the hoarder. Since, the clutter is typically in heaps, the possibilities of harm increment as these tall stacks may topple. Personal satisfaction is bargained incredibly.
- *Fire Safety Concerns:* Since, the clutter comprises of a great deal of different material, basically being paper, possibilities of minor flame breakouts are basic, which may even get monstrous. What's more, since, the clutter is everywhere throughout the house, firefighters may face obstacles while saving such individuals. Likewise, since, hoarders are secretive about their living conditions, they have incessant electrical issues that they never get repaired. Such harmed wires may bring about short-circuits and sparks which may bring about tremendous flame breakouts.
- *Loss of Structural Integrity:* The house of a hoarder is cluttered to such an extent that it may clog drain pipes, causing dampness throughout the house. Also, the chances of stress on weight-bearing supports of the house may cause the structure to collapse someday.

B. Financial Costs

"Compulsive hoarding is a psychological disorder, but also a money management disorder".[59] In a recent study, the financial and societal expenses for hoarders and their families was highlighted. With similar specimen of individuals who hoard and family members who informed, it was further discovered that the financial effect reached out to the greater society too. They noticed that "14% who met criteria for compulsive hoarding and 10% who did not", reported medical costs that were paid through public help, showing some level of monetary weight on society at large.[58] The San Francisco Task Force which estimated expenses shooting up to 6.4 million dollar for every year provided to caregivers and landlords of hoarders. Financial professionals might not have the preparation or skill important to treat somebody with an extreme problem of compulsive hoarding.[60]

C. Psychosocial Costs

The caregiver frequently feels torn between

dealing with the hoarder, and the community they live in. They tend to keep the hoarding a family mystery. However, they feel discouraged and angry and don't recognize what to do with their feelings. Another study reported the family burden of compulsive hoarding where there exists a critical connection between living in a cluttered house and not needing individuals to visit. It was further concluded that these families confront "social awkwardness and shame".[58] Authors have also noted that caregivers stayed away from forming friendships keeping in mind the end goal to abstain from needing to welcome individuals over. In case of spouses, where one is a non-hoarder, the other may request a separation and a custody fight may follow. Photos of the house are taken to court to persuade the court that the home environment is not suitable for raising a child. The hoarder is humiliated as well as feels colossal hatred which more often than not meddles with raising the child mutually. Cases, where children are residing with a hoarder parent or parents, may have school authorities or other child protection authorities taking actions against the hoarder parent(s) and take the child forcefully from such an environment, which would be devastating for both the parties.[57]

Treatment and Interventions

1) Medication: Research has ever supported the fact that hoarders usually do not respond well to medications. As indicated in a study, in cases of severe hoarding, the patients usually do not respond to treatment with a serotonin reuptake inhibitor (SRI) (for example, clomipramine and SSRI's like paroxetine, fluvoxamine, fluoxetine, citalopram, escitalopram and sertraline).However, in case of comorbid depression and anxiety, medications may prove to be useful. In that case, the medications should be continued for nothing less than a year.[61]

2) Psychotherapy: Grant, Samuel, Chamberlain, and Odlaug, 2014 in their book "Clinical Guide to Obsessive Compulsive and Related Disorders", report that psychotherapy should be the preferred treatment for hoarding disorder. They specified that Cognitive Behavior Therapy (CBT) usually works in hoarding disorder. The techniques found to be effective include: "motivational interviewing, several features of cognitive therapy and behavioral practice and skills training. The treatment focuses on three hoarding behaviors: excessive acquisition, difficulty discarding or letting go of possessions, and disorganization and clutter that impairs functioning."They emphasized that the treatment must be undertaken in 26 weekly sessions out of which a few need to be completed at the client's home itself. The initial four sessions focus on educating about hoarding and the cognitive behavioral model to be utilized in order to enhance motivation.[61]As researchers have pointed out, the CBT treatment for hoarding disorder includes: "includes psychoeducation, efforts to enhance motivation, skills training for organizing and decision-making, direct practice discarding and not acquiring objects, and cognitive strategies to reduce problematic beliefs."[62]

3) Social Support: Research supports the fact that hoarders lack social support and are in dire need for reliable support.[63] This can be offered to them by educating them about their problem and appraising their efforts to stop it. Support groups which are mostly a Western concept, bring together, in this case, the hoarders or the caregivers to talk about their problems and not feel alone. People may even discuss ways in which they have handled their problem and have accomplished their goal of not hoarding further. Thus, being a part of a support group provides individuals to discuss their situations improvise solutions, gain new perceptions, decrease anxiety regarding their situations, curb depression and a sense of burden that they often feel.

4) Labeling the problem: As discussed earlier, hoarders lack insight into their problem even after evidence is shown to them regarding their problem. Hence, the health professional or the caregiver 'suggests' to the hoarder that they have a disorder that involves 'acquiring' things to such a level that it becomes impairing to them and their love ones. Appropriate education must be given to them, regarding the various health, social and economic costs the hoarder and their families might have to face.

Conclusion

This paper has endeavored to analyze the literature with respect to what compulsive hoarding is and what impact does it have on families of hoarders. The review recognizes the way through which compulsive hoarding has made its place as a distinct disorder in the DSM 5. It is clearly expressed

in the studies discussed in the review that incorporation of compulsive hoarding in the DSM 5 had required a great deal of efforts by clinicians and scientists to distinguish it as a crippling condition which impacts people and their families and relatives, and some of the time even the community at large. Hence, on the basis of the review, it can be inferred that compulsive hoarding is a condition wherein, the individual has trouble in discarding objects henceforth, gathering clutter which eventually limits one's living space and disrupts normal functioning and is impeding for the hoarder and in addition their families. A great deal of literature still focuses upon the impact of hoarding on people while concentrating on its predominance, comorbidity, onset and mediations and treatment models, with little proof existing on the caregivers of hoarders. While the hoarder may as of now get solutions in light of a comorbid issue, for example, depression, anxiety or OCD, relatives of hoarders may not be considered by social services experts. It is only lately that clinicians and analysts have begun recognizing the wreck hoarding causes in the life of the caregivers. On the other hand, despite everything it needs evidence, both qualitative and quantitative. A far reaching review on the impact of compulsive hoarding on families showed that "the area lacks robust evidence about the impact of hoarding behavior on families suggests that further research is needed in this emergent field".[64]Health experts and others that may come into contact with this issue may not comprehend what those living with a hoarder need or what would actually help. The absence of support experienced by hoarders and their families is referred to be a contributing element for the advancement of hoarding itself.[57,58,65] With tremendous volumes of clutter expanding consistently, a caregiver is under steady pressure to manage the attack of "stuff" and bargains on their quality of life. Every day normal existence of people living with a hoarder is upset to such a degree where the caregiver confronts trouble, washing, cleaning and even cooking.[64] Evidence for burden on caregivers of hoarders has generally been based upon little specimens or restricted to appraisal of psychiatric comorbidity.[65] Caregivers feelings of intolerance and irritation are reasonable as hoarders simply don't quit "buying" or "acquiring" belonging that have no genuine utilization and furthermore show poor understanding into their issue.[8,29,66] "Insight" is utilized to depict "the degree to which the individual perceives that his/her over the top convictions are irrational".[67] This absence of insight produces expanded animosity between hoarders and their relatives bringing on families to deteriorate under the strain, abandoning a few hoarders to confront their issues alone. A study uncovered that caregivers of elderly hoarders reported the hoarder to have poor insight, which was additionally not clarified by any detectable psychological impairment.[65] Thus, absence of understanding likewise exasperates the "dismissal" towards the storing relative and henceforth, add to "feelings of isolation, defeat and loneliness".[64] This review has recognized different physical and safety issues; economic and financial expenses; and mental and social expenses caregivers of compulsive hoarders face. This is in accordance with research which noticed that clutter has been reported to build danger of flame, falling, poor sanitation and health risks.[65] The most widely recognized articles that a hoarder acquires incorporates daily papers, magazines, garments and other combustible material which expands the possibilities of flame in the house influencing the hoarder's family and even the neighbors who find such a person in the region a risk to life and property. This likewise welcomes the issue of short circuit incidents once in a while. Exploration observed that a residential community health division spent the vast majority of their financial plan ($16000) getting out one house, just to confront similar issues year and a half later.[56] Quality of life which envelops the mental, physical and social well-being of people is profoundly traded off among caregivers of compulsive hoarders. This is upheld by research that recognized 'duty', 'loyalty', and 'withdrawal' and 'isolation' as few of the effects on family members of hoarders.[68] Withdrawal alludes to "the retreat of the family of the hoarder from the outside world". In this manner, when extreme hoarding represents an issue for the relatives, they feel unbalanced and humiliated and abstain from interacting with the individuals so they don't uncover the position of their family.[57]In the light of the picture created from this integrative review, it is clear that it is not so much the needs of the hoarders that represent an issue for mental health caretakers as much as it is the needs of those

relatives influenced by the hoarding. This review highlights the requirement for looking after the needs of the caregivers of the hoarder who are likewise at incredible danger, in some cases considerably more than the hoarder themselves. It shows that mental health specialists need to comprehend what compulsive hoarding is and how it influences caregivers, so as to provide specific end goal to give sufficient and proper backing. This review suitably distinguishes the requirement for further research keeping in mind the end goal to give the confirmation base to supporting caregivers of individuals with compulsive hoarding.

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Review Article

Psychotherapeutic Alliance : Concept and Determinants

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Introduction

All successful psychotherapeutic approaches share many common factors, such as the therapist's ability to use non-verbal techniques to validate the client, and the therapist's ability to detect obstacles that may impede change. One of the most powerful is the client's expectations, something that the adroit therapist will capitalize on. Another is the therapist's perceived credibility, partly of their level of experience and record of success but also in the modality they choose to use. The link between expectancy and outcome is directly mediated through the therapeutic alliance and the therapist is able to manipulate this factor.[1]

The therapeutic alliance plays an important role in enhancing treatment outcome among individuals with a variety of disorders, including posttraumatic stress disorder (PTSD).[2] The therapeutic alliance, also known as working alliance, refers to the alliance between a healthcare professional and a client (or patient). It is the means by which a therapist and a client hope to engage with each other, and effect beneficial change in the client. The therapeutic alliance between client and therapist is the cornerstone of any psychotherapeutic modality. The therapeutic alliance typically involves factors of confession, atonement and absolution, encouragement, positive and negative reinforcement, aversive procedures, behavioral modeling, promotion of values, and cheer leading. According to Frieswyk et al, "The therapy process requires the active participation of the therapist, who is known as a 'participant-observer'.[3] The therapeutic alliance is a performance of two people, a transaction, in which the client's behavior and what he says and does are adjusted, in accordance with the best of his information and ability, to what he guesses or surmises about the therapist.[4]

Components of the therapeutic alliance: The therapeutic alliance has been theorized to consist of three parts: The working alliance, transference/ counter-transference and real alliance.

The meaning, value, and importance of these factors has been the subjects of debate for more than 100 years. Nevertheless, we can use them as a broad framework upon which to stretch the fabric of our discussion of the alliance in psychotherapy. Those issues were termed transference, counter-transference and resistance.

Different approaches of therapeutic alliance

The Psychoanalytic Perspective: Freud was the first to formally address the concept of the therapeutic relationship in his early writings on psychoanalysis. Within a psychoanalytic framework, the client-therapist dyad is seen as a context within which the client's transference is enacted and can be analyzed. With neurotic clients in psychoanalysis, it is assumed that the transference reactions to the therapist are based on past relationships and maladaptive views of self and other, rather than realistic reactions to a here-and-now relationship between the therapist and client. Adherents to traditional psychoanalytic theory view the role of the therapist as a "blank slate" onto which the patient can project his or her own fears, needs, desires, beliefs, and fantasies, and correspondingly, therapists in this theoretical orientation are discouraged from self-disclosure with their clients.[5] Zetzel introduced the term *"therapeutic alliance"* to describe elements of transference that are healthy and

contribute to a client's ability to participate effectively in therapy.[6]

Greenson introduced the term "working alliance" to describe the adaptive, rational, and present-based interactions between the client and therapist. Whereas transference reactions occur when the client is relating to his or her mental representation of the therapist rather than the therapist as a complete and real human being, the working alliance instead emphasizes a "real relationship" in which both the therapist and the client bring their personal characteristics and contributions to the relationship, creating a genuine style of interaction based on real transactions between the two people.[7] He theorized three distinct stages of therapy:

1. The first is a **"contractual"** phase in which initial agreements, goals, and roles are defined between the client and therapist.
2. The second phase is the **"relational"** stage, in which the client develops an emotional attachment to the therapist and comes to view the therapist as warm, interested, genuine, and understanding.
3. The final phase is the **"working"** phase, during which the patient collaborates actively with the therapist in learning to understand him or herself.[8]

Horney states "In alliance in which one person becomes dependent on the other there is invariably a great deal of resentment. The dependent person resents being enslaved; he resents having to comply, but continues to do so out of fear of losing the other."[9] On matters of resistance, Horney contends that when the client is analyzed, he/she will realize the futility of their efforts, though with some reluctance. He may politely and intellectually follow the analyst's suggestions that the irritations are only "bubbles" surfacing. But as soon as the analyst identifies one of the deeper disturbances, the client will react with a mixture of concealed irritation and diffuse anxiety, and soon will argue most cleverly that the analyst is wrong, that at least he is exaggerating his reaction. Horney believes that when a therapist reacts with inner irritation to a client's tendency to defeat his/her efforts, he/she may be identifying the client with his/her own father, or another loving person.[10]

The notion of resistances were renamed "security operations" by Sullivan.[11] He felt that the discovery of a parataxic distortion brought about a sharp fall of a parataxic distortion in one's level of security, causing one to become intensely anxious. This was viewed as injurious to the alliance, and ultimately to the therapy. Sullivan did not believe that a therapist should become seriously ego-involved with a client, in fact, consider any personal involvement with a client, therapeutically dangerous and part of what he termed "*social hokum*". He saw the therapist as an expert in the problem that "ail" the client but did not recommend that the therapist become intimate with any of them. Sullivan expanded upon and reformulated the notion of transference in terms of parataxis "me-you" patterns. He interpreted transference as a one-way process that showed the direct interaction of personalities. By transference the client manifests interpersonal processes that open the gates of memory sealed by dissociations, reorients his experience, and facilitates the development of arrested or distorted systems of motives so that he moves forward toward the conditions of adult personality organization."

The Humanistic Perspective: Carl Rogers was one of the first influential figures outside of the psychoanalytic tradition to advance a conceptualization of the therapeutic relationship. Rogers' person-centered model of psychotherapy considered the alliance to be a vital and active component of successful therapy. Within Rogers' theory, healthy therapist-client relationships are conceptualized as inherently healing to the client when certain conditions are met. Specifically, the quality and the therapeutic value of the relationship depends upon the therapist's ability to be empathic and "congruent" (i.e., authentic, genuine) with the client, while providing unconditional positive regard toward him or her. Rogers contends that his aim of therapy is not merely to solve problems, but to assist clients in their growth process so that they can better cope with problems they are currently facing as well as deal with future issues.[12] Rogers wrote "If I can provide a certain type of alliance for self the capacity to use that alliance for growth and change, and personal development will occur." It was Roger's contention that the significant positive personality changes of an individual occurs only as a result of the alliance between therapist and client.[13]

Roger's believed that the following six

conditions were necessary and sufficient for personality changes:

i) Two persons are in psychological contact.

ii) The 1st person, whom we shall term the client, is experiencing in-congruency.

iii) The 2nd person, whom we shall term the therapist, is congruent or integrated in the alliance.

iv) The therapist experience unconditional positive regard or real caring and acceptance for the client.

v) The therapist experiences an empathic understanding of the client's internal frame of reference and endeavors to communicate this experience to the client.

vi) The communication to the client or the therapist's empathic understanding and unconditional positive regard is to a minimal degree achieved.

The Behavioural Approach: Clinical and research evidence suggests that a therapeutic alliance, even in the context of a behavioural orientation, can contribute significantly to the process of behavior change. The behavior therapist is one who can conceptualize problems behaviorally and make use of the client/therapist alliance in facilitating change. As opposed to some of the other modalities of treatment, behavioural practitioners do not assign an all important role to alliance variables. Instead, they typically contend that factors such as warmth, empathy, authenticity, permissiveness, and acceptance are considered necessary, however, not sufficient for behavioural change to occur. Lazarus maintains that unless clients respect their therapist it will be difficult to develop the trust necessary for them to engage in significant self-disclosure. Behaviour therapist tend to be more active and directive and can function as consultants in helping the client solve problems as opposed to allowing the alliance in and of itself to facilitate the change.[14]

The Cognitive-Behavioural Approach: It can be used to understand variability in client behavior, and Cognitive-behavioural formulation can be used to guide individuals in dealing with difficult problem in therapeutic alliance. Schemes are defined as cognitive structure that may be at the core of an individual's particular dysfunction. It is a maladaptive, Cognitive-interpersonal cycle that client's perceptions of the therapist's behavior provide a phenomenological link to the dysfunctional interpersonal schemes and associated pattern of behavior. Cognitive-behaviour therapist states that cognitive transference develops when the afore-mentioned patterns are repeated in the therapeutic process.

The Existential Perspective: According to Seguin, "It is through total acceptance, that the client comes to value his or her own uniqueness, becomes free to exert choice, to make commitments, and to find meaning in life".[15] According to Bugental and Sterling, "It is necessary to develop what they term a 'meaningful realistic therapeutic contract."[16] According to Yalom, existentially oriented therapists strive toward honest, mutually open alliance with their clients. The therapist and client address one another equally, generally both on a first-name basis, with the therapist process, answering questions fully and openly, as opposed to remaining impassive in an effort to evoke transferential distortions.[17]

Measurement of the Therapeutic Alliance

Measurements can be obtained from:

1) Client self-report questionnaires.
2) Therapist-report forms.
3) Observational codings of therapy tapes by trained clinical raters, or some combination of these.

Ratings of the therapeutic alliance through each of these methods have been found to have adequate reliability and validity for outcome research.

1. The Working Alliance Inventory: This inventory developed by Horvath & Greenberg[18] in 1989 includes the 36 items which are rating Never to always (1-7). It assesses three key aspects of the therapeutic alliance: (a) agreement on the tasks of therapy, (b) agreement on the goals of therapy and (c) development of an affective bond. The reliability (alpha > 0.80) and convergent validity with the Helping Alliance Questionnaire were good (r > 0.64).

2. The Penn Helping Alliance Questionnaire: PHAQ developed by Lester et al in 1996. It includes 19 items in patient version and 19 items in therapist version which were rate 1-6 in which 1 indicate strongly disagree and 6 indicate strongly agree.[19]

3. Exploitation index: Exploitation index developed by Epstein and Simon in 1991 which includes 7 domains generalized boundaries violation, Eroticism, Exhibitionism, Dependency, Power-seeking, Greed, Enabling, these are rating on never too often. This index includes 32 items in which patient rate as never, rarely, sometimes and often. Scoring done as allot marks Never = 0, Rarely = 1, Sometimes = 2, Often = 3.[20]

When therapist and client reports of alliance

quality are compared for a dyad, the ratings are typically moderately correlated, but therapists tend to overestimate some elements of the alliance such as the emotional bond. Observer-coded alliance rating is much more time-intensive but adds a qualitatively different perspective on the alliance, and may be most useful when used in tandem with client or therapist report forms.[21] Given that therapist and client ratings tend to differ and client ratings are the best predictor of alliance, it is important for therapists to attend and regularly monitor client's perceptions of the alliance. Therapists who have access to regular data from client self-report of symptoms and alliance quality have been found to have better rates of client retention, and are more likely to achieve positive treatment outcomes.

Client and therapist characteristics predicting the quality of alliance

The majority of research on antecedents of the therapeutic alliance focuses upon client characteristics; however, it is important to note that the therapist's personal characteristics and manner of behaving in interpersonal interactions also play a significant role in alliance quality.

Therapist characteristics that have been found to be related to the working alliance include:

1. Adequacy of their own social and professional social support networks.
2. Comfort with intimacy.
3. Level of experience in performing psychotherapy.
4. Interpersonal style of interaction with the client, especially in regards to therapists' ability to grant autonomy to the client and refrain from behaviors that are perceived as controlling, distancing, blaming, or hostile toward the client.

Client characteristics:

1. Client's interpersonal styles. For example, certain classes of interpersonal problems predict deficits in the quality of the bond element of the alliance.
2. Clients who are overly detached (i.e., find it hard to be open and intimate with others), or have low self-esteem tend to form poorer therapeutic bonds.
3. Clients who have a low comfort level with intimacy tend to rate significantly more positive working alliances with experienced versus novice therapists.
4. The severity of clients' symptoms and subjective distress upon entry into therapy has been found to be uncorrelated with the quality of the therapeutic bond.

Alliance Change across Time

The timing of alliance ratings is also an important factor to consider when evaluating alliance-outcome. Most often, the earliest phase of the alliance is given the most attention (i.e., within the first 3-4 sessions), as this reflects the initial formation of the relationship. There is evidence suggesting that the quality of the alliance remains relatively stable across time in treatment, and measurements taken at any given time-point are sufficient for predicting therapeutic outcome. In one study, 83% of patients were found to have stable patterns of alliance across time with little fluctuation.[22] It was also found that early observer-rated alliance predicts observer-rated alliance late in therapy, suggesting that alliance quality is relatively stable. According to the results of a large-scale meta-analysis, clients view the alliance as even more stable across sessions as do their therapists and independent observers.[23] In contrast, other researchers argue for the importance of ongoing assessment of the alliance to gain the best understanding of how therapist-client relationships develop over time.

Rupture and repair in the alliance

Alliance "ruptures" are defined as increased tension in the therapeutic relationship, a negative shift in the quality of the existing alliance, or difficulty establishing a relationship in therapy.[24] The concept of alliance rupture has been theoretically compared to the psychoanalytic concept of resistance. Although both terms may describe similar phenomena in therapy sessions, the primary difference is that ruptures are considered to be an interactive process that both therapist and client contribute as opposed to resistance which is typically viewed as arising from the client's internal processes. Alliance ruptures are considered to be an inevitable event in therapy and can be opportunities for positive change in therapy.[25,26] For example, successfully resolving an alliance rupture in session could provide a healthy model of conflict

resolution and resiliency in a relationship and can disconfirm a client's dysfunctional beliefs or schemas about interpersonal relationships.

Steps in Alliance Rupture Repair

1) At the first sign that the client does not appear to be open to an intervention or is not working with you, stop and explore what is going on for the client at that moment.

2) Reflect back the client's perception and emotions and ask about additional emotions and thoughts about unhelpful or invalidating events, until client feels understood.

3) Find some truth in the client's reaction and convey recognition of therapist's contribution to the problem.

4) Alliance ruptures can take many forms, based upon the type of therapeutic event that prompts the rupture and the subsequent reactions of the client.

Consistent with Bordin's pan-theoretical model, ruptures can occur in the three broad components of the alliance: 1) Disagreement about goals of therapy, 2) Disagreement about in-session tasks. 3) Strains in the emotional bond.[26]

Client responses to ruptures are theorized to fall into two major types: 1) Withdrawal 2) confrontation. Withdrawal in session include withholding of information from the therapist, reduced eye contact, missing sessions, or insisting that "nothing is wrong" despite clear expressions of negative affect. Confrontation, on the other hand, may take the form of sarcasm, criticism of the therapist, and signs of hostility or aggression in session.

Stiles et al found four distinct patterns of alliance development across time:[25]

1. Stable alliance with little change across time,
2. Positively sloped change with minimal variability,
3. High session-to-session variability with an overall slight inverted U-shape (highest alliance quality in the middle phase of therapy), and
4. A shallow U-shape (highest alliance quality at the beginning and end of treatment).

Client Factors

1. ***Lack of client skill***: Therapists cannot make the assumption that every client has developed the skill to effectively perform a particular behavior or sequence of behaviours. For many clients their difficulty in therapy will parallel their inability to cope with life stressors.

2. ***Client cognitions regarding previous therapy failure*:** When the client has cognitions of failing to be able to successfully make changes in thought or behavior, the therapist needs to help the client to carefully examine their cognition.

3. ***Client cognitions regarding consequence to others of change*:** Another set of cognition involves the client having catastrophic ideas relative to the result of their attempting to change on others.

4. ***Secondary Gain*:** There may be situations where the client may not change because of the gain that accrues from continuing their dysfunctional suicidal thinking and/or behavior.

5. ***Fear of Changing*:** For some clients changing means relinquishing ideas, beliefs, or behaviours that they see as inimical to their survival. While this may appear paradoxical in that their thinking makes them suicidal. They often choose the familiarity of their pain to the uncertainty of a new mode of thinking or behaving.

6. ***Lack of client motivation*:** Clients may arrive for therapy under protest. Therapy may be mandated as part of a legal penalty, i.e. "go to therapy or go to jail".

7. ***Negative mind set*:** Often a client is seen to have a "bad attitude" or "a very negative view". What is labeled as negative or attitudinal is often an issue of negative set. The negative set might be manifested directly as "Yes-but" behavior quickly disqualifying whatever the therapist says, or as directly arguing with the therapist on issues both large and small.

8. ***Limited or poor self-monitoring*:** Individuals may see the flaws and foibles of others, but remain blind to their own. Difficulty or inability to self-monitor will often be a major stumbling block to therapy.

9. ***Limited or poor monitoring of others*:** For some clients, the monitoring of others is a problem, they tend to look at others, but see very little. Their response to others would more likely be based on the client's images and distortions of others rather than a data based assessment.

10. ***Narcissistic style*:** A Narcissistic style

needs to be differentiated from a diagnosis of clinical narcissism. The Narcissistic style causes the client to be so self-involved any attempt to have them look at others or at themselves is met with resistance. The reaction is typically framed as, "It can't be me" or "Why would you expect so much from me".

11. ***Client frustrated with lack of therapy progress*:** Clients may have unrealistic expectations of therapy and possible therapy progress. When the expectations are not met, the client may blame self or therapist or withhold from the therapeutic collaboration.

12. ***Patient perception of lowered status in therapy*:** For some individuals, being a client is a mark of lowered status. For many, being in therapy is the mark of being "sick" "disturbed" or "crazy".

Therapist Factors

1. ***Lack of therapist skill*:** Just as clients come into therapy with a particular set of skills so too do therapists. Because of limited experience with a particular client problem or population, the therapist may not be best equipped to work with a particular client.

2. ***Client and therapist distortions are congruent*:** If client and therapist share a particular dysfunctional idea e.g.," everything is hopeless and cannot change," it will bode poorly for the therapy.

3. ***Poor socialization to the model*:** The client who does not understand what is expected of them will have difficulty complying with the therapeutic regimen.

4. ***Lack of data*:** The basis of treatment is the assessment and general collection of data. The therapeutic conceptualization and the resultant treatment plan is then data-based. If the therapy is focused on theory without data, the therapies will suffer.

5. ***Therapeutic narcissism*:** An issue that can be a major impediment to therapy is what we term "Therapeutic narcissism". This results from the therapist being so taken with themselves that they are blinded by the need for greater humanity and empathy. The therapeutic narcissism may take the form of telling rather than asking the client how they feel. It may take the form of deciding what the client needs without consulting the client.

6. ***Poor timing of interventions*:** Interventions that are ultimately can have the effect of the client not seeing the importance or relevance of the therapeutic work, the thereby appearing to be noncompliant. If the therapist tries to push or rush the client because of his or her anxiety the result may be the loss of collaboration, the missing of sessions, a misunderstanding of the therapeutic issue or a premature termination of therapy.

7. ***Lack of experience*:** Inexperience is something that all therapists face at the advent of their careers. This impediment is unintentional and a standard part of the mental health training system.

8. ***Therapy goals are unstated, unrealistic, or vague*:** When the goals of therapy are unstated, unrealistic, or vague, the client may be in the position of unknowingly resisting the treatment. This issue also raises problems with informed consent. The client must be part of the treatment planning process and informed as to the goals, strategies, and interventions of the therapy so that they can best comply rather than being noncompliant out of ignorance.

9. ***Lack of agreement with therapy goals*:** It is important for the therapist to repeatedly solicit feedback from the client and to encourage the client to raise any concerns and objections, so that therapist and client's problems which forms a basis for collaboration and so that it is clear that the client understands and accepts the homework assignments.

10. ***Lack of collaboration/alliance*:** Collaboration is an essential ingredient for all psychotherapy. This is crucial in working with the suicidal client. If the client and therapist do not have a good working alliance, it would seem to follow that the client may be less motivated to work with the therapist, do homework, follow the therapist's direction, or generally work toward making change.

Problem/ Pathology Factors

1. ***Client rigidity foils compliance*:** With some clients, their personality rigidity foils their ability to actively comply with therapy. This is particularly true with clients who are obsessive-compulsive, paranoid in which their disorder may preclude their compliance.

2. ***Medical/ physiological problems*:** It is essential for every client coming for therapy to have a complete medical evaluation, with blood work as part of a comprehensive assessment and treatment

plan. It is unethical and dangerous for the therapist to be treating what may appear to be psychological disorders but have a medical etiology, e.g. a client with hypothyroidism may appear depressed because of the slowed action and thinking.

3. ***Difficulty in establishing trust*:** Trust is a central issue in therapy. The trust must be bidirectional where the client trusts the therapist and the therapist can trust the client.

4. ***Autonomy press*:** The autonomous individual will be reluctant to come for. Their avoidance of therapy is seen as one way of maintaining their autonomy.

5. ***Impulsivity*:** Clients who are impulsive and hostile in those cases therapy as restrictive and limiting.

6. ***Confusion*:** Clients who are confused because of schizophrenia, bipolar illness, or neurological injury or deficit will have difficulty making use of therapy. They may have memory problems, difficulty in follow-through, difficulty with homework, and problems dealing with any abstractions.

7. ***Limited cognitive ability*:** Clients may have limited cognitive ability that is a result of limited intellectual ability or neurological deficit. Their processing will be limited by the lowered level of cognitive integration.

8. ***Symptom profusion*:** Anxious clients will often overwhelm the therapist with graphic, elaborate and detailed descriptions of their symptoms. Their idea is that if anything is left out they run the risk that the omitted piece will be the essential piece that makes it impossible for them to be helped.

9. ***Dependence*:** The client who is dependent will often work to insure that the therapist is totally and completely on their side. They may overwhelm the therapist with data bring the therapist gifts or praise the therapist for the wit, insight, sensitivity, and perspicacity.

10. ***Self-devaluation*:** Often term low self-esteem or poor self-image, this involves devaluing everything that one does, or the concomitant overvaluing of what everyone else does. This often leads to "yes-but" behavior and to devaluing both the therapy and the therapist.

11. ***Limited energy*:** Depression is a major contributor to this impediment. Individual who are depressed will often have vegetative signs that include lowered energy. It then becomes difficult to cooperate in therapy goal is to avoid any activity that requires action or energy.

12. ***Substance use*:** If Substance abusing clients come to therapy they cannot make use of the therapy.

Abuse of the Therapeutic Alliance: This interactional process is the mechanism by which the effects of treatment are created and realized. As with most interpersonal alliances, the psychotherapeutic process has a frame or structure that delineates and identifies the purpose and meaning of the alliance. This frame consists of socially dictated components which serve as guidelines to how the therapeutic process should occur. This ethical must act as to avoid injury or harm to the client. The client is vulnerable to abuse. This abuse may take many forms from the more subtle through more moderate abuse to severe abuse of physical or sexual aggression. Sexual contact between the client and therapist will invariably cause situations that manifest themselves as the client experiencing greater difficulties as the client experiencing greater difficulties with trust, self-esteem, and problems expressing anger. Despite the documented harmful effects of sexual involvement with clients, 7-12% of therapist admits to having had sexual contact with a client. Approximately 10% male and 2-3% female therapist engaged in sexual activity.

Other areas of potential problems occur in regard to fees and financial arrangements. The Ethics Code for Psychology states that the psychologists as early as possible define and make an agreement as to how the fee schedule is arranged. Fees are consistent with laws, and are not misrepresented.

Conclusion

Therapists are bound by clinical, ethical and legal standards to maintain the integrity of psychotherapeutic to maintain the integrity of the psychotherapeutic process.

Epstein writes, "Ideally, the therapist will be able to fine-tune the frame into an empathic dynamic structure that is sensitive to the client's changing needs". This is essential, particularly since the therapeutic alliance plays such an important part as an agent in the changing process.[20]

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Original Article

Clinical and Psychoeducational Profile of Children with Attention Deficit Hyperactivity Disorder and Learning Disabilities

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ABSTRACT

Background: *Attention deficit hyperactivity disorder (ADHD) and Specific learning disabilities (SpLD) often coexist. However, the Indian literature on the comorbidity and impact of complementary and alternative medicine (CAM) in ADHD treatment is scarce.* ***Objectives:*** *To evaluate the demographics, subtypes and comorbidities in children with ADHD and SpLD. To assess the effects of medications and CAM on ADHD target symptoms using standardized instruments.* ***Materials and Methods:*** *200 children aged 8-14 years referred to Learning Disability centre of a tertiary care hospital in Mumbai for academic issues. They underwent a psychoeducational battery for SpLD diagnosis. Also they underwent ADHD evaluations using the Vanderbilt ADHD Diagnostic Teacher Rating Scales (VADTRS) and Vanderbilt ADHD Diagnostic Parent Rating Scales (VADPRS). Clinical details, allopathic, ayurvedic and homeopathic medicine intake were noted. A trial of Methylphenidate (MPH) or Atomoxetine (ATX) was done for 12 weeks. Treatment outcome measures were difference in the mean symptom scores of VADPRS and VADTRS at baseline and 3 months.* ***Results:*** *In our study male: female ratio was 3:1,10(5%) had primary nocturnal enuresis, 134(67%) had dyscalculia, 8(4%) had epilepsy and 4(2%) had febrile convulsion. 51(25.5%) had significant perinatal risk factors, 28.5% had developmental delay,31(15%) had soft neurological signs. Majority (69.5%) had combined type of ADHD, male:female ratio in ADHD-C and ADHD-I was 1.3:1 and 1:2 respectively. Drug compliant children showed more improvement. Allopathic medications alone were more effective than combinations with CAM.* ***Conclusions:*** *Children with ADHD in an Indian referred clinic population had a combined presentation, and had a significant improvement in symptom scores on medications at 3 months. The use of CAM in our sample did not add any clinical effectiveness to the use of allopathic medications.*

Keywords: *ADHD, Psychoeducational profile, Specific learning disability*

Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a common neurobehavioral disorder affecting children and causing significant limitations in functioning of multiple domains. These children display behavioral patterns depending on the type of ADHD and associated co-morbidities.[1] It affects certain areas of the brain that allow problem solving, planning ahead, understanding others actions, and impulse control. It is two to four times more common in boys.[2] ADHD affects around 5 to 10 % of school-age population globally, with upto 75 % of those diagnosed as children continuing to meet criteria for disorder in adolescence, and up to 66 % continuing

to be symptomatic in adulthood.[3]

Specific learning disability (SpLD) is manifested by significant difficulties in the acquisition and use of efficient reading (dyslexia), writing (dysgraphia), and mathematical (dyscalculia) abilities despite conventional instruction, intact senses, normal intelligence, proper motivation and adequate sociocultural opportunity.[4] SpLD and ADHD may co-occur in the same child because of shared genetic etiology and both are known to impair educational achievement and /or social functioning. About 20% of children with SpLD have associated ADHD as comorbidity and vice versa.[5]

Most of studies have evaluated the prevalence of ADHD in general school aged population. Very few studies have addressed the issue of ADHD in the setting of SpLD. The present study was planned for detailed psychoeducational assessment of children with ADHD and associated learning disabilities.

Materials and Methods

This prospective observational study was carried out at the Pediatric Neurodevelopmental Centre of a tertiary hospital in Mumbai over a period of 18 months since January 2013 after obtaining approval from the Institutional Ethics Committee. These children were enrolled only after obtaining informed consent from the parents or the guardians. All children aged 8 to 14 years attending learning disability clinic with IQ more than 80-85 and having parents with good English language proficiency were included.Children with congenital anomalies, obvious neurological deficits and visual or hearing impairment were excluded from the study.

Sample size: 200 children with suspected ADHD and learning disability were included.All children with poor scholastic performance were screened for sensory issues, average cognitive abilities at the outpatient department and then registered at the Pediatric Neurodevelopmental Centre for learning disability diagnostic services. These were also screened for ADHD symptoms by DSM IV TR[6] and those eligible were included in the study.

Then children underwent neurological assessment followed by objective evaluation of ADHD, its subtypes and other co-morbidities on basis of clinical interview, standardized rating scales such as the NICHQ Vanderbilt Assessment – Teacher Informant and NICHQ Vanderbilt Assessment – Parent Informant.[7]The children with ADHD diagnosis were given either Methylphenidate (MPH) or Atomoxetine (ATX). Dose of MPH used was 0.2-1 mg/kg/day and of ATX was 0.5-1.2 mg/kg/day.

In addition all enrolled children also underwent a comprehensive psychoeducational evaluation for their academic issues. The intelligence test used was Malins Intelligence Scale for Indian Children (MISIC).[8] The 2 subtests i.e. verbal and performance IQ were noted. Additionally the scaled scores (5 in each) of the VIQ and PIQ were also noted. A team of developmental pediatricians, clinical psychologists, special educators, psychiatrists, occupational therapists made the final diagnosis of specific learning disability. Children who received medicines were followed up after 1st week of initiation of drug to check for immediate side effects, monthly and at 3 months post treatment and VADPRS and VADTRS symptom scores were noted.

At the end of the study, detailed statistical evaluation was done and p value of less than 0.05 was considered to be statistically significant.

Results

Table 1 describes the demographic profile and clinical profile of our sample. Our sample consisted of mainly boys and majority were of age group 10-13 years. Chief academic complaint was difficulty in mathematics in majority of children, n = 134(67%). History of epilepsy was present in 8(4%) children and febrile convulsions were present in 4(2%). Significant perinatal history was present in 51 children.Developmental delay was present in total 57 children. Soft neurological signs were seen in 31(15.55%). Majority of children had ADHD-C type on all three scales namely VADPRS (76%), VADTRS (70%) and DSM-IV TR (69.5%). As per DSMIV-TR 38 (25.33%) males were inattentive and 112(74.67%) had ADHD combined type. Amongst females 23(46%) were inattentive and 27(54%) had combined type, showing females were more inattentive than males. This was statistically significant (p value = 0.006).

Out of 200 children, 4 children were lost to follow up and remaining 196 children were on

Table-1: Demographic Data,Clinical History and Findings of Study Children

Sl. No.	Variable		N = 200	Percentage
1.	Gender	Male	150	75 %
		Female	50	25 %
2	Age(years)	8 – 9	17	8.5 %
		10 – 13	183	91.5 %
3	Type of family	Joint	24	12 %
		Nuclear	176	88 %
4	Board	CBSE	18	9 %
		SSC	169	84.5 %
		ICSE	13	6.5 %
5	Socioeconomic status	Upper class	90	45 %
		Upper Middle Class	108	54 %
		Lower Middle Class	2	1 %
6	Chief Academic Complaints	Reading	110	55 %
		Writing	120	60 %
		Mathematics	134	67 %
		Reading + Writing	58	29 %
		Reading + Maths	63	31.5 %
		Writing + Maths	72	36 %
		Reading + Writing+Maths	27	13.5 %
7	History of medical illness	Epilepsy	8	4 %
		Febrile Convulsion	4	2 %
		Primary Nocturnal Enuresis	10	5%
8	Significant perinatal history	Yes	51	25.5 %
		No	149	74.5%
9	Developmental Delay	Delayed walking	34	17 %
		Delayed Talking	23	11.5 %
10	Soft neurological signs	Yes	31	15.5 %
		No	169	84.5%
11	Diagnosis of Learning Disability	SpLD1 (Dyslexia)	200	100 %
		SpLD2 (Dysgraphia)	200	100%
		SpLD3 (Dyscalculia)	196	98 %

medications and followed up after 3 months. Symptoms score were recalculated on VADPRS and VADTRS difference in mean symptom score was calculated [Table 2]. Total 65 children were on atomoxetine (ATX) and 131 were on methylphenidate (MPH).23 children were on complimentary alternative medicines like homeopathic and ayurvedic along with above mentioned drugs. ADHD-C type showed more improvement than ADHD-I with difference in mean symptom score

Table-2: Differences in Mean Symptom Score on VADPRS and VADTRS

Factor		VADPRS	VADTRS
Difference in mean symptom score as per sub-type of ADHD	ADHD-I	-9.33 (n = 48)	-8.84 (n = 59)
	ADHD-C	-19.59 (n = 148)	-20.3 (n = 137)
		p = 0.000*	p = 0.000*
Difference in mean symptom score as per CAM therapy	Without CAM	-17.78 (n = 173)	-17.63 (n = 173)
	With CAM	-11.78 (n = 23)	-11.08 (n = 23)
		p = 0.003*	p = 0.001*
Difference in mean symptom score as perdrugs and CAM therapy	ATX without CAM	-14.13 (n = 60)	-13.6 (n = 60)
	ATX with CAM	-7 (n = 5)	-7 (n = 5)
	MPH without CAM	-19.72 (n = 113)	-19.7 (n = 113)
	MPH with CAM	-13.11 (n = 18)	-12.22 (n = 18)
		P = <0.001*	P = <0.001*

*statistically significant

of -19.59 and significant p value ($p < 0.001$).MPH (score = -19.72) was more effective than ATX (score = -14.13).Combination of drugs with CAM was not effective.174 children were compliant and 22 were non-compliant. Drug compliant (score dropped from 37.5 to 18.48) children showed significant improvement in symptom scores than non compliant children (score dropped from 33.5 to 30.31, p value = 0.0007). We used 10 subtests of Malins Intelligence Scale for Children (MISIC) for evaluation. Amongst these, scaled scores of all subtests fell in range of 88-113.

Discussion

In our study male: female ratio was 3:1, this finding was consistent with study by Suvarna BS and Kamat[9] and meta-analysis by Gaub M et al.[10] This lower ratio within the general population indicates that proportionally more boys with ADHD present to clinics and the lower referral rates of ADHD girls may reflect a neglect of the problems experienced by girls with ADHD.[11,12]

We divided the study population in 2 age groups, 8-9 years and 10 to 13 years. Majority of children were older. However due to a referral sampling bias of the study population we got a higher number of older aged children.[5] 176(88%) children were from nuclear family suggesting that ADHD was more common in children belonging to nuclear family in which a child could be affected by anxiety and tension between parents which could lead to increased behavioral problems in them.[1] Majority belonged to upper middle and upper class while only1% children were from lower socioeconomic class. These findings were consistent with study by Patankar et. al.[2] and Karande et.al.[5] This might be a reflection of awareness, access and utilization of health services by upper and middle class. In our study 10(5%) children had primary nocturnal enuresis which was almost similar to that found by Chiozza et. al. (3.88%).[10] Our findings on prevalence of epilepsy and febrile convulsions with ADHD were similar to study done by Cantwell.[13] In our study 51(25.5%) children showed significant perinatal risk factors and 28.5% had delayed milestones. Various studies have shown different prevalence, however developmental delay was more common in ADHD children as compared to normal children.[1,2,5] Present study showed 31(15%) of children had one or more soft neurological signs. ADHD-C was the major subtype reported to our clinic. We did not find hyperactive impulsive type of ADHD (ADHD-HI), as our study population was from secondary school and ADHD-HI is commonly found in preschoolers.[14]

We reported MPH was more effective in reducing the symptom scores compared to ATX and many studies support our finding.[15-17] We also found in effectiveness of CAM therapy in ADHD. Compliant patient improved more than those of non-compliant and this has been supported by other studies too.[18,19]

On MISIC, high mean scores were found in mazes (104.45), coding (102.96) and similarities (112.61) indicating that these children have high average verbal concept formation and abstract thinking ability.The ACID profile (i.e. low scores on Arithmetic, Coding, Information and Digit Span) is evident on IQ profiles of children with ADHD and specific learning disability. However, we did not find this in our study, except the low scores on arithmetic, suggesting poor numerical ability of these children. Also, further research is needed to investigate the need for updating MISIC norms, with the change in culture and children's exposure to various modes of technology.[20]

Conclusions

Prevalence of ADHD was more in males than females. The commonest ADHD subtype was of combined type. Drug compliant and children with ADHD-C subtype showed more improvement. CAM was ineffective.

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Original Article

Degree of Burnout among Emergency Healthcare Workers and Factors influencing level of Burnout: A pilot study

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ABSTRACT

Objectives: *(1) To examine the level of burnout reported by healthcare workers of emergency department. (2) To find out the relationship between burnout and demographic variables like age, religion, marital status, years married, general and professional education, children and number of children. (3) To explore factors that may influence the level of burnout among healthcare workers working in emergency department.* ***Methods:*** *Seven healthcare workers working in the emergency department of Gauhati Medical College Hospital, Guwahati were be selected by non probability purposive sampling. Demographic proforma, factors influencing level of burnout, and Assamese translation of Maslach Burnout Inventory were the tools used.* ***Results:*** *In emotional exhaustion, there was low-level burnout. High-level burn out was seen in depersonalisation or loss of empathy. Moderate burnout was found in personal achievement.* ***Conclusion:*** *While findings of the present study have several implications in terms of improving resources and environment in the emergency healthcare delivery system, similar study, replicated on a large sample, would help to draw conclusions that are more definite and generalisable to a larger population.*

Keywords*: Sampling, Demography, Dependent variable, Depersonalisation.*

Introduction

Every individual has certain projects, hopes, desires. The organisation an individual works for bears an inescapable role on their psychic apparatus. Sometimes, the impact of the organisation is such that, the individual suffers for their psychic aspects not having been taken into account by the organisation.[1]

A consequence of the psychic apparatus of the worker can be the burnout syndrome. It is an emotional answer to certain situations. Such situations include intense work relations with other people that result in chronic stress. Another mechanism is the disparity between the expectation and compensation. This is observable in career-related professional development and dedication.[2,3]

Burnout syndrome is a gradual process. Fluctuations in mood and lack of encouragement progress to both physical and mental symptoms. The

sense of relationship with work that a worker usually has to have is lost. Things cease to be important anymore. Components of the syndrome include emotional and physical exhaustion, cynicism and lacking affection, and ultimately a feeling of reduced personal accomplishment.[4]

Need for the study

Although burnout in large organisations has been examined in many studies, in general there has been a lack of concentration on healthcare workers and on hospital settings, especially in India. In addition, there are relatively few studies investigating burnout among Indian healthcare workers. Unfortunately most of the studies on burnout in healthcare workers have been conducted in Europe and United States. There are few studies from Asian countries. In view of the paucity of Indian studies in this area, the present work was undertaken to identify the predictors of burnout in an Indian healthcare population. As the socio-cultural background of Indian healthcare workers varies widely from their western counterparts, we expected to identify predictors of burnout relevant to them. Finding predictors of burnout relevant in an Indian setting should have important policy implications in human resource management in this sector in similar developing countries.[5]

A health workforce crisis is crippling health service delivery in many low-income countries. High-income countries with high salaries and attractive living conditions are drawing qualified doctors and nurses from poorer countries to fill gaps in their own human resources pool. This migration of skilled labour is depleting human capital in many developing countries.[6] The human resource crisis in India is acute. To the best of investigators' knowledge, there is a paucity of such work in this field in the state of Assam, which is another major reason to undertake this study. Moreover, with the increasing complexities and the changing patterns of society, the stress in the environment leading to burnout is increasing day by day. Study of burnout and factors influencing it will therefore enable us to find out suitable ways to reduce stress among healthcare workers and thereby improving the quality of health care. Thus the need for the study is felt.

Therefore, this study is designed to identify degree and factors that influence burnout among emergency healthcare workers in hospital.

Statement of the problem

Degree of burnout among emergency health-care workers and factors influencing level of burnout[7]

Objectives of the study

1. To examine the degree of burnout reported by healthcare workers of emergency department.
2. To find out the relationship between burnout and demographic variables like age, sex, religion, marital status, years married, general and professional education, children and number of children.
3. To explore factors that may influence the level of burnout among healthcare workers working in emergency department.

Material and Methods

The study protocol is discussed in an original article.[8] The study was carried out in the emergency department of Gauhati Medical College and Hospital (GMCH), Assam in a pilot sample of seven (ten per cent of a calculated sample of 62) among willing healthcare workers who were available during data collection from September 2014 to August 2015.

Description of tools

Demographic proforma: It is prepared to gather the background information regarding the participations under study. It consists of eight items. Variables are socio-demographic data, e.g. age, religion, marital status, years married, general and professional education, children, and number of children.

Factors influencing level of burnout: It consists of 12 items. These are travelling time to work, working hours per week, doctor/doctor conflict, nurse/nurse conflict, nurse/doctor role conflict, availability of doctors/nurses to work with, lack or inadequate doctor/nursing personnel, poor wages, too frequent night duties, inadequate security during night duties, job status, and years in current job.

It was evident from the literature review that because of the very nature of the type of data required to be analysed to assess level of burnout and factors that may influence the level of burnout among healthcare workers, standardised tools are

essential. After an extensive literature search, authors found that Maslach Burnout Inventory (MBI)[9] is the golden scale for assessing burnout among healthcare workers.

Burnout self-test (MBI) is subdivided into three categories:

- Section A – Emotional exhaustion
- Section B – Depersonalisation
- Section C – Personal achievement

MBI contains 22 items which are answered as never, a few times per year, once a month, a few times per month, once a week, a few times per week and every day.

Section A – Emotional exhaustion contains seven items

Section B – Depersonalisation contains seven items

Section C – Personal achievement contains eight items

Scoring

Section A: Emotional exhaustion

Emotional exhaustion: Testifies to fatigue at the very idea of work, chronic fatigue, trouble sleeping, physical problems. For the MBI, as well as for most authors, "exhaustion would be the key component of the syndrome." Unlike depression, the problems disappear outside work.

- Total 17 or less: Low-level burnout
- Total between 18 and 29 inclusive: Moderate burnout
- Total over 30: High-level burnout

Section B: Depersonalisation

Depersonalisation (or loss of empathy): Rather a "dehumanisation" in interpersonal relations. The notion of detachment is excessive, leading to cynicism with negative attitudes with regard to patients or colleagues, feeling of guilt, avoidance of social contacts and withdrawing into oneself. The professional blocks the empathy he can show to his patients and/or colleagues.

- Total 5 or less: Low-level burnout
- Total between 6 and 11 inclusive: Moderate burnout
- Total of 12 and greater: High-level burnout

Section C: Personal achievement

The reduction of personal achievement: The individual assesses himself negatively, feels he is unable to move the situation forward. This component represents the demotivating effects of a difficult, repetitive situation leading to failure despite efforts. The person begins to doubt his genuine abilities to accomplish things. This aspect is a consequence of the first two.

- Total 33 or less: High-level burnout
- Total between 34 and 39 inclusive: Moderate burnout
- Total greater than 40: Low-level burnout

A high score in the first two sections and a low score in the last section may indicate burnout.

Translation of the scale

The inventory was translated from English into local language Assamese by an expert not related to this study. It was later back-translated into English by another independent expert, not acquainted with the original version. The back-translation was subsequently compared with the original version by a psychiatrist for conceptual equivalence of the items. Necessary finer adjustments were made to convey the correct information to the participants.

Reliability of the scale

The reliability of the scale was established by data collected from ten staff nurses, who are working in the maternity department of GMCH.[10] The reliability has been drawn by using split-half Spearman Brown formula:

$$r_{SB} = 2r/(1+r)$$

where r is the Pearson product moment correlation co-efficient.

Reliability of emotional exhaustion-

The calculated value of r = 0.79

Hence, $r_{SB} = 0.88$

Since the calculated value of r_{SB} (reliability) is 0.88, which is highly reliable, the tool can be used for main study.

Reliability of depersonalisation-

The calculated value of r = 0.65

Hence, $r_{SB} = 0.79$

Since the calculated value of r_{SB} (reliability) is 0.79, which is highly reliable, the tool can be used for main study.

Reliability of personal achievement-

The calculated value of r = 0.76

Hence, $r_{SB} = 0.86$

Since the calculated value of r_{SB} (reliability) is 0.86, which is highly reliable, the tool can be used

for main study.

Ethical clearance

The study was approved by the Institutional Ethical Committee.

Statistical analysis

Data obtained was analysed using descriptive statistics such as mean, standard deviation, and frequency distribution, as well as inferential statistics such as non-parametric test (chi-square).

Results

Demographic variables

The demographic variables of emergency healthcare workers of GMCH are presented in Table 1.

Table-1: Frequency and percentage distribution of healthcare workers of emergency department of Gauhati Medical College Hospital (N=7)

Demographic variables	Frequency	Per cent (%)
Age (years)		
20-30	3	42.9
30-40	3	42.9
40-50	1	14.3
Religion		
Hindu	6	85.7
Muslim	1	14.3
Marital status		
Single	3	42.9
Married/with partner/cohabitating	4	57.1
Years married		
Does not apply	3	42.9
< 5 years	2	28.6
5-10 years	2	28.6
General education		
HSLC	1	14.3
HS	2	28.6
Graduate	2	28.6
Others	2	28.6
Professional education		
Doctor	4	57.1
Nursing	2	28.6
Paramedical	1	14.3
Child		
Yes	4	57.1
No	3	42.9
Number of children		
1	3	42.9
2	1	14.3
Does not apply	3	42.9

HSLC=High School Leaving Certificate, HS=Higher Secondary

Factors influencing burnout

Factors influencing burnout of emergency healthcare workers of GMCH are presented in Table 2.

Table-2: Frequency and percentage distribution of factors influencing burnout (N=10)

Factors influencing burnout	Frequency	Per cent (%)
Time to reach workplace		
< 30 minutes	2	28.6
30-60 minutes	2	28.6
> 2 hours	3	42.9
Hours per week		
36-42 hours	2	28.6
42-48 hours	2	28.6
> 48 hours	3	42.9
Doctor/doctor role conflict		
Yes	1	14.3
No	6	85.7
Nurse/nurse role conflict		
Yes	3	42.9
No	2	28.6
Doctor/nurse role conflict		
Yes	1	14.3
No	6	85.7
Availability of doctors/nurses to work with		
Yes	4	57.1
No	3	42.9
Lack or inadequate doctor/nursing personnel		
Yes	7	100
No	0	0
Less salary		
Yes	6	85.7
No	1	14.3
Too frequent night duties		
Yes	2	28.6
No	5	71.4
Inadequate security during night duty		
Yes	4	57.1
No	2	28.6
Job status		
Permanent	3	42.9
Contractual	2	28.6
Trainee	2	28.6
Years in current job		
0-5 Years	5	71.4
None*	2	28.6

N=Number, *Trainees

Burnout (emotional exhaustion, depersonalisation and personal achievement)

Burnout of emergency healthcare workers of GMCH is presented in Table 3 and Figure 1.

Table-3: Burnout (emotional exhaustion, depersonalisation and personal achievement) (N=10)

Burnout	Mean	Median	SD	SE
Burnout (or emotional exhaustion)	14.1429	15	3.305	8.745
Depersonalisation or loss of empathy	14.2857	12	3.771	9.978
The reduction of personal achievement	35.7143	39	2.436	6.447

N=Number, SD=Standard Deviation, SE=Standard Error

Association between demographic variables and emotional exhaustion

Table 4 shows association between demographic variables and emotional exhaustion.

Association between demographic variables and depersonalisation

Table 5 shows association between demographic variables and depersonalisation.

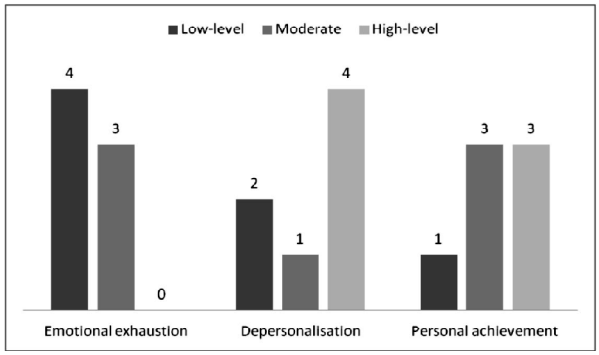

Figure 1: Burnout (emotional exhaustion, depersonalisation and personal achievement)

Table-4: Association between demographic variables and emotional exhaustion (N=7)

Demographic variables	Low-level (<17)	Moderate (18-29)	Chi-square	df	P-value
Age (years)			1.556	2	.459^{NS}
20-30	1	2			
30-40	2	1			
40-50	1	0			
Religion			1.556	1	.212^{NS}
Hindu	4	2			
Muslim	0	1			
Marital status			7.000	1	.008**
Single	0	3			
Married/with partner/cohabitating	4	0			
Years married			7.000	2	.030*
Does not apply	0	3			
<5 years	2	0			
5-10 years	2	0			
General education			4.958	3	.175^{NS}
HSLC	1	0			
HS	1	1			
Graduate	0	2			
Others	2	0			
Professional education			.875	2	.646^{NS}
Doctor	2	2			
Nursing	1	1			
Paramedical	1	0			
Child			7.000	1	.008**
Yes	4	0			
No	0	3			
Number of children			7.000	2	.030*
1	3	0			
2	1	0			
Does not apply	0	3			

df = Degree of Freedom, NS = Not Significant, HSLC = High School Leaving Certificate, HS = Higher Secondary, * = significant at 5% level, ** = significant at 1% level

Table-5: Association between demographic variables and depersonalisation (N=7)

Demographic variables	Low-level (≤ 5)	Moderate (6-11)	High-level (≥ 12)	Chi-square	df	P-value
Age (years)				3.889	4	.421 NS
20-30	0	1	2			
30-40	1	1	1			
40-50	1	0	0			
Religion				2.917	2	.233 NS
Hindu	2	1	3			
Muslim	0	1	0			
Marital status				4.278	2	.118 NS
Single	0	2	1			
Married/with partner/cohabitating	2	0	2			
Years married				4.278	4	.370 NS
Does not apply	0	2	1			
<5 years	1	0	1			
5-10 years	1	0	1			
General education				14.000	6	.030*
HSLC	0	0	1			
HS	0	0	2			
Graduate	0	2	0			
Others	2	0	0			
Professional education				7.000	4	.136 NS
Doctor	2	2	0			
Nursing	0	0	2			
Paramedical	0	0	1			
Child				4.278	2	.118 NS
Yes	2	0	2			
No	0	2	1			
Number of children				6.222	4	.183 NS
1	1	0	2			
2	1	0	0			
Does not apply	0	2	1			

df = Degree of Freedom, NS = Not Significant, HSLC = High School Leaving Certificate, HS = Higher Secondary, * = significant at 5% level

Association between demographic variables and personal achievement

Table 6 shows association between demographic variables and personal achievement.

Association between selected factors and emotional exhaustion

Table 7 shows association between selected factors and emotional exhaustion.

Association between selected factors and depersonalisation

Table 8 shows association between selected factors and depersonalisation.

Association between selected factors and personal achievement

Table 9 shows association between selected factors and personal achievement.

Discussion

The study has been conducted among the healthcare workers of emergency department of GMCH. The study population comprised of doctors, nursing personnel, paramedical, and support staffs working in the department. Emergency departments in hospital healthcare services are highly stressful environments.

Demographic variables

Four doctors, two nursing personnel, and one paramedical staff constituted the sample for this pilot study. Majority of them were young, Hindu, with general education of higher secondary and graduation, married for more than five years, having one child.

Factors influencing burnout

Most of participants required more than two

Table-6: Association between demographic variables and personal achievement (N=7)

Demographic variables	Low-level (≥ 40)	Moderate (34-39)	High-level (≤ 33)	Chi-square	df	P-value
Age (years)				3.111	4	.539 NS
20-30	0	1	2			
30-40	1	1	1			
40-50	0	1	0			
Religion				1.556	2	.459 NS
Hindu	1	3	2			
Muslim	0	0	1			
Marital status				1.556	2	.459 NS
Single	0	1	2			
Married/with partner/cohabitating	1	2	1			
Years married				3.889	4	.421 NS
Does not apply	0	1	2			
<5 years	0	1	1			
5-10 years	1	1	0			
General education				11.667	6	.070 NS
HSLC	1	0	0			
HS	0	1	1			
Graduate	0	0	2			
Others	0	2	0			
Professional education				4.667	4	.323 NS
Doctor	0	2	2			
Nursing	1	1	0			
Paramedical	0	0	1			
Child				1.556	2	.459 NS
Yes	1	2	1			
No	0	1	2			
Number of children				3.111	4	.539 NS
1	0	1	2			
2	1	1	1			
Does not apply	0	1	0			

df=Degree of Freedom, NS=Not Significant, HSLC=High School Leaving Certificate, HS=Higher Secondary

hours to reach workplace and worked for more than 48 hours per week. Majority neither perceived any professional role conflict nor complained of availability to work with. But, all agreed that there was lack or inadequate staff. Most of them felt that salary was less. Though night duties were not that frequent, majority expressed inadequate security during night duties. Maximum numbers had permanent job and working for up to five years.

Burnout (emotional exhaustion, depersonalisation and personal achievement)

Four healthcare workers had low-level and three had moderate burnout in emotional exhaustion. In depersonalisation, the burnout of low-level, moderate, and high-level were found in two, one, and four workers respectively. Three each had high-level burnout in personal achievement and one low-level burnout.

Association between demographic variables and burnout

Those emergency healthcare workers of GMCH who were single and without child were emotionally exhausted (P-value of .008, significant at one per cent level). Burnout in depersonalisation was high when general education was less; with more general education, burnout in depersonalisation decreases (P-value of .030, significant at five per cent level).

Association between selected factors and burnout

Contractual job was associated with high-level burnout in depersonalisation (P-value of 0.39, significant at five per cent level). Burnout in personal

Table-7: Association between selected factors and emotional exhaustion (N=7)

Factors influencing burnout	Low-level (< 17)	Moderate (18-29)	Chi-square	df	P-value
Time to reach workplace			3.938	2	.140 NS
<30 minutes	1	3			
30-60 minutes	2	0			
>2 hours	1	0			
Hours per week			4.278	2	.118 NS
36-42 hours	0	2			
42-48 hours	2	0			
>48 hours	2	1			
Doctor/doctor role conflict			1.556	1	.212 NS
Yes	0	1			
No	4	2			
Nurse/nurse role conflict			.139	1	.709 NS
Yes	2	1			
No	1	1			
Doctor/nurse role conflict			.875	1	.350 NS
Yes	1	0			
No	3	3			
Availability of doctors/nurses to work with			.194	1	.659 NS
Yes	2	2			
No	2	1			
Lack or inadequate doctor/nursing personnel			NA		
Yes	4	3			
No	0	0			
Less salary			.875	1	.350 NS
Yes	3	3			
No	1	0			
Too frequent night duties			.058	1	.809 NS
Yes	1	1			
No	3	2			
Inadequate security during night duty			1.500	1	.221 NS
Yes	2	2			
No	2	0			
Job status			4.958	2	.084 NS
Permanent	3	0			
Contractual	1	1			
Trainee	0	2			
Years in current job			3.733	1	.053 NS
0-5 years	4	1			
None*	0	2			

N=Number, df=Degree of Freedom, NS=Not Significant, NA=Not Applicable, *Trainee

achievement varied with the perception of doctor/ nurse role conflict (P-value of .030, significant at five per cent level).

Earlier studies

O'Mahony[11] examines levels of burnout experienced by emergency nurses and the characteristics of their work environment to determine if there is a relationship between the two. A literature review of recent articles on emergency nurses' burnout and contributing factors was undertaken. A quantitative study, in which nurses were asked to indicate the extent of their agreement with a series of statements on burnout and the working environment, was then undertaken, and the results were analysed to ascertain the extent to which the two topics are related. The results indicate that 52% of nurses in an emergency department in Ireland experience high levels of emotional exhaustion and depersonalisation, which are significantly related to the nature of their work environment. Improvements to the environment and

Table-8: Association between selected factors and depersonalisation (N=7)

Factors influencing burnout	Low-level (≤ 5)	Moderate (6-11)	High-level (≥ 12)	Chi-square	df	P-value
Time to reach workplace				8.167	4	.086 NS
< 30 minutes	0	2	2			
30-60 minutes	2	0	0			
> 2 hours	0	0	1			
Hours per week				7.194	4	.126 NS
36-42 hours	0	2	0			
42-48 hours	1	0	1			
> 48 hours	1	0	2			
Doctor/doctor role conflict				2.917	2	.233 NS
Yes	0	1	0			
No	2	1	3			
Nurse/nurse role conflict				2.222	2	.329 NS
Yes	1	0	2			
No	0	1	1			
Doctor/nurse role conflict				1.556	2	.459 NS
Yes	0	0	1			
No	2	2	2			
Availability of doctors/nurses to work with				.194	2	.907 NS
Yes	1	1	2			
No	1	1	1			
Lack or inadequate doctor/nursing personnel				NA		
Yes	2	2	3			
No	0	0	0			
Less salary				2.917	2	.233 NS
Yes	1	2	3			
No	1	0	0			
Too frequent night duties				3.733	2	.155 NS
Yes	0	0	2			
No	2	2	1			
Inadequate security during night duty				.750	2	.687 NS
Yes	1	1	2			
No	1	0	1			
Job status				10.111	4	.039*
Permanent	2	0	1			
Contractual	0	0	2			
Trainee	0	2	0			
Years in current job				7.000	2	.030*
0-5 years	2	0	3			
None**	0	2	0			

N=Number, df=Degree of Freedom,NS=Not Significant, NA=Not Applicable, *=Significant at 5% level, **=Trainee

to education are required to reduce the risk of nurses developing burnout in the future.

Due to the inherent demands of their profession, doctors and nurses are at great risk of suffering from burnout caused by job stress. Bagaajav *et al*[12] examined the prevalence of burnout among doctors and nurses in Mongolia and identified the factors influencing their burnout. A self-administered questionnaire of 180 doctors (45.9%) and 212 nurses (54.1%) resulted in a response rate of 87%. Burnout was measured by the Copenhagen Burnout Inventory (CBI) in three scales: personal burnout, work-related burnout, and client-related burnout. Job stress was measured by the effort-reward imbalance (ERI) model. Compared with the prior studies of hospital staffs in other countries, doctors and nurses in Mongolia had relatively higher burnout rates, with personal, work-related and client-related average scores of 45.39, 44.45, and 32.46, respectively. Multiple regression analysis revealed that ERI significantly influenced all dimensions of burnout but over-commitment significantly

Table-9: Association between selected factors and personal achievement (N=7)

Factors influencing burnout	Low-level (≥ 40)	Moderate (34-39)	High-level (≤ 12)	Chi-square	df	P-value
Time to reach workplace				4.667	4	.323 NS
< 30 minutes	1	1	2			
30-60 minutes	0	2	0			
> 2 hours	0	0	1			
Hours per week				5.444	4	.245 NS
36-42 hours	0	0	2			
42-48 hours	0	1	1			
> 48 hours	1	2	0			
Doctor/doctor role conflict				1.556	2	.459 NS
Yes	0	0	1			
No	1	3	2			
Nurse/nurse role conflict				5.000	2	.082 NS
Yes	1	2	0			
No	0	0	2			
Doctor/nurse role conflict				7.000	2	.030*
Yes	1	0	0			
No	0	3	3			
Availability of doctors/nurses to work with				1.556	2	.459 NS
Yes	1	2	1			
No	0	1	2			
Lack or inadequate doctor/nursing personnel				NA		
Yes	1	3	3			
No	0	0	0			
Less salary				1.556	2	.459 NS
Yes	1	2	3			
No	0	1	0			
Too frequent night duties				3.733	2	.155 NS
Yes	1	1	0			
No	0	2	3			
Inadequate security during night duty				.750	2	.687 NS
Yes	1	2	1			
No	0	1	1			
Job status				5.444	4	.245 NS
Permanent	1	2	0			
Contractual	0	1	1			
Trainee	0	0	2			
Years in current job				3.733	2	.155 NS
0-5 years	1	3	1			
None**	0	0	2			

N=Number, NS = Not Significant, *=significant at 5% level, NA = Not Applicable, **=Trainee

influenced only personal and work-related burnout. Both ERI and over-commitment were different among professions.

Previous research into the causes of burnout has mainly been concerned with external triggers, such as onerous work criteria or organisational or social influences. Factors such as individual reactions and personality have largely been ignored as a possible aetiology of burnout. In preparation for a long-term study, in a general cross-sectional study, Bühler and Land[13] investigate the relationship between burnout and personality variables. Different personality variables that have a possible impact on burnout were determined in a number of prestudies. The data were gathered from 119 people working in intensive care units. MBI was used as well as certain subscales of the following personality questionnaires: Eysenck Personality Inventory (EPI), Inventory of Aggressivity (IA), Trier Personality Questionnaire (TPQ), Scales of Control (SC), Locus of Control (LC), and the Logo-test (LOGO). The scales of mental health, respectively

psychoprotection, external locus of control, and neuroticism, were confirmed as being statistically relevant concerning burnout.

A similar study was conducted by Thorsen *et al*,[14] among 101 staff nurses working in Obstetrics and Gynaecology at a referral hospital in Malawai, found nearly three quarters (72%) reported emotional exhaustion, over one third (43%) reported depersonalisation, while almost three quarters (74%) experienced reduced personal accomplishment. In another study conducted by Lasebikan and Oyetunde[15] in Nigeria among 292 nurses showed that doctor/nurse conflict, inadequate nursing personnel, too frequent night duties, poor wages were predictors of burnout. Lin *et al*[16] conducted a study in China among 128 nurses. Years of experience and professional title had a significant positive relationship with emotional exhaustion and personal accomplishment.

Stress is one of the most common problems. One manifestation of stress is burnout. Burnout and other stress-related illnesses among medical professionals are receiving increased attention and have been described in many branches of medical practice including dentists, nurses, etc., The purpose of the study by Khurana and Khurana[17] was to measure the prevalence of stress and burnout in medical professionals in Rajasthan. The MBI-Human Service Survey (MBI-HSS) and a demographic questionnaire of authors' own design were sent to 1,735 medical professional of various branches and different location throughout the state of Rajasthan. In response to that, 627 (36%) surveys were returned, of which 576 (92%) were found complete for analysis so later group constitute as sample for analysis. 29.16% of medical professional showed high level of emotional exhaustion, 20% showed high level of depersonalisation, and 17.9% showed low personal accomplishment. Young professionals showed more sensitivity towards burnout. Females were more prone to burnout as compared to males. Burnout is an important problem in medical professionals in Rajasthan. Difference in approach to work and perceived environment at workplace, unrewarding career, unsupported behaviour of peer group, balance between work and family needs appear to be important factors in burnout.

Limitations

As the study was carried out in the emergency department of a tertiary care teaching hospital, the findings cannot be generalised. Moreover, being a pilot study, the sample size was small.

Conclusions

Workload and tension result from the very organisation and work dynamics of the emergency department; thus, arises the need to look for ways of re-organising this work dynamics in order to decrease stress.[18] Findings of the present study have several implications as far as improving the resources and environment for emergency health-care workers; thus, having a positive impact in delivery of healthcare services and better patient outcomes. Similar study, replicated on a large sample, would help to draw conclusions that are more definite and generalisable to a larger population.

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Original Article

A study of attitudes and beliefs towards consumption of caffeine in doctors: focus on existing nosological systems for caffeine dependence

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ABSTRACT

Background*: Caffeinated beverages and products are ubiquitously available and are often household items. These beverages are also used as social catalysts. Classification systems in psychiatry have now included the diagnoses for behavioral and psychological disorders related to caffeine consumption. DSM-5 has put "caffeine use disorders" under the heading of conditions for further study and encouraged research in this domain. Therefore, the purpose of this study was to assess the patterns of caffeine use among doctors at a tertiary care teaching hospital.* ***Methods****: Participants (n=140) were recruited in the study after an informed written consent. They then filled out a semi-structured questionnaire assessing the socio-demographic data and a face validated questionnaire to assess their subjective attitudes and beliefs towards caffeine and the pattern of their caffeine use.* ***Results****: Prevalence of caffeine use disorder was found to be 6.5% as per DSM-5 criteria and 20% as per the ICD-10 criteria. Positive attitudes and beliefs towards caffeine were associated with higher consumption of caffeine and more number of intoxication symptoms after consumption of caffeine. Negative attitudes towards caffeine did not affect caffeine consumption.* ***Conclusions****: Prevalence of caffeine use disorder may vary depending upon choice of the diagnostic criteria used. Attitudes and beliefs towards caffeine play a role in determining the pattern of caffeine use as well as perception of effects after caffeine use.*

Keywords: *Doctors, Caffeine dependence, Diagnosis*

Introduction

Caffeine is the most widely used psychoactive substance. It is ubiquitously present in daily household products such as tea, coffee, soft drinks, synthetic caffeinated drinks and energy drinks. Caffeinated beverages are often used as a social catalyst or an "ice breaker" in social circles and events. Caffeine use is not as stigmatized and socially tabooed as alcohol, cannabis and nicotine.

Caffeine produces an array of effects on the human body. Caffeine consumption also leads to improved endurance,[1] cognitive vigilance[2] and information processing speed.[3] Caffeine consumption has effects on cardiovascular and autonomic systems, diuresis and neuro-hormonal systems.[4] Moreover, literature has shown vulnerable users of caffeine to become dependent on caffeine.

The DSM-IV TR (Diagnostic and Statistical

Manual for Mental Disorders, IVth Edition Text Revision)[5] does not include the diagnoses caffeine dependence or withdrawal in diagnostic formulations. ICD-10 (International Classification of Diseases – 10th Edition)[6] however, includes both. The recently published DSM-5[7] mentions caffeine withdrawal syndrome and puts caffeine use disorder under "conditions for further study". It points towards the inadequacy of current data to establish caffeine use disorder as a separate diagnosis and encourages the researchers to explore this issue in detail. Therefore, this study was planned to evaluate the patterns of caffeine use in doctors at a tertiary care teaching hospital.

Method

Participants

The study was conducted at a tertiary care teaching hospital in an urban setting in western India. The Institutional Ethics Committee approved the study. One hundred and forty participants were recruited in the study after written informed consent. Individuals, who were older than 18 years of age, who were registered at the tertiary care teaching hospital as either a student, intern, resident or faculty and individuals who were consuming at least one caffeinated product in a week were recruited in the study. Individuals younger than 18 years, individuals with a diagnosed neuropsychiatric disorder were excluded from the study.

Materials

1. *Caffeine survey questionnaire*[8,9]

This structured questionnaire was adapted and developed by McIlvain. The questionnaire was face validated in a pilot study by McIlvain et al. Consent from Dr Gary McIlvain was obtained via email before using the questionnaire in our study. The questionnaire assesses and explores the attitudes and beliefs about caffeine, patterns of caffeine intake and symptoms experienced after caffeine intake and abstinence.

2. *Standardized diagnostic criteria*

Standardized criteria DSM-5[7] criteria for caffeine use disorder, caffeine intoxication and caffeine withdrawal and ICD-10[6] diagnostic criteria

3. *Semi-structured questionnaire*

This self-designed questionnaire was used to gather socio-demographic data, details regarding consumption of other substances, any medical or neuropsychiatric history or treatment history.

Procedure

Study participants were assessed cross-sectionally. The recruited participants were first given the semi-structured self designed questionnaire, and then the Caffeine Survey Questionnaire to complete. A questionnaire containing DSM-5 and ICD-10 criteria for caffeine intoxication, withdrawal and dependence were distributed and participants were asked to tick the symptom experienced by them after intoxication or withdrawal from caffeine. Completed questionnaires were collected and analyzed. Data was pooled in a spreadsheet and analyzed using statistical software. Chi-square test, Mann-Whitney U test, Kruskall Wallis ANOVA and Pearson's correlation were used for data analysis.

Results

Socio-demographic variables:

The study sample consisted of 140 participants, with 53% male and 47% female participants.

Mean age of the participants was 23.99 ± 3.36 years. Mean age was significantly higher in male than female participants. (23.26 ± 2.61 vs. 24.80 ± 3.89 years, t = -2.767, $p = 0.008$).

Comorbid substance use:

15% of the participants reported taking one or more substance apart from caffeine. Prevalence of comorbid substance use was significantly higher in males than females (20 vs. 7%, $X^2 = 4.735$, $p = 0.025$). Commonly reported substances were alcohol (10%), nicotine (4%), cannabis (2%) and others (1%). There was no significant difference in prevalence of comorbid substance use across designation or parental education.

Caffeine consumption:

More than 2/3rds of the study population was consuming 1 caffeinated product. Most participants (72%) reported brewed tea as their choice of caffeinated drink, whereas instant coffee (29%), brewed coffee (17%), soft drinks (18%) and other caffeinated products were used less frequently. Mean age at which caffeine consumption started was 16.47 ± 4.88 years and duration between waking up and first caffeinated product was 99.78 ± 121.54

(Median 60) minutes. Median caffeine consumption (Table-1) per week was 501 mg.

Weekly caffeine consumption did not differ significantly between genders (U 2263.5, Z = -0.616, p = 0.538), between participants with or without hobbies (U 1392.5, Z = -0.415, p = 0.679) and between participants with or without comorbid substance use (U 1049, Z = -0.849, p = 0.396). Weekly caffeine consumption differed significantly across designation (X2 = 15.651, $p < 0.001$).

Attitudes and beliefs towards caffeine

Significantly more number of male participants believed that caffeine enhances performance (X2 = 6.420, P = 0.040). Apart from this, there was no significant difference in the attitudes towards caffeine across gender.

Significantly lesser number of interns believed that caffeine enhances performance (Table-2) and significantly lesser number of interns had used caffeine to enhance mental and physical performance.

Participants with positive attitudes towards caffeine reported a significantly higher daily intake of caffeine (Table-3). Negative attitudes and beliefs

Table-1. Caffeine consumption per week in study groups in mg (N = 140)

	Mean (SD)	Median	SEM
MBBS students	515.91±316.22	501.00	65.93
Interns	593.36±423.54	501.00	50.98
Residents	982.80±700.11	832	102.12

Table-2. Attitudes and beliefs towards caffeine (N = 140)

		M	F	Sig	UG	Interns	PG	Sig
1	I believe that caffeine will help me concentrate during studying/working	48%	47%	Ns	61%	42%	49%	Ns
2	I believe caffeine will help keep me awake	64%	61%	Ns	65%	61%	64%	Ns
3	I believe that caffeine will help me loose weight	8%	3%	Ns	13%	3%	6%	Ns
4	I believe that caffeine will keep me active and fresh	58%	60%	Ns	65%	48%	70%	Ns
5	I believe that caffeine enhances performance	40%	21%	0.040	56%	20%	34%	0.021
6	I believe caffeine can be harmful to my health and can hurt me	52%	62%	Ns	65%	49%	64%	Ns
7	I believe that caffeine can be addictive	79%	80%	Ns	74%	80%	83%	Ns
8	I believe that caffeine can disrupt coordination	22%	23%	Ns	30%	22%	19%	Ns
9	I object to using caffeine consumption on `religious/moral grounds	15%	12%	Ns	30%	7%	15%	0.012
10	My caffeine consumption has increased over time	25%	33%	Ns	26%	25%	36%	Ns
11	My caffeine withdrawal has interfered in my work	8%	17%	Ns	9%	4%	26%	0.042
12	Have you ever used caffeine to enhance physical performance	22%	16%	Ns	35%	4%	34%	$p < 0.001$
13	Have you ever used caffeine to enhance mental performance	40%	41%	Ns	61%	17%	64%	$p < 0.001$
14	Have you ever used caffeine to loose weight	8%	11%	Ns	17%	6%	11%	Ns
15	Have you ever used caffeine to stay awake	70%	73%	Ns	74%	62%	83%	Ns
16	Have you ever used caffeine to alleviate caffeine withdrawal symptoms	12%	15%	Ns	17%	3%	28%	0.001
17	Have you tried to reduce your caffeine intake before and failed?	21%	17%	Ns	43%	4%	28%	$p < 0.001$
18	Do your friends/colleagues/family comment/ criticize your caffeine intake?	22%	21%	Ns	35%	10%	32%	0.005
19	In order to get your caffeine-containing product do you Interrupt the work at hand?	14%	14%	Ns	17%	6%	23%	0.022
20	In order to get your caffeine-containing product do you make excuses and leave in the middle of a conversation?	8%	11%	Ns	13%	4%	15%	Ns

M – Males, F – Females, UG – undergraduate students, PG – post-graduate residents, ns – not significant

Table-3. Attitudes, beliefs towards consumption of caffeine (N = 140)

		Caffeine consumption in mg (Mean±SD) and median			
		Agree	Disagree	X2	P
1.	I believe that caffeine will help me concentrate during studying/working	849 ± 612752	541 ± 452472	13.861	0.001
2.	I believe that caffeine will keep me active and fresh	798 ± 594621	581 ± 448501	8.910	0.031
3.	I believe that caffeine enhances performance	905 ± 696668	662 ± 491501	9.070	0.011
4.	My caffeine consumption has increased over time	1005 ± 725848	552 ± 389501	19.261	$p < 0.001$
5.	My caffeine withdrawal has interfered in my work	1532 ± 827996	602 ± 440501	24.030	$p < 0.001$
6.	Have you ever used caffeine to enhance mental performance	790 ± 556636	659 ± 547501	-2.257	0.024
7.	Have you ever used caffeine to loose weight	1054 ± 820826	676 ± 509501	-2.377	0.017
8.	Have you ever used caffeine to stay awake	762 ± 551621	587 ± 543501	-2.591	0.010
9.	Have you ever used caffeine to alleviate caffeine withdrawal symptoms	1064 ± 823857	656 ± 479501	-2.999	0.003
10.	Do your friends/colleagues/family comment/criticize your caffeine intake?	1099 ± 805822	605 ± 404501	-3.677	$p < 0.001$
11.	In order to get your caffeine-containing product do you Interrupt the work at hand?	1343 ± 8801230	612 ± 405501	-4.062	$p < 0.001$
12.	In order to get your caffeine-containing product do you make excuses and leave in the middle of a conversation?	1315 ± 8921230	650 ± 468501	-3.288	0.001

towards caffeine and perceived unpleasant effects after caffeine use did not affect the daily caffeine intake.

55% of the study participants reported 1 or more symptoms after caffeine consumption. Most commonly reported symptoms were enhanced performance (39%), diuresis (34%), increased psychomotor activity (32%) and least reported was muscle twitches (11%) and abdominal symptoms (15%). 13% of the participants (18/140) reported 5 or more symptoms after their caffeine consumption fulfilling the DSM 5 criteria for caffeine intoxication.

40% of the participants reported experiencing one or more withdrawal symptoms after abstinence from caffeine. Most commonly reported symptoms were drowsiness (34%), headache (29%) and fatigue (26%) and least commonly reported were muscle stiffness (6%) and nausea/vomiting (8%). 19% of the participants (25/140) reported 3 or more withdrawal symptoms fulfilling the DSM 5 criteria for caffeine withdrawal.

70% participants fulfilled one or more DSM 5 criteria for caffeine use disorder. Most commonly fulfilled criteria were, (1) excessive caffeine intake despite knowing the harm (80%), (2) Caffeine intake leading to personal problems (30%) and (3) Desire to quit but failed (26%). 29 of the study participants fulfilled 3 or more ICD-10 criteria for caffeine dependence syndrome (CDS). Thus, the prevalence of CDS according to ICD-10 criteria was 20%. However, only 9 of the participants fulfilled the mandatory 3 criteria in DSM 5 to diagnose Caffeine Use Disorder (CUD) making the prevalence of CUD 6.5%. Weekly caffeine consumption was significantly higher in participants fulfilling criteria for caffeine use disorder(1058 ± 737, Median 881 mg vs. 690 ± 532, Median 501 mg, U 357, Z = -1.981, $p = 0.048$).

Discussion

This study attempts to fill the lacunae in the existing literature. It assesses the attitudes and beliefs of doctors towards caffeine, their patterns of caffeine use and perceived effects of caffeine use.

The reported daily caffeine consumption in our study was well below the accepted level of 400 mg[10] and the levels observed in literature.[11] However, we found a significant rise in caffeine intake with increasing age. This can be attributed to round the clock working hours, emergency duties and more hectic schedules faced by interns and residents as compared with MBBS students. Apart from occupational stress, demands from relationships, and other social roles also develop with age. Thus, all these factors may amalgamate which might raise

the need for caffeine.

We found positive attitudes and beliefs towards caffeine as key predictors of high caffeine intake. Among these beliefs were, (1) caffeine improves concentration, (2) caffeine helps in remaining active and (3) caffeine enhances performance. Caffeine is often promoted as a substance to be used for maintaining wakefulness. Literature has shown caffeine to reduce fatigue and maintain alertness in drivers.[14] Remaining alert and awake for nights is often a necessity in medicine for students, interns and residents. Literature has shown similar attitudes towards caffeine from college students[9] and athletes.[12,13]

Interestingly, negative attitudes and beliefs towards caffeine did not affect caffeine consumption. Prominent negative beliefs included: (1) caffeine is harmful for health, (2) caffeine can cause clumsiness and (3) a moral and religious objection to caffeine. This can be attributed to (1) peer pressure and social learning overpowering the negative opinions and beliefs towards caffeine and (2) the need to stay awake and perform optimally takes a higher priority in medical students and doctors than potential risks associated with caffeine intake.

The key finding in our study was related to the prevalence of caffeine use disorder. Although ICD-10 included the diagnosis caffeine dependence syndrome, DSM-IV TR did not. DSM 5 however included CUD as a condition for further study. Both these classification systems have one important difference between their criteria. ICD-10 requires fulfillment of (any) 3 or more criteria to diagnose dependence on any substance, including caffeine. However, DSM 5 requires fulfillment of 3 or more criteria, which must include the 3 mandatory criteria. DSM 5 does not mention mandatory criteria for diagnosis of dependence on any other substance, an exception that has been made to avoid over-diagnosis of dependence on caffeine. The prevalence of caffeine use disorder in literature ranges from 9-79%.[15-18] DSM-5 estimates the prevalence for CUD to be 7%. This study supports this estimate, as prevalence of caffeine dependence syndrome was 20% with ICD-10 criteria, whereas that for caffeine use disorder was 6.5% with DSM-5 criteria.

Literature has shown that lifestyle, expectancies from caffeine and sensitivity to caffeine do affect the effects produced by caffeine ingestion.[19] 55% of our subjects reported experiencing one or more symptoms of caffeine intoxication and 13% fulfilled the criteria for caffeine intoxication syndrome as per DSM 5. It was observed that participants who thought (1) caffeine improves concentration and (2) caffeine keeps the user awake, were significantly more likely to report excitement, insomnia and enhanced mental performance after caffeine ingestion. Thus, it is fair to hypothesize that apart from peer pressure and social learning, suggestibility and expectations from a substance also affect the perceived effects from a substance.

Conclusion

Prevalence of dependent pattern of caffeine use may be affected by the diagnostic system used by the researchers. Perceived effects after caffeine consumption are affected by the subjective attitudes, beliefs and expectations from caffeine. Positive attitudes and beliefs towards caffeine are predictors of high caffeine use. More research is necessary to ascertain the extent and epidemiological profile of this diagnosis.

Limitations

Smaller sample size is a limitation in this study. The study is conducted in a hospital with specific occupational demands. The findings may be limited to this demographic stratum.

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Original Article

Caregiver burden and its effect on Quality of Life in caregivers of OCD: A clinic based case-control study from Northern India

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ABSTRACT

Objective: *The aim of this study was to assess and compare the burden of care and quality of life (QoL) in the primary care givers of patients with Obsessive–Compulsive disorder (OCD) and Schizophrenia.* ***Methods:*** *60 patients of OCD and Schizophrenia with 60 of their primary care givers were recruited in this study. OCD and Schizophrenia diagnosis was determined by means of the ICD-10 DCR and the severity of illness was assessed using Yale Brown Obsessive-compulsive scale (Y-BOCS) and Positive and Negative Syndrome Scale for Schizophrenia (PANSS) in patients of OCD and Schizophrenia, respectively. Burden Assessment Schedule (BAS) was used for assessing caregiver burden and the quality of life was measured using the WHOQOL-BREF Quality of life Performa scale.* ***Results:*** *The caregivers in both the groups were found to have considerable burden of care, though it was significantly higher ($p < 0.01$) in caregivers of Schizophrenia group as compared to caregivers of OCD group. The quality of life of caregivers was also found to be impaired to a significant extent , though it was more affected adversely in caregivers of Schizophrenia group as compared to OCD group particularly in domains of 'Physical health' ($p=0.02$), 'Psychological' ($p=0.01$) and 'Environment' ($p<0.001$). In both the groups' burden of care was found to have an inverse relationship with most of domains of quality of life. As a part of correlation, age of patient, severity of illness and socioeconomic status predicted the caregiver burden and QOL of caregivers in OCD group.* ***Conclusion:*** *The present study reflects considerable burden of care in the families of patients with OCD and Schizophrenia and impairment in quality of life of both groups of caregivers, though more in the Schizophrenia group.*

Key words*: Obsessive compulsive disorder, Schizophrenia, Burden of care, Quality of life, clinic based, Case control*

Introduction

Obsessive-compulsive disorder is a chronic disorder with periods of remission and relapse. Obsessive-compulsive disorder was estimated to be the 11th leading cause of non-fatal burden in the world in 1990, accounting for 2.2% of total YLD, around the same percentage as schizophrenia.[1] In the Version 1 estimates for the Global Burden of Disease 2000 study, published in the World Health Report 2001,[2] there had been a substantial reduction in the estimated burden of obsessive compulsive disorder (now accounting for 2.5% of total global YLDs) due to improved data on prevalence of the condition. Estimates of DALYs for OCD worldwide is 5.1 and for low and middle income countries like India is 4.5.[3] The life time prevalence of OCD is

estimated to be around 2.5 % to 3.3% and is twice as prevalent as Schizophrenia.[4] There is only one epidemiological study from India which found the lifetime prevalence of OCD of 0.6%.[5] This rate is considerably lower compared to the 2-3% rate reported in the European and North American studies.

There has been growing concern to understand the impact of obsessive compulsive disorder (OCD) on family functioning and care giving is one of them. Care giving for the ill has emerged as a critically important public health issue. There has been a major shift in the conceptualization of role of the family unit in psychiatric disorders-from blaming to helping the family in taking care of mentally ill relatives.[6] Caregivers, however have often been overlooked during the treatment of their ill relatives particularly with chronic psychiatric illnesses. There is significant burden of care giving which ultimately affects the quality of life of the caregivers.[7] It does appear that schizophrenia and to a lesser extent affective disorders have been the focus of the systematic research on the family burden worldwide, including India.[8] However, caregivers of OCD have not received due attention of the clinicians and researchers in terms of caregivers burden and their quality of life. The families of OCD patients report sizeable burden due to illness and decreased community activities, leading to an increase in their isolation and distress.[9] They also report poor QOL in the domains of physical wellbeing, psychological wellbeing and social relationships.[10] Thus it would be clinically useful to assess the burden of care and quality of life in caregivers of OCD and to compare with those in caregivers of an illness like schizophrenia, which is proven to be having significant burden of care in preexisting literature. We hypothesised that the burden of care and the caregiver quality of life in OCD would be comparable to schizophrenia and there would be no difference.

Materials and methods

It was a cross sectional study conducted in the Out Patient Department (OPD) of Department of Psychiatry, Institute of Human Behaviour and Allied Sciences (IHBAS), New Delhi, India. 30 patients of OCD and 30 patients of schizophrenia along with their key caregivers (one for each patient) attending the OPD and meeting the inclusion criterion were enrolled in the study over a period of 9 months. In families with more than one caregiver, the person with the maximum contact was considered as the key caregiver and included. To qualify as patient to be included in this study one had to be in the age range of 18 – 60 years, of either sex having working knowledge of Hindi and/or English, fulfilling the diagnostic criteria of Obsessive-compulsive disorder and Schizophrenia as per ICD-1O DCR and having duration of illness of at least 2 years, and with the presence of a key caregiver having adequate knowledge about patient and his/her illness. Patients with co-morbid psychiatric diagnosis (including mental retardation) and disabling medical conditions including co-existing alcohol/substance abuse disorder (except tobacco), neurological illnesses like epilepsy or other organic brain diseases, and who were staying in residential/attending day care facilities for whom primary caregiver was not a relative, were excluded. The key caregivers who were included in the study were staying with the patient for at least 2 years, belonged to the age group of 18 -60 years, and had a working knowledge of Hindi and/or English. The key caregivers who himself /herself were suffering from any pre-existing psychiatric illness, had substance use disorder (except tobacco) prior to the onset of illness in patient, suffered from chronic or disabling medical conditions, and unwilling to give consent for participation in the study, were excluded from the study.

An attempt was made to control for severity of illness (which may act as a confounding factor) in both the groups by enrolling at the best 'moderately ill' subjects using Clinical Global Impression-Severity (CGI-S) score.[11]

A semi-structured proforma designed for this study was used for collecting the socio-demographic details in both the groups of patients. International Statistical Classification of Diseases and related health problems, 10th revision, version Diagnostic Criteria for Research (ICD-10, DCR)[12] was used for diagnosing OCD and schizophrenia. Yale Brown Obsessive-compulsive scale (Y-BOCS)[13] was used for assessing the severity of illness in patients of OCD and illness severity in patients of schizophrenia was assessed using Positive and Negative Syndrome Scale for Schizophrenia (PANSS).[14] Burden

Assessment Schedule (BAS)[15] was used for assessing caregiver burden and the quality of life was measured using the WHOQOL-BREF Quality of life Performa scale.[16] The WHOQOL-BREF is based on a four domain structure and contains a total of 26 questions. To provide a broad and comprehensive assessment, one item from each of the 24 facets contained in the WHOQOL-100 has been included. In addition, two items from the Overall quality of Life and General Health facet have been included. The Burden Assessment Schedule (BAS) is a semi-quantitative, 40-item scale measuring 9 different areas of objective and subjective caregiver burden. Each item is rated on a 3-point scale. Scores range from 40 to 120 with higher scores indicating greater burden. Its validity is comparable with the Family Burden Schedule (FBS).[17] General Health Questionnaire12 (GHQ12)[18] Hindi version was used to detect psychological distress and psychiatric morbidity among the caregivers.

	Initial sample of 47 OCD patients and their key caregivers	Initial sample of 52 Schizophrenia patients and their key care-givers
Refused consent	6	8
Caregivers with GHQ> 2	6	8
Diagnosable psychiatric illness on SCAN in caregivers	3	4
Patients with co-morbid psychiatric illness	2	2
Total excluded	17	22
Total final sample	30	30

Statistical analysis

Statistical analysis was performed using the Statistical package for social sciences (SPSS) version 17. Mean and SD were computed for continuous variables and frequency and percentage of categorical variables were calculated. Categorical variables were compared using the Fisher's exact/ chi-square tests and continuous variables using the Independent sample t-test. For comparison of family burden and quality of life between the groups we used Analysis of Variance (ANOVA). Pearson's product moment correlation and Spearman's rank correlation were used for computing correlations of parametric and non-parametric variables, respectively. Comparisons were carried out using the 2-tailed *t*-test. The significance level for various tests was set at < 0.05.

Ethical considerations

Informed written consent was obtained for each participant after full explanation regarding the purpose of the study and the management of the patients was given priority over the assessment for the study. The Information gathered during the course of the study was kept confidential and all the subjects were given the right to withdraw from the study at any point in time as per their will with no effect on their management process. The caregivers who were found to be suffering from sub-syndromal psychological problems or syndromal psychiatric illness were advised appropriate consultation and offered help. The study was approved by the Ethics committee of the institute.

Results

Socio-demographic and clinical variables

The socio-demographic characteristics of patients in both groups were comparable in terms of their age ($p = 0.73$), gender ($p = 0.60$), educational levels ($p = 0.52$), type of family ($p = 0.11$) and socioeconomic status ($p = 0.30$) however differed with a significant statistical difference in terms of their occupational status ($p = 0.00$), monthly income ($p = 0.01$) and marital status. The patients in both the groups were having comparable duration of illness. The socio-demographic characteristics of caregivers in both the groups as depicted in Table 1.1 and 1.2, were comparable in terms of gender ($p = 1.00$), educational level ($p = 0.87$), occupation ($p = 0.70$), total income of family ($p = 0.56$), marital status, residence ($p = 0.79$) however differed in terms of age being higher in OCD group ($p = 0.002$) and, duration of contact with the patient ($p = 0.05$), the caregivers of OCD patients spending more time with patients than caregivers of patients with schizophrenia. Overall the patient and caregivers in both the groups were comparable in most of the socio-demographic characteristics.

The socio-demographic characteristics of the patients (Table 1 and 2)

The mean age in years of patients in the OCD

Table-1. Sociodemographic characteristics of patients and caregivers

Patient's Variable	OCD (n = 30)		Schizophrenia (n = 30)			
	Mean	SD	Mean	SD	t / U value	p-value
Age(in years)[1]	30.77	7.11	30.17	6.24	0.34	0.73
Monthly income (in rupees)[2]	2133.33	3638.71	216.67	690.86	317.00	0.01**
Duration of illness[1](in years)	5.17	2.10	5.93	2.47	2.83	0.20
Caregiver Variable						
Age[1] (in years)	40.67	09.15	47.03	08.98	-2.71	0.01**
Family's Total Monthly income[2] (in Rupees)	23650.00	19523.26	23183.33	14818.72	411.50	0.56
Total number of family members[1]	05.50	01.40	05.27	01.20	0.69	0.49

1- Independent- t test 2- Mann whitney U test Pearson chi-square test
* Significance at the level of 0.05 p value
** Significance at the level of 0.01 p value

group was 30.77 (S.D 7.11) and in schizophrenia group was 30.17 (S.D 6.24). In the OCD group 53.33 % of patients were male whereas in the Schizophrenia group 60% of patients were male. Most (80%) of the patients in OCD group were employed, with mean income of Rs 2,133 (S.D 3638) while in Schizophrenia group most (80%) were unemployed, with mean income of Rs 216 (S.D 690). About half (56.66 %) of patients in the OCD group were married while in Schizophrenia group more than half (53.33 %) were unmarried.

The socio-demographic characteristics of caregivers of both groups (Table 1 and 2)

The mean age of caregivers in OCD group was 40.67 years (S.D 9.11) and 47.03 years (S.D 8.98) in the Schizophrenia group and was statistically significant (p 0.01). In each group 70 % caregivers were female and most (around 70%) of caregivers were educated above 8th std. to post-graduation level. Most of the caregivers were working in varying jobs and few were unemployed (16% in OCD group and 23 % in Schizophrenia group). In the OCD group the majority of caregivers were either spouse (46.66%) or mothers (43.33%) of patients while in Schizophrenia group, mothers constituted exactly half of caregivers group , spouses being 23.33% and fathers 16.66% , however there was no significant statistical difference in terms of relation of caregivers with patients in the two groups.

The clinical characteristics of patients (Tables 1, 2 and 3)

In the OCD group the mean duration of illness in patients was 5.17 years (S.D 2.10) while in schizophrenia group the mean was 5.93 years (S.D 2.47). The mean score on Y-BOCS for Obsessions was 13 (S.D 1.53), for Compulsions mean was 12.17 (S.D 1.55) and the mean total scores was 25.20 (S.D 2.72). The mean score on Positive syndrome domain was 24.20 (S.D 3.53), on Negative syndrome domain was 16.43 (S.D 5.22), on General psychopathology domain it was 27.20 (S.D 6.06) and the total mean score was 68.16 (S.D 9.69).

Caregiver Burden in OCD and Schizophrenia (Table 4)

The mean for BAS scores in OCD group was 65.67 (S.D 8.87) and 71.57 (S.D 5.27) in the Schizophrenia group and was statistically significant (p 0.003). It is evident from Table- 3 that there was highly significant statistical difference between the two groups in the mean scores of caregiver burden on multiple domains of BAS, higher being in the Schizophrenia group. The domains are external support ($p < 0.001$), taking responsibility ($p < 0.001$), other relations ($p = 0.004$), patient's behaviour ($p = 0.007$) and support of patient ($p = 0.03$).

Quality of Life of Caregivers in OCD and Schizophrenia (Table 5)

Table-4 displays the scores for quality of life of caregivers as measured by WHO-QOL BREF (1-100 scale) on all 4 domains in both the groups. There was a significant statistical difference between the two groups in DOMAIN 1 (Physical health), DOMAIN 2 (Psychological) and DOMAIN 4 (Environment).

Table-2. Sociodemographic characteristics of patients and caregivers

Patient's Variable		OCD (n = 30) Frequency (%)	Schizophrenia (n = 30) Frequency (%)	X^2	df	p value
Gender	Male	16 (53.33)	18 (60.00)	0.27	1	.060
	Female	14 (46.67)	12 (40.00)			
Educational level	Literate, Primary & Middle school	06 (20.00)	09 (30.00)	1.29	2	0.52
	Matriculation, 12th, Diploma	16 (53.33)	16 (53.33)			
	Graduation, Postgraduation	08 (26.67)	05 (16.67)			
Occupation	Unemployed	06 (20.00)	24 (80.00)	21.60	1	0.00*
	Employed	24 (80.00)	06 (20.00)			
Marital status	Unmarried	13 (43.33)	16 (53.33)	—	—	—
	Married	17 (56.67)	09 (30.00)			
	Divorced, Separated	00	05 (16.67)			
Type of family	Nuclear	22 (73.33)	16 (53.33)	2.58	1	0.11
	Joint, Extended nuclear	08 (26.67)	14 (46.67)			
Socioecon-omic status	Lower	07 (23.33)	05 (16.67)	1.07	1	0.30
	Middle, Upper middle	23 (76.67)	25 (83.33)			
Caregiver Variable						
Gender	Male	09 (30.00)	09 (30.00)	0.00	1	1.00
	Female	21 (70.00)	21 (70.00)			
Educational level	Illiterate, just Literate & Primary school	08 (26.66)	07 (23.33)	0.26	2	0.87
	Middle & Matriculate	13 (43.33)	15 (50.00)			
	12th, Diploma, Graduation & Postgraduation	09 (30.00)	08 (26.67)			
Occupation	Unemployed	05 (16.67)	07 (23.33)	0.41	1	0.52
	Employed	25 (83.33)	23 (76.67)			
Marital status	Unmarried	02(06.66)	01(03.33)	—	—	—
	Married	28 (93.33)	27 (90.00)			
	Divorced & Separated	00	02(06.66)			
Residence	Urban	18 (60.00)	19 (63.33)	0.07	1	0.79
	Rural	12 (40.00)	11 (36.67)			
Relation with patient	Mother	13 (43.33)	15 (50.00)	4.74	2	0.09
	Father & other relatives	03 (10.00)	08 (26.67)			
	Spouse	14 (46.66)	07 (23.33)			
Duration of contact with patient	$\leq$ 12 hours	06 (20.00)	17 (56.67)	3.77	1	0.05*
	>12 hours	24 (80.00)	13 (43.33)			

1- Independent- t test 2- Mann whitney U test Pearson chi-square test

* Significance at the level of 0.05 p value

** Significance at the level of 0.01 p value

Table-3. Severity of illness assessed by YBOCS and PANSS

	OCD (n = 30)			Schizophrenia (n = 30)	
	Mean	SD		Mean	SD
YBOCS-O	13.00	01.53	PANSS-P	24.20	03.53
YBOCS-C	12.17	01.55	PANSS-N	16.43	05.24
YBOCS TOTAL	25.20	02.72	PANSS-G	27.20	06.06
			PANSS TOTAL	68.16	09.69

Correlation of variables (Tables 6 and 7, supplementary data)

In OCD group the age of patient, patient's monthly income and duration of illness in patient correlated positively with total BAS scores and negatively correlated with QOL Domain scores. The

Table-4. Caregiver burden as measured by BAS in both groups

BAS Scores	OCD (n = 30)		Schizophrenia (n=30)			
	Mean	SD	Mean	SD	t-value	p-value
Spouse Related	06.43	02.70	05.43	02.56	1.47	0.14
Physical & Mental Health	09.43	01.87	09.53	01.65	0.21	0.82
External Support	08.47	01.45	09.93	01.59	3.71	<0.01**
Caregiver Routine	06.83	01.34	07.43	01.43	1.67	0.09
Support of Patient	05.50	0.97	06.13	01.19	2.24	0.03*
Taking Responsibility	07.40	01.10	08.83	01.48	4.24	<0.01**
Other Relations	05.23	0.81	05.93	0.98	3.00	<0.01**
Patient's Behaviour	08.57	02.20	09.87	01.30	2.77	<0.01**
Caregiver Strategy	07.73	01.70	08.37	0.99	1.75	0.084
BAS Total	65.67	08.87	71.57	05.27	3.13	<0.01**

Independent- t test
* Significance at the level of 0.05 p value
** Significance at the level of 0.01 p value

Table-5. Quality of life as measured by WHO-QOL BREF (1-100 scale) in both the groups using independent t-test

	OCD (n = 30)		Schizophrenia (n=30)			
	Mean	SD	Mean	SD	t-value	p-value
QOL- DOMAIN1	59.53	07.45	54.8	07.49	2.453	0.02*
QOL- DOMAIN2	48.8	04.83	45.03	06.63	2.514	0.01*
QOL -DOMAIN3	52.5	08.62	49.23	10.61	1.308	0.19
QOL -DOMAIN4	54.43	06.63	47.27	08.12	3.741	<0.01**

* Significance at the level of 0.05 p value
** Significance at the level of 0.01 p value

Table-6. Correlation of total burden scores and quality of life scores Pearson correlation

VARIABLE	BAS Total	QOL Domain 1	QOL Domain 2	QOL Domain 3	QOL Domain 4
Age of patient	0.51**	-0.49**	-0.39*	-0.12	-0.36
Patient's monthly income	0.42*	-0.41*	-0.54**	-0.47**	-0.42*
Age of caregiver	0.12	-0.08	-0.18	-0.14	-0.01
Total number of family members	-0.37	0.34	0.30	0.03	0.23
Total monthly income	-0.24	0.27	-0.03	0.04	0.22
Duration of illness	0.81**	-0.67**	-0.47**	-0.28	-0.32
YBOCS –Obsessions Score	0.55**	-0.56**	-0.50**	-0.21	-0.18
YBOCS- Compulsions Score	0.37*	-0.34	-0.41*	-0.09	-0.10
YBOCS Composite Score	0.52**	-0.51**	-0.51**	-0.17	-0.16

*Correlation is significant at the level of 0.05 p value
**Correlation is significant at the level of 0.01 p value

scores of Y BOCS for Obsessions, Compulsions and Total, all correlated positively with total BAS score and negatively correlated with all QOL domains. Analysis of variance (ANOVA) revealed a significant statistical difference in QOL domain 4 scores in patient with different education level (p = 0.01). The post-hoc analysis found a significant statistical difference in QOL domain scores between

Table-7. Correlations of total burden and quality of life scores with various variables in OCD group Pearson correlations

BAS Total	QOL Domain 1	QOL Domain 2	QOL Domain 3	QOL Domain 4
OCD	-0.86**	-0.62**	-0.46*	-0.49**
SCHIZOPHRENIA	-0.41*	-0.40*	-0.09	-0.35

*Correlation is significant at the p value of 0.05.
** Correlation is significant at the p value of 0.01.

Supplementary data 1. Correlations of total burden and quality of life scores with various patient related variables in OCD group

VARIABLE	BAS Total Score Mean ± SD	p	QOL Domain 1 Mean ±SD	p	QOL Domain 2 Mean ± SD	p	QOL Domain 3 Mean ± SD	p	QOL Domain 4 Mean ± SD	p
Gender of Patient (student t-test)										
Male	65.44 ± 9.73	0.88	60.25 ± 8.32	0.58	48.12 ± 5.23	0.42	50.44 ± 9.29	0.16	53.50 ± 6.37	0.42
Female	65.93 ± 8.60		58.71 ± 6.52		49.57 ± 4.38		54.86 ± 7.42		55.50 ± 7.00	
Educational Level of Patient (ANOVA)										
Just Literate, Primary & Middle school	65.00 ± 8.24	0.26	61.83 ± 8.27	0.07	50.00 ± 3.79	0.80	57.17 ± 6.27	0.25	60.67 ± 3.61	*0.01
Matriculate, 12th & Diploma	67.94 ± 8.23		56.69 ± 8.38		48.50 ± 5.13		50.38 ± 7.74		51.19 ± 6.40	
Graduate & Postgraduate	61.63 ± 10.07		63.50 ± 8.58		48.50 ± 5.31		53.25 ± 9.89		56.25 ± 4.92	
Occupation Status of Patient (student t-test)										
Unemployed	57.17 ± 5.34	0.01	68.00 ± 2.49	0.00	52.00 ± 3.09	0.25	60.50 ± 9.96	0.11	59.50 ± 3.83	0.22
Employed	67.79 ± 8.33		57.42 ± 6.73		48.00 ± 4.89		50.50 ± 7.06		53.17 ± 6.63	
Marital Status of Patient (student t-test)										
Unmarried	63.62 ± 9.32	0.28	61.69 ± 8.15	0.17	49.08 ± 4.80	0.79	53.00 ± 9.89	0.79	56.23 ± 4.64	0.20
Married	67.24 ± 8.46		57.88 ± 6.63		48.59 ± 4.98		52.12 ± 7.63		53.06 ± 7.70	
Type of Family (student t-test)										
Nuclear	67.82 ± 9.15	0.06	57.50 ± 7.27	0.11	47.82 ± 5.08	0.06	52.00 ± 9.13	0.54	53.50 ± 7.17	0.06
Joint & Extended nuclear	59.75 ± 4.64		65.12 ± 4.73		51.50 ± 2.77		53.88 ± 7.41		57.00 ± 4.24	
Socioeconomic Status (student t-test)										
Lower	74.43 ± 8.14	*0.00	51.71 ± 4.53	*0.00	46.57 ± 5.85	0.16	48.14 ± 8.61	0.13	50.14 ± 8.72	*0.05
Middle & Upper middle	63.00 ± 7.33		61.91 ± 6.49		49.48 ± 4.39		53.83 ± 8.36		55.74 ± 5.44	

* Significance at the p value of 0.05.
** Significance at the p value of 0.01.

patients who were educated below 8th std and who were educated above 8th std. (p = 0.05). Occupational and marital status of patient and type of family did not have any significant statistical difference in total BAS and WHO QOL scores. There was also a significant statistical difference in BAS and WHO QOL scores in patients with differing socioeconomic status (SES).

Supplementary data 2. Correlations of total burden and quality of life scores with various caregiver related variables in OCD group

VARIABLE	BAS Total Score Mean ± SD	p	QOL Domain 1 Mean ±SD	p	QOL Domain 2 Mean ± SD	p	QOL Domain 3 Mean ± SD	p	QOL Domain 4 Mean ± SD	p
Gender of Caregiver (student t-test)										
Male	66.67 ± 10.81	0.69	57.78 ± 7.03	0.41	48.67 ± 4.00	0.92	53.33 ± 4.35	0.73	53.56 ± 7.10	0.64
Female	65.24 ± 8.16		60.29 ± 7.66		48.86 ± 5.23		52.14 ± 9.91		54.81 ± 6.57	
Educational Level of Caregiver (ANOVA)										
Uneducated, just literate & Primary school	62.63 ± 5.23	0.32	61.88 ±7.22	0.47	50.75 ± 3.84	0.38	54.00 ± 9.97	0.69	56.25 ± 4.92	0.55
Middle & Matriculate	68.38 ± 10.99		57.77 ± 8.24		47.69 ± 5.21		50.92 ± 8.78		53.00 ± 8.27	
12th, Diploma Graduate Postgraduate	64.44 ± 7.55		60.00 ± 6.53		48.67 ± 5.00		53.44 ± 7.66		54.89 ± 5.37	
Relation of Caregiver with Patient (ANOVA)										
Mother	63.62 ± 9.35	0.42	61.69 ± 8.15	0.16	49.08 ± 4.84	0.40	53.00 ± 9.97	0.38	56.23 ± 4.60	0.38
Other relatives	63.67 ± 1.52		63.00 ± 1.34		52.00 ± 3.46		58.33 ± 9.71		60.67 ± 4.04	
Spouse	68.00 ± 9.18		56.79 ± 6.84		47.86 ± 5.05		50.79 ± 6.81		51.43 ± 7.36	
Duration of Contact with Patient (student t-test)										
≤ 12 hours	59.00 ± 6.13	0.04	63.67 ± 6.37	0.13	52.00 ± 3.09	0.07	55.17 ± 8.30	0.41	57.33 ± 4.96	0.24
> 12 hours	67.33 ± 8.75		58.50 ± 7.45		48.00 ± 4.89		51.83 ± 8.40		53.71 ± 6.88	
Residence (student t-test)										
Urban	63.50 ± 8.95	0.10	62.06 ± 7.79	0.02*	49.33 ± 4.99	0.46	52.44 ± 9.88	0.96	55.94 ± 6.31	0.13
Rural	68.92 ± 8.01		55.75 ± 5.13		48.00 ± 4.67		52.58 ± 6.72		52.17 ± 6.72	
Occupation of Caregiver (student t-test)										
Unemployed	64.00 ± 7.55	0.18	61.37 ± 7.22	0.07	49.68 ± 4.67	0.19	53.00 ± 9.99	0.68	55.32 ± 6.71	0.34
Employed	68.55 ± 10.54		56.36 ± 7.03		47.27 ± 4.92		51.64 ± 5.42		52.91 ± 6.52	

* Significance at the p value of 0.05.
** Significance at the p value of 0.01.

The various caregiver related variables like gender, educational level, relation with patient did not have any significant statistical difference in BAS and WHO QOL scores. Residence of caregiver was found to be associated with a significant statistical difference in QOL domain 1 scores in those who belonged to urban background with a mean value of 62.06 (S.D = 7.79) and in those who belonged to rural background with a mean scores of 55.57 (S.D = 5.17) with a p value of 0.02. On an average total burden scores on BAS correlated negatively with mean scores of all domains of QOL with a magnitude of 86 % with domain1, 62 % with domain 2, 46 % with domain 3 and 49% with domain 4. In other words as the total burden score increased , the quality of life hampered adversely as evident by decrease in QOL scores in all domains.

Discussion

The present study is based on the clinical concern that neurotic illnesses like OCD also cause

significant dysfunction in psychosocial areas and the concerned families experience considerable burden of care and have impaired quality of life.

Caregiver burden in caregivers of OCD and schizophrenia

There was a considerable burden of care in caregivers of both groups, although overall burden of care was significantly higher in caregivers of patients with Schizophrenia as compared to caregivers of OCD. The findings of this study are in agreement with the earlier Indian studies by Thomas et al., 2004 and Gururaj et al, 2008 which reported that families of patients with Schizophrenia experience greater burden as compared to families of OCD.[19,20] This can be partly attributed to the nature of Schizophrenic illness which causes significant psychosocial dysfunction in suffered patients leading to greater degree of burden in caregivers. This is however not in keeping with the findings of Indian studies as done by Jayakumar et al., 2002 and by Kalra et al., 2009 that overall burden of care was comparable in caregivers of patients with Schizophrenia and patients with OCD.[21,22]

The caregivers of patients with OCD and Schizophrenia experienced a comparable degree of burden in spouse-related areas. The key relatives in OCD group often encounters problems such as poor support from spouse in family responsibilities, inadequate satisfaction of emotional and sexual needs, and deteriorated marital relationship and because of persisting problems, they may express poor satisfaction over quality of health service. The impairment in marital and sexual life of caregivers in OCD group noted in this study concords with earlier findings.[23-25] The study done by Jayakumar et al.,2002 found the burden of care in spouse related domain is higher in OCD group as compared to Schizophrenia group while the study done by Kalra et al., 2009 found that both OCD and Schizophrenia posed comparable level of burden on spouses.[21,22] Quality of life in caregivers of ocd and schizophrenia There was a significant impairment in quality of life in both caregivers' group, however in Domain 1, Domain 2 and Domain 4 of WHO QOL BREF, Schizophrenia group caregivers scored significantly less as compared to OCD group. This implies that caregivers of OCD group had better physical health, psychological well-being and quality of environment as compared to the Schizophrenia group. This is probably because Schizophrenia being a psychotic illness and often characterized by more disruptive symptoms might have led to greater impact on quality of life of caregivers in terms of affecting their quality of life. There is some evidence related to decline in quality of life of caregivers of patients with OCD. Stengler-Wenzke et al., 2006 reported the QOL of relatives of patients with OCD was significantly lower in the domains physical well-being, psychological well-being, and social relationship compared with that of the general population.[26]

Correlates of burden of care and quality of life in caregivers of OCD

In this study patient related variables such as age, educational level, monthly income, socio economic status, duration of illness and severity of illness have been found to be related to level of overall burden and quality of life of caregivers. The age of patient correlated positively with total BAS scores while it was negatively correlated with QOL Domain- physical health & QOL Domain-psychological. This implies that relatively older patients posed more burdens on caregivers and adversely affected physical and psychological well-being of the caregivers. This observation substantiated the similar finding in the study done by Grover et al., 2011 which reported that caregiver burden was more with older patients.[27] The plausible reason for the same could be that older patients had more psychosocial dysfunction leading to more responsibilities and worries about future of growing older patients. The income of patient has been found to impose impact on burden, and the patients with more income exerted more burdens and affected negatively all domains of quality of life. This might be a chance finding and we could not find any obvious explanation of the same. Another possibility being higher severity of illness and poor response and satisfaction to treatment might have led to increased perception of burden and hence poor quality of life. The study also found Socioeconomic Status (SES) to be correlated with burden of care and physical and psychological quality of life, higher burden and poorer quality of life being in caregivers of lower SES as compared to middle SES. This observation is probably due to that caregivers of lower SES might be more constrained by poor

financial conditions leading to difficulties in caring of the patient, in terms of treatment of him/her, finances for transport to healthcare facilities and in other routine day to day needs. Besides worries of future financial constraints might had further exacerbates the level of burden. The duration of illness in patient has also been found to be correlated positively with total BAS negatively correlated with QOL domains – physical health & psychological, scores. The clinical implication of the same would be that long duration of illness led to higher level of burden on their caregivers and hampered their physical and psychological aspects of quality of life.

The scores of Y BOCS for Obsessions, Compulsions and the total scores, all correlated positively with total BAS scores and all negatively correlated with all QOL domains. This finding is in agreement with the Indian study by Grover et al., 2011.[27] Another study reports that the only predictor of a poorer score on the mental component of quality of life on SF-36 was the patient's Y-BOCS total scores.[28,29] A Brazilian study found that caregivers' levels of psychological morbidity, accommodation, and emotional burden were associated with each other and with the severity of patient obsessive-compulsive and depressive symptoms.[30] The study done by Kalra et al., 2009 found statistically significant positive correlations between total BAS scores and severity of illness in both OCD and Schizophrenia group.[22]

As the total burden score increased, the quality of life hampered adversely as evident by decrease in QOL scores in all domains. This implies that high degree of burden of care affects all aspects of quality of life varying from physical and psychological well-being to social relations, disturbed surrounding environment & restrictions of freedom out of burden of care.

The present study has certain limitations that need to be kept in mind before interpreting the results. The study involved hospital based and small sample size including purposive rather than random sampling so the findings cannot be generalized to the whole population of OCD and Schizophrenia. Coping strategies of the caregivers which is known to be a mediator in the perception of the burden of care and quality of life has not assessed in the study. The other limitations are that the study was cross sectional in nature and the raters were not blinded to the diagnosis and results.

It is evident from the above discussion that there is considerable caregiver burden and adverse effects on quality of life of caregivers of patients with OCD and of patients with Schizophrenia , though the degree of burden and impairment in quality of life has been more in caregivers of Schizophrenia as compared to caregivers of OCD. This has important clinical implication when it comes to long term functional recovery of patients with either OCD or Schizophrenia. Diversified strategies and interventions have been found useful in condensing the burden in caregivers of patients with schizophrenia and hence bettering their quality of life. These include imparting information, using a problem solving approach to help caregivers to cope more effectively, and offering both emotional and psychosocial support. Similar strategies need to be tried with good effort in caregivers of OCD patients as well. This also highlights the need for clinicians to be aware of various psychosocial dysfunctions in these patients and their caregivers which will help them in dealing more effectively with these issues. To conclude, there is substantial burden of care in caregivers of OCD and Schizophrenia along with considerable comparable impairment of their quality of life, though it has been found to be significantly higher in caregivers of Schizophrenia. There is inverse relation between caregiver burden and quality of life which is self-explanatory. However in view of the limitations of the present study it is recommended that a well planned community-based study with a large sample size needs to be carried out for better understanding of patterns of burden of care and quality of life in the caregivers. This would facilitate in devising appropriate interventional strategies for addressing various psychosocial issues which determine burden of care and quality of life in the affected caregivers.

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Original Article

A long-term comparative evaluation of metabolic profile and tolerability of olanzapine versus iloperidone in drug naïve patients of psychosis

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ABSTRACT

Introduction: *Atypical antipsychotics have become the mainstay therapy for psychosis. Though extrapyramidal side effects are lesser with atypical antipsychotics, yet there are increased concerns over their metabolic and tolerability effects.* ***Aim:*** *To comparatively evaluate the metabolic profile of olanzapine versus iloperidone in cases of psychosis.* ***Materials and Methods:*** *A prospective, randomized, open-label, interventional, flexible dose study of 12 months duration was conducted in the Department of Pharmacology and Department of Psychiatry, Rohilkhand Medical College and Hospital, Bareilly. A total of 100 newly diagnosed patients of psychosis (ICD-10, F20–F29), 50 each in olanzapine and iloperidone groups, of both sexes were included in the study. Demographic parameters were recorded, following which patient's body weight; body mass index (BMI), fasting blood sugar (FBS), and lipid profile were estimated at baseline. Follow-up of the patients was done periodically after 1, 3, 6, 9 and 12 months. Statistical evaluation was done by using student t- test. Comparison of data within the group was done by using paired t- test while data between the two groups were compared using unpaired t - test.* ***Results:*** *Olanzapine-treated patients showed markedly significant increase in body weight of 10.09kg (p=0.0001), along with a significant increase in BMI. Fasting blood sugar, total cholesterol, triglyceride (TG), and low density lipoprotein (LDL) levels were also statistically significantly increased. The high density lipoprotein (HDL) levels were significantly decreased. Iloperidone-treated patients showed statistically significant lesser increase in body weight (of 2.04 kg, P < 0.0001) and BMI. No significant changes in fasting blood sugar, total cholesterol, TG, LDL, and HDL levels were observed.* ***Conclusion:*** *Iloperidone caused lesser increase in body weight and BMI and fewer metabolic adverse effects as compared to olanzapine, hence should be preferred in obese, diabetic and dyslipidemic psychotic patients.*

Key words: *Atypical antipsychotics, Weight gain, Hyperglycemia, Dyslipidemia*

Introduction

Antipsychotic medications preferably second generation antipsychotics are the mainstay of treatment for schizophrenia and the related disorders, though some atypical antipsychotics may cause weight gain, hyperglycemia and dyslipidemia as well as drug-related cardiac changes (QTc prolongation) ICD10, F20-F29 group of psychiatric disorders includes mental and behavioral disorders characterized by prominent disturbances of thought, perception, affect and behavior. The disorder in this section includes schizophrenia, schizotypal disorder,

persistent delusional disorders, and schizo-affective disorders.[1] Antipsychotics are classified as conventional or typical (D_2 antagonists) and atypical or second generation antipsychotic agents. Atypical antipsychotics are efficacious in treating positive symptoms as conventional agents coupled with better tackling of negative symptoms.[2] Atypical antipsychotic agents in addition to their moderate potencies at dopamine receptors, interact with varying affinities at several other classes of receptors like alpha1 and alpha 2 adrenergic, 5-HT_{1A}, 5-HT_{2A}, 5-HT_{2C}, M and $H_{1.}$[3] They enhance patient's quality of life with fewer relapses and reduced hospital stay, number of physician visits and overall care costs. Besides, at therapeutic doses they produce minimal to no extrapyramidal side effects.[3]

The choice of antipsychotic agents for long term treatment is based primarily on efficacy, safety and avoidance of adverse effects. Recently, atypical antipsychotics have gained much notoriety for causing metabolic derangements such as weight gain, dyslipidemia and hyperglycemia leading to new-onset type 2 diabetes mellitus. Due to paucity of research and literature illustrating the long term tolerability and metabolic side effect profile of atypical antipsychotics especially iloperidone in Asian Indian population, this prospective long term comparative study with olanzapine is being carried out to assess the metabolic parameters, and other adverse events of olanzapine and iloperidone in patients of first episode psychosis. Furthermore, the aim is to evaluate whether there exists any gross advantage of one drug over the other in respect to metabolic and other adverse effects including safety profile outcomes on long term basis.

Material and methods

A prospective, randomized, interventional, open label, flexible dose clinical study was conducted to compare changes in metabolic and safety profile in patients of first episode psychosis. Study was conducted for one year period, from October 2013 to September 2014. Patients who were receiving treatment with either olanzapine or iloperidone were recruited in the study. Study was conducted in the department of Pharmacology and Department of Psychiatry, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh. Approval of the study was obtained from Institutional Ethical Committee. Each subject signed an informed consent form prior to participation and could withdraw without prejudice at any time. Registration from Clinical Trial Registry Indian (CTRI) was also obtained and the registration No. is CTRI/2014/10/005144.

Patients of age group 18-65 years and of both genders attending to psychiatry outpatient department during the study period diagnosed with first episode psychosis (drug naïve) falling under the group (F20-F29) as per criteria of the 10th edition of the International Classification of Diseases (ICD-10) receiving either olanzapine (OLZ) or iloperidone (ILO) were included in the study. A total of 100 patients (OLZ= 50, ILO = 50) comprised of sample size and all patients were allotted a reference number. Simple randomization was done. Flexible dose schedule of both drugs were deployed depending on consultant psychiatrist opinion as per clinical evaluation. Dose of olanzapine ranged 10-20mg/day and that of iloperidone 8-12mg/day though initially lower doses were administered. No other psychiatric drug therapy was given to patients except test drugs during the study period although rescue medications like tablets / injections of lorazepam, tab trihexyphenidyl, tab. clonazepam were administered, if required, for managing emergency and side effects if any.

Of 100 enrolled patients, two patients dropped out of olanzapine group (n=48) during the study period due to extrapyramidal adverse effects, and two patients of iloperidone were not considered owing to poor compliance. All study participants were emphatically told they have to take the prescribed medicine for at least one year despite adequate control to prevent the recurrence of psychosis. Exclusion criteria were patients with history of taking antipsychotics before study, pregnant and lactating mothers, patients with history of diabetes mellitus, dyslipidemia, obese individuals, significant and untreated medical illnesses like severe cardio-vascular disease, hepatic, renal or thyroid disease, hepatitis, and HIV, and patients currently taking the following medications like antiepileptic, antidepressants, antiparkinsonian drugs, oral contraceptives, steroids, thiazides and agents that induce weight loss.

A complete preliminary clinical examination was conducted on all subjects included in the study to

rule out any chronic ailments referred to in the exclusion criteria. Patients were then evaluated by senior consultant psychiatrist and their socio-demographic data regarding age, sex, socio-economic status, family history etc were recorded in the case report form. For calculating body mass index (BMI = kg/m^2) patient's height and body weight were taken using measuring tape and weighing machine respectively. Blood pressure was measured with mercury sphygmomanometer using standard protocol. All baseline investigations were carried out, including patient's fasting blood sugar (FBS),total cholesterol(TC),low density lipoprotein (LDL) cholesterol , triglyceride(TG) and high density lipoprotein (HDL)cholesterol.

Patients were subsequently monitored and reassessed after 1,3,6,9 and 12 months. During each follow up visit, weight of patient was recorded to calculate BMI, besides FBS and lipid profile were estimated and results were compared with baseline. Further, all adverse events at each visit or associated side effects during treatment were recorded in case report form. The treatment compliance was evaluated at each monthly visit using tablet counts and questioning the parents/relatives.

Statistical analysis of the data was performed by using the SPSS windows version 20. Mean values of change in body weight, BMI, FBS, and lipid profile (at baseline, 1,3,6,9 and 12 months) were compared between two groups by using unpaired 't' test, and in the groups by paired 't' test.

Results

Results and other details of the research work are being reported as per CONSORT (consolidated standards of reporting trials 2010) statement for improved reporting of randomized trials. Table 1 shows demographic parameters and socio-economic status of the patients enrolled in the study. There was predominance of males over females. Out of 100 patients enrolled 68 were males and 32 females. In OLZ group 36 were males and 14 females while in ILO group 32 males and 18 females (p=0.3911), and both groups were comparable. Mean age of olanzapine group was 30.48 $\pm$ 9.27 years (mean $\pm$ SD) Vs 28.76 $\pm$ 10.28 years (mean $\pm$ SD) in iloperidone group (p=0.4043). Rural: urban ratio was 3.34:1. Regarding educational status 53/100 patients i.e. 28 patients in olanzapine group and 25 in iloperidone group were illiterate. The socio-economic status of majority of cases was categorized as lower class (68/100 cases), whereas middle class included only 32 cases.

Table 2 shows an increase in mean body weight from baseline 55.29 $\pm$ 6.30 kg (mean $\pm$ SD) to 65.38 $\pm$ 12.96 kg after 12 months of therapy with olanzapine. Thus, there was a marked statistically significant increase in body weight (upto 10 kg, $p < 0.0001$) which was evident after one month. Out of 48 patients in OLZ group, 35 patients (72.91%) experienced weight gain and of these 34 patients recorded more than 7% increase in body weight at the end of study. Similarly, olanzapine also increased the mean BMI from baseline 21.06 $\pm$ 1.42 kg/m^2 (mean $\pm$ SD) to 24.78 $\pm$ 3.94 kg/m^2 after 12 months. Statistically significant increase in BMI was recorded at each follow up visit (upto 3.72 kg/m^2,$p<0.0001$), 35 out of 48 patients (72.91%) experienced an increase in BMI in the olanzapine group.

Olanzapine increased mean FBS from baseline 84.42 $\pm$ 5.63 mg/dl (mean $\pm$ SD) to 92.4 $\pm$ 12.83 mg/dl after 12 months. Thus, olanzapine caused statistically significant rise in FBS (upto 7.98 mg/dl, $p < 0.0001$) at the end point. 10 patients (20.83%) had impaired FBS values (100-125mg/dl). Alterations

Table-1 : Demographic Parameters

S. No.	Parameters	OLZ	ILO	Total No.	Test Value	P value
1.	Male	36	32	68	$X^2 = 0.7353$	0.3911
2.	Female	14	18	32		
3.	Mean age (Mean $\pm$ SD)	30.48 $\pm$ 9.27	28.76 $\pm$ 10.28	29.62 $\pm$ 9.77	$X^2 = 0.8375$	0.4043
4	Rural	40	37	77	$X^2 = 0.5082$	0.4759
5	Urban	10	13	23		
6	Literate	22	25	47	$X^2 = 2.2524$	0.6894
7	Illiterate	28	25	53		
8	Low socio economic class	35	33	68	$X^2 = 0.5235$	0.9136
9	Middle class	15	17	32		

OLZ = Olanzapine, ILO = Iloperidone, $P > 0.05$ = Not significant, SD = Standard deviation

in FBS were observed as early as one month and became statistically significant after 3 months.

A statistically significant rise (upto 10.29mg/dl, $p < 0.0001$) in TG levels at end point and a significant increase in TG levels from baseline to end point were noted. LDL levels were also statistically significantly increased from 85.48 ± 8.51mg/dl at baseline to 90.79 ± 10.75 mg/dl at end point whereas HDL levels showed statistically significant decrease after 12 months. 19 out of 48 patients (39.58%) became dyslipidemic after 12 months of therapy, further, olanzapine caused statistically significant effects on TC, TG, and LDL levels as early as after one month, but significant effects on HDL levels were a bit delayed.

Table 3 shows the effect of iloperidone on mean body weight, BMI, FBS and lipid profile. Mean body weight at baseline was 55.13 ± 5.34 kg, and it increased to 57.17 ± 6.86 kg at the end of 12 months. Thus, iloperidone also showed a statistically significant increase in body weight (upto 2.04 kg, $p < 0.0001$) and the increase was evident after 3 months. Out of 48 patients in iloperidone group only 20 patients (41.66%) experienced weight gain. Mean BMI at baseline was 21.7 ± 1.67 kg/m^2 and it statistically significantly increased to 22.51 ± 2.06 kg/m^2 at the end point. The increase in BMI was noted at each follow-up till end point (upto 0.81 kg/m^2, $p < 0.0001$) 41.66% (20/48) patients in the iloperidone group experienced an increased in BMI. However, none of the patient crossed the normal range (18.5-24.99 kg/m^2).

Regarding effect of iloperidone on FBS, mean FBS at baseline was 83.56 ± 5.39 mg/dl and at end point was 83.44 ± 4.72 mg/dl, thus reflecting no statistically significant changes in FBS ($p < 0.6955$ at end point). No statistically significant rise ($p = 0.8934$) at end point in TC levels was observed and TG levels ($p = 0.0929$) also did not show any statistically significant rise. LDL and HDL levels also showed no statistically significant increase ($p = 0.7868$, and $p = 1.000$ at end point respectively), thus suggesting that iloperidone did not significantly altered lipid profile parameters.

Table 4 shows comparative evaluation of olanzapine and iloperidone on body weight and BMI. Although, both agents caused increase in body weight yet comparatively olanzapine caused more increase in body weight at end point. Further, a significant difference between two agents was noted after 6 months onwards and after 12 months a markedly significant p value was recorded. Similarly, olanzapine caused more marked significant increase in BMI compared to iloperidone. Statistically significant changes in p value were noted after 9 months onwards.

Table-2: Body Weight, BMI, FBS, Lipid Profile In Olanzapine Group*

Parameters	Baseline (Mean ± SD)	1 month (Mean ±SD)	p value	3 month (Mean ± SD)	p value	6 month (Mean ± SD)	p value	9 month (Mean ± SD)	p value	12 month (Mean ± SD)	p value
Body weight (kg)	55.29 + 6.30	56.56 + 7.16	<0.0001*	57.92 + 7.87	<0.0001*	59.92 + 9.36	<0.0001*	62.69 + 11.17	<0.0001*	65.38 +12.96	<0.0001*
BMI (kg/m^2)	21.06 + 1.42	21.48 + 1.69	<0.0001*	21.98 + 1.92	<0.0001*	22.72 + 2.46	<0.0001*	23.69 + 3.36	<0.0001*	24.78 + 3.94	<0.0001*
FBS (mg/dl)	84.42 + 5.63	85.06 + 5.81	0.1868	87.08 + 7.24	0.0005*	89.1 + 9.82	0.0002*	90.33 + 11.34	<0.0001*	92.4 + 12.83	<0.0001*
TC (mg/dl)	147.21 + 21.76	148.4 + 22.42	<0.0048*	151.42 + 22.54	<0.0001*	154.23 + 23.08	<0.0001*	155.69 + 24.85	<0.0001*	157.5 + 26.89	<0.0001*
TG (mg/dl)	125.2 + 13.36	126.33 + 14.25	<0.0007*	129.5 + 15.04	<0.0001*	131.6 + 15.67	<0.0001*	132.71 + 15.89	<0.0001*	133.69 + 16.47	<0.0001*
LDL (mg/dl)	85.48 + 8.51	86.29 + 8.94	<0.0048*	87.88 + 9.34	<0.0001*	89.39 + 10.03	<0.0001*	89.98 + 10.31	<0.0001*	90.79 + 10.75	<0.0001*
HDL (mg/dl)	45.44 + 3.66	45.08 + 3.56	0.0656	44.37 + 3.56	0.0002*	43.35 + 3.60	<0.0001*	43.06 + 3.12	<0.0001*	42.6 + 2.98	<0.0001*

*$P < 0.05$ = Significant, $P < 0.0001$ = extremely significant, $P > 0.05$ = Not signifi cant, SD = Standard deviation, BMI = Body mass index, FBS = Fasting blood sugar, BW = Body weight, TC = Total cholesterol, TG = Triglyceride, LDL = Low density lipoprotein, HDL = High density lipoprotein.

Table-3: Body Weight, BMI, FBS, Lipid Profile In Iloperidone Group*

Para-meters	Base line (Mean ± SD)	1 month (Mean ±SD)	p value	3 month (Mean ± SD)	p value	6 month (Mean ± SD)	p value	9 month (Mean ± SD)	p value	12 month (Mean ± SD)	p value
Body weight (kg)	55.13 + 5.34	55.42 + 5.55	0.0068*	56.04 + 5.87	<0.0001*	56.42 + 6.12	<0.0001*	56.75 + 6.44	<0.0001	57.17 + 6.86	<0.0001
BMI (kg/m^2)	21.7 + 1.67	21.92 + 1.68	0.0170*	22.08 + 1.75	0.0021*	22.22 + 1.85	0.0002*	22.34 + 1.91	<0.0001*	22.51 + 2.06	<0.0001*
FBS (mg/dl)	83.56 + 5.39	83.38 + 5.19	0.5045	83.33 + 5.36	<0.4413	83.27 + 5.22	<0.3697	83.38 + 4.88	<0.5843	83.44 + 4.72	<0.6955
TC (mg/dl)	143.73 + 20.52	143.98 + 20.93	0.7691	143.92 + 20.15	0.8331	143.63 + 20.30	0.9471	143.56 + 20.22	0.8575	143.6 + 19.78	0.8934
TG (mg/dl)	124.69 + 12.91	124.97 + 12.48	0.9672	124.44 + 12.47	0.6428	124.58 + 12.29	0.8535	123.88 + 11.54	0.2260	123.48 + 11.20	0.0929
LDL (mg/dl)	86.52 + 6.64	86.42 + 6.26	0.6131	86.63 + 6.30	0.6569	86.54 + 6.30	0.5069	86.54 + 6.09	0.9438	86.44 + 5.90	0.7868
HDL (mg/dl)	44.58 + 2.95	44.52 + 2.82	0.7828	44.58 + 2.87	0.8963	44.52 + 2.89	0.7540	44.6 + 2.68	0.9462	44.63 ± 2.49	1.000

Table-4: Comparative Results of Body Weight and BMI In OLZ And ILO Groups

Body Weight (Kg)				BMI (Kg/m^2)			
OLZ group (n=48)	**ILO group (n=48)**	**t value**	**p value**	**OLZ group (n=48)**	**ILO group (n=48)**	**t value**	**p value**
Baseline (Mean ± SD) 55.29 ± 6.30	Baseline (Mean +SD) 55.13 ± 5.34	0.1369	0.8914	Baseline (Mean ± SD) 21.86 ± 1.42	Baseline (Mean ± SD) 21.7 + 1.67	2.056	0.0424*
1 month 55.56 ± 7.16	1 month 55.42 ± 5.55	0.8886	0.3764	1 month 21.45 ± 1.69	1 month 21.92 ± 1.68	1.3002	0.1966
3 month 57.92 ± 7.89	3 month 56.04 ± 5.87	1.3523	0.1794	3 month 21.98 ± 1.92	3 month 22.08 ± 1.75	0.2715	0.7866
6 month 59.92 ± 9.36	6 month 56.42 ± 6.12	2.2125	0.0293*	6 month 22.72 ± 2.46	6 month 22.22 ± 1.85	1.1445	0.2552
9 month 62.69±11.17	9 month 56.75 ± 6.44	3.2556	0.0016*	9 month 23.69 ± 3.36	9 month 22.34 ± 1.91	2.4662	0.0154*
12 month 65.38 ± 12.96	12 month 57.17 ± 6.86	3.9573	0.0001*	12 month 24.78 ± 3.94	12 month 22.51 ± 2.06	3.6067	0.0005*

Table 5 shows comparative evaluations of FBS between olanzapine and iloperidone treated groups. After 3 months statistically significant increase in FBS ($p = 0.0041$) and at end point ($p = 0.0005$) was noted, suggesting a greater increase in FBS in olanzapine treated group.

Table 6 shows comparative evaluation of olanzapine and iloperidone on TC and TG levels. Olanzapine consistently significantly raised TC and TG levels in contrast to iloperidone. Both TC and TG values with olanzapine were significantly raised after 6 months and these persisted even after 12 months.

Table 7 shows comparative evaluation of olanzapine and iloperidone on LDL and HDL levels. A comparative significant increase in LDL and a significant decrease in HDL were noted with olanzapine after 9 months and these values persisted even after 12 months.

Table 8 shows adverse events associated with olanzapine versus iloperidone. It could be visualized that a higher incidence of adverse events were encountered with olanzapine as compared to iloperidone. In OLZ group, the more common adverse effects noted were sedation (n = 32), somnolence (n = 27), extrapyramidal side effects (n = 2), impared FBS (n = 10) and dyslipidemia (n = 19). Whereas in ILO group, commoner adverse events were insomnia (n = 23), dizziness and orthostatic hypotension (n = 12).

Table-5: Comparative Results of OLZ and ILO Groups on FBS (mg/dl)

OLZ group (n=48)	ILO group (n=48)	t value	p value
Baseline (Mean ± SD) 84.42 ± 5.63	Baseline (Mean± SD) 83.56 ± 5.39	0.7799	0.4374
1 month 85.06 ± 5.81	1 month 83.38 ± 3.19	1.5239	0.1308
3 month 87.08 ± 7.24	3 month 83.33 ± 5.36	2.9434	0.0041*
6 month 89.1 ± 9.82	6 month 83.27 ± 3.22	3.705	0.0003*
9 month 90.33 ± 11.34	9 month 83.38 ± 4.88	3.9799	0.0001*
12 month 92.4 ± 12.83	12 month 83.44 ± 4.72	4.633	0.0005*

Table-6: Comparative Results of OLZ and ILO Groups on TC and TG (mg/dl)

TC (mg/dl)				TG (mg/dl)			
OLZ group (n=48)	**ILO group (n=48)**	**t value**	**p value**	**OLZ group (n=48)**	**ILO group (n=48)**	**t value**	**p value**
Baseline (Mean ± SD) 147.21 ± 21.76	Baseline (Mean ± SD) 143.73±20.52	0.8226	0.4127	Baseline (Mean ± SD) 125.21 ± 21.76	Baseline (Mean ± SD) 124.69 ± 12.91	0.1978	0.8436
1 month 148.4 ± 22.42	1 month 143.98±20.93	1.0188	0.3108	1 month 126.33 ± 14.25	1 month 124.67 ±12.48	0.6195	0.5370
3 month 151.42 ± 22.54	3 month 143.92 ± 20.15	1.7539	0.0826	3 month 129.5 ± 15.04	3 month 124.44 ±12.47	1.8307	0.0702
6 month 154.23 ± 23.081	6 month 143.67±20.30	2.4292	0.0170	6 month 131.6 ± 15.67	6 month 124.58 ±12.29	2.4923	0.0144*
9 month 155.69 ± 24.85	9 month 143.56±20.22	2.6768	0.0087*	9 month 132.71 ± 15.89	9 month 123.88 ±11.54	3.1789	0.002*
12 month 157.5 ± 126.89	12 month 143.6 ± 19.78	2.9444	*	12 month 133.69 ± 16.47	12 month 123.48 ± 11.202	3.6234	0.0005

Table-7: Comparative Results of in OLZ and ILO Groups on LDL and HDL (mg/dl)

LDL (mg/dl)				HDL (mg/dl)			
OLZ group (n=48)	**ILO group (n=48)**	**t value**	**p value**	**OLZ group (n=48)**	**ILO group (n=48)**	**t value**	**p value**
Baseline (Mean ± SD) 85.48 ± 8.51	Baseline (Mean ± SD) 86.52 ± 6.64	0.6809	0.4975	Baseline (Mean ± SD) 45.44 ± 3.66	Baseline (Mean ± SD) 44.63 ± 2.95	1.2169	0.2266
1 month 86.29 ± 8.94	1 months 86.42 ± 6.26	0.0842	0.5370	1 month 45.08 ± 3.56	1 months 44.52 ± 2.82	0.8700	0.3864
3 month 87.88 ± 9.34	3 months 86.63 ± 6.30	0.7839	0.4350	3 month 44.37 ± 3.56	3 months 44.58 ± 2.87	0.7839	0.4350
6 month 89.37 ± 10.03	6 months 86.71 ± 6.30	1.5871	0.1157	6 month 43.35 ± 3.60	6 months 44.52 ± 2.89	1.7909	0.0764
9 month 89.98 ± 10.31	9 months 86.54 ± 6.09	2.0312	0.0449*	9 month 43.06 ± 3.12	9 months 44.6 ± 2.68	2.6456	0.0095*
12 month 90.79 ± 10.75	12 months 86.44 ± 5.90	2.5084	0.0138*	12 month 42.6 ± 2.98	12 months 44.63 ± 2.49	3.6915	0.0004*

Discussion

Atypical antipsychotics are mainstay of treatment for schizophrenia and other psychotic disorders and are widely employed in the management of mood disorders and other indications. Atypical antipsychotics demonstrate higher serotonin $5HT_2$ receptor antagonism, are less likely to cause extra pyramidal side effects at therapeutic doses and generally have beneficial effects on both positive and negative symptoms of schizophrenia.[4]

In the present study iloperidone, a structural analogue of risperidone has been compared with olanzapine a widely used, efficacious, and well

Table-8: Adverse events with atypical antipsychotics - olanzapine versus iloperidone

Adverse Effects	Olanzapine (N = 50)	Percentage %	Iloperidone (N = 50)	Percentage %
Sedation	32	64	5	10
Dizziness	5	10	12	24
Somnolence	27	54	2	4
Headache	10	20	4	8
Insomnia	7	14	23	46
Tremors	5	10	1	2
Extrapyramidal side effects	2	4	0	0
Anxiety	11	22	4	8
Constipation	8	16	1	2
Dry mouth	9	18	1	2
orthostatic Hypotension	2	4	12	24
Appetite Increase	25	50	15	30
Weight Gain	35	70	20	40
Increase Body Mass Index	35	70	20	40
Impaired FBS	10	20	0	0
Dyslipidemia	19	38	0	0

tolerated atypical antipsychotic indicated for the treatment of schizophrenia, schizo–affective disorders and acute manic or mixed episode and related disorders.[5-7] Further, it has a favorable risk/ benefit profile and is being extensively utilized worldwide.[8] Besides, both agents belong to same class, long acting and showed clinically documented efficacy.

In the present study young age group patients predominated, males (68/100) outnumbered females and rural populace particularly illiterates were more affected. 68% of cases were from lower socio-economic class. 2 cases from olanzapine group owing to extrapyramidal side effects and 2 cases from iloperidone group due to poor compliance dropped out and were not included for the purpose of study.

In our study, olanzapine caused significant, marked increase in weight ($p < 0.0001$) after one month onwards to the end point, the mean increase in weight from baseline to end point was approximately 10 kg. Whereas, iloperidone not only caused a lesser mean increase in weight (approx. 2 kg) at end point but also only 41.66% of cases experienced weight gain. Our findings are consistent with those of other workers who observed that most atypical antipsychotic agents except a few caused significant rapid increase in body weight ranging from 2-14 kg which occurred within 12 weeks of treatment and was one of the important adverse effects leading to dropout from the study.[9-11]

In short term studies with olanzapine, Allison et al[12] observed an increase of 4 kg over 10 weeks. Other workers observed an increase in body weight of 4.7 kg and 5.4 kg respectively after 12 weeks of olanzapine therapy and increase in mean body weight of 4.6 kg after 4 months.[13-15] In CATIE trial (Clinical antipsychotic trials of intervention effectiveness trial) average weight gain of 0.9 kg was noted in olanzapine group and 30% of patients gained >7% of their baseline weight.[16] In contrast we observed 34/48 patients gained more than 7% increase in body weight with olanzapine. An involvement of higher percentage (70.8%) of patients was probably due to study being conducted on Asian Indian populations.

In CAFE trial (Comparison of Atypical anti-psychotics in the First Episode Psychosis) found the highest weight gain (24.2 ± 1.9lb) among olanzapine treated patients at 52 weeks follow up.[17] In a randomized clinical trial in drug naïve population a weight gain of 10.9 ± 7.2 kg with olanzapine therapy over one year was noted.[18] Similarly, other authors also observed that olanzapine caused a significantly higher weight gain 24.2 ± 1.9 lb, ($p < 0.001$) and 13.9 lb respectively over 52 wks.[19] Pooled data from studies on weight changes with olanzapine use revealed 24-37% patients experienced weight gain of 7% of their body weight.[20] Jain et al[21] observed that 40/60 patients who gained weight 18 patients were < 40 years of age whereas 22 were > 40years. When change in weight was compared on the basis of gender only 40% of men gained weight in comparison of 60% of women which was

statistically significant ($p < 0.01$).

In our study 34/48 patients gained weight in olanzapine group out of which 10 patients were females and 24 were males, 20 patients were >= 30 years of age, 14 patients were less than 30 years of age. Paul et al[22] in acutely ill patients of schizophrenia reported that plasma concentration of 20.6ng/ml being associated with an increased likelihood of clinically significant weight gain (> 7% of baseline weight) after 6 weeks of olanzapine therapy.

De Hert et al[23] in a meta analysis noted statistically significant weight gain with iloperidone. In line with our observations Weiden et al[24] observed that iloperidone caused a mild weight gain (1.5-2.1 kg). Hochfeld et al[25] in a meta analysis of 3200 patients being treated with iloperidone observed an average weight gain of about 2kg following treatment for greater than 1 year. The authors also noted that most weight gain occurred within first 6 weeks of the studies. Our findings were consistent with these authors but in contrast the weight gain was consistent throughout 12 month period. Singh et al[26] in a comparative, 6 months randomized clinical trial observed that olanzapine produced a significantly marked early consistent increase in weight (approx. 7kg at end point) in comparison to iloperidone induced weight gain (upto 1kg at end point). In our study olanzapine showed an increase in weight in all the follow ups within the group but the pattern of weight gain was different than iloperidone suggesting that the two drugs might have different mechanisms of weight gain. The explanation involves that the study drugs have different affinities for the receptors leading to different patterns of caloric intake. Moreover, both olanzapine and iloperidone treated subjects appear to gain weight over a prolonged period of time and there was significant difference in weight gain between these two agents over 1 year.

The precise mechanism of weight gain has not been clearly understood and appears to be multifactorial phenomena and revolves around neuroendocrine pathways (hypothalamic neurotransmitters and neuropeptides) and the effects on receptors. The hypothalamic nucleus most involved with appetite is the arcuate nucleus. One population of cells in arcuate nucleus expresses neuropeptide Y (NPY) and Agouti-related protein (AgRP), the two highly orexigenic (appetite enhancing) peptides whose expression is increased by ghrelin and inhibited by leptin. Another population of neurons expresses pro-opiomelanocortin (POMC). Ghrelin, a peptide hormone induces NPY and AgRP expression, thereby stimulating appetite.[27] Leptin, a hormone released from adipose tissue, inhibits food intake by suppressing NPY/AgRP expression and increasing POMC activity. The neurotransmitters serotonin and histamine also regulate food intake. Serotonin enhances satiety by stimulating POMC secretion from arcuate nucleus neurons, an effect mediated by $5HT_{2C}$ receptors. Antagonist of $5\text{-}HT_{2C}$ receptor prevents or delays the onset of satiety thus increasing size of meal.[27] Histamine from tubero-maxillary nucleus in the posterior hypothalamus acts on H_1 receptors to suppress food intake and increase thermo genesis. It also increases sympathetic action of adipose tissue to enhance lipolysis. Histamine and H_1 signaling pathways appear to be required for leptin function. Antipsychotic associated weight gain correlates to an extent with affinity for H_1receptor and $5HT_{2C}$ receptors.[27] Olanzapine and clozapine show high affinity for each of these receptors Histamine H_1 receptor blockade activates hypothalamic AMP kinase indicating negative energy balance and increasing appetite. H1receptor also seems to be required for leptin's anorexigenic effect. Iloperidone has low affinity for H1receptors. Additionally, dopamine D_2 receptors antagonism have also been implicated since D_2 receptor blockade is a common factor underlying weight gain with respect to all antipsychotic medications. D_2 blockade also causes hyperprolactinemia, which in turn may decrease insulin sensitivity and increase fat deposition, this may also be necessary for the orexigenic effect of $5\text{-}HT_{2C}$ antagonism. In addition, atypical antipsychotics also affect the levels of neuropeptides hormones involved in weight regulation. All antipsychotic except quetiapine give rise to sustained increase in ghrelin levels. Further, adiponectin levels fall during antipsychotic treatment, it is unclear whether antipsychotics directly affect adiponectin synthesis or secretion or whether this is the result of adipogenesis and insulin resistance. Finally, antipsychotics may act directly on adipose tissues thus olanzapine may directly inhibit lipolysis.[27]

In the present study highly significant increase ($p < 0.0001$) in BMI was observed with olanzapine

after 1,3,6,9 and 12 months follow-up. Ujike et al[28] observed that olanzapine (mean dose 15.5 ± 5.8 mg/day) administered for 8-24 weeks increased BMI by mean 4.3 ± 10.7%. Conley et al [29] in 8 weeks trial reported an increase in BMI 1.1 kg/m^2 in olanzapine group and 0.5kg/m^2 in risperidone group. Jain et al[21] observed that the BMI was increased in 40 patients (66.66%); 24 were women and 16 men (26.6%) interestingly authors noted weight gain was not related to dose of olanzapine and BMI. In contrast, we observed that an increase in weight was associated with increase in BMI and only 41.66% (20/48) patients, of iloperidone group experienced an increase in weight and BMI.

Moreover, in our study, iloperidone though caused an increase in BMI from baseline 21.7 ± 1.67 kg/m^2 (mean ± SD) to 22.51 ± 2.06 kg/m^2 at the end point but comparatively this increase was slow to develop. Significant increase in BMI was noted consistently after 6 months onwards and at no point it crossed the normal range (18.50-24.99 kg/m^2). Singh et al[26] observed that in short term trial, olanzapine produced marked, significant increase in BMI (2.49 kg/m^2 at end point) compared to iloperidone (0.43 kg/m^2 at end point). No data are available with respect to long term effect of iloperidone on BMI in Asian Indians.

Regarding FBS, it was observed that olanzapine caused more pronounced consistent increase, in FBS (7.98 mg/dl at end point, $p < 0.0001$) and the significant rise in FBS was noted from IInd follow up visit onwards. Lindenmayer et al[30] in a short term prospective randomized trial in hospitalized patients observed that olanzapine group showed significant increase of glucose level at the end of 6 weeks, approximately 14% developed abnormally high blood glucose level. In the present study 20.83% (10/48) patients experienced significant high blood sugar levels. Ingole et al[31] observed that mean blood sugar significantly increased after 6 and 12 weeks of treatment with olanzapine. Our observations in respective FBS were in conformity with these authors. A significant association between olanzapine and diabetes mellitus was observed by Sernyak et al,[32] Fuller et al[33] and Farewell et al[34] following one year therapy, olanzapine was a significant predictor of development of new onset diabetes and that development of diabetes mellitus takes more than 15 months. We have not estimated mean HbA_{1C} level, though in phase 1 of CATIE trial[16] olanzapine was associated with significant rise in mean HbA_{IC} from baseline of 0.41% ± 0.09%. Reduction in insulin sensitive index was also statistically significant with olanzapine and risperidone but not with quetiapine.

In the present study, iloperidone did not significantly altered FBS in comparison to olanzapine. In line with our observations, Cutler al[35] in 25 weeks open-label clinical trial of iloperidone with dose 12mg twice daily that could be decreased to 12mg/d any time after day 35, observed that levels of serum glucose were essentially unchanged or decreased during the treatment. In contrast, Weiden et al [24] in short term acute schizophrenia studies on patients exposed to 3 dose ranges of iloperidone observed mild elevation in serum glucose level. In long term clinical trial with iloperidone in 3 different doses schedule 4-8mg/d, 10-16mg/d, 20-24mg/d, Hochfeld et al[25] observed baseline random mean glucose level (99-112mg/dl), and baseline fasting glucose levels (94mg/dl) were normal for all iloperidone treatment groups and mean increase from baseline of about 5mg/dl in both fasting and random glucose groups did not indicate overall shift to diabetic levels. Similarly mean levels of glycosylated Hb were unchanged from baseline to end of study. The authors observed that changes in glucose levels were unlikely to be of clinical concern. We have not estimated HbA_{IC} levels so cannot comment. Our observations corroborates with those of Hochfeld[25] with regard to FBS.

In the present study, a statistically significant increase (10.2 mg/dl, $p < 0.0001$) in total cholesterol (TC) was observed in patients treated with olanzapine for one year. Similarly triglycerides (TG) and low-density lipoproteins (LDL) levels were also statistically significantly increased while high density lipoprotein (HDL) levels showed statistically significant decrease at the end of study. Further, 19 out of 48 patients became dyslipidemic following one year treatment with olanzapine. In contrast, iloperidone treatment did not show any statistically significant changes in TC, TG, LDL, and HDL levels.

A number of research workers[36, 37] also observed that olanzapine caused more disturbed lipid profile and was associated with marked hypertriglyceridemia and hypercholesterolemia. Moreno et al[38] observed that following 3 months of

treatment with second generation antipsychotics more than 70% patients had significant increase in TC and LDL levels. Osser et al [14] observed that short term treatment with olanzapine caused fasting TG to increase by a mean of 60mg/dl but fasting TC did not increase. These authors also noted a strong association between weight change and TG changes ($p < 0.02$). Barnwal et al[39] also observed that all atypical antipsychotics cause statistically significant increase in all lipid parameters TC, TG, HDL and LDL. Thus, our observation in respect to dyslipidemia with olanzapine is consistent with above findings.

We have not observed any significant changes in lipid parameters with iloperidone from baseline to end point. Hochfeld et al[25] in a metanalysis of data of 3210 patients from 9 clinical trials with iloperidone, observed mean (SD) changes in lipid parameters with 4-24 mg/day iloperidone. Mean (SD) change from baseline to end point in TC and TG were (8.2mg/dl and -0.83mg/dl. respectively), thus iloperidone exhibited small changes in lipids that are unlikely to be of clinical concern. Our observations with reference to TC and TG are in line with Hochfeld[25] though; in contrast we did not observe any increase in mean TC during the first 4 weeks of therapy. These authors also observed that mean LDL levels increased from baseline to end of study by 9mg/dl while HDL levels increased by 0.55 mg/dl, In variance to their observations, we observed no statistically significant changes in mean LDL and mean HDL levels with iloperidone from baseline to the end point. The mechanism of antipsychotic induced hyperlipidemia is not well delineated, though this dyslipidemia is generally accepted to be the result of weight gain yet some atypical antipsychotics may have direct or immediate effects on serum lipids independent of their effects on weight.[40]

Consideration of co-morbidities likes obesity, diabetes mellitus and dyslipidemia is required for selection of antipsychotics because antipsychotics have been implicated in the development of metabolic syndrome. Further, metabolic syndrome has been recognized as a risk factor in patients with severe mental illnesses like schizophrenia.[41,42] Prevalence of metabolic syndrome in antipsychotic naïve and antipsychotic treated patients ranged between 3.3 to 26.0% and 32.0 to 68% respectively, and higher in younger patients, females and Hispanics.[43] Moreover, a higher prevalence of metabolic abnormalities was recorded in patients receiving second generation antipsychotics especially clozapine, olanzapine and risperidone as compared to 1st generation antipsychotics.[43] As per NCEP ATPIII guidelines the presence of at least three of the five criteria comprising of abdominal obesity, hypertriglyceridemia, low high-density lipoprotein (HDL) cholesterol, raised blood pressure, and impaired fasting glucose are required for metabolic syndrome. Only few research workers simultaneously observed glycemic and lipid abnormalities, along with alternations in central obesity or blood pressure in antipsychotic naïve patients that too not covering all the criteria of metabolic syndrome though studies on prevalence of metabolic syndrome with antipsychotic treated patients are fairly common. In the present study in the olanzapine group only 7 patients out of 48 developed metabolic syndrome in comparison to iloperidone where none of the patient could be characterized to develop metabolic syndrome. This clearly established the safety of iloperidone over olanzapine since metabolic syndrome is clearly an important risk factor for cardiovascular morbidity/ events. In our study no serious adverse effects requiring hospitalization were observed with either agent. No case of diabetic ketoacidosis has been noted despite hyperglycemia with olanzapine.

Limitations of study

Larger number of patients should have been included for more authentic clinical outcomes.

Conclusion

Data pertaining to long term clinical use of iloperidone are still too sparse for comparative evaluation with olanzapine. Definitely, more long term clinical trials should be carried out to comparatively evaluate metabolic adverse effect profile particularly in respect to treatment emergent weight gain, and adverse outcomes on fasting blood sugar and lipid profile. However, our study supports long term safety and tolerability of iloperidone over olanzapine for the treatment of psychosis.

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Original Article

A Study of Psychiatric Comorbidity in Infertile Couples

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ABSTRACT

Background: *Psychiatric comorbidity in infertile couples is a reality but is often under-diagnosed and under treated as there is tendency to explain away the symptoms experienced by the infertile couples.* ***Aim:*** *The aim of this study was to study the psychiatric comorbidites in couples with infertility and to compare them with matched control couples.* ***Material and Methods:*** *A total of 60 couples (30 couples in each group) who gave informed consent formed the two groups - the fertile group and the infertile group who were then subjected to General Health Questionnaire-12 (GHQ-12) in Hindi. A score of $\geq$ 3 warranted a psychiatric assessment for psychiatric morbidity. Schedule for Affective Disorder and Schizophrenia- Change Bipolar (SADS-CB) was applied for assessment of sub-syndromal symptomatology and psychiatric disorders. A score of > 2 on a sub-item of SADS-CB rendered detailed assessment and mental status examination. Diagnosis was established according to ICD-10 criteria.* ***Results:*** *A total of 46.6% individuals in the infertile group were found to have an Axis-I psychiatric disorder. Substance abuse especially nicotine was the most common psychiatric disorder found in 9 individuals (15.5%).This was followed by depressive disorder (10%) and adjustment disorder (8.33%). There was significantly higher proportion of female subjects in the infertile group (n = 14,46.6%) as compared to the fertile group (n=4,13.3%), who had an AXIS-I psychiatric disorder of some kind (p=0.020). Finally, the comparison between the infertile (n =28,46.6%) and the fertile group (n=10, 16.66%) revealed significantly higher (p = 0.03) prevalence of Axis-I psychiatric disorders among the former.* ***Conclusion:*** *The present study shows that couples with infertility are more prone to co morbid disorders like substance use, depression and anxiety, with females being more vulnerable than males. The presence of psychiatric referrals in infertility clinics should be a positive step towards recognition and treatment of psychiatric disorders.*

Keywords: Infertility, Psychiatric comorbidity, Axis I disorder, Substance abuse, Depression.

Introduction

Infertility is defined as one year of unprotected intercourse without conception.[1] In India surveys have found that 8% of women have infertility, of which 6% having primary infertility and 2% having secondary infertility.[2]

Infertility is a deeply wounding experience and as negative, has potential to affect both partners individual well being and their relationship with each other. The stigmatization of having difficulty in conceiving a child or being childless is evident in all the societies and prominently in India, where family unity and parenting continue to be of core value, infertile couples are subject to more disgrace and psychological distress. Anxiety and depressive symptoms are common after being diagnosed

infertile and many individual suffer from psychological distress during infertility treatments. A study conducted by Sule et al. conducted in 2015 found psychiatric morbidity to be present in 39.16 % of the study group.[3]

Significant psychiatric co morbidity in infertility is seen in large number of studies done in western countries but very few studies have been done in Indian subcontinent.

Aim

The aim of this study was to study the psychiatric comorbidites in couples with infertility and to compare them with matched control couples.

Material and Methods

The infertile couples were recruited for the study during the infertility assessment phase. Couples were new to their diagnosis of infertility and had not undergone any treatment for infertility at the time they were recruited for the study. The couples were considered infertile when they had been unsuccessful in attempts to conceive a child with natural methods for more than a year. A total of 60 couples (30 couples in each group) who gave informed consent formed the two groups - the fertile group and the infertile group.Only those individuals were included who fulfilled the inclusion and exclusion criteria were included in the study.

Inclusion criteria for the cases

1. Couples in the age group of 20 to 45 years.
2. Couples diagnosed as infertile due to any cause.
3. Couples giving informed consent.

Exclusion criteria for the cases

1. Couples in which either the wife or the husband was not willing to give informed consent.
2. Couples having previous known Axis-I psychiatric illness.

Inclusion criteria for the controls

1. Couples in the age group of 20 to 45 years.
2. Couples having at least one healthy living child.
3. Couples with female in her 2nd trimester of pregnancy.
4. Informed Consent.

Exclusion criteria for the controls

1. Any known Axis-I psychiatric disorder.
2. Couples in which either the wife or the husband not willing to give informed consent.
3. Females having complicated obstetric condition and/ or knowing the status of congenital malformation in the baby, if present.
4. Couples having congenital abnormality (i.e. mental retardation, cerebral palsy, etc.) in the present child.
5. Couples having secondary infertility or any concurrent illness associated with infertility.

Methodology

Each couple (Cases or control) after being included in study was further evaluated. Detailed history and physical examination was done according to semi-structured Performa. Then the subjects were administered following tools:

1. *GHQ-H (General Health Questionnaire-Hindi Version)*[4]

The General Health Questionnaire (GHQ) is a measure of current mental health and since its development by Goldberg D *et al.*, it has been extensively used in different settings and different cultures. A wide number of variants are available; the shortest being the GHQ-12.

A score of more than or equal to 3 is taken as significant and warrants the use of detailed assessment of an existing psychiatric illness.

A Hindi version of GHQ has been translated for application in Northern India. The reliability of GHQ Hindi Version (GHQ-H) was tested by translation retranslation method and split half method using the score of 500 patients attending the psychiatry OPD (Jaipur, India) and 500 normal subjects. The tool was found to be sensitive and reliable.

2. *Schedule for Affective Disorder and Schizophrenia-Change Bipolar scale (SADS-CB)*[5]

SADS was developed by Endicott and Spitzer [1978] to reduce information variance in both the descriptive and diagnostic evaluation of a subject.

In SADS-CB, first 27 questions are related to depression and anxiety. The scale asks for symptoms

and functioning during the past week. Most ratings take into account the intensity, frequency and duration of symptoms over the past week.[5] A score of > 2 on a sub-item of SADS-CB rendered detailed assessment and mental status examination.

3. *The ICD – 10 Classification of Mental and Behavioural Disorders* [6]

ICD 10 Classification of Mental and Behavioural Disorders which have been designed by World Health Organization Geneva in 1992 for the diagnosis of psychiatric disorders.

Statistical analysis

The collected data were entered into Statistic package for Social Sciences (SPSS) version 15.1.Chi–square test and Student t test were used to identify significant differences between groups. A p–value of less than 0.05 was considered statistically significant.

Results

A total of 48 infertile couples coming to the OPD of Obstetrics and Gynaecology were screened during the period of the study, out of which 30 couples (60 subjects) fulfilled the selection criteria. A total of 18 couples could not be included in the study owing to different reasons, the most common being not turning up on appointed day (18.75%). 64 age and sex matched fertile couples were also screened during the period of the study. 34 couples had to be excluded owing to various reasons thus the control group also resulted in 30 couples (60 subjects) who fulfilled the selection criteria.

The demographic features of subjects are shown in Table 1. a and 1b. Majority of the subjects fromeither of the genders were aged between 20-30 years in both the groups. The mean age of the females in the infertile group was 27.93 ± 4.49 years as against 28.30 ± 4.22 years in the fertile group. Like-wise, the mean age of the males in the infertile and the fertile group was 31.43 ± 4.88 years and 30.63 ± 4.51 years respectively. Among the females in both the groups, maximum numbers of subjects were illiterate. The maximum proportion of males (n = 9; 30%) in the infertile group were educated upto pre-school level whereas in the fertile group, the maximum number of males (n = 8; 26.6%) had an education upto the level of intermediate. The majority of the couples in both the groups were Hindus, having a rural domicile with income less than Rs. 5,000 per month and a duration of marriage ranging between 5 to 10 years.

There were no statistically significant

Table-1b: Socio-Demographic Profile of the subjects

	Infertile Couple (N=30)	Fertile Couple (N=30)
	AGE (Years)	
	Religion	
Hindu	16 (53.3%)	19 (63.3%)
Muslim	12 (40%)	10 (33.3%)
Other	02 (6.6%)	01 (3.3%)
	Domicile	
Rural	23 (76.6%)	20 (66.6%)
Urban	7 (23.3%)	10 (33.3%)

GHQ 12 Scores of the sample

Table-1a: Socio-Demographic Profile of the subjects

Socio-Demographic Variables	Females		Males	
	Infertile Couple (N=30)	Fertile Couple (N=30)	Infertile Couple (N=30)	Fertile Couple (N=30)
	AGE (Years)			
20-30	20 (66.6%)	19 (63.3%)	17 (56.6%)	16 (53.3%)
30-40	10 (33.3%)	11 (36.6%)	12 (40%)	14 (46.6%)
>40	—	—	01 (3.3%)	—
Education				
Illiterate	12 (40%)	11 (36.6%)	4 (13.3%)	3 (10%)
Pre-School	8 (26.6%)	10 (33.3%)	9 (30%)	7 (23.3%)
High School	4 (13.3%)	5 (16.6%)	5 (16.6%)	7 (23.3%)
Intermediate	4 (13.3%)	3 (10%)	6 (20%)	8 (26.6%)
Graduate	2 (6.6%)	1 (3.3%)	6 (20%)	5 (16.6%)

demographic differences between fertile and infertile subjects, in terms of age, educational status, religion, domicile, income and duration of marriage.

Table 2 shows GHQ-12 scores of study subjects of both fertile and infertile couples. The GHQ-12 assessment of the infertile group revealed a total of 19 (63.3%) females and a total of 12 (40%) males to be having a score of ≥ 3.

A significantly higher number ($p = 0.002$) of infertile females (n = 19, 63.3%) scored above the cut-off scores of GHQ-12 as compared to the 23.3% of the fertile females. Similarly, statistically significant difference ($p = 0.045$) was seen among the males. In comparison to 40% (n = 12) infertile males, only 16.6% males in the control group scored above the cut-off scores for cases on GHQ-12.Though the difference between the two genders within the groups was not statistically significant.

On comparing the two groups, for both the genders, the proportion of subjects with scores ≥ 3 in the infertile group (n = 31, 51.6%) was found to be significantly ($p < 0.05$) higher as compared to that in the fertile group (n = 12, 20%).

Table 2: GHQ-12 Scores of the Study Subjects of both the groups

GHQ –12 Scores	Infertile Couples (N=30)		Fertile Couples (N=30)	
	Female (N=30)	Male (N=30)	Female (N=30)	Male (N=30)
< 3	11 (36.6%)	18 (60%)	23 (76.6%)	25 (83.3%)
≥ 3	19 (63.3%)	12 (40%)	7 (23.3%)	5 (16.6%)
Inter-gender Comparison within group	$\chi^2 = 3.270$ (df = 1); p = 0.071 (NS)		$\chi^2 = 0.417$ (df = 1); p = 0.519 (NS)	
Comparison inter-group females	$\chi^2 = 9.774$ (df = 1); p = 0.002 (S)	Comparison inter-group males	$\chi^2 = 4.022$ (df = 1); p = 0.045 (S)	

SADS-CB scores for subjects of infertile group

Table 3 shows gender wise comparison of mean SADS-CB scores for subjects of infertile group. The symptoms of worry, self-reproach, pessimism, somatic and psychic anxiety, phobia, insomnia, anergia, weight loss, ahnedonia, concentration difficulties and agitation were statistically significant on SADS-CB in the infertile females as compared to the males. Overall scores also showed a significant difference between the two genders. Overall mean scores were significantly higher in the females as compared to the males ($p = 0.015$).

Psychiatric disorders in subjects

Table 4 shows psychiatric disorders in subjects of both groups. Significantly higher proportion of female subjects in the infertile group, as compared to the fertile group, had an AXIS-I psychiatric disorder of some kind ($p = 0.020$). Within the group, there was no significant difference between the two genders regarding the proportion of subjects with Axis-I disorder ($p > 0.05$).A total of 28 individuals in the case group were found to have an Axis-I psychiatric disorder. Of these individuals, substance abuse especially nicotine was the most common psychiatric disorder found in 9 individuals (15.5%).This was followed by depressive disorder and adjustment disorder. Among the 14 infertile females having a psychiatric disorder, depression (n = 4; 28.57%) and adjustment disorder (n = 4; 28.57%) were the most common psychiatric disorders. Among the infertile males having a psychiatric disorder (n = 14), most common was substance abuse (n = 7, 50%) followed by sexual disorder (n = 3; 21.42%), depression (n = 2; 14.28%), adjustment disorder (n = 1; 7.14%) and dysthymia (n = 1; 7.14%).A total of 4 fertile females (13.3%) and 6 fertile males (20%) were diagnosed with an Axis-I psychiatric disorder. The most common disorder among fertile females was GAD which was found in 50% (n=2) females, whereas substance abuse was found in 75% of those 6 males.

Discussion

The study has shown that high levels of psychiatric morbidity are experienced by individuals suffering from infertility especially female. A total of 46.6% individuals in the infertile group were found to have an Axis-I psychiatric disorder. Substance abuse especially nicotine was the most common

Table-3: Comparison of mean SADS-CB scores for subjects of infertile group

S. No	Item	Female (n=30)		Male (n=30)			
		Mean	SD	Mean	SD	"t"	"p"
Q. 1	Subjective feelings of depression..	1.37	1.00	0.90	0.80	1.994	0.051
Q. 2	Worrying, brooding, painful preoccupation..	0.87	1.07	0.23	0.43	2.998	0.004
Q. 3	Feeling of self-reproach..	0.50	0.82	0.13	0.35	2.257	0.028
Q. 4	Negative evaluation of her/ himself..	0.77	1.01	0.37	0.67	1.813	0.075
Q. 5	Discouragement, pessimism, and hopelessness..	0.93	0.94	0.33	0.66	2.851	0.006
Q. 6	Suicidal tendencies.	0.30	0.60	0.07	0.25	1.973	0.053
Q. 7	Somatic Anxiety..	1.70	0.92	1.27	0.74	2.017	0.048
Q. 8	Psychic Anxiety..	1.00	0.79	0.40	0.50	3.525	0.001
Q. 9	Phobia..	0.67	0.84	0.17	0.38	2.959	0.004
Q. 10	Obsessions or Compulsions..	0.37	0.61	0.27	0.45	0.719	0.475
Q. 11	Insomnia..	1.27	0.98	0.73	0.83	2.277	0.026
Q. 12	Initial Insomia..	0.67	0.48	0.47	0.51	1.569	0.122
Q. 13	Middle Insomia..	0.23	0.43	0.17	0.38	0.637	0.527
Q. 14	Terminal Insomia..	0.03	0.18	0.00	0.00	1.000	0.321
Q. 15	Sleeps more than usual..	0.13	0.35	0.03	0.18	1.401	0.167
Q. 16	Subjective feeling of lack of energy or fatigue..	0.73	1.01	0.30	0.60	2.017	0.048
Q. 17	Appetite compared to usual	0.43	0.68	0.27	0.52	1.067	0.290
Q. 18	Rate of weight loss..	0.30	0.47	0.00	0.00	3.491	0.001
Q. 19	Excessive concerns with bodily functions..	0.73	0.98	0.40	0.77	1.465	0.148
Q. 20	Pervasiveness of loss of interest or pleasure..	0.77	1.01	0.23	0.63	2.465	0.017
Q. 21	Concentration difficulties..	0.27	0.69	0.00	0.00	2.112	0.039
Q. 22	Subjective feeling or anger..	1.07	0.87	1.00	0.83	0.304	0.762
Q. 23	Overt expression of irritability..	0.23	0.57	0.17	0.38	0.535	0.595
Q. 24	Agitation not associated with manic syndrome..	0.13	0.35	0.00	0.00	2.112	0.039
Q. 25	Psychomotor retardation..	0.17	0.53	0.00	0.00	1.720	0.091
Q. 26	Mood worse in the morning..	0.80	0.89	0.47	0.57	1.731	0.089
Q. 27	Mood worse in the evening..	0.87	0.90	0.50	0.73	1.733	0.088
	Total Score	17.27	15.95	8.87	9.05	2.509	0.015

Table-4: Axis–I Psychiatric Disorders in Subjects of both groups

Psychiatric Disorder	Infertile Group (N = 30)		Fertile Group (N = 30)	
	Female (N = 30)	Male (N = 30)	Female (N = 30)	Male (N = 30)
Depressive Disorder	4 (13.3%)	2 (6.6%)	1 (3.3%)	0
Adjustment Disorder	4 (13.3%)	1 (3.3%)	1 (3.3%)	0
Generalized Anxiety Disorder	2 (6.6%)	0	2 (6.6%)	1 (3.3%)
Dysthymia	2 (6.6%)	1 (3.3%)	0	0
Sexual Disorder	0	3 (10%)	0	1 (3.3%)
Substance Abuse (Nicotine)	2 (6.6%)	7 (23.3%)	0	4 (13.3%)
Axis-I Disorder	14 (46.6%)	14 (46.6%)	4 (13.3%)	6(20%)
No Axis –I Disorder	16 (53.3%)	16 (53.3%)	26 (86.6%)	24 (80%)
Inter-gender Comparison within group	$\chi^2 = 1.926$ (df = 1); p = 0.165 (NS)		$\chi^2 = 0.741$ (df=1); p = 0.389 (NS)	
Comparison inter-group females	$\chi^2 = 5.455$ (df = 1); p = 0.020	Comparison inter-group males	$\chi^2 = 3.628$(df = 1); p=0.071	

psychiatric disorder found in 9 individuals (15.5%). This was followed by depressive disorder (10%) and adjustment disorder (8.33%). There was significantly higher proportion of female subjects in the infertile group (n = 14,46.6%) as compared to the fertile group (n = 4,13.3%), who had an AXIS-I psychiatric disorder of some kind (p = 0.020). Finally, the comparison between the infertile (n = 28,46.6%) and the fertile group (n = 10, 16.66%) revealed significantly higher (p = 0.03) prevalence

of Axis-I psychiatric disorders among the former. Among the 14 infertile females having a psychiatric disorder, depression (n = 4; 28.57%) and adjustment disorder (n = 4; 28.57%) were the most common psychiatric disorders. Among the infertile males having a psychiatric disorder (n = 14), most common was substance abuse (n = 7, 50%). Gender-wise assessment of the sub-syndromal psychiatric symptoms in the two groups revealed mixed anxiety and depressive features to be the most common symptom. SADS-CB and GHQ-12 scores were significantly higher in infertile groups and also overall mean scores of SADS –CB was higher in infertile females as compared to infertile males.

Other studies done in India yielded similar results. Sule et al 2015 revealed psychiatric morbidity in around 40% of the study population.[3] In a study conducted by Thara et al, 57.5% of the females in the infertile group had psychiatric disturbance.[7] Also these findings are in agreement with previous studies.[8-13] In India, women are symbolized as the image of procreation. Motherhood is considered a source of power for a woman, one that determines the strength of her marital bonds and respectful status in family and society. Infertile women are considered bad omen in our society and are not allowed to participate in religious ceremonies. They are often divorced or separated as the onus of child bearing is on female partner. Mindes *et al*. reported in their study that the social role imposed by society to women of motherhood/pregnancy can result in the perception that infertility is a threat and thus produces higher anxiety levels and as women can react negatively but men can choose to deny and forget.[14] This point of view can explain the significantly higher levels of depressive symptoms and anxiety in women as compared to males.

Substance abuse especially nicotine and alcohol was found to be more in infertile couples. Also fertile females had no consumption of any substance in compared to infertile females who consumed nicotine in the form of tobacco (chewable). Substance abuse especially nicotine is also considered to relieve stress and also is culturally accepted in our society which explains the findings in our study.

Due to the medicalization of the problem of infertility, the priority of the specialized infertility centers is the treatment of the physical problems. The psychological problems are often neglected and not given their due importance. Ignoring the psychological factors and merely considering infertility as a medical problem will therefore create huge obstacles in understanding and treating such individuals from a holistic point of view and would decrease the outcome of such treatments. Hence, infertile couples should be routinely evaluated for psychological disturbances and psychiatric morbidity to maximize their health.

The study was conducted in a tertiary hospital and is representative of the flow of patients at this hospital. So the findings from this study cannot be generalized. The sample size of the present study was small and the findings need to be explored further with a larger sample size.

Conclusion

In conclusion, the present study showed that couples with infertility are more to prone to co morbid disorders like substance use, depression and anxiety, with females being more vulnerable than males.The presence of psychiatric referrals in infertility clinics should be a positive step towards recognition and treatment of psychiatric disorders. In this way patients suffering from psychiatric symptoms could be identified and given care. This can lead to beneficial results in supporting patients with infertility by health professionals.

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Original Article

Effectiveness of Gestalt Therapy based on Mindfulness on Assertiveness of Iranian girls students

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ABSTRACT

Background: *Regarding of this fact that lack of assertiveness is one of the serious problem among students, present study was carried out to investigate the effectiveness of Gestalt Therapy Based on Mindfulness on assertiveness of high school students.* ***Method:*** *The design of this study was quasi-experimental, pretest-posttest with control group. In so doing a high school was selected using by available sampling and thirty students who had low extent of assertiveness were selected randomly and then were assigned to control and experimental randomly equally. To collect the intended data, the researchers made use of assertiveness questionnaire. data commenced analyzed by using SPPS software and Analysis of Co-variance (ANCOVA).* ***Results:*** *The results of pretest-posttest showed that mindfulness-based Gestalt therapy affected the extent assertiveness positively and was statistically significant.* ***Conclusion:*** *Given the effects of mindfulness-based Gestalt therapy, it is suggested that this therapy be used by specialists to prevent its adverse effects on behavioral disorder.*

Keywords : *Gestalt Therapy, Mindfulness, Assertiveness, Students*

Introduction

Adolescence is regarded as a turning point and a considerable stage in growth and social and emotional evolution of the individuals. As far as this stage is concerned, there exists a requirement for emotional and affection balance particularly a balance between emotions and wisdom, self-awareness, selecting goals in the life, emotional independence of the family, establishing healthy relationship with others, acquiring necessary social skills, understating healthy and effective life are among the most important needs of adolescents.[1]

By expanding of world for adolescents' makes disruption and renovation their secure zone and all their social, emotional, intelligent, physical and finally biological aspects change. Many adolescents for challenge this changes resort to shyness and social isolation. Anyway the puberty affects on the intensity of shyness and also shyness makes this stage undergo a lot of reactions.[2] So the adolescence is better to acquire some skills to facilitate their relationship with others and increase their personal development. Assertiveness is one of these skills that play a major role in interactions among individuals.[3]

Assertiveness in psychology is rooted in the education of social skills and behavior therapy. Theorists consider it commonly as the proper expression of any kind of feelings, except stress, toward others. It causes individual to behave on the basis of their interests, expresses his feeling honestly and express the truth without the feeling of fear from others. In additions they acquire skill of saying no.[4]

Assertiveness is a social skill which promotes an individual's well-being.[5] In addition in can enhance self-esteem and interpersonal relationships[6] and decreasing the social anxiety.[7]

Lack of assertiveness associated with poor social skills in future that consist of crime, defection in educational and cognitive function æleaving schooling and alcoholism anti-social behaviors and psychological disorder.[8] Conversely, having assertiveness results in individual conforming with environment, feeling of efficacy, and internal control and these feelings reinforce interactions with others, self-confidence, and self-esteem.[9] Those people who don't have assertiveness tend to have inactive behaviors. Among the factors that result in incidence of inactive behaviors in individuals or not having the assertiveness cause to desirable believes and ideas and anxious thoughts. People that do not have assertiveness try to hide their anxious and Trying to hiding and controlling the negative experiences is one of the reasons related to emotional and physical well-being.[10]

Attempt to repress these thoughts can lead to increasing the intensity and frequency of these thoughts and if this attempt concerns the overlooking negative emotions, so unconsciously, its impact will be more severe.[11]

In psychological literature, they are concepts that basic are experience of the thoughts, quit attention and awareness such as mindfulness and Gestalt therapy. These approaches are seem to helping these individuals in awareness them of their thoughts and preventing their repression and concealing.

The main goal in Gestalt therapy is to increase the awareness. The therapist help the client to enhance his awareness in a way that it makes it possible for him to accept again what he alienated from himself before. Awareness in Gestalt theory includes: knowing the environment, knowing self, accepting self and ability to make contact. by attaining awareness they are made capable of encountering the rejected parts of their mind, accept it and experience it thoroughly. They can be integrated and completed to proceed in certain paths.[11]

Awareness are knowledge or non-verbal sense that accrue here and now. Awareness included" knowing" and also "being". If we recommend that our client to give attention his breathing mechanism, in fact we mean that he knows that he is breathing and that he is experiencing breathing moment and moment. This is exactly awareness continuous experience that can be remedial in counseling. Therefore one of the Gestalt therapist concerns increase the awareness of the clients-awareness of thinking, behavior and feeling, knowing of your relationship, relationship with others, the effects on the surrounding and vice versa.[12]

Gestalt therapy has demonstrated its effectiveness in various research including : Expressing anger and increasing control,[13] Self-esteem, depression, feeling of loneliness in ladies,[14] decrease social phobia,[15] decreasing the phobic behavior,[16] assertiveness,[17] loneliness and lack of association with others,[18] unresolved emotional problems to associate with other.[19]

Although Perlz (1969) believe that it follows existence heritage that according to double-vision Docherty, prioritizes mind than body, but indeed what remains for us where reverse double-vision that emphasis on them more than the body. Overlooking of the thinking from the part of Perlz, prompts a kind of ani-thinking that bear out vacuum organisms. Gestalt therapy is to balance overemphasis on the biology need to the theory that pay attention to cognition and thinking.[20]

Mindfulness is one of the approaches that are base on cognition that can be combined with other approaches. It seems that it can be combined with Gestalt theory to moderate it. Among approaches that have been combined with mindfulness are Mindfulness-based stress reduction (MBSR), Mindfulness-based cognitive therapy (MBCT), Acceptance and Commitment Therapy (ACT), Dialectic Behavior Therapy (CBT), Behavior Activation (BA), Functional Analytic Psychotherapy (FAP), Integrative Behavioral Couple Therapy (IBCT), and Cognitive Behavioral Analysis System of Psychotherapy (IBCT).[21]

Mindfulness means particular attention, purposefully, at the present, without prejudice.[22] The most important part of mindful exercises are awareness that means commitment to the mindfulness. So that person can, with a open heart, non-judgmental and un-reactive move from one moment to another one.[23]

Although the main purpose of mindfulness is

not pacification, but observing negative events without any kind of judgment about them or physiological stimulation result in calmness. Mindfulness is a skill that makes it possible for person to perceive the events less annoying than they are in reality. When a person is mindful of present time, he will no longer pay attention previous or past events.[24]

For instance, because of in individuals that don't have the sense of assertiveness, they get worry about the possible consequences of experience that through mindfulness person can focus on present time and the worry decreases. Through mindfulness decrease the effect of hidden feelings and knowledge and the awareness of the person increases with regard to his thoughts.[25] Also, enhancement in mindfulness can result in change in social processing in different aspects of inter-personality conflicts[26]. Dekeyser, Raes, Lejssen, and Saraand[27] indicated, in their studying that four factors of mindfulness are associated to better description and diagnosis of bodily feelings and anxiety and less disruption.

Mindfulness can be helpful in disentangling people from automatic thoughts, desirable habits and behavioral models and so it can play a major role in managing behavior.[28] In addition, mindfulness based stress reduction is effective in increasing students' assertiveness.[29]

Regarding to the fact that adolescent years are among the turning points in growth and social development and lack of assertiveness can result in behavioral disorder in the future (delinquency, defection in the educational and cognitive performance, leaving the school and alcoholism, anti-social behavior and so on). Mindfulness and Gestalt therapy have the potential background to be combined with each other such as both approaches emphasize on "awareness", "present time and being " and "here and now". In addition to moderating Gestalt theory with regard to bio-cognition, in current study this approach is combined with cognition-based mindfulness. On the other hand mindfulness is combined with different approaches such as cognitive and behavioral ones. However mindfulness has not been combined with other approaches so far. So the necessity of carrying current research is understood. But it not combined with gestalt therapy in any research. Current study issue at investigating "does Gestalt Therapy Based on Mindfulness Affect in Students' assertiveness?"

Material and Methods

The research design was quasi-experimental type of pretest – posttest method using experimental group. Research population included all female high school students attending high schools in Iran. In so doing Gambrel and Ridgi assertiveness questionnaire was distributed among students. Then from among those students who attained the lower marks in the questionnaire were selected randomly and were assigned to experimental and control group equally. Treatment periods design for nineteen minutes for twice a week corresponding to protocol of mindfulness abase on gestalt therapy relevant to assertiveness.

Gambrel and Ridgi's Assertiveness Questionnaire[30] included forty main statements, that Iranian form has 21 materials. Each material in the questionnaire involves a situation that required courageous behavior. The material are developed on the basis of Likert Five-choice Scale including (1) I certainly get sad (2) I get sad so much (3) I averagely get sad (4) I get sad a bit (5) I never get sad. In addition, Gambrill and Richey[30] reported a reliability coefficient of 0.81 for this scale. while the reliability of the questionnaire in present research was reported to be. 80 using by Cronbach's alpha. Gestalt Therapy Based on Mindfulness protocol is presented in Table 1 below.

Results

The age of groups was between 15 and 18 that 20 percent of whom were 15 years, 38 percent 16 years,35 percent 17 years, and 7 percent 18 years old. The extent of assertiveness ranged from 22 to 45.

In Table 2 statistical indices of mean score and standard deviation were presented for intended groups.

As it is indicated in table 1 above the mean score related to assertiveness for two groups in posttest decreased compared to that of pretest. But this reduction is not very.But this decreasing in experimental group is considerable. To measure the significant of Gestalt Therapy Based on Mindfulness and removing the effects of pretest the researchers made use of Analysis of Co-variance (ANCOVA).

Table-1: Mindfulness-based gestalt therapy protocol

Description	Agenda	Sessions
First Meeting	Introduction and Presenting the Rules	1. Getting acquainted with group members and leader of the group, purpose and condition of membership presence in the group and thinking that must be follow (confidentiality, avoiding criticism, judgment 2- Some explanations about assertiveness were presented.
Second & Third Meetings	Increasing Awareness and Familiarity with relaxation	1. Awareness of feelings, thoughts, bodily movements, Awareness of internal conflicts and being in now and how feelings they have in present time. 2. Practice of circling among group members. In this practice group members express their feelings and they are encouraged to restraint their undesirable feelings. 3. Through awareness of breathing, body, voices, using my ego rule, saying one's features loudly and saying that he is aware of …, one can broaden his awareness of other features of personality. 4. Acquaintance with body relaxation and training him about body relaxation on fourteen muscles including wrist, arm, muscles in the back of calf, thighs, chest, shoulders, neck, lips, eyes, jaws and forehead.
Fourth & Fifth Meetings	Commitment and Mindfulness	1. Increasing responsibility and cooperation among members: Members understood their roles, and recognize their responsibilities and assignments, and investigate the extravagance and recreation in each case. 2. Members, through enumerating their duties and responsibilities, will be familiarized with size of play role, and that they analyze their possible deficiencies and over expectations. In addition each person's feeling investigated for each rolling. 3. Training of breathing mindfulness, training inhaling and exhale properly along with relaxation and withholding the thoughts of other things and teaching breath watching techniques. In addition, group members were made aware of role and responsibilities interference
Sixth & Seventh Meeting	Approaching and familiarity with thoughts	1. Getting to contact with self and others. 2. To practice of watching the relationship among mood and activities. 3. Training mindfulness of thoughts, training attention to the mind, positive and negative thoughts, desirability and undesirability of the thoughts, letting to entering negative and positive thoughts in the mind and easily exiting of them without any judgment and deep thinking.
Eighth Meeting	Summary	Reviewing previous sessions, presenting the feedback to other member of group, and revision of group experience

Table-2: Mean, Standard Deviation, and Variance in Pretest and Posttest

Groups	N	Mean	Standard Deviation
Pretest for Experimental	15	13.60	24.32
Posttest for Experimental	15	6.27	22.10
Pretest for Experimental	15	26.32	26.40
Posttest for Experimental	15	25.31	7.50

Table 3: Kolmogorov–SmirnovTest for Assertiveness

Group	Statistics	Significance
Pretest	0.97	0.05]
Posttest	0.87	0.05

But prior to running ANCOVA it is necessary that its assumptions should be tested. To attain this end, they run Kolmogorov – Smirnov Test to test normality of the data and Levene's test to assess homogeneity of regression slop that results are presented in Tables 3 and 4 below.

Table-4: Levine's Test to Analyze Homogeneity of Variance in Assertiveness

Dependent Variable	df1	df2	F	Statistical Significance
Assertiveness	1	28	0.53	0/63

p > 0/05

After Taking into account the results of Kolmogorov–Smirnov (P > 0. 05) in table 3, assertiveness has normal distribution.

The results of Levine's Test to test the homogeneity of variance for assertiveness found to be significant ($p < 0.05$). Therefore homogeneity of the variance assumption was accepted (Table 4)

5 Table below shows the results of Analysis of Covariance (ANCOVA) for the effects of Mindfulness-Based Gestalt Therapy on

Table-5 : The Results of ANCOVA for research Variables

Source of Variety	Sum of Squared	Degree of Freedom	Mean of Squared	F	Eta Squared	Significance Level
Group	140,15838	2	140.15838	883.212		0.001
Assertiveness	109.1095	1	109.1095	721.14	0.493	0.001
Error	757.2008	27	398.74			

Assertiveness.

The results of Analysis of Covariance, as it was presented in Table 5 above, approved the fact that after moderating the pretest scores mindfulness-based Gestalt Therapy can increase the assertiveness and it statistically significant (F = 02. 64) (p > 0.01). The extent of Eta Squared is 0.49 and statistical power was equal to one. The above results indicate that Gestalt Therapy Based on Mindfulness is effective in increasing students' assertiveness and it is statistically significant (p > 0.01).

Discussion

This research aimed to investigate the effectiveness of Mindfulness-base Gestalt Therapy on Students' Assertiveness. This study showed that this treatment increases students' assertiveness and is statistically significant.

Reviewing the relevant research literature, be homogeneous or heterogeneous research, cannot bear the same results but researches can be brought up that, using mindfulness and Gestalt therapy, pointed to relationship of variables at their disposal and assertiveness.

The previous researches related to Gestalt therapy approved its effect on social phobia, assertiveness, expressing anger and increasing control, self-esteem, depression and loneliness, decreasing phobia behaviors, loneliness, not relationship with other, Unresolved emotional problems meant to significant effect of Gestalt Therapy. From this researches can refer to the studies carried out by Zalpoor,[13] Farahzadi et al,[15] Haji Hasani,[17] Bahrami et al,[14] Martinez,[16] Harris[18] and Paivio, and Greenberg[19] that are all in line with current research.

The only research that directly investigated the effects of mindfulness based stress reduction on assertiveness was that of Golpour[29] which indicated that this method of mindfulness based stress reduction was effective in increasing mindfulness and assertiveness among students suffering from test anxiety. They found that this method is one of the methods that can increase awareness and consciousness that can accordingly enhance efficacy of the people. Also it is effective in increasing assertiveness and decreasing test anxiety.

Effectiveness of this method that have been studied in variable related to assertiveness, such as those of Harton- Deutsch and Horton,[26] Jafari Fard et al,[31] Dekeyser et al,[27] Martinez[16] and Fennell[32] all of which are consistent with current research.

The different between this study and previous is that in this study, given the common grounds between Gestalt and mindfulness such as focusing on present moment, creating insight and awareness in the client that results in their recognition of the worry factors, and pay attention to how to breathing, the combined effectiveness of both Gestalt and mindfulness is used. In previously research used to only one of these approaches but in current research, as mentioned before, to moderate biology-oriented Gestalt Therapy, that use of mindfulness based stress reduction.

To explain this research finding, can be remark that clients in Gestalt are encountering some emotions and handle them. They are become aware of their behaviors. In this approach more emphasis to role of awareness of person from his surroundings through senses, bodily feelings, and discovering emotions. Contact with self in present time is more important rather than past and future. In addition to emphasizes to social surrounding and context. It use of different techniques in this approach. That techniques increases the individual responsibility. To sum up Gestalt emphasis on present time, awareness, responsibility result to in person's overcoming on himself and his surrounding and power of choice that finally increasing the assertiveness.

As mentioned before, those people who lack of assertiveness are more likely to have inactive behavior that resulting from undesirable beliefs and anxiety thoughts. According to Gestalt Therapy, anxiety is the gap between present and future time and those people who are lack of courage, in face

to social relationship in particular and other routine in general are more likely to be anxious. In addition, this people inflicted try to conceal their anxiety. An attempt to repress these thoughts leads to their intensification. Thorough Gestalt Therapy and mindfulness based stress reduction, by experience these thoughts and being aware of them, makes it possible to accept the denied parts of the mind.

In Gestalt Therapy being aware of thinking and feeling process, behaving mechanism, knowledge of relationship by our self, relationship with other, affects on environment, and in return environment affecting him mutually leads to person has not assertiveness, that have more moderate behaviors toward self, surroundings and others.

Gestalt Therapy helps people to go beyond self-deceiving, defenses, familiar layers and, so that, they encourages that showing the feelings that are not directly experience. According to Gestalt therapy, through life experiences and viewpoints of others one can internalize the values that want to live with them. It is thought that when internal motives of the person are prompted, his efficacy and capacity will exceed just coping with the problems[33].

In mindfulness based stress reduction, the awareness is attained through regular and repetitive exercise and it training includes maintain awareness voluntary and basis of pay attention to specific issue like breathing from moment to moment. If mind is diverted to thoughts, sounds, or other feelings, than the content of awareness is reserved and refer to attention to specific purposes. These processes are repeated continually. In this case the breathing binge used to returns the awareness to present moment and decreases the content of diversion in reality.

Regarding the fact those person that do not possess enough assertiveness are continually involved in anxious thoughts, this moment to moment awareness results in paying more attention to the content of message. In this case a preliminary concentration, like breathing, can act as mainstay that is used to return to present moment. In addition longstanding observation of thoughts makes it possible for us to have the same thinking pattern just as thoughts not necessary the reality.

Fennell[32] indicated, in his study, that mindfulness training increases the self-confidence. In mindfulness, more emphasis is maintained the awareness and notation involuntarily at the present moment and from moment to moment. This moment–by-moment attention increases meta-cognitive insight of the person toward the content of his thoughts. Then comprehensive observation of the thoughts makes it possible for us to develop the same thinking patterns. Thus mindfulness makes to meta-cognitive awareness toward to thoughts that person don't have assertiveness and also revise in his thoughts.

Several limitations should be noted regarding this study, First, the participants in the study were largely girls student and absence of perusing to determine its long-term effects. Therefore in future researches it can be and including pursued process. Also used to extended community. The results of study indicated that application of Gestalt Therapy Based on Mindfulness was effective in increasing assertiveness. Taking the results of study it is suggested that teachers and counselor use this method to increase students' assertiveness.

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Original Article

Dhat syndrome: A Profile of Patients attending Psychiatry Outpatient Department at a Tertiary Care Centre in Rural area of Rajasthan, India

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ABSTRACT

Introduction: *Dhat syndrome is undue concern about the debilitating effects of the passage of semen. N.N. Wig coined the term Dhat syndrome. The word "Dhat" derives from the Sanskrit word dhatu, meaning metal, elixir or constituent part of the body.* ***Aim:*** *To study the socio-demographic and clinical characteristics of male subjects with Dhat Syndrome.* ***Method:*** *107 male subjects with Dhat Syndrome fulfilled inclusion criteria. Subjects having age below 18 years or mental retardation were excluded.* ***Statistical Analysis:*** *After collecting the data, the statistical analyses were performed using the licensed version of Statistical Package for the Social Science Version 17 (SPSS-17). Descriptive analyses were computed in terms of mean and standard deviation for continuous variables. Nominal variables were computed in terms of frequency and percentage.Further inferential statistics like Chi square were applied as required.* ***Results:****The mean age of subjects was 25.2 years.Majority of the subjects were single (58.0%),educated graduate & above (54.2%), from rural locality (90.7%), from nuclear family (58.0%) and Hindu by religion (87.9%)****.*** *Majorityof the subjects reported of their own (73.8%). The patients of Dhat Syndrome with Nocturnal Emission were 46.7%, Dhat Syndrome with Premature Ejaculation were 15.9%, Dhat Syndrome with Erectile Dysfunction were 8.4% and the patients with Dhat Syndrome alone were 17.8%. History of masturbation was present in 59.8% of the patients. Among comorbidities, Anxiety spectrum disorders were present in 41.1% and Tobacco dependence in 30.8%.* ***Conclusion:*** *Dhat Syndrome continued to be a major problem among patients with sexual disorders, needs careful evaluation, psychosexual education and proper counseling. Misconceptions regarding Dhat syndrome prevalent among patients also need to be tackled carefully.*

Key words: *Dhat syndrome, Sexual dysfunction, Comorbidity, Nocturnal emission, Masturbation.*

Introduction

Dhat syndrome is undue concern about the debilitating effects of the passage of semen in urine. N.N. Wig coined the term "Dhat syndrome" and defined it as the vague somatic symptoms of fatigue, weakness, anxiety, loss of appetite and guilt attributed to semen loss through nocturnal emissions, urine and masturbation though there is no evidence of loss of

semen.[1] The word "Dhat" derives from the Sanskrit word *dhatu*, meaning "metal," "elixir" or "constituent part of the body" which is considered to be the most concentrated, perfect and powerful bodily substance, and its preservation guarantees health and longevity.[2] Myth prevalent among people of the Indian subcontinent is that "it takes 40 days for 40 drops of food to be converted to one drop of blood, 40 drops of blood to make one drop of bone marrow and 40 drops of bone marrow form one drop of semen.[3] ICD–10 classified Dhat syndrome as both neurotic disorder [F 48.8] and culture – specific disorder caused by undue concern about the debilitating effects of passage of semen.[4] Prevalence of dhat syndrome varies among psychosexual disorders ranging from18-65%.[5,6,7]

Aims of the Study

The main aim was to study the socio-demographic and clinical characteristics of male subjects with Dhat Syndrome.

Material and Method

The study was conducted in Psychiatry OPD with due permission from the Scientific and the Ethical Committee of National Institute of Medical Sciences and Research (NIMSR), Jaipur. Out of 125 patients who presented to our OPD with dhat syndrome, 18 patients were excluded. Out of which 10 were below 18 years of age, 5 did not gave consent for partici-pation and 3 were mentally retarded. 107 fulfilled the inclusion criteria.

Inclusion criteria: (a) Male patients with in an age group of 18 years & above, (b) Who gave a written informed consent for participating in the study

Excluded were the cases who: (a) Were below 18 years, (b) Did not gave a written informed consent for participation, (c) Had mental retardation.

Data collection: The data was collected by providing the subjects, who fulfilled the inclusion criteria, with (a) Patient Information Sheet, (b) Written Informed Consent Form and (C) Performa for socio-demographic and clinical profile" specially designed for study". Comorbidities including psychosexual disorders were diagnosed as per ICD-10 criteria.[4]

Statistical Analysis: After collecting the data, the statistical analyses were performed using the licensed version of Statistical Package for the Social Science Version 17 (SPSS-17). Descriptive analyses were computed in terms of mean and standard deviation for continuous variables. Nominal variables were computed in terms of frequency and percentage. Further inferential statistics like Chi square were applied as required.

Table-1: Socio-Demographic Profile (N=107)

Variable	Frequency	Percentage
Age in years Mean age = 25.2 years, SD (6.8)		
Marital Status		
Single	62	58.0%
Married	45	42.0%
Education		
Illiterate	2	1.9%
Below high school	14	13.1%
High school	14	13.1%
Intermediate/Diploma	19	17.8%
Graduate/Postgraduate	484	4.9%
Profession	10	9.3%
Occupation		
Unemployed	2	5.18%
Student	52	48.6%
Unskilled/Semiskilled	9	8.4%
Skilled	10	9.3%
Farmer	17	15.9%
Shop Owner	8	7.5%
Clerical	4	3.7%
Semiprofessional/Professional	5	4.7%
Religion		
Hinduism	94	87.9%
Islam	10	9.3%
Sikhism	3	2.8%
Family Type		
Nuclear	62	58.0%
Joint	43	40.2%
Extended	2	1.8%
Socio-economic status		
Upper class	1	0.9%
Upper middle class	28	26.2%
Middle class	36	33.6%
Upper lower	38	35.5%
Lower class		43.7%
Locality		
Urban	10	9.3%
Rural	97	90.7%

Results

107 male subjects with Dhat Syndrome who fulfilled inclusion criteria were available for data analysis.

Socio-demographic profile: (Table-1) The mean age of subjects was 25.2 years (Standard Deviation: 6.8; Range: 18–50). Majority of the

subjects were single (58.0%), educated graduate & above (54.2%), from rural locality (90.7%), from nuclear family (58.0%) and Hindu by religion (87.9%).

Table-2: Clinical Profile (N = 107)

Variable	Frequency	Percentage
Source of Referral:		
1. Direct	79	73.8%
2. Dermatology	10	9.3%
3. Medicine/Surgery	14	13.1%
4. Cardiology/Urology	4	3.7%
ClinicalProfile:		
1. Dhat Syndrome	19	17.8%
2. DS + NE	50	46.7%
3. DS + PME	17	15.9 %
4. DS + NE + PME	9	8.4%
5. DS + PME + ED	5	4.7%
6. DS + NE + ED	7	6.5%

Note: DS=dhat syndrome; NE=nocturnal emission, PME=premature ejaculation; ED=erectile dysfunction

Clinical profile: (Table-2) Majority of the subjects reported of their own (73.8%). The mean age of onset of illness was 22.5 years (SD = 6.2) and the mean duration of illness was 2.5 years (SD = 2.9). The patients of Dhat Syndrome with Nocturnal Emission were 46.7%, Dhat Syndrome with Premature Ejaculation were 15.9%, Dhat Syndrome with Erectile Dysfunction were 8.4% and the patients with Dhat Syndrome alone were 17.8%. History of masturbation was present in 59.8% of the patients. Among comorbidities (Table-3), Anxiety spectrum disorders were present in 41.1% and Depression in 5.6% of the patients. Among substances, Tobacco (30.8%) was most commonly abused substance followed by Alcohol (4.7%).

Table-3: Comorbidity Profile (N=107)

Variable	Frequency	Percentage
Psychiatric Comorbidity: (N = 107)		
No Psychiatric Comorbidity	57	53.3%
Anxiety Spectrum Disorders	44	41.1%
Depression	6	5.6%
Substance Abuse: (N = 107)		
No Substance Abuse	62	57.9%
Tobacco	33	30.8%
Alcohol	5	4.7%
Tobacco + Alcohol	6	5.6%
Cannabis	1	0.9%

Perceptions and Sexual Misconceptions: 10.3% of the patients perceived their sexual organ as short, 1.9% as thin. 11.2% perceived their semen as thin & watery. Misconceptions regarding dhat were also prevalent as 14.9% believed that it leads to physical weakness, 10.3% believed that it leads to sexual weakness and 28.9% believed that it leads to physical weakness and sexual weakness.

Discussion

The current study was done in a hospital setting in a rural area. All the participated subjects were males. Most of the subjects were educated graduate and above (54.2%), single (58%), Hindu (87.9%), from rural locality (90.7%), nuclear family (58%).In our study mean age of presentation was 25.2 years (SD = 6.8) which is slightly lower than previous studies like 28.14 years (SD: 8.97) in a study by Grover et al., 2015[8], 29.32 years (SD: 6.39) in a study by Chavan et al., 2014[9], 30.3 years (SD: 8.6) in a study by Verma et al., 2013[5], 31.86 years (SD: 5.92) in a study by Rajkumar et al., 2014[10] and 32.20 years in a study by Aswal et al., 2012.[11] The mean age of onset of illness was 22.5 years (SD = 6.2), which is similar to most other studies like mean age of onset was 23.5 years (Nakra et al., 1977),[12] 23 years (Sawat et al., 2012),[13] 28.6 years (Rajkumar et al., 2014).[10]

In our study, Anxiety spectrum disorders are more common comorbidity than depression [Anxiety = 41.1 % > Depression = 05.6 % ($p < 0.001$)] which is similar to the study by Bhatia et al., 2011, where anxiety was 30% and depression 20%, while depression was the common finding than anxiety like in studies, anxiety was 12.9% and depression - 15.1% (Grover et al., 2015),[8] anxiety 10% and depression 28% (Aswal et al., 2012),[11] anxiety 21% and depression 39% (Bhatia et al., 1991)[7]. Among substances, in current study, tobacco (30.8%) was the most common substance of abuse followed by alcohol (4.9%) [tobacco > alcohol ($p < 0.001$)], which is slightly different from other studies like in a study by Rajkumar et al., 2014,[10] tobacco was most commonly abused substance in 17.9% of population, while in other studies alcohol was the most commonly abused substance like alcohol 19.2% and tobacco 6.3% (Verma et al., 2013)[5] and alcohol 44% (Aswal et al., 2012).[11]

Misconceptions regarding dhat were prevalent in our study as 14.9% believed that it leads to

physical weakness, 10.3% believed that it leads to sexual weakness and 28.9% believed that it leads to both physical weakness and sexual weakness both. Misconceptions were similarly common in other studies like in a study by Grover et al., 2015,[8] 75.6% of the patients of dhat syndrome believed that it leads to sexual weakness, 58.5% believed that it causes physical weakness and 24.7% believed that it causes early death. In a study by Chavan et al., 2014,[9] masturbation was considered as abnormal activity by 82.2% and nocturnal emission by 69.4% of people.In a study by Bhatia et al., 2011,[14] 7% believed that masturbation and nocturnal emission has delirious effects on health and in another study by Chavan et al., 2009,[15] 47.61% of patients believed that Dhat syndrome causes weakness, 14.28% believed that masturbation causes weakness and 40.47% believed that nocturnal emission causes weakness.

Conclusion

The mean age of subjects was 25.2 years. 73.8% of the subjects reported on their own. Majority of the subjects were single (58.0%), educated graduate and above (54.2%), from rural locality (90.7%), from nuclear family (58.0%) and Hindu by religion (87.9%). The patients of Dhat Syndrome with Nocturnal Emission were 46.7%, followed by Dhat Syndrome alone 17.8%. History of Masturbation was present in 59.8% of the subjects. Anxiety Spectrum Disorders and Tobacco dependence were most common comorbidities. Misconceptions regarding dhat were also highly prevalent.

Limitation

The main limitation of this study is that it a hospital based study so the results may not be applied to general population. So it is recommended that a community based study on Dhat syndrome is necessary to represent general population.

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Original Article

Mental Health Among Women of Insurgency Areas: A Study of Widows and Half-Widows in Kashmir Valley

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ABSTRACT

Introduction: *The act of terrorism and armed conflict in the State of Jammu and Kashmir has resulted in an unprecedented rise in the mental health problems among the people of the valley. The most vulnerable section of the population adversely affected by this conflict are the Half-Widows defined as women whose husbands have disappeared/untraceable and these women are still waiting impatiently for their return. This study attempted to assess and compare the mental health status of widows and half-widows of Kashmir valley, hypothesizing the mental health problems to be significantly higher among half-widows than widows.* ***Objectives:*** *The objectives of the study were: (1) To assess and examine the severity of mental health problems of widows and compare them with the mental health of half-widows on different dimensions of Mental Health Inventory (MHI-38.)* ***Method:*** *The participants of this study consist of 100 (50 widows and 50 half-widows) selected by means of simple random sampling technique from the most disturbed districts (i.e. Baramulla, Anantnag, Srinagar and Shopian) of Kashmir valley. The mental health of the participants was assessed by administering Mental health Inventory (MHI-38).* ***Results:*** *The findings of the study reported significant difference between the mental health of half-widows in comparison to widows. Further the analysis of data revealed that half-widows showed higher degree of anxiety (SD =* 3.25*), depression (SD =* 1.51*) and loss of behavioral/emotional control (SD = 4.72) and lower on general positive affect (SD = 2.17) emotional ties (SD = 0.86) and life satisfaction (SD = 0.44) in comparison to widows.* ***Conclusion:*** *This research work gives an ultimate message to the mental health professional for the dire need to take a bigger initiative to approach the psychological issues of half-widows who are in an extreme need of their services which they aren't able to avail just because of their worst economic conditions.*

Keywords: *Mental health, Half-widow, Conflict, Disappearances, Violence, Trauma.*

Introduction

Everyone agrees that without women, society isn't complete but it is also a visible fact that despite their importance they remained deprived of their basic rights equal to men almost in all socie-ties since long. But with the pace of advancement and globalization and change of attitude of educated people towards women rights and equality, they are coming up in the developing countries like India and have achieved their recognition in the developed countries. But whenever the conflict/insurgency takes place anywhere, women become more vulnerable and deprived of their freedom. Though entire communities in the world are facing the issue

of terrorism and armed conflict, women and girls are worst affected because of their status in the society and their gender.[1] The same is the case with the women of Kashmir valley, the region has passed through a miserable condition since past twenty one years and the life of people especially the situation of women has become pathetic due to the ongoing disturbances and loss of life.

The perception of people living in the valley about getting opportunities to excel in life is very narrow, but within the resources the social, educational and economic growth has shown a steady rise, not up to their expectations as they perceived. Though the entire population is living a life of insecurity in the valley but women seem to be worst affected since they have developed sense of insecurity related to their life and property and also their kins. Even among women, the starkest form of this insecurity seems to be the highest among a section of widows who aren't widows actually but technically are known as half-widows; women whose husbands have disappeared but are living with the hope of their survival and expecting their return as well. Widowhood in itself is counted as the most pathetic state of a woman's life but the plight of these half-widows becomes worst by the fact that their broken mindset has not healed up due to the disappearance of their husbands. These women are caught between the devil and the deep blue sea where they have no way out, living a life of standstill with no ray of hope for leading a normal life ever. The widows and half-widows are in a way similar but in reality, widows are able to console themselves while half-widows are living with a disturbed mindset characterized by the hope of re-union but at the same time distressed by the fact that their dreams may never be true. Living in this dilemma has ruined the rationality of their lives. These half-widows face a situation of identity crises in the society since most of the things in their lives aren't clear to them. The duration of wait characterized by uncertainty makes them to suffer from Depression and Post-Traumatic Stress Disorder (PTSD). As a result, they resort to self-medication to alleviate their sufferings.[2] The misery of these women becomes more than physical since they have to support their families on their own.[3] In this context, the present research was designed to examine the mental-health status of half-widows and compare them on this measure with the widows of the valley.

Mental health is a positive state of psychological well-being (WHO,1954). Mental health was defined as, "a state of successful performance of mental function, resulting in productive activities, fulfilling relationship with people and the ability to adapt to change and to cope with adversity." (U.S. Public Health Service, 1999). WHO (2004) defines mental health as, "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community." Since the concept of mental health is a dynamic and ever-changing concept so there is no consensus on any particular definition of it. Mental health is determined by a variety of social, psycho-logical and health outcomes at individual, community and societal levels and has an impact on all aspects of our lives. Poor mental health contributes to socio-economic and health problems such as higher level of physical morbidity and mortality, lower levels of educational attainment, sustained feeling of discrimination, poor work performance/productivity, greater incidence of addiction, higher crime rates and poor community and societal cohesion.[4] A study was conducted in Israel where the most prevalent disorders included were PTSD, acute stress disorder and depression among people exposed to terrorism while tranquilizers, alcohol and cigarette were used to cope with the stress in a nationally representating sample in Israel.[5] Recent epidemiological studies were done in Afghanistan and communities affected by the war were found to be highly suffering from symptoms of PTSD, anxiety and depression[6]. Depression and anxiety disorder was also found to be very common among the conflict affected population of Pakistan.[7] The high rate of daily violence and trauma has made Jammu & Kashmir one of the highest rated state on suicide rates in India.[8] A broader examination on the literature on gender difference in trauma exposure and its consequences suggest that women may be more negatively affected by the combat exposure. A recent meta-analytic study of gender difference in trauma and PTSD, suggests that women are more likely to suffer from PTSD in comparison to men accounting to traumatic experiences.[9] Another study conducted in Uganda revealed women (81.9%) proportionally reported

more psychological distress than men (70.9%) which was associated with gender related factors like; marital status, having children etc which predominantly affect women in their social roles.[10] A research study was conducted on residents of Afghanistan which reported that war exposure and daily stressors were comparably stronger predictors of PTSD among women than men.[11] In US city, a study reported women at greater risk of PTSD following assaultive violence than men. This increased risk led women to get sensitized to the effects of subsequent trauma events of lesser magnitude. After the genocide in Rwanda, women reported more symptoms of PTSD because of the entire household burden especially on widows after the death of their husbands. Women were found to be particularly targeted for violence in Rwanda.[12]

In any country if disturbance occurs due to the acts of extremism, terrorism and armed conflict, it is a measure concern for social scientists and more specifically for mental health professionals to know how these kinds of acts disturb the mental health status of those living in that area. In this perspective, the present study was an attempt to compare the mental health status on dimensions of anxiety, depression, loss of behavioral/emotional control, general positive affect, emotional ties and life satisfaction among widows and half-widows of Kashmir valley.

Objectives

To assess and examine the severity of mental health problems of widows and compare them with the mental health of half-widows on different dimensions of Mental Health Inventory (MHI-38).

Research Questions

In the light of the objectives, the following research questions were framed and tested -

- Is there any significant difference between the mental-health of widows and half-widows?
- Is there any significant difference between the widows and half-widows on measures of mental health: Anxiety, Depression, Loss of Behavioral/Emotional Control, General Positive Affect, Emotional Ties and Life Satisfaction?
- Is there any significant difference between widows and half-widows on the Global scales of Psychological Distress and Psychological Well-being?
- Is there any significant difference between widows and half-widows on the Global Mental Health Index?

Method

Research Design

Between group design was used in this research study.

Participants

The research was conducted on 100 widows(50 widows and 50 half- widows) aged between 30 to 50 years selected on the basis of random sampling technique from different disturbed districts (i.e. Baramulla, Anantnag, Srinagar & Shopian) of Kashmir valley.

Instruments

In order to collect information from the widows and half-widows, a "General Information Form" was used along with the Mental Health Inventory (MHI-38) to assess the mental health status of the participants.

General Information Form: This form comprised of the demographic information related to the participants like; age of the widows, duration of their marriage, living in rural/urban areas, their education level, source of income and duration of disappearance of their husbands in case of half-widows.

Mental Health Inventory (MHI-38): This scale is used to assess the mental health of the participants. It comprises of six sub –scales: Anxiety, Depression, Loss of Behavioral/Emotional Control, General Positive Affect, Emotional Ties and Life Satisfaction, two global scales-Psychological Distress and Psychological Well-being and a global Mental Health Index. It comprises of 38 items on a 6 point Likert scale. The correlation coefficient of this scale is 0.93.

Data Analysis

Data was analyzed using Descriptive Statistics and t-test.

Procedure

The collection of information from the subjects

for this study was a big challenge and had to go through tedious procedures. Initially the social welfare departments of the disturbed districts of Kashmir valley were approached regarding the residential details of the widows in their respective areas. Then a chain of contacts was established through which other participants were located. On the other hand, the residential addresses of half-widows were obtained by contacting those few welfare associations working for them. Most of the half-widows were living in the far flung interiors with lesser transport medium. So, approaching the half-widows was a big challenge for the present investigator, but anyway they were contacted. Since all women were illiterate so this inventory was administered by investigator and while administration the local language was kept as the medium for conversation. Majority of the participants were unwilling to cooperate because of apprehensions, fear and no hope of getting monetary or legal benefits. On repeated request and persuasion, the rapport was established and gradually they came forward to answer the questions of the inventory. Since the present investigator was a Kashmiri researcher, so as they prepared themselves and came forward hoping something positive in their favour. It took almost two months in contacting 110 participants and out of which finally 100 were retained as per need of the proposed research work. The researcher gave appreciation to everyone for their kind cooperation and help for completing this research work.

Results and Discussion

The mean, standard deviation and t-values of the respective groups of widows and half-widows are shown in the tables below:

As shown in Table 1, half-widows differ significantly from widows on anxiety, depression, loss of behavioral/emotional control, general positive affect and life satisfaction. The scores on the first three sub-scales i.e.; Anxiety, Depression and Loss of behavioral/Emotional Control (negative dimensions) of half-widows are greater than the widows. Though both the groups are widows but half-widows showed an experience of extremely negative emotions because of the life-long wait for their life-partners with no any confirmation of their being alive or dead. Thus remaining part of their lives seem to be characterized by hope on one hand and apprehension on the other which might be responsible for their increased level of depression, anxiety and reduced emotional and behavioral control. On the remaining three sub-scales of MHI i.e.; general positive affect, emotional ties and life satisfaction (positive dimensions), half-widows scored low as compared to widows. From the responses of half-widows it implies that they are alienated from the free social mixing, even their close relatives have become apathetic towards them. This might be the reason for their reduced life satisfaction and general positive affect. On the whole both the groups are living in an acute state of psychological conditions which needs to be considered at its earnest by the psychologists.

On statistically analyzing table 2, results showed that the widows and half-widows differ significantly on Psychological distress and Psychological well-being Global Scales. Since half-widows are more psychologically disturbed than the widows it might have resulted in their lesser scores on psychological well-being. The life of a half-widow is characterized

Table-1: Showing the Mean, standard deviation and t-values of widows and half-widows on the six sub-scales of Mental Health Inventory

	Groups Compared							
Sub-Scales of MHI	**Widows**			**Half-Widows**				
Anxiety	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**t-values**	**Significance**
	50	33.92	2.75	50	40.88	3.25	11.55	0.01
Depression	50	11.0	1.43	50	18.26	1.51	24.7	0.01
Loss of Behavioral/ Emotional control	50	32.76	2.18	50	41.68	4.72	12.13	0.01
General Positive Affect	50	19.4	1.77	50	12.78	2.17	16.71	0.01
Emotional Ties	50	3.92	.488	50	2.86	.86	7.6	0.01
Life Satisfaction	50	2.12	.33	50	1.26	.44	11.03	0.01

by extreme chaos along with the feeling of being treated unjustfully. Her life is a struggle for justice along with the responsibility of upbringing her children with the least social and economic support. This might be the possible reasons for the increased psychological distress and low psychological well-being in the life of half-widows.

Table 3, shows the overall Global mental health Index of both widows and half-widows indicating extreme poor mental health of half-widows. Extreme feelings of deprivation with the hope of returning of their life-partners have put them in a conflicting state which might be the reason for the poor mental health of half-widows.

attention of psychologists to come forward and help them in rebuilding their lost hopes, confidence and to bring them into the normal state of their life. This research work gives an ultimate message to the psychologists for the dire need to take a bigger initiative to approach the psychological issues of half-widows who are in an extreme need of their services which they aren't able to avail just because of their worst economic conditions.

Future Recommendations

- The government should envisage looking into the problems of widows and half-widows living in far-flung interiors and develop social and economic support to build up their lost confidence and to bring them into the mainstream of the society to live a dignified life.
- It is not possible without government to help the widows and half-widows in alleviating their acute psychological problems with which they are suffering.
- A mental health professional can investigate the problems of mankind but can't resolve them without proper economic packages for people affected by the daily disturbance.
- Both the government and the NGO's should come forward to help those whose hopes

Table-2: Showing the Mean, Standard deviation and t-values of Widows and Half-Widows on Two Global Scales

Global-Scales of MHI	Groups Compared							
	Widows			Half-Widows				
	N	Mean	SD	N	Mean	SD	t-values	Significance
Psychological Distress	50	90.26	4.48	50	112.96	6.2	20.66	0.01
Psychological Well-Being	50	27.52	1.8	50	17.64	2.72	21.45	0.01

Table-3: Showing the Mean, Standard deviation and t-values of Widows and Half-Widows on Global Mental Health Index

Variables	N	Mean	Standard Deviation	t-values	Significance
Widows	50	101.72	14.41	6.28	0.01
Half-Widows	50	88.56	3.4		

Conclusion

In the present era, each and every individual is somewhat disturbed in his/her life and psychologists are to some extent attending their psychological problems and are also successful to a greater extent. But apart from the micro level disturbance in the daily lives of common people, there is a very destitute section of our society which is not only deprived of their basic needs but also forced to struggle their remaining life with the least support ultimately worst affecting their overall well-being. In the process of collecting data and having contact by interacting with the participants of this study, it was observed that the people living in such a pathetic state need the

have shattered and rebuild their expectations and energize them to lead a relatively peaceful and happy life.

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Original Article

Psychological Problems among Children infected with HIV/AIDS – An Indian Study

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ABSTRACT

Background: *Understanding the common psychological problems in HIV infected children and adolescents are critical for improving their mental health and quality of life as this aspect needs to be explored in Indian setting.* ***Aim:*** *The purpose was to compare psychological and behavioral problems between two groups of children who were on ART treatment and those who were not.* ***Methods:*** *With this aim perinatally infected HIV adolescents seeking treatment at Asha Kirana Hospital in Mysore were randomly selected. Strengths and Difficulties Questionnaire (SDQ) was administered to assess the psychological issues of children who are On ART and PRE ART treatment.* ***Results:*** *The results revealed that overall On ART group showed overall higher psychological and behavioral problems compared to Pre ART group. Further, it revealed that peer related problems, hyperactivity were highest among adolescents with perinatally infected HIV.* ***Conclusions:*** *The study highlighted the need for addressing mental health problems of adolescents with perinatally infected HIV.*

Key Words : *Psychological Problems, Perinatally infected, ART.*

Introduction

Globally it was estimated that in the year 2008 there were 33.4 million people living with HIV, out of which children below 15 years constituted 2.1 million.[1] It was estimated that India has an overall prevalence of 0.31%.[2] The number of children living with HIV infection and AIDS are on the rise. It is estimated that India has the largest number of AIDS orphans with the UNAIDS estimating the number to be 2 million. Nearly 4 % of the 2.4 million HIV infections in the country believed to be among children due to vertical transmission. The increased access to antiretroviral treatment resulted in increased survival rates among the children infected with HIV/AIDs and also led to the improved quality of life of seropositive children. This continues to have increased impact on child's and adolescents' mental health. Children with chronic illness, in general, are found to be at greater risk for psychiatric problems including depression, anxiety, and feelings of isolation. However, children with HIV/AIDS have additional factors in the complexity of their illness and treatment as well as in the adverse psychological circumstances and poverty in which many live. Children who know about their HIV status live in fear of their disease, and fear of the loss of caregivers due to HIV/AIDS. As a result the psychiatric status, needs, and concerns of the children and adolescents with HIV infection is an essential part of their care even with advancements in Highly Active Anti-Retroviral Therapy (HAART).

Despite the growing numbers of children infected with HIV/AIDS in India, the studies addressing the impact on the mental health of

children either affected or infected with HIV/AIDS are meagre. Few existing studies focused on discloser issues;[3] and impact of child's illness on caregivers.[2,5] Understanding the common psychological problems in HIV-infected children and adolescents is critical for improving their mental health and quality of life as this aspect needs to be explored in India setting. This research aimed towards understanding the common psychological and behavioral problems among children infected with HIV/AIDS.

Material and Methods

The subjects for the study consists total 32 Adolescents with Prenatally Acquired HIV seeking treatment at ASHA KIRANA Pediatric ART Hospital in Mysore. Two groups of children who were On ART and PRE ART were selected using simple random technique. The study had a cross-sectional design. A standard form was used to collect the information on socio demographic characteristics of subjects. Informed consent was taken either from parents or guardian of the subjects. The following standardized tool was used for data collection.

Strength and Difficulties Questionnaire – SDQ (Goodman, 1997):[4] This scale has 25 items with 5 domains: emotional problems, conduct problems, hyperactivity, peer relationship, and prosocial behaviour. The scale assesses the common behavioural and psychological problems among children. Both descriptive and inferential statistics were used analysis the data. Student's 't' test and spearman correlation test was used to measure association between the variables.

Results

The mean age of the children was 14.41 with SD of 2.13. The minimum age was 10 years and maximum age of the children was 17 years. Majority 65.5% were boys and 34.4% were girls. 78. 1% of the children were on ART treatment and 21.9% were on Pre ART treatment. Majority 71.9% of the children were studying in secondary school, followed by 12.9% in primary school and small percentages of 9.4% were studying in college.

Table 1 shows the extent of psychological and behavioral problems among adolescents with perinatally acquired HIV/AIDS. The mean total score of SDQ was 28.00 ± 4.11. The manifestation of psychological and behavioral problems raged highest in the area of peer relationships 6.72 ± 2.34 and lowest in the area of conduct problems 4.47 ± 2.07. The other areas such as emotional problems 5.62 ± 1.42; hyperactivity 5.78 ± 2.07; and pro social behaviour 5.41 ± 2.16 were being in the middle order. Among the all the domains of SDQ it was found that adolescents reported higher level of peer related problems, hyperactivity and emotional related psychological problems.

Table-1: Mean Scores of Strength and Difficult Questionnaire (SDQ)

SDQ	Mean and (SD)
Emotional Problems (EP)	5.62 (1.43)
Conduct Problems (CP)	4.47 (2.07)
Hyperactivity (HY)	5.78 (2.07)
Peer relationship (PRS)	6.72 (2.34)
Pro social behavior (PSB)	5.41 (2.16)
Total Score – SDQ	28.00 (4.11)

Table – 2: Types of Treatments and SDQ

Sl. No.	Domain of (SDQ)	Extent of SDQ				't'-Values df=30	Level of significance Inference
		PRE ART		ON ART			
		Mean	SD	Mean	SD		
1	EP	5.42	1.50	4.36	1.97	0.030	0.506 NS
2	CP	4.85	2.54	4.36	1.97	0.553	0.282 NS
3	HYP	5.57	1.57	5.64	1.43	0.110	0.824 NS
4	PRS	6.57	2.63	6.76	2.31	0.920	0.620 NS
5	PSB	5.14	2.26	5.96	2.03	0.185	0.773 NS
6	TOTSDQ	27.57	5.28	28.12	3.84	0.307	0.269 NS

EP: Emotional Problems, CP: Conduct Problems, HYP: Hyperactivity, PRS: Peer relationships, PSB: Pro social behavior and TOT SDQ: Total of SDQ scores
NS – Non Significant

The results shows (Table – 2) that the mean scores of SDQ domains among PRE ART andON ART treatment group. Overall ON ART group showed overall higher psychological and behavioural problems compared to PRE ART group. In Pre-ART group children were tested HIV positive and but not on ART. However 't' values show that the difference between two categories was not significant. In Table (3) the scores of the EP: Emotional Problems, CP: Conduct Problems, HYP: Hyperactivity, PRS: Peer relationships, PSB: Pro social behavior and TOT SDQ: Total SDQ scores were not associated with age and income of the subjects. However, hyperactivity($r = -0.400$; $p < 0.0$), Conduct Problems ($r = -0.434$; $p < 0.05$), Peer relationships ($r = -0.412$; $p < 0.05$), were found to be positively correlated with total score of the SDQ ($r = -0.503$; $p < 0.05$).

Table – 3: Correlation between age and Income

		Age	Income	HY	CP	PRP	PSB	EP	SDQTOT
Age	Pearson Correlation	1	.155	-.097	-.052	.182	.134	.033	.126
Income	Pearson Correlation		1	-.160	-.041	.001	.231	-.091	.007
HY	Pearson Correlation			1	-.004	-.050	.073	.071	.400*
CP	Pearson Correlation				1	.054	-.316	.157	.434*
PRP	Pearson Correlation					1	-.112	-.073	.412*
PSB	Pearson Correlation						1	-.161	.294
EP	Pearson Correlation							1	.503**
SDQTOT	Pearson Correlation								1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Discussion

The present study aimed towards assessing the psychological and behavioral problems among children who are On ART and PRE ART treatment. The purpose was to compare psychological and behavioral problems among two groups on the basis of ART treatment. The results revealed that peer related problems, hyperactivity were highest among adolescents On ART group compared to PRE ART group. Few of the studies have reported the side effects of ART medications in the form of hyperactivity and depression among children with HIV. Similar finding has been reported by Das [5] where emotional and behavioral problems found to be common among 50 HIV infected children who are on ART. Further in her study results revealed that rule breaking behavior was highest among those children whose parents disclosed their HIV status and those children who are discriminated by other children due to their HIV status.

In the current study non-significant relationship found between age and psychological problems among adolescents with perinatally infected HIV. However few studies have reported that age of the children are positively related to mental problems among children with HIV/AIDS. In the study by Mellins *et al* [6] older youth with HIV were more likely to have behavioral disorders than younger HIV-positive youth. Prospective cohort study of the long-term effects of in utero and/or postnatal exposure to HIV and antiretroviral therapies by Gaughan *et al*[7] found the rates of psychiatric hospitalization in HIV-infected children 4-17 years of age to be about six times higher than the general population with most hospitalizations for depression and behavioural disorders. Risk factors such as traumatic life events, substance abuse, are strongly assoiciated with psychiatric problems among perinatally HIV infected children (Gaughan et al[7] and Pao et al).[8] The current

study has certain limitations. The sample for the study is very small and represent from one setting and findings may not be generalized. Nevertheless, the study highlighted the need for addressing mental health problems of adolescents with perinatally infected HIV. HIV clinicians should therefore be aware of possible mental health problems such as anxiety disorders and ADHD in perinatally-exposed/ infected youth and mood disorders in perintally-infected youth and comprehensive psychiatric, psychological, and neuropsychological assessments are critical components in the overall care for children and youth with HIV. Psychiatric evaluation is important in assessing the presence of depressive, anxiety, and psychotic symptoms (such as hallucinations) related to the psychological impact of the illness on the child and/or the effects of retroviral treatment. Mental status evaluation is important in determining the presence of any symptoms of attentional deficits, memory impairment, or even full-blown dementia in few advanced cases.

Health care professionals while working with adolescents should evaluate the psychological issues of children to improve mental health of HIV infected adolescents. A major factor that distinguishes HIV/ AIDS from other chronic or terminal illness is the stigma which leads to difficulty in adjusting to family, society and school. The stigmatizing public response, with fear of contagion leads to feelings of isolation and rejection. The children find it difficult to adjust and function normally as a result of HIV needs to be addressed while delivering services to them.

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Original Article

Psychiatric morbidity and Quality of life in patients of Psoriasis – A cross-sectional study in Northern India

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ABSTRACT

Background: *Chronic skin disorders have currently been assessed considering not only their physical aspect but also the related psychosocial issues. Psoriasis, one of the most disabling skin conditions, may be considered suitable for this approach that puts equal weight on the physical, psychological and social impairments.* ***Aim:*** *The aim of this study was to evaluate psychiatric morbidity and quality of life in patients of psoriasis.* ***Methods:*** *This cross-sectional study was conducted on 100 consecutive patients of psoriasis, over a period of 12 months, in a tertiary care centre. The Psoriasis Area and Severity Index (PASI) was used to assess severity of psoriasis. MINI was used to assess the psychiatric morbidity and ICD-10 criteria were used for clinical psychiatric diagnosis. The WHOQOL-BREF was used to determine the quality of life and CGI was administered to evaluate severity of illness.* ***Results:*** *Psychiatric morbidity was present in 79% of the psoriatic patients. Adjustment disorder (47%) was the most common psychiatric co-morbidity followed by Moderate depression (16%), Social phobia (9%), Dysthymia (4%) and Mild depression (3%). Severity of psoriasis had a significant association with psychiatric co-morbidity, CGI and negative correlation with all the domains of WHOQOL.* ***Conclusion:*** *Patients with psoriasis have a clinically significant prevalence of psychiatric co morbidity leading to impairment in quality of life. The study highlights the importance of multidisciplinary approach in early identification and proper management of psychiatric morbidity in patients of psoriasis by both dermatologists and psychiatrists.*

Keywords: Psoriasis, Psychiatric morbidity, Quality of Life.

Introduction

Psoriasis is a chronic relapsing skin disease presenting with erythematous, scaling papules and indurated plaques arising preferentially on elbow, knee, scalp, affecting 1.5% to 2% of the Western and 0.44 to 2.8% of the Indian population.[1,2] It is estimated that at least 10 percent of Psoriasis sufferers have a severe form that causes disability and exclusion from a normal life.

It is a disorder that has social implications too as patients with chronic skin illnesses with appearance altering conditions like psoriasis are likely to cause more social, psychological, and physical distress. The associated stigma and cosmetic disfigurement in Psoriasis may cause exacerbation more than life events. Many people with Psoriasis isolate themselves because of such a deep sense of shame, embarrassment and low self-esteem.[3] All these factors lead to a situation affecting the psychological health of patients of Psoriasis. As a matter of fact, psychiatric co-morbidities are highly prevalent in patients of Psoriasis with Depression and Anxiety being most common disorders. The profile of psychiatric diagnoses obtained in a study

were — 65% Adjustment disorder-depressed type, 30% Depressive episode and 4% Dysthymia.[4] Psychiatric and psychological sequelae of Psoriasis have been found to be common and at times severe.[5-7]

There is significant psychosocial morbidity associated with Psoriasis. Tools used to quantify this psychological burden, such as quality of life measures, indicate that the psychosocial impact of Psoriasis is comparable with that of other major medical diseases.[8] Both Psoriasis and psychiatric disorders individually have chronic debilitating course with significant suffering and distress therefore Psychiatric disorders when co-morbid with Psoriasis further worsen the quality of life of the patient.

The suffering experienced by many Psoriasis patients has been explored extensively in western literature over many decades but very few Indian studies have looked into psychological aspects of this chronic disfiguring disease. Keeping in view the relationship between Psoriasis and psychiatric morbidities, the present study was planned to assess the prevalence of psychiatric disorders and quality of life in patients of psoriasis and its correlation with severity of psoriasis.

Material and Methods

The study was an observational cross-sectional study, conducted by the Departments of Psychiatry and Dermatology, Era's Lucknow Medical College, a Tertiary Care Centre in Lucknow, over 1-year period. The study was approved by the Institutional Ethical Committee. A total of 124 patients were screened and 100 patients aged 18-60 years visiting for the first time/or as a follow up case at the OPD in the Department of Dermatology, who were diagnosed with Psoriatic disorder based on Psoriasis area and severity and giving written informed consent were included and formed the sample size of the study. Subjects with other skin disease with visible patches, pregnancy and lactation, mental retardation and unwilling to give consent were excluded from the study.

All the patients were subjected to detailed examinations including the elicitation of dermatological and psychiatric profile after getting written consent for study by using following scales and tools:

1. ***Socio-demographic proforma sheet***
2. ***Clinical profile sheet :*** A proforma specially constructed for this study to get clinical details of Psoriasis e.g. duration of illness, severity of illness etc.
3. ***PASI (Psoriasis area and severity index)[9]:*** This is currently Gold standard score for the assessment of extensive Psoriasis, but has the limitation of inter observer variation. Four sites of affection: the head (h), upper limb (u), trunk (t), and lower limbs (l) are separately scored by using three parameters-erythema, induration and desquamation, each of which is graded on a severity scale 0 to 4, where 0 = nil, 1 = mild, 2 = moderate, 3 = severe and 4 = very severe. The maximum score of PASI is 72.
4. ***MINI (Mini-International Neuropsychiatric Interview)[10]:*** It is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe for DSM-IV and ICD-10 psychiatric disorders. It was designed to meet the need for a short but accurate structured psychiatric interview for multicenter clinical trials and epidemiology studies and to be used as a first step in outcome tracking in non research clinical settings.
5. ***ICD-10, DCR:[11]*** ICD-10 Classification of Mental and Behavioral Disorders-DCR which has been designed by the World Health Organisation Geneva in 1992 for the diagnosis of psychiatric disorders.
6. ***WHO Quality of Life (WHO QOL-BREF):[12]*** The WHOQOL-BREF instrument comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. It assesses the individual's perceptions in the context of their culture and value systems, and their personal goals, standards and concerns.
7. ***Clinical Global Impression scale (CGI)-S:[13]*** It is a 7 point scale that requires the clinicians to rate the severity of the patient's illness at the time of assessment. Considering total clinical experience, a patient was assessed on the severity of mental illness at the time of rating. (1) normal, not at all ill; (2) borderline mentally

ill; (3) mildly ill; (4) moderately ill; (5) markedly ill; (6) severely ill; (7) extremely ill.

Evaluation of Psychiatric co-morbidities was done with the help of Mini-International Neuropsychiatric Interview (M.I.N.I.)[10] and Classification of psychiatric disorder was done using ICD-10 DCR criteria.[11] Quality of Life of patients was measured using WHO-Quality of Life-BREF Scale[12] while severity of illness was measured using Clinical Global Impression Scale (CGI).[13]

Statistical Analysis

Data was expressed using descriptive statistics such as mean, standard deviation for continuous variables and number and percentage for categorical variables. Categorical variables were analysed using Chi Square test. Spearman's correlation analysis was carried out for select variables. $P < 0.05$ was considered significant. All the statistical analyses were carried out by SPSS version 11.0 software.

Results

All the 100 patients of Psoriasis attending the Dermatology OPD of our facility who were finally enrolled in the study were subjected to psychiatric and quality of life assessment. The prevalence of psychiatric co-morbidity among patients with Psoriasis as observed in present study was 79%. Adjustment disorder (47%) was the most common psychiatric co-morbidity followed by Moderate depression (16%), Social phobia (9%), Dysthymia (4%) and Mild depression (3%). Distribution of patients according to presence of psychiatric co-morbidities has been shown in Table 1 below:

Psychiatric assessment of the psoriasis group lead to the generation of two subgroups: Psoriasis with psychiatric co-morbidity (N = 79) and Psoriasis without psychiatric co-morbidity (N = 21). The two subgroups were compared on socio-demographic profile, clinical parameters and quality of life.

Sociodemographic Data

The socio-demographic variables of the patients like gender, religion, marital status, education and per capita income were similar in both group of patient. There were statistically significant differences regarding age, domicile and occupation between the two groups. Age of patients ranged from 18 to 56 years. Mean age of patients with psychiatric co-morbidities was 30.67 ± 8.64 years as compared to 35.05 ± 7.38 years for patients without psychiatric co-morbidities. Statistically, this difference was significant ($p = 0.036$).

Majority of patients were from urban areas (66%). However, prevalence of co-morbidity was significantly higher ($p < 0.001$) in rural/semi-urban group (100%) as compared to urban group. Psychiatric co-morbidity was maximum in students (94.4%) and semiskilled/unskilled laborers (85%) and minimum in executives/administrator (66.7%) and housewives (69.4%). Statistically, this difference was significant ($p < 0.001$).

Clinical Parameters

Almost half patients (53%) had involvement of $\leq$ 3 sites whereas remaining (47%) patients had involvement of > 3 sites. Prevalence of psychiatric co-morbidities was significantly higher among cases with involvement of > 3 sites (89.4%) as compared to those having involvement of $\leq$ 3 sites (69.8%). Out of 59 cases not showing Koebernisation (Psoriasis at site of trauma or injury), 42 (71.2%) had psychiatric co-morbidity. However, out of 41 cases with Koebernisation, 37 (90.2%) had psychiatric co-morbidity and this difference was statistically significant ($p = 0.021$) (Table 2). Pruritis, type of onset and duration of illness did not yield significant results.

All the patients with Psoriasis score $\geq$ 25 had psychiatric co-morbidity. Among those having scores $\leq$ 24 too, majority (n = 42; 66.7%) had psychiatric

Table-1: Type of Psychiatric Co-morbidities (as per ICD-10 classification)

S. No.	Psychiatric Comorbidity	No. of Cases	Percentage
1.	Adjustment disorders	47	47.0
2.	Moderate depression	16	16.0
3.	Social phobia	9	9.0
4.	Dysthymia	4	4.0
5.	Mild depression	3	3.0
6.	None	21	21.0

co-morbidity. A statistically significant difference in Psoriasis severity scores (PASI) between patients with psychiatric co-morbidity (26.49 ± 14.78) and those without psychiatric co-morbidity (9.62 ± 13.21) was observed ($p < 0.001$). (Table 3)

Table-2: Association between Psoriasis presentation and severity with Psychiatric Comorbidity

S. No.	Variable	Total	Patients with psychiatric comorbidity (n = 79)		Patients without psychiatric comorbidity (n = 21)		Statistical significance
			No.	%	No.	%	
1.	No. of sites						
	≤ 3	53	37	69.8	16	30.2	$\chi^2 = 5.719$;
	> 3	47	42	89.4	5	10.6	$p = 0.017$ (S)
2.	Koebernisation						
	Absent	59	42	71.2	17	28.8	$\chi^2 = 5.296$;
	Present	41	37	90.2	4	9.8	$p = 0.021$ (S)
3.	Pruritis						
	No	92	71	77.2	21	22.8	$\chi^2 = 2.312$ (df = 1);
	Yes	8	8	100	0	0.0	p = 0.128 (NS)
4.	Type of onset						
	Acute	38	28	73.7	10	26.3	$\chi^2 = 1.044$ (df = 1);
	Gradual	62	51	82.3	11	17.7	p = 0.307 (NS)
5.	Duration of psoriasis						
	<=1 yr	45	34	75.6	11	24.6	
	>1-5 yrs	43	34	79.1	9	20.9	$\chi^2 = 1.482$ (df = 2);
	5-10 Yrs	12	11	91.7	1	8.3	p = 0.477 (NS)

Quality of Life

Quality of life was measured with WHOQOL-BREF instrument and mean scores of WHOQOL-BREF (overall) were significantly lower in patients suffering from comorbid psychiatric disorders (57.05 ± 14.78) as compared to psoriatic patients without psychiatric disorders (63.76 ± 5.05). Patients with comorbid psychiatric disorders reported quality of life poor to very poor in all the domains (physical, psychological, social relationships and environmental). Similarly mean CGI scores for severity of illness were significantly higher in patients with comorbid psychiatric illness (4.04 ± 1.19) as compared to patients without comorbid psychiatric illness (1.29 ± 0.46).

In all the patients, degree of severity of psoriasis was determined with PASI score and further correlation was done with spearmen's correlation coefficient to find increase in severity of psoriasis associated with increase in severity of illness (CGI scores) and quality of life (WHO QOL scores). A strong positive and significant correlation of CGI (severity of illness) was observed with PASI scores ($r > 0.7$; $p < 0.001$). The correlation between PASI

Table-3: Association between level of PASI scores and Psychiatric Co-morbidity

S. No.	PASI Scores	Total	Patients with psychiatric co-morbidity (n = 79)		Patients without psychiatric co-morbidity (n = 21)		Statistical significance
			No.	%	No.	%	
1.	≤ 24	63	42	66.7	21	33.3	$\chi^2 = 14.173$; p = 0.001
2.	25-48	32	32	100	0	0	
3.	49-72	5	5	100	0	0	
	Mean PASI ± SD	22.95 ± 14.9	26.49±14.78		9.62 ± 13.21		

and WHO QOL scores was mild, negative and statistically significant too (r = -0.3 to 0.5; $p < 0.001$). (Table 4)

Table-4: Correlation of Psoriasis severity (PASI) with CGI and WHO Quality of life

Variable	"r"	"p"
WHO QOL	-0.382	< 0.001
CGI (severity of illness)	0.766	< 0.001

Discussion

This study analyzed the prevalence and implications of psychiatric morbidity among patients with psoriasis. We also studied the influence of socio-demographic and clinical variables on the mental health of patients with psoriasis.

Prevalence of Psychiatric disorders

The prevalence of psychiatric co-morbidities in our study was found to be 79%. Highly variable prevalence range of 27.4% to 90% has been reported across several studies using different methods and instruments. In present study, we used Mini-International Neuropsychiatric Interview (MINI) scale to detect psychiatric co-morbidity. MINI is a very effective, systematic and reliable tool with a high precision and accuracy and has been tested widely in different regions and in different language adaptations.[14,15] High prevalence of psychiatric co-morbidities in present study as compared to another study reported from India[4] could be attributed to the changing lifestyle, social environment and increasing focus on physical appearance affecting the social acceptability thus leading to stigmatization and social isolation and hence increased psychiatric co-morbidity. However, our study was comparable with most other studies reporting high prevalence of psychiatric disorders.[16-18]

The profile of psychiatric diagnoses obtained in the present study showed Adjustment disorder with depressed mood (47%) as the most common psychiatric co-morbidity followed by Moderate depression (16%) and social phobia (9%) respectively. Dysthymia (4%) and Mild depression (3%) were some of the less common psychiatric co-morbidities. These findings are in agreement with the findings of Mattoo et al, (2005)[4] who also found Adjustment disorder, Depression and Dysthymia to be the major psychiatric co-morbidities in Psoriasis patients. In present study, social phobia was diagnosed in 9% of patients with Psoriasis which is relatively higher as compared to previous studies.[19,20] These findings indicate that Psoriasis carries a high burden of psychiatric co-morbidity, the reason for this could be multifaceted and one of them which could be the most important is preoccupation of patient about people's perception of them and avoiding physical contact with others in order to prevent social rejection and shame.[21,22]

Association of socio-demographic variables and psychiatric co-morbidities

In present study, we found a significant association between psychiatric morbidity and socio-demographic variables of age, domicile and occupation. It was observed that prevalence of psychiatric co-morbidity was significantly higher in younger age groups as compared to older age groups. In patients aged $\leq$ 18 years, the prevalence of psychiatric co-morbidity was as high as 100%. The findings indicate a probable role of life stage as younger population are more conscious for their physical appearance and because of this illness they suffer from low self confidence and low self esteem. In addition, its detection at a younger age affects the patient's social, marital and economic prospects and hence might contribute to a higher burden of stress and depression. Remröd et al[23] in their study also found that patients aged < 20 years were significantly more anxious and depressed than their older counterparts. In another study, a high tendency of psychological stress, depression and suicidal behaviour has been observed in young patients with dermatological disorders.[24]

In present study, semi-urban/rural patients had significantly higher prevalence of psychiatric co-morbidity as compared to urban patients. As stated earlier the environmental correlates play a detrimental role in psychiatric illnesses. Due to higher illiteracy among rural population, Psoriasis is usually considered as a contagious and incurable disease and these myths and beliefs are passed from generation to generation leading to stigmatization and social isolation of the patients in the society. Higher prevalence of semiskilled/unskilled laborers could be attributed to the functional impairment caused by Psoriasis[14] causing nega-tive impact in the form of loss of work opportunities which eventually

affects their psychological well being. Also, both people from rural area and labourers, has less access to hospital facility, poor adherence to treatment and regular follow-ups, it leads to situation of increase severity of psoriasis and hence increased mental illness.

Clinical variables and psychiatric co-morbidity

The findings of present study endorse the observations made in a number of previous studies taking different criteria for assessing the disease severity and associated complications. In present study, a significant association between prevalence of psychiatric co-morbidities among patients of Psoriasis was observed with increased number of sites involved and evidence of Koebernisation. Harvima et al (1996)[25] also found that patients with more severe dermatologic lesions and particular defects had significant psychological distress.

In our study, significantly higher Psoriasis severity scores (PASI) were observed in patients with psychiatric co-morbidity than those without psychiatric co-morbidity. Gupta et al (1993)[26] in their study showed higher prevalence of death wish, suicidal ideation and higher depression scores among patients with higher self-rated severity of Psoriasis. Using the same severity scale as used in present study (PASI), Devrimci-Ozguven et al[27] and Mattoo et al[28] also found a significant association between severity of Psoriasis and depression/anxiety symptoms. However, some workers including a recent study in India did not find a significant association between Psoriasis severity and Psychiatric disorders.[29-31]

Severity of psoriasis, Psychiatric morbidity and Quality of life

With increasing PASI scores, a significant increase in mean CGI scores was observed and Mean QOL scores for all the dimensions (overall, physical, psychological, social and environmental) were significantly lower for those having PASI score 25-48 and > 48 as compared to those having PASI scores 0-24. Thus in effect, all the components of quality of life were found to be affected in patients of higher severity of Psoriasis. Also, the proportion of patients reporting their quality of life as poor to very poor was significantly higher in patients of Psoriasis with co-morbid Psychiatric disorders. Similar association was also observed in a number of studies.[4,32-34] The mechanism of the causal relationship between Psoriasis, Depression, and Anxiety are not known. It may be that Psoriasis and Psychiatric disorders individually have chronic debilitating course with significant suffering and distress and Psychiatric disorders when co-morbid with Psoriasis further worsen the quality of life of the patient. Awareness of this relationship among the physicians who treat Psoriasis patients is vital, as these psychological co-morbidities can lead to poor treatment outcomes and worsening or precipitation of Psoriasis and vice versa.[35]

Conclusion

The findings of present study indicated that psychiatric co-morbidities in patients of psoriasis are quite high and severity of psoriasis further leads to increased severity of psychiatric illness and poor quality of life in such patients. Younger age, semi-urban/rural population, students, laborers, Psoriasis complication and increased PASI showed a significant association with Psychiatric co-morbidities and hence poor quality of life in all domains. The high prevalence of Psychiatric co-morbidities at each life-stage indicated the need of regular and continued evaluation of Psoriasis patients. Addressing the psychological aspects of dermatological diseases may help minimizing frequency of symptoms exacerbations in patients of psoriasis. Similarly management of the dermatological symptoms may reduce negative emotional responses such as anxiety and depression that can be secondary to the nature of dermatological symptoms. Owing to limitations of study (cross – sectional, small study sample, no follow up) some relationships could not be explored extensively. Also the findings of the study cannot be generalized to Psoriasis patients in community. Therefore, further extensive cohort studies are necessary on large population to find prevalence in community sample and to find any etiological role of Psychiatric disorders in Psoriasis.

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Original Article

Substance abuse in Women: Present scenario in North India

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ABSTRACT

Background: Today no part of world is free from drug addiction. It is spreading its fangs in each and every corner of world and India is also not spared. Increasing population and nuclear system of families in India is also bringing changing patterns in its social and cultural values. It is very fast spreading in younger children and women too. Drug addiction in women impacts the whole family as in India whole of the family is dependent on woman member of the family. **Material and Methods:** This was a retrospective study conducted at Swami Vivekanand Drug De addiction and Treatment Center of the Department of Psychiatry at the government medical college, Amritsar. The study covered women patients registered at the SVNDDTC between July 2012 and June 2015. The diagnosis of substance dependence was made by a consultant psychiatrist after direct interview with the patient and the relatives. The diagnoses were made according to International Classification of Diseases (ICD-10). The data collected was statistically analyzed. **Results:** Total of 99 women reported for de addiction during the study period. The mean age of the sample was 30.09 ± 10.70 years and age of onset of substance dependence of 29.21 ± 8.62 years. The mean years of education were 9.36 years. Majority were married, non-earning, from urban locality and having fair/good social support. **Conclusion:** A typical woman seeking treatment for substance abuse was a middle-aged, married and house-wife from an urban nuclear family with substance abuse impacting their lives, so requiring more attention.

Keywords: *Substance abuse, Addiction, Women, Cocaine*

Introduction

Substance abuse has been defined as the use of a drug or other substance for a non-medical purpose, with the aim of producing some type of 'mind-altering' effect on the user. The non-medical use of habit-forming drugs is not a new phenomenon. Its extent and more certainly, its pattern and trends may have differed, but it has been with us for generations. However, the problem, in recent times, has assumed dangerous proportions. Among young people, the drug abuse has become more or less a part of their culture and their way of life.

The problem of drug abuse among the youth in Punjab, one of India's wealthiest states, is fast becoming an epidemic. The local government had estimated that two-thirds of all rural households in Punjab had at least one drug addict. A study by a state university claims that almost 70% of young men are addicted to drugs or alcohol. Punjab has had a drugs problem for many years, but the fear is that things there have recently become much worse. The government agencies fighting the evil of substance abuse are now facing a new challenge as an increasing number of women in Punjab are

taking to drugs. In the state, use of heroin is the highest, followed by liquor and opium. Almost same is the trend among the fairer sex as well, causing not only health problems for them but also negative impact on their family life. Drug abuse among Indian women was not recognized until recently, and still has not been given proper merit. Roles are changing, and changes in lifestyle are all creating new problems that India is not used to. Studies have shown that within the family, it is often the woman who is impacted most directly. Women, mothers and wives in particular, have an intimate role within the home, and thus end up barring most of the burden brought on by an addicted child or spouse.[1]

Various researches on the origin of drug abuse have found gender differences in factors affecting initiation, progression, and maintenance of drug use. The neurobiological basis of drug abuse and addiction is essentially the same, regardless of the drug taken or the person taking it. Still, males and females may differ in their biological and behavioral responses to drugs. Women typically progress from first use of cocaine, heroin, or marijuana to dependence more quickly than men. But cocaine-induced cognitive impairments and risk for stroke have been found to be more severe in men than in women. Studies show that female hormone estrogen may play a role in reducing cocaine toxicity in women.[2]

"Like many other societies, India is undergoing transition. Changing roles, increased stress, and alterations in lifestyle bring with them newer problems, including drug abuse. Although the problem of drug abuse among women is being increasingly recognized, this phenomenon and related problems do not usually show up in official drug statistics. This is partly due to the limited number of women drug users and the largely subordinate position of women users in the drug subculture. However, women are likely to suffer greater consequences than men due to drug abuse."[3] Also basic behavioral and neurochemical research has suggested that women may be more sensitive than men to the rewarding effects of drugs, perhaps due to differences in brain chemistry. Another concern is that women are more inclined to hide their substance abuse for a number of reasons, including shame, stigma or fear of losing their children. Compared to the general population, women in treatment show significantly higher rates of domestic violence, medical problems, unemployment, homelessness, mental health problems, primary care taking responsibilities, shame and guilt.[4]

Evidence also indicates that psychosocial factors, such as childhood physical and sexual abuse, depression and posttraumatic stress disorder, relationships with a significant other, and partner violence play a more important role for women than for men in beginning and continuing drug use. One of the most devastating health consequences of illicit drug use for both women and men is AIDS, with half of all new HIV infections now linked to injection drug use. Approximately two-thirds of AIDS cases in women and more than half of pediatric AIDS cases in the United States are related to injection drug use by women or their sexual contact with an injecting drug user.[5]

Although women tend to be older than men, on average, when they begin a pattern of regular drunkenness, women's drinking-related problems (e.g. loss of control over drinking, negative consequences of drinking) appear to progress more quickly than those of men. This faster progression also means that women experience shorter intervals than men between onset of regular drunkenness and first encountering the negative consequences of drinking, which include physical problems, interpersonal difficulties, negative intrapersonal changes (such as in personality or self-esteem), poor impulse control, and reduced ability to maintain normal social roles and responsibilities. Women report more severe problems and experience more health-related consequences from substance use and their substance-related problems interfere with functioning in more life domains compared with men. Despite concerns that women would fare worse than men, current evidence suggests that, overall, women's substance abuse treatment outcomes are as good as, or better than, men's treatment outcomes. For example, one recent study found that men and women were equally likely to complete treatment, but women who completed treatment were nine times more likely to be abstinent than women who did not complete, whereas men who completed treatment were only three times more likely to be abstinent than men who did not complete treatment.[6]

Within the family where drugs are being abused, it is normally the woman who is affected the most. Women in India face greater problems from drug

misuse than men do, although these sex differences do not show up clearly in official statistics. In India, women are considered to be disadvantaged and minorities. Unfortunately for the women in India who are bearing the burden of a drug user in the family, they are looked very down upon, and become very affected.[7] It is difficult to get a full picture of women's use of substances and its associated problems, since prevalence studies and biological, prevention and treatment research studies may not address gender issues. The available literature indicates that women are generally less likely than men to use illicit substances, gender differences in illicit substance use being much smaller among adolescents. In contrast, women are more likely than men to use pharmaceutical drugs both medically and non-medically. Substance use during pregnancy can result in low birth weight, early delivery and poor nutritional status. However, some of the effects on the mother and the fetus may also be attributed to the lifestyle associated with illicit substance use.[8]

In many societies, problems of substance use and women's use of substances are heavily stigmatized and cultural norms may make it difficult for women to acknowledge such a problem or leave their homes and families to have treatment. Because many women with substance use problems also live with a partner or other family members with a substance use problem, it is even more difficult for them to obtain support to undergo treatment.

Because of the characteristics of women with substance abuse problems and the obstacles to treatment they face, many researchers have suggested that women would be less likely to seek, begin, or complete treatment, and would therefore have poorer long-term outcomes. So they need more attention and support from the families and society.

Material and Methods

This was a retrospective study conducted at Swami Vivekanand Drug De addiction and Treatment Center (SVNDDTC) of the Department of Psychiatry at the Government Medical College, Amritsar. The study covered women patients registered at the SVNDDTC between July 2012 and June 2015. The approval was taken from Institutional Ethical Committee.The diagnosis of substance dependence was made by a consultant psychiatrist by directly interviewing the patient and the relatives after taking their informed consent. The diagnoses were made according to International Classification of Diseases (ICD-10).

For all the registered female subjects the available records were scanned and relevant information was retrieved according to a study specific predetermined coding plan. The information included was socio-demographic profile and substance use pattern. The clinical information was discerned from the recorded history and clinical evaluation.

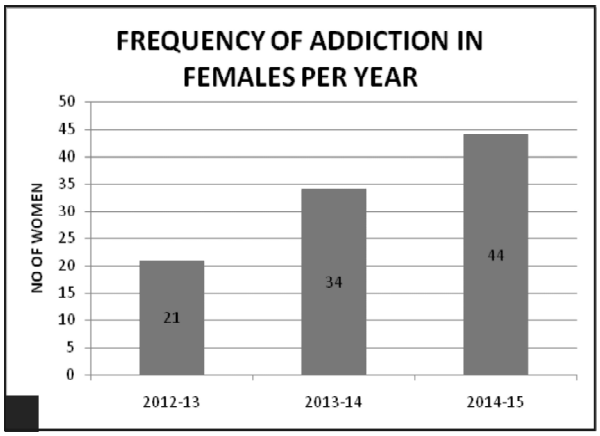
Measures

A semi structured proforma was used to record age, marital status, education, occupation, family type, religion, and locality. This included details of substances abused by females.Four levels of drug-related complications were operationalized which covered the seven areas of functioning such as health, occupation, finance, family, marital, legal, and social areas. The severity of complications at the first presentation (nil, mild, moderate, and severe) was extracted from the case records. Descriptive statistics was used for the demographic and clinical variables. Nonparametric tests were applied to see relationship between nominal and ordinal data. Parametric tests were applied for the continuous variables.

Results

Demographic profile

Total of 99 women reported for de addiction during the study period (21 females during 2012-13, 34 during 2013-14 and 44 during 2014-15). (Graph 1)

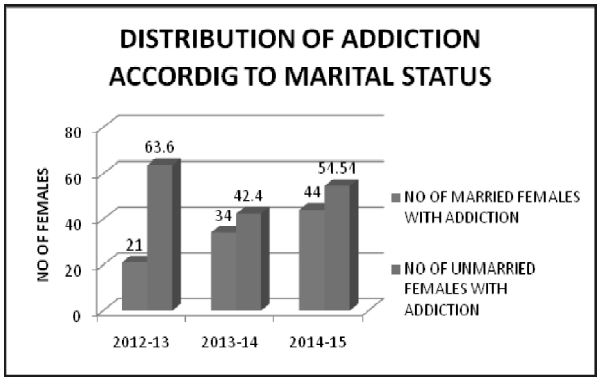


GRAPH 1

The mean age of the sample was 30.09 ± 10.70 years, with age of onset of substance intake of 27.30 ± 9.83 years and age of onset of substance dependence of 29.21 ± 8.62 years. The mean years of education were 9.36 years. Majority (75.14%) were married (71.42% in year 12-13, 67.64% in 13-14 and 86.36% in 14-15) {Graph 2}, non-earning (49.1%; includes 20% housewives), Sikh by religion, from urban locality (71.42% in year 12-13, 55.88% in 13-14 and 72.73% in 14-15) {Table 1}. Majority was having fair/good social support (69%).

Table-1: Showing Trend of Addiction in Females Between Urban/Rural Area

Year	No. of Addicted Females Living in Urban Area (%)	No. of Addicted Females Living in Rural Area (%)
2012-13	15 (71.42%)	6 (28.58%)
2013-14	19 (55.88%)	15 (44.12%)
2014-15	32 (72.73%)	12 (27.27%)



GRAPH 2

Clinical profile

The common substances were: Opioids (53.51%), Alcohol, Tobacco and sedatives (46.49%). Tobacco was used by smoking, chewing or both. The common opioids used were: heroine (80%), smack (12%), others including injectable buprenorphine or pentazocine, tramadol tablets and opium (8%). About 23% were polysubstance users. Out of the total heroine users 25% were injecting the same. The reasons for initiating substance use were: To alleviate frustration or stress (56%), curiosity (29%), and peer pressure (15%). The reasons for relapse were: withdrawal symptoms (55%), peer pressure (40%) and stress (5%).

Discussion

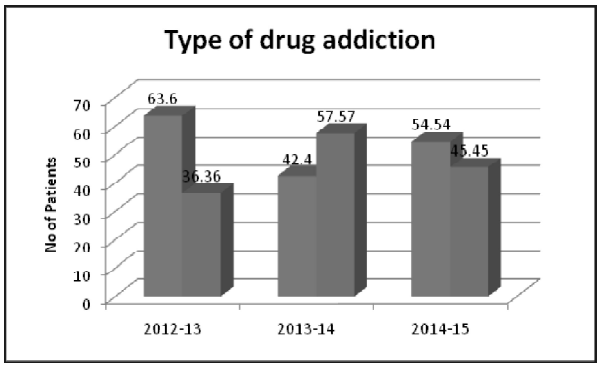
Substance abuse is a complex problem having medical and social ramifications which impacts all social strata. It affects not only users and their family but all sections of the society. It causes immense human distress, financial losses and leads to crime and violence worldwide. The epidemic of drug abuse continues to painstakingly seep into the country's social and cultural aspects and has assumed an alarming dimensions.[9]

Indian society is in transition and there are problems with changing roles and lifestyles. Even then, compared to the West the problem of substance abuse among women is very low. However, it is being increasingly recognized among the related professionals and the media that the prevalence of substance abuse among women is showing a definite increase. As yet, this does not get reflected in official statistics for a variety of reasons: Lack of funding and independent financial resources, societal stigma, and burden of childcare, problems in transportation, and the largely subordinate position of the women. Nearly half of our sample having initiated substance use to alleviate frustration or stress is in line with earlier report of humiliation, shame, anger, and marital conflict as major reasons to initiate drugs.[10]

The present research was a retrospective chart review with the aim of studying the profile of women seeking treatment at a de addiction center at a tertiary care hospital. Thus, it attempts to provide descriptive information about substances abuse among women in northern India. This profile of treatment seekers may help us to address more effectively a partly hidden problem. The commonest substance of abuse recorded was opioids in our study. This points towards the highly addictive nature of opioids. Majority of the women in the present study being married, well-educated and in their 4th decade is similar to the finding of the Rapid Assessment Survey.

The substances of abuse being mainly opioids and Alcohol, and less commonly sedative-hypnotics and tobacco, is similar to earlier studies from other parts of India reporting no abuse of cannabis or inhalants among women[11-13] (Graph 3). Nearly half of our sample having a family history of substance dependence is supportive of earlier research establishing that family members', especially husband's and father's, substance abuse plays a contributory role in initiation of substance use in

women[14].



GRAPH 3

It is well-recognized that women have proportionately more fatty tissue, less body water, and lesser activity of gastric alcohol dehydrogenase enzyme than men, leading to higher drug concentration and related complications. Also, our sample reporting health as the most affected area, alongside a longer duration of substance dependence and more impairment in family rather than financial or occupational domains.

The results of our study must be seen within its limitations. The sample size was small. The retrospective chart review entailed inferring relevant data from the recorded narratives. Some of the instruments, assessments, and definitions used (e.g., social support, impairment) were center-specific and have not been evaluated for their reliability. The sample comprised of only women seeking de addiction treatment at one center. Hence, generalization of our findings to other de addiction centers, and across the community and the country demands caution.

However, within these limitations the study leads to the following conclusions. A typical woman seeking treatment for substance abuse was a middle-aged, married and house-wife from an urban nuclear family with substance abuse impacting their lives, especially their physical health. Thus there is a need for measures to improve access to de addiction services to women substance users in the community. This may well be a small part of the wider concerted social action in the context of empowerment, support, and attention to the special needs of women.

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Original Article

Stress and Coping in Parents of Children with Mental Retardation

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ABSTRACT

Background: *Perceived stress are known to be higher in patient with psychiatric illness, more so with developmental disorders. However variable factors determine how they cope with these. Analysis of the stress perception and coping strategies practiced among parents of the mentally retarded children would be worthwhile. The authors examined the levels of perceived stress among parents of the mentally retarded children and the coping skills used by these parents.* ***Method:*** *Parents of fifty children with known diagnosis of mental retardation were subjected to A Family interview for stress and coping in mental retardation (FISC-MR) and General Health Questionnaire 12 (GHQ 12).* ***Results:*** *Parents scored highest on extra input for care score followed by personal distress, decreased leisure time, and altered social life. Parents scored low on financial problem, other interpersonal problem, and marital problem. Evaluation of FISC-MR Part-2 revealed that parents scored highest on social support followed by global rating, rearing practice specific to training, expectation from child, general awareness about MR, attitude towards child management, general rearing practices, misconceptions and attitude towards child as a person and family member. There was strong significant positive correlation between Psychiatric morbidity and the perceived stress among the parents. This means parents who scored high on psychiatric morbidity also reported higher degree of stress. Results revealed statistically significant difference between ($p < 0.05$) coping strategies and Psychiatric morbidity but there was no significant correlation between the two.* ***Conclusions****: Parents of mentally retarded children suffer significant amount of stress and they often have poor coping skills. Parents were coping sub-optimally mainly in area of child rearing practices, global rating of family adaptation and social support. There was strong significant positive correlation between Psychiatric morbidity and the perceived stress among the parents.*

Keywords*: Mental Retardation, Parents, Perceived stress, Coping*

Introduction

ICD 10 defines Mental Retardation as condition of incomplete or arrested development of mind, characterized especially by impairment in skills manifested during development period, contributing to the overall level of intelligence. DSM 5 has replaced the term mental retardation with Intellectual disability. It defines it as a disorder with onset during the development period that includes both intellectual and adaptive functioning deficits in conceptual, social and practical domains. A child with mental retardation creates tremendous stress for the parents. It changes the goals and relationship of parents.[1] In our country, the family members have traditionally shared the responsibilities for the care of such children. But with breaking of joint families and economic hardship the stress experienced by the parents of such children has compounded.[1] Stress

in the parents is associated with below than optimal parenting and disrupted family systems.[2] Venkatesh et al[3] reported that the extent of the person's vulnerability to stress depends on his/her personality, coping skills and available social supports. High level of stress in parents of children with mentally retardation is associated with increased level of disability of these children.[4] Such distressed parents are unable to mobilize or exploit the available resources, unable to participate in the home based intervention methods and may end up worsening the disability of such children. Also with increased level of disability, high level of stress and burden is experienced by the parents.[5] Commonly assosiated disabilities such as communication skills and behavioural difficulties are important correlates of parental stress.[6] The level of parental education and family income also has an impact on the parental perceived stress and anxiety.[1] Education of the mother is significantly related to her attitudes towards her child.[7] The increase in the level of psycho-social problems faced by the parents correlated with the level of mental retardation of the child.[8]

Study by Mohamed G. Al-Kuwari in 2005 using the General Health Questionnaire (GHQ-12) showed higher prevalence of psychiatric morbidity among mothers of mentally retarded children compared to mothers whose children were not mentally retarted.[9] In 2011, Fathia et al studied psychosocial impacts of mentally retarded children on Parents and found that 51.2% of mothers reported moderate depressive symptoms while nearly 30% reported severe symptoms of depression. 70% of parents reported moderate to severe anxiety scores on the HADS.[10]

In 2000, Chandorkar and Chakraborty found higher prevalence of psychological morbidity in the parents of mental retarded children compared to parents of children without mental retardation.[11] Study by Seshadri et al found that most mothers perceived that a mentally retarded child was a burden that varied from being moderately to severely troublesome. Greater the degree of the child's retardation, greater is the perceived burden on the mother.[7] Some caregivers cope better than the others. Hassall et al[12] reported that in the mothers of children with an intellectual disability; parenting stress levels inversely correlated with family support. Mc Pherson[13] reported that the relationship between maternal intolerance and parenting stress was significant . Higher level of parenting stress was associated with greater intolerance for child's misbehavior. Leung et al[14] reported differences in parenting stress by socio-economic status. Webster-Stratton[15] (1990) reported that family stressors due to major demographic hardships such as poverty and unemployment have deleterious effects on the parenting of children with mental retardation.

Upbringing of the disabled child creates an extra demand on the resources of the parents. Parents faced more risk in marital life which arose due to conflict between wife and husband in properly sharing the additional need for caring the child.[8] Mothers experienced psychological distress due to social stigma and anticipation of future.[9] Parents have to struggle between meeting the time bound household chores and in attending mental retarded child's needs on day to day basis.

Thus previous researches and studies on parents' burden shows that there are multiple factors and mediators that affect the stress and psychological well being of the parent of mentally retarded children, but a consolidated studies comprising all these factors and mediators as variables and co variables are lacking in this area. Hence this study has been designed to study the stress experienced and coping strategies used by the Parent's of children with mental retardation.

Material and Methods

Sample and population

Hundred students with mental retardation studying in a special school and attending psychiatric services from a tertiary care hospital were randomly chosen for the study. They were randomly allotted the numbers between one and hundred and then every even number student was selected. Parents of these fifty students were included into the study. Informed consent was obtained from the parents. The study was approved by the institutional ethical committee. The parents were interviewed by the principal worker. Firstly demographic profiles of the parents were recorded. A semi-structured performa was used to collect the details including child variables such as age, gender and level of mental retardation, and parent variables such as age, education, occupation, religion, type of family and family income. Each parent were interviewed separately and they were explained the procedure

in detail. They were given questionnaires of the tools printed on paper in a booklet form and were asked to reply on the same. IQ of the child were recorded from school records or from disability certificate obtained from Government Hospital or as assessed by the clinical psychologist of the hospital .To assess the coping strategies used by parents, interview method were used. FISC-MR and GHQ 12 were used.

Inclusion criteria: These parents were able to read and understand English. Their children had IQ < 70 and were less than 18 Yrs in age. Children with additional associated disabilities were also included in the study as it is an important variable in present study.

Exclusion criteria: (a) Individuals unwilling to participate in the study (b) Parents with a previous history of mental illness (c) Parents with a previous history of Head Injury.

Research tools used for the study: (a) *FISC-MR:* A Family interview for stress and coping in mental retardation, a tool developed by Girimaji et al[16] (1999) at NIMHANS, Bangalore, was used to study stress and coping in parents. This scale has two parts: Part I measures Perceived stress – this part has 11 subscales covering 4 areas namely; daily care stress, family emotional stress, social stress and financial stress. Scoring scores 0 to 4 (0-nil, 1-mild, 2-moderate, 3-high and 4-very high). Part II measures Mediators of stress or coping strategies. FISC -MR is a useful, reliable and valid instrument for both clinical and research purposes with moderate to high reliability (internal consistency, inter-rater reliability and test-retest reliability) and validity (factorial, criterion and construct) of the instrument.[16]

(b) *General Health Questionnaire (GHQ-12):* It is a measure of current mental health. It focuses on two major areas: the inability to carry out normal functions and the appearance of new and distressing symptoms. The GHQ 12 is used to detect psychiatric disorder in the general population and within community. It assesses the respondent's current state and asks if that differs from his or her usual state. All items have a 4 point scoring system that ranges from a 'better/healthier than normal' option, through a 'same as usual' and a 'worse/more than usual' to a 'much worse/more than usual' option. Likert scoring (0-1-2-3) is applied. Threshold score is 12 (out of a maximum of 36).[17]

Data analysis: Categorical variables were observed as numbers and percentages. Continuous variables were evaluated as Mean ± Standard Deviation. Correlation coefficient has been calculated between continuous variables to check the degree of correlation. Comparison across group was performed using 2 independent sample t. All were subsequently analyzed statistically. An alpha level of 5% has been taken. Hence any p value less than 0.05 has been considered to be significant. Total score of FISC-MR Part-1(sums of Sub-scale 1 to 11) quantifies perceived stress; greater the score more severe is the level of perceived stress. Total score of FISC-MR Part-2 denotes coping strategies i.e. how well the subject is coping with the stressors; greater the score poorer the coping skills and adaptation of the subject. To assess morbidity, GHQ 12 was used.

Results

Out of the total of 50 parents interviewed; primary care givers comprised of 35 mothers (70% of the informants) and 15 fathers (30 % of the informants). Mean of perceived stress level was 14.44.(SD = ± 2.88) (Table 1). Sub-scale wise evaluation revealed that parents scored highest on extra input for care score followed by personal distress, decreased leisure time, and altered social life. Parents scored low on financial problem, other interpersonal problem, and marital problem. In extra input for care subscale 50 out of 50 parents accepted for extra input for care. 5 out of 50 i.e. about 10% reported in low category, 23 out of 50 i.e. about 46 % scored in moderate category, 19 out of 50 i.e. about 38% scored in high category, and 3 out of 50 i.e. about 6% scored in very high category of extra input for care. Mean score for this subscale was 2.4 out of maximum 04; SD was 0.76. In personal distress subscale (S5) 14 out of 50 i.e. 28% scored in mild category, 19 i.e. 38% in moderate category, 12 i.e. 24% in severe category and 03 i.e., 6% scored in very severe category of personal distress. Mean for this subscale was 2 and SD was 0.97.In decreased leisure time subscale (S2) 8 out of 50 i.e. 16% scored in minimal category, 25 i.e. 50% in somewhat decreased category, 10 i.e. 20% in definitely decreased category and 02 i.e. 4 % in totally decreased leisure time category. Mean score

Table-1: Assessment of stress and coping in parents

Domains of FISC MR part 1 and 2	Description of domains	MEAN	SD
	FISC MR Part 1		
S1	EXTRA INPUT FOR CARE	2.4	0.76
S2	DECREASED LEASURE TIME	2	0.92
S3	NEGLECT OF OTHERS	1.40	1.07
S4	DISTURBED BEHAVIOUR	1.28	1.14
S5	PERSONAL DISTRESS	2.00	0.97
S6	MARITAL PROBLEM	0.72	1.01
S7	OTHER INTERPERSONAL PROBLEM	0.52	0.71
S8	EFFECT ON SIBS & OTHER FAMILY WORRIES	1.18	1.17
S9	ALTERED SOCIAL LIFE	1.44	.88
S10	SOCIAL EMBARRASMENT	1.06	0.93
S11	FINANCIAL IMPLICATION	0.44	0.81
	FISC MR Part 2		
S12	GENERAL AWARENESS ABOUT MR	1.52	1.39
S13	MISCONCEPTIONS	1.20	1.05
S14	EXPECTATION FROM CHILD	1.60	1.32
S15	ATTITUDE TOWARDS CHILD AS A PERSON & FAMILY MEMBER	1.28	1.18
S16	ATTITUDE TOWARDS CHILD MANAGEMENT	1.36	1.14
S17	GENERAL REARING PRACTICES	1.32	1.24
S18	REARING PRACTICE SPECIFIC TO TRAINING	1.62	0.70
S19	SOCIAL SUPPORT	1.96	0.70
S20	GLOBAL RATING	1.74	0.63
	SECTION 1: PERCEIVED STRESS(Sum of S1 to S11)	14.44	2.88
	SECTION 2: MEDIATORS OR COPING STRATEGIES (Sum of S12 to S20)	13.60	3.37

for this subscale was 2 with SD of 0.92.In altered social life (S9) subscale 16 out of 50 i.e. 32% scored in mild category, 20 i.e. 40 % in moderately altered social life category, 5 i.e. 10% in severely altered category. Mean score of this subscale was 1.44 and SD was 0.88. Total score of FISC-MR Part-2 denotes coping strategies i.e. how well the subject is coping with the stressors; greater the score poorer the coping skills and adaptation of the subject. The mean of coping strategies score was 13.60 (SD = ± 3.37). (Table 1). Sub-scale wise evaluation revealed that parents scored highest on social support followed by global rating, rearing practice specific to training, expectation from child, general awareness about MR, attitude towards child management, general rearing practices, misconceptions and attitude towards child as a person and family member. In social support (S19) subscale 12 out of 50 (24%) scored in best social support category, 29 (58%) in adequate category, 8 (16%) in somewhat adequate category and 1 (2%) in no/very little category. Mean score for the subscale was 1.96; SD was 0.70. Global rating of family adaptation subscale (S20) revealed that 18 out of 50 (36%) scored in extremely well adapted category, 27 (54%) in adequately adapted category,

Table-2: Relation of GHQ 12 score with stress and coping in Parents

	GHQ-12	Number of parents	Mean	SD	P-value	Significance
Total Score FISC-	< 12	30	12.72	2.34		
					< 0.001	Significant
MR Part-1	≥ 12	20	16.81	1.57		
Total Score FISC-	< 12	30	13.24	2.98		
					< 0.001	Significant
MR Part-2	≥ 12	20	17.10	3.86		

5 (10%) in inadequately adapted category. Mean score for the subscale was 1.74; SD was 0.63. In rearing practice specific to training subscale (S18) 25 (50%) scored in most favourable category, 19 (38%) in somewhat favourable category, 06 (12%) in somewhat unfavourable category. Mean score for the subscale was 1.62; SD was 0.70. In subscale expectation from child (S14) 44 out of 50 i.e. 88% of parents scored in either largely appropriate or mildly appropriate category and only 6 (12%) scored in moderately inappropriate expectation category. None score in highly inappropriate category.

To assess psychiatric morbidity among parents of MR children, GHQ 12 was used. Total number of cases with scores above the cut off was 20 out of 50 i.e. prevalence of morbidity in sample population was 40%. Table 2 shows relation between GHQ 12 score (psychiatric morbidity) with stress and coping in Parents**.** By using 2 independent sample t-test p-value < 0.05. There is significant difference between mean FISC-MR Part 1 score and mean FISC-MR Part 2 score with respect to GHQ-12 score. With respect to GHQ12 and FISC MR part 1, correlation coefficient (r) was 0.703 , P-value < 0.001 .There was strong significant positive correlation between GHQ-12 score and Part

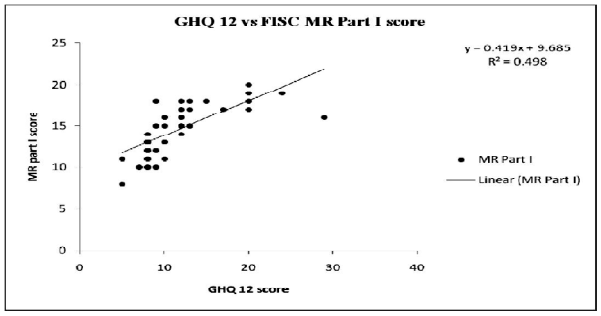

Fig. 1: Correlation between GHQ 12 score and perceived stress in parent

1 Score (Fig 1). With respect to GHQ12 and FISC MR Part 2, correlation coefficient (r) was 0.310, P-value 0.301 (> 0.05) (Not Significant). There was no significant correlation between GHQ-12 score and Part 2 Score (Fig 2)

Discussion

The results of this study indicate that parents of mentally retarded children suffer significant amount of stress. Findings are similar to those of Hussain and Juyal[18] which concluded that caregivers of disabled children undergo more than average amount of stress. In this study it was mainly in domains of daily care and social life. Domain/ Sub-scale wise evaluation (Table 1) revealed that the parents scored highest on extra input for care score followed by personal distress, decreased leisure time, and altered social life. 50 out of 50 parents accepted some extra input for care, and 45 (90%) reported moderate to severe extra input for care. 34 out of 50 parents (68%) reported moderate to very severe personal distress. 37 out of 50 (74%) of parents reported somewhat to totally decreased leisure time. 25 out of 50 (50%) of parents reported moderately to severely altered social life due to continuous care-giving. The parents had fairly good support from their spouse and they did not report marital conflict. The findings are similar to those of Singh et al[19] which concluded that having an intellectually subnormal child is not altogether a sign of so-called 'bad fate or misfortune' to everyone, but it can also be a challenge which strengthens the parents of those children. The results of this study indicate that some of the parents of mentally retarded children showed poor coping skills. This was mainly in area of child rearing practices and awareness

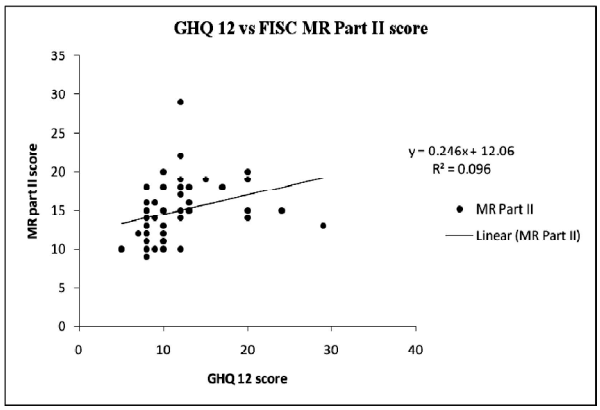

Fig. 2: Correlation between GHQ 12 score and coping in parent

about MR. Sub-scale wise evaluation revealed that parents scored highest on social support followed by rearing practice specific to training and expectation from child. This indicated that there was lack of social support in some of parent causing significant burden of care. Training about rearing children with MR and awareness about MR were lacking in many of the parents. Psychiatric morbidity

is common among the parents of mentally retarded children (prevalence of morbidity in sample population was 40%). Caregivers of mentally retarded children have higher prevalence of depression than normal population.[20] There was strong significant positive correlation between Psychiatric morbidity and the perceived stress among the parents. This means parents who scored high on psychiatric morbidity also reported higher degree of stress. Results revealed statistically significant difference between ($p < 0.05$) coping strategies and Psychiatric morbidity but there was no significant correlation between the two.

Conclusion

The results of this study indicate that parents of mentally retarded children suffer significant amount of stress and they often have poor coping skills. Parents appear to mainly have difficulty in area of daily care and social life domains. Parents were coping sub-optimally mainly in area of child rearing practices, global rating of family adaptation and social support. 25 out of 50 (50%) parents were found with somewhat favorable to somewhat unfavorable rearing practice specific to training. On global adaptation subscale most of the parents scored in extremely well adapted or adequately adapted category and only 5 out of 50 (10%) were inadequately adapted. 82% of parents (41 out of 50) were having availability and utilization of social resources in best and adequate category. There was strong significant positive correlation between Psychiatric morbidity and the perceived stress among the parents. This means parents who scored high on psychiatric morbidity also reported higher degree of stress. Thus we may conclude that living with and caring for the child with Mental Retardation is very stressful and burdensome. Multiple stressors seem to be responsible for the stress and burden experienced by the caregivers. Due to high level perceived stress of some of the caregivers in the study were showing inadequate coping skills.

Recommendations

(a) As this study revealed that the parents of mentally retarded children are at risk for psychiatric morbidities and should be screened for early intervention. It is recommended that a more supportive environment in the form of help in daily care and restive care may provide helpful.

(b) A concerted effort must be made to prepare and train Parents of mentally retarded in looking into the demands and the needs of their children.

(c) Skills training may improve the resilience of the caregivers.

Limitations of the study

(a) The sample of the present study comprises of those parents who were availing services of either special school or tertiary care hospital, were educated and were more aware about concept of mental retardation than general population. Probably a study in a community setting may yield a more realistic result.

(b) Control was not selected during the sampling process.

(c) Other variables like the education level of the parents, exposure to previous seminars/ workshop and availability of additional help at home were not included in this study.

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Original Article

A prospective study of factors affecting treatment compliance in psychiatric patients attending a tertiary general hospital psychiatry unit

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ABSTRACT

Background: *Psychiatric disorders are usually long standing, requiring regular monitoring, follow up and medications for effective management of symptoms. This study was carried out to know the probable factors that affect the compliance to treatment. The study aimed to study the pattern and regularity of follow-ups in psychiatric patients along with various factors affecting treatment compliance and also measured short term compliance in patients attending psychiatry out patient services.* ***Methodology:*** *187 patients diagnosed and evaluated for the first time were enrolled in the study after taking due informed consent as prospective data for 6 months (short term compliance). A special proforma was prepared to collect the following data: Socio – demographic aspects, diagnosis and follow up details, compliance and non-compliance factors. Patients were then interviewed using the special proforma and relevant data was collected for the individual case. The data was then pooled, tabulated and subjected to statistical analysis.* ***Results:*** *Majority of patients with depressive – anxiety disorders and psychotic disorders had a good compliance while those with substance related disorders had a poor compliance. The main reasons of non compliance in prospective study were patients being busy with work or out of town, patients having relapse of symptoms, lack of caregiver, availability of extra medications and bad weather.* ***Conclusion:*** *Socio-demographic factors do not affect the compliance of patients with mental illness. The most significant factor affecting compliance to follow up was found to be the clinical profile of the patient. Various reasons cited by patients for poor compliance to medications included those related to the patient, to the caregiver, to the medications and to environmental factors. Compliance of patients on ECTs was good, with very few patients having poor compliance.*

Key words: *Compliance, Factors affecting compliance*

Introduction

Adherence or compliance is defined as the extent to which patient's behavior coincides with medical or prescribed health advice.[1] Psychiatric disorders are usually long standing, requiring regular monitoring, follow up and medications for effective management of symptoms. Regular follow up and good treatment compliance ensures a favorable prognosis in most of the disorders. The reasons for non compliance may include discomfort resulting from treatment, expense of treatment, decision based on personal values and judgments; or religious or cultural beliefs about the advantages and disadvantages of the proposed treatment,

maladaptive personality traits or coping styles.[2]

Considering the psychological, social and biological complexity and the long term nature of psychiatric disorder, the topic is of significant interest to the psychiatrist and so this study was done to study pattern and regularity of follow-ups in psychiatric patients, the short term compliance and to study various factors affecting treatment compliance in patients attending psychiatry outpatient services.

Methodology

This was a longitudinal study conducted in outpatient department of Psychiatry of a tertiary teaching hospital after Institutional Ethics Committee approval. 187 patients diagnosed and evaluated for the first time were enrolled in the study after taking due informed consent and their follow up data of next 6 months was recorded to look for short term compliance. The inclusion criteria were all patients attending the psychiatry OPD and diagnosed as having psychiatric disorders according to DSM-IV-TR criteria, patients of either sex and of any age, all the patients and/or relatives willing to participate in the study and giving informed consent for same, all patients with reliable and adequate data regarding compliance to treatment. The exclusion criteria include patients lacking objective data regarding compliance to treatment and patients not suitable for study for any other reason as per discretion of the investigator.

The following materials were used for assessment of the patients:

1. A special pro-forma was prepared to collect the following data:
   a) Socio–demographic aspects
   b) Diagnosis and follow up details over 6 months
   c) Compliance and noncompliance factors.
2. DSM-IV-TR criteria for diagnosing patients.[3]

The population was further divided into three groups depending on compliance (number of appointments missed over 6 months) on various treatment modalities into:

a) Good compliance: missed only 1 -2 appointments, did not miss their medications or if, missed, then not for more than 6 days
b) Moderate compliance: missed 3 – 4 appointments, having missed medication for more than or equal to 7 days but less than a month
c) Poor compliance: missed 5 or more appointments, having missed medications for more than a month or discontinued medications

Factors affecting compliance were cross – tabulated with these three groups and subjected to statistical analysis using computerized software.

Results

The sample consisted of 187 patients with a mean (Sd) age of 33.4 yrs (10.99), the age range being between 15 to 66 years. The sample comprised of 65 (34.8%) females and 122 (65.2%) males. 46 (24.6%) of patients were unmarried, 122 (65.2%) were married and 5 (2.7%) were widows or separated. There were 28 (15%) uneducated patients, 125 (66.8%) school educate patients and 34 (18.2%) college educated patients. 80 (42.8%) patients were unemployed, 69 (36.9%) patients engaged in unskilled work, 10 (5.3%) in semi – skilled work and 28 (15%) in skilled work. 56.7%, i.e., 106 patients belonged to the lower class, 38.5%, i.e., 72 belonging to middle class and only 4.8% , i.e., 9 patients belonging to upper class in the study. The sample consisted of 149 (79.7%) Hindu's, 36 (19.3%) Muslims and 2 (1.1%) following other religions. 140 (74.9%) patients came from nuclear families while 47 (25.1%) came from joint families.

Of the 187 patients studied around 63 (33.7%) patients were diagnosed as suffering from the various depressive and anxiety disorders. Another 60 (32.1%) patients enrolled in the study were diagnosed with substance related disorders. 23 (12.3%) patients received a diagnosis of schizophrenia and other psychotic disorders and 41 (21.9%) patients received diagnosis other than these three categories such as personality disorders, impulse control disorders, adjustment disorders, etc.

Of the 187 patients asked to follow up at appropriate intervals, 77 (41.2%) showed good compliance, i.e., those patients who didn't miss any appointments they were given or missed only 1 -2 appointments; 30 (16%) had moderate compliance, i.e., those patients who missed 3 – 4 appointments; and patients having poor compliance were 80 (42.8%), who missed 5 or more appointments in the 6 months duration that this population was studied. Around 170 patients of the 187 studied were prescribed medications, amongst these 51 (30%) had good

compliance, i.e., did not miss their medications or if, missed, then not for more than 6 days; 21 (12.35%) had moderate compliance, having missed medication for more than or equal to 7 days but less than a month; and majority, i.e., 98 (57.64%) patients had poor compliance on medications having missed medications for more than a month or discontinued medications. As can be seen from the table, almost 89% or 8 out of 9 patients put on ECT had good compliance , i.e., did not miss more than 1- 2 ECTs. The probable reasons for this could be that more severely ill patients are put on ECT's, more frequent follow up for ECT's, quicker improvement seen on ECT's as compared to other treatment modalities.

Most reasons quoted were patient related, of which, maximum (88) times the reason given was the patient having a busy schedule, either due to work or other obligations. 48 times the reason given was that patients went out of town and couldn't come for treatment as advised, followed by poor compliance due to relapse of symptoms (31 times), medical co- morbidities in the patients (26 times), patient not cooperating for treatment (15) or having forgotten appointments (6 times).

The top ranking caregiver related reason quoted was lack of a caregiver (20 times), followed by stressful events at home or in the family (13 times), financial constraints on the part of the family members (11 times), lack of knowledge about illness and need for treatment (9 times) and medical illness in the caregivers (9 times) were also commonly given reasons.

The drug related reasons cited by the patients included availability of extra medications (25 times), claiming to feel 100% better with medications and so feeling that they can be discontinued (14 times), perceiving no improvement on the prescribed medications (3 times) or due to side effects to medications (3 times) as well as 2 times claiming to try alternate medications. Certain environmental reasons like bad weather (30 times) and living at a long distance from mental healthcare facilities (19 times) was also on the list of reasons for poor compliance.

These reasons help us formulate recommendations like working out appointments according to patients schedule, sending them reminders through sms or emails, improving awareness about mental illness and their treatment, working with the entire family, increasing the number of health care facilities, educating the patients and care givers about need for continuing treatment and expected side effects, etc.

The factors like age, sex, marital status, education, occupation, socio-economic status did not affect the compliance on follow up. The most significant factor affecting the short term compliance is diagnosis. Maximum number of patients having depressive or anxiety disorders, i.e., 36 (57.1%) of the 63 patients in this category had a good compliance, 16 (25.4%) had moderate compliance while only 11 (17.5%) had poor compliance. Similarly, maximum no. of patients diagnosed with schizophrenia and other psychotic disorders, i.e., 13 (56.5%) of 23 patients had good compliance, 3 (13% had moderate compliance and 7 (30.4%) had poor compliance. In comparison only 17 (28.3%) of the 60 patients having substance related disorders had a good compliance, 9 (15%) had moderate compliance while maximum, i.e., 34 (56.7%) had poor compliance. This is similar to the clinical experience of most physicians with patients having substance related disorders. Also patients given diagnosis, other than these three, showed similar distribution with only 11 (26.8%) having good compliance, 2 (4.95) moderate compliance and maximum, i.e., 28 (68.3%) having poor compliance. This group consider mostly of patients with personality disorders, impulse control disorders and adjustment disorders, etc. The difference seen was found to be statistically very significant with p value less than 0.01 [Tables 1a and 1b].

The factors like age, sex, marital status, education, occupation and socio-economic status do not affect the compliance on medications. The most significant factor affecting the short term compliance on medications is diagnosis. Majority of patients having depressive or anxiety disorders (44.4%) had a good compliance while majority of patients diagnosed with schizophrenia and other psychotic disorders (61%), patients having substance related disorders (72%) or other disorders (59%) had poor compliance to medications. Other diagnosis consisted mostly of patients with personality disorders, impulse control disorders and adjustment disorders, etc. The reason for psychotic patients having poor compliance could be their uncooperativeness or lack of knowledge in the caregivers about need and availability of medication for same. Poor compliance in patients of substance related disorders and personality disorders are a common clinical experience amongst psychiatrists.

Table-1a: Demographic Factors affecting compliance on follow up

Parameter		Good compliance (N = 77)	Moderate compliance (N = 30)	Poor compliance (N = 80)	Test, p value
Age (Mean ± S.D.)		34.18 ± 11.4	32.36 ± 10.47	33.08 ± 10.9	ANOVA, p = 0.70
Sex	Female	28 (36.36%)	12 (40%)	25 (31.25%)	χ^2,
	Male	49 (63.64%)	18 (60%)	55 (68.75%)	p = 0.642
Marital Status	Unmarried	18 (23.37%)	7 (23.33%)	21 (26.25%)	
	Married	58 (75.32%)	21 (70%)	57 (71.25%)	χ^2,
	Widow	1 (1.3%)	2 (66.67%)	2 (2.5%)	p = 0.623
Education	Educated	69 (89.61%)	24 (80%)	66 (82.5%)	χ^2,
	Uneducated	8 (10.39%)	6 (20%)	14 (17.5%)	p = 0.322
Occupation	Skilled	13 (16.88%)	4 (13.33%)	11 (13.75%)	
	Semi-skilled	5 (6.5%)	2 (6.67%)	3 (3.75%)	χ^2,
	Unskilled	24 (31.17%)	8 (26.67%)	37 (46.25%)	p = 0.409
	Unemployed	35 (45.45%)	16 (53.33%)	29 (36.25%)	
Socio–economic status	Upper class	5 (6.5%)	0 (0%)	4 (5%)	
	Middle class	34 (44.15%)	15 (50%)	23 (28.75%)	χ^2,
	Lower class	38 (49.35%)	15 (50%)	53 (66.25%)	p = 0.099

Table-1b: Diagnosis affecting compliance on follow up

Diagnosis	Good compliance (N = 77)	Moderate compliance (N = 30)	Poor compliance (N = 80)
Depressive & anxiety disorders	36 (46.75%)	16 (53.33%)	11 (13.75%)
Schizophrenia and other psychotic disorders	13 (16.88%)	3 (10%)	7 (8.75%)
Substance related disorders	17 (22.07%)	9 (30%)	34 (42.5%)
Others	11 (14.30%)	2 (6.67%)	28 (35%)

χ^2 = 35.663; df = 6; p < 0.01 (significant)

The difference seen was found to be statistically very significant with p value less than 0.05 [Tables 2a and 2b].

Discussion

Non -compliance or non- adherence to treatment

Table-2a: Demographic Factors affecting compliance on medications

Parameter		Good compliance (N = 51)	Moderate compliance (N = 21)	Poor compliance (N = 98)	Test, p value
Age (Mean ± S.D.)		31.98 ± 11	38 ± 11.71	34.94 ± 10.4	ANOVA, p = 0.07
Sex	Female	17 (33.33%)	8 (15.1%)	28 (52.8%)	χ^2,
	Male	34 (66.67%)	13 (11.1%)	70 (59.8%)	p = 0.641
Marital Status	Unmarried	15 (29.41%)	4 (19.04%)	17 (17.35%)	
	Married	36 (70.59%)	16 (76.2%)	77 (78.57%)	χ^2,
	Widow	0 (0%)	1 (4.76%)	4 (4.08%)	p = 0.307
Education	Educated	46 (90.2%)	19 (90.48%)	78 (79.6%)	χ^2,
	Uneducated	5 (9.8%)	2 (9.52%)	20 (20.4%)	p = 0.17
Occupation	Skilled	8 (15.68%)	2 (9.5%)	17 (17.34%)	
	Semi-skilled	4 (7.85%)	1 (4.78%)	3 (3.06%)	χ^2,
	Unskilled	15 (29.42%)	9 (42.86%)	40 (40.82%)	p = 0.651
	Unemployed	24 (47.05%)	9 (42.86%)	38 (38.78%)	
Socio–economic status	Upper class	3 (5.89%)	1 (4.76%)	5 (5.1%)	χ^2,
	Middle class	26 (50.98%)	7 (33.34%)	33 (33.67%)	p = 0.293
	Lower class	22 (43.13%)	13 (61.9%)	60 (61.23%)	

Table-2b: Diagnosis affecting compliance on medications

Diagnosis	Good compliance (N = 51)	Moderate compliance (N = 21)	Poor compliance (N = 98)
Depressive & anxiety disorders	28 (54.9%)	8 (38.1%)	27 (27.55%)
Schizophrenia and other psychotic disorders	6 (11.77%)	3 (14.28%)	14 (14.29%)
Substance related disorders	8 (15.69%)	9 (42.86%)	43 (43.87%)
Others	9 (17.64%)	1 (4.76%)	14 (14.29%)

$\chi^2 = 16.641$; df = 6; p = 0.011 (significant)

is the degree to which a patient does not carry out the clinical recommendations of a treating physician i.e. it is the failure of the patient to follow the prescribed treatment regimen.[4,5] Non-compliance is a significant problem in all patient populations, from children to the elderly.[6,7] It applies to nearly all chronic diseases and settings, and tends to worsen with longer drug therapy duration.[8] Non-compliance leads to lack of disease control, hospital admissions or readmissions, poor outcome and poor quality of life for patient, increased burden on the relatives and increased financial cost to society.[9,10] According to Kumar and Sedgwick, the reasons for non-compliance include intolerable side-effects, cost of medication, psychotic explanations which include delusions and hallucinations.[11] In addition, Parashos et al. also identified social pressure and lack of insight as reason for noncompliance.[10]

Our study shows that age distribution does not affect the compliance in short term follow-ups and this was in agreement with another that observed that the distribution of age groups did not differentiate the treatment acceptors from the drop outs.[12] An Indian study on follow ups in a rural psychiatric clinic reported that the number of males and females attending follow up clinic is almost similar which is in agreement with our study.[13] Findings of our study are in disagreement with the study of attitudes and drug acceptance that commented that male patients who mask doubt about their masculinity behind social outgoings may find the "chemical restraint" produced by tranquilizers particularly threatening.[14] Our results of sex distribution are also in disagreement with a review of literature which reported that females are more likely to default.[15] This may be due to difference in the population under study. The study of dropouts from psychiatric walk in clinic pointed out that acceptance of treatment was greater among females and reflected that it could be either due to a lesser degree of tolerance of aberrant behavior in females by the community or a greater ease on the part of females to accept the 'sick role' and the attendant benefits in a stressful situation.[12] Our study is not in agreement with this result also, this may be due to different population selection as well as different cultural beliefs.

Our study does not show any effect of married status or type of family on outcome of compliance, which is in agreement with another paper that studied the pattern of follow up visits in a rural psychiatric clinic over 2 years reported that single and married patients attended the clinic in almost equal proportions.[13] Our results differ from the results of a study on compliance in psychiatric outpatients conducted at Maudsley hospital, London, pointed out that men living alone defaulted more often than those living with their wives, which suggest a beneficial influence of supervision.[16] This may be because, in India, married patients tend to hide their illness due to the social implications of having a mental illness. Our study showed that level of education had no significant influence on the outcome of compliance in long term, which is in agreement with the dropouts study that noted a tendency towards lower acceptance in those with no education compared to those with college education and professional qualifications although the differences was not statistically significant.[12] Other researchers in their study of drop outs from psychiatric clinic of a general hospital noted that the lower income group as well as the higher income group was significantly more likely to drop out than the middle range income group, which in disagreement with our study, as our results showed that socioeconomic status did not have any effect on the outcome of compliance, this may be due to difference in population under study.[17] A study of follow up in rural psychiatric clinic observed that schizophrenic patients and bipolar depressed patients attended the clinic regularly and more frequently throughout year, which is replicated in our study.[13]

The following recommendations may be followed via our study –

1. Most frequent reasons for poor compliance include patient related factors such as busy schedule, being out of town, forgetting appointments, etc. These can be addressed by fixing appointments keeping in mind patient's schedule and having in place reminder systems such as telephonic or email reminders to patients.
2. For factors related to caregivers like lack of caregivers, lack of knowledge among caregivers about illness and treatment, financial constrains and family stress; improving awareness about mental illness, involving the entire family in treatment planning and psycho educating family members about need for proper compliance are some of the measure that can be taken.
3. Medication related factors like availability of extra medications, side effects of medications, ineffectiveness of medication or in some cases 100% improvement with medications all form important factors leading to poor compliance. These can also be dealt by explaining the need and expected side effects of the prescribed medications to patient and family members, using pill
4. Boxes, controlling prescription to avoid patients getting extra medications and explaining the need for continued treatment even after remission is achieved.
5. As compliance has shown to be affected by diagnosis in our study, it is more important to psycho educate patients and relatives of patients with substance related disorder , personality disorders, impulse control disorders , adjustment disorders, etc., about the nature of illness and placing strategies for improving compliance in these patients early on.
6. In a broader sense, encouraging education can be a community based approach which can improve compliance and in turn, prognosis of mental illness.

Our study had limitations in form that it was conducted in the OPD of tertiary hospital and so the results cannot be generalised as the patient flow may differ from other hospitals. The number of patients advised electroconvulsive therapy and counselling were very less, i.e., less than 10%, so they could not be separately analysed. Several other factors affecting compliance on follow up and medications were not studied.

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Original Article

Cognitive Impairment Among Type-2 Diabetes Mellitus Patients

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ABSTRACT

Introduction: *Type–2 diabetes and its effect on cognitive ability has been the subject of great concern not only because of adverse physical consequences but also its association with cognitive impairment.* ***Aim:*** *Present study aimed to compare the cognitive ability of Type-2 diabetic patients with non-diabetic control group.* ***Methodology:*** *The study was conducted on 30 males, in which 15 were diabetic patients and 15 were from normal population. All were educated and belong to middle or upper middle socio-economic status. All were in age group of 60-65 years. To measure Focus Attention, Executive Function and Working Memory, Trail Making Test, Stroop Color Test and Immediate Memory Test were used for assessment.* ***Result and Conclusion:*** *The present study revealed that cognitive ability of type-2 diabetes mellitus patients was found compromised in comparison to their normal counterpart and difference was observed statistically significant. The patients of diabetes mellitus reported impairment in their executive functioning, working memory and attention-concentration abilities than the control group.*

Key words: *Type-2 Diabetes Mellitus, Cognitive impairment*

Introduction

The question of cognitive impairment in people with Type-2 Diabetes has been the subject of much speculation in recent years. Chronic hyperglycaemia is known to have serious adverse effects on many tissues and organs, such as the eyes and kidneys, through vascular damage. Cognitive function has been examined in people with Type-2 Diabetes in a small number of studies with variable results.[1-3] The most consistent findings have been observed regarding different domains of cognitive functions such as focused attention, executive function and verbal memory in groups with Type-2 Diabetes when compared with non-Diabetic controls.[1] Though, some of the studies have shown varying degree of impairment in other Cognitive domains, including visuo-spatial memory, attention and concentration, and frontal lobe/executive function.

Diabetes develops when the body cannot produce or use insulin, an essential hormone made in the pancreas. As diabetes develops, other health problem, such as high blood pressure and high cholesterol levels, are also likely to occur. Type-2 diabetes is also associated with high-fat, high-calorie diets, sedentary lifestyle, overweight and economic hardship.[4-6] Diabetes in older adults has become a major public health problem affecting an increasing number of individuals worldwide. The prevalence of type 2 diabetes is low (less than one percent) in many developing societies and very high (40-50%) in certain groups. Many societies have become westernized relatively rapidly during the last few decades, and this has been paralleled by an increase in the incidence of type-2 diabetes. Approximately 90% of older adults with diabetes have type-2 diabetes. Worldwide, type 2 diabetes is an important

and common disease that is steadily becoming more common.

Diabetes Mellitus and Cognitive Functions: The prevalence of type-2 diabetes increases with increasing age, which itself may be associated with decreased cognitive functioning and may independently account for some cognitive decline. Both older age and diabetes are independently associated with an increased risk of cognitive dysfunction; the risk is even greater for older adults with diabetes. The influence of diabetes on brain function has been of interest for more than 80 years [7,8]. Subjects with type-2 diabetes initially manifest deficits in abstraction, problem solving, memory and the completion of tasks involving speed and complex perceptual-motor responses.

In 1922, Miles and Root were the first to describe a possible relation between diabetes and cognitive dysfunction. Compared to non-diabetic persons, they observed worse performance of patients with diabetes on measures of memory, arithmetic and psychomotor speed.[7]Since then, numerous studies have examined the relation between T2DM and cognitive functioning.[8-10]

The majority of studies investigating cognitive impairment associated with type-2 diabetes has a case-control design and indicated that older diabetic patients perform worse than controls on a variety of cognitive function tests. Cognitive impairment may particularly affect verbal memory or complex information processing in type-2 diabetes.According to discussed review, present study's aim is, "Compare the cognitive ability of type- 2 diabetic mellitus patients with non-diabetic control group."

Methodology

1. ***Sample:*** The sample consisted of normal subjects and the patients with type-2 diabetes mellitus. Patients were taken from the different hospital's OPD and control group were taken from the normal population of different societies of Greater Noida city, in Uttar Pradesh.
   (a) Control group — The sample consisted of normal volunteers. 15 normal male subjects, in the age range of 60 to 65 years, were included in the study. There was no history of any mental and psychiatry problem and physical illness. There was no family history of psychiatry illness also.
   (b) Clinical group — 15 patients in the similar age range, with type-2 diabetes mellitus were selected from the different hospital's OPD of the city.

The following inclusion- exclusion criteria were applied to all the subjects before inclusion in the study.

Inclusion Criteria

- All the subjects aged between 60 to 65 years old included.
- Subjects diagnosed with Type 2 Diabetes and having at least 05 years of illness duration .
- At the subjects who have at least assess relationship between type 2 diabetes and cognitive impairment among clinical sub-group.
- Assessed as a dependent measure either quality of life or psychological well-being, defined as general well-being.

Exclusion Criteria

- Any patient having type 2 diabetes with a history of any brain injury, neurological condition, psychiatric condition or delayed development milestones or subnormal intelligence was not included in the study.
- Any patient having history suggestive of type 1 diabetes was not included in the study.
- Any patient having type 2 diabetes having suggestive of any major medical illness was also not included in the study.

Normal Control

- The sample of normal controls was selected from general population independent of clinical group.
- The subjects were included in the study bearing no biological relation with any of those included in the clinical group.
- Subjects having history suggestive of any major physical, psychiatric or behavioral problem were not included

in the study.

2. ***Assessment Tests:*** Three assessment tests for measuring and comparing the cognitive abilities (executive function, focus attention and working memory) of control group and clinical group were chosen. These are -
   (a) Stroop Color – Word Test (Stroop, 1935) –Stroop consists of the color namely, "Blue", "Green", Red", "Yellow" are printed in capital letters on a paper. The color of the print occasionally correspond with the color designated by the word. The subject will be asked to read the stimuli and the time taken to read all the stimuli are noted down. Then the subject is asked to name the color which the word taken is printed. The increase in time taken to perform the letter task compared with the basic task is referred to as "the Stroop interference effect". It is considered a general measure of cognitive flexibility control and executive functioning.
   (b) Trail Making Test (TMT) Parts A and B (Shum, 1990) — The task requires a subject to "connect-the-dots" of 25 consecutive targets on a sheet of paper. Two versions are available; A, in which the targets are all numbers (1, 2, 3 etc.) and B, in which the subject alternates between numbers and letters (1, A, 2, B, etc). The goal of the subject is to finish the task as quickly as possible and the time taken to complete the test is used as the primary performance metric. The TMT is sensitive to the impairment in attention process.[11-13]
   (c) Digit Span Test (Albert B. Blankenship, 1938) — Digit span test is used to measure working memory storage capacity. Partici-pants are presented with a series of digit (e.g. 8, 3, 4) and must immediately repeat them back. If they do this successfully, they are given a longer list. The length of the longest list a person can remember is that person's digit span.

3. Procedure

These tasks were individually administered on each subject of control group and clinical group. The instructions were given according to the tasks. First, the consent form which will be filled up to all the subjects before inclusion in the study and personal data sheet will be used to elicit demographic information regarding responded age, gender, education, socioeconomic status and duration of illness. Then the stroop color-word task, trail making test and digit span test conducted to assess the cognitive abilities of the patients and control group.

Results

Statistical analysis was done to calculate the difference between control group and clinical group on cognitive abilities.Mean age of the control group is 61.13, and SD is 1.41. For the clinical group Mean age is 61.47 and SD is 1.81. T- Test was done to analyze the mean difference between two groups on the task. Table 1 shows the effect of type-2 diabetes mellitus on executive function.

Table-1: Effect of Type 2 Diabetes Mellitus on Executive Function

Task	Control Group	Clinical Group
Color Task	112	112
Item completed	0	30
Incorrect responses	0	82
Color score		
Color- Word Task		
Items completed	82.87	63.33
Incorrect responses	29.00	48.67
Color-word score	53.87	14.66

Table-2: Color-Word Scores of Executive Function

	Group One		Group Two	
	C-Res-ponse	C-W Res-ponse	C-Res-ponse	C-W Res-ponse
Mean	112	53.87	104.53	14.67
SD	00	36.70	13.55	35.74

Both the results of this analysis and inspection of Color-Word scores, indicated a significant changes in the level of performance between the groups. Clinical group had both a lower mean score and a larger standard deviation for Color-Word score. All

Table-3: Result of Trail Making Test of Attention Process

	Control Group		Clinical Group	
	Part A	Part B	Part A	Part B
Average	1	8	0	0
Deficient	2	0	7	3

the subjects in the control group successfully completed the 112 items of the Color task and the occurrence of an incorrect response was nil. In the control group, 100% of the subjects had Color score of 112. In clinical group, 60% of the subjects (9 of 15) had Color score of 112. Greater degrees of interference was reflected in lower Color-Word scores of clinical group.

Table 3 shows the result for the both parts of TMT A and B. Higher time taken revealed greater impairment. In control group, seven subjects take more time than average time (29 second) but below the 40 sec. to complete the Part A. Three subjects take time below the 60 sec. and two subjects marked below the deficient and above the 60 sec. On Part B, three subjects are very near to average range, three subjects are below to 90sec. and one subject is take the time more than 120 sec.

On the other hand, clinical group shows, not a single subject with average criteria in both Parts. Two patient's score is near to deficient range and six patients have in between the average and deficient in Part A. In Part B, four patients are near to deficient range, two are in the middle and six are near to average score with little differences.

Table-4: Result of Immediate Memory

Group	Group One	Group Two
Mean	8.28	4.67
SD	2.34	1.99
N	15	15

T value = 4.46

Table 4 shows the data of immediate memory. Data is based on immediate scores achieved by the subjects of control group and clinical group. By conventional criteria, this difference is considered to be extremely statistically significant.

Discussion

A growing literature has examined the extent and depth of potential cognitive effects of Type-2 diabetes in older adults. The present study was aimed at investigating the relationship of type-2 diabetes mellitus and cognitive abilities with normal control group and reveals significant group difference within selected domains, most consistentlyin executive function, focused attention and immediate memory than the control group. Their cognitive abilities were found compromised in comparison to their normal counterpart and difference was observed statistically significant. As suggested by Nilsson,[14] not all aspects of cognitive abilities may be equally or coincidently affected by Type-2 diabetes, at least in relatively mild to moderate cases.In the clinical group, patients had cognitive dysfunction. Similar prevalence of cognitive dysfunction was reported in a previous study by Munshi et al.[15] Their study showed that one-third of the elderly diabetic population had cognitive dysfunction.

The control group performed significantly better than the clinical group on the cognitive abilities. Significant diabetes- related group difference were observed for all measures of executive function including focus attention and immediate memory. Control group displayed a trend for faster performance on cognitive abilities. Regarding the executive function, the group means were significant on Stroop Interference Effect. As shown in result, clinical group were slow on word scores and faced difficulties to scores normal or higher in color- word scores. They were very confused to tell color name and mostly time told wrong color names. In many studies, a widely used test for selective attention is the Stroop Color Word Test.[16] In general, cross-sectional and longitudinal studies show worse performance of type 2 diabetes mellitus patients on complex attention tasks,[17] but not basic attention tasks[18] compared to non-diabetic persons.The majority of cross-sectional studies that measured executive functioning showed diminished performance of the patients with T2DM.[17-21]

Diabetes-related slowing has been observed with a variety of speeded tasks, especially those measuring basic reaction time or perceptual speed.[9,22-24] However, Messier's[24] review indicated that less than half the included studies actually reported diabetes-related slowing. Selected measures of executive functioning have produced diabetes-related performance deficits in some (but

not all) studies.[9,10,17,24] Because executive functioning may involve multiple underlying processes or dimensions,[25,26] it may be especially susceptible to task-related selection effects in special population research.[14]

As shown in Table 3, attention process of clinical group is compromised on both the part of TMT. Not a single patient touched the average criteria time in part A and part B of TMT. It reveals major impairment in the attention process of diabetic patients. Some number of patients scores in between the average and deficit range, and small number of patients are near to average and deficit range. On the other hand, control group subjects touch the average criteria and others are near to average.

One study suggests that frontal structures may be affected by diabetes squeal and may therefore be associated with occasionally observed deficits in episodic memory recall, verbal fluency, and executive functioning.[27] The present results contribute to potential consolidation of the executive functioning deficit associated with diabetes in that the tasks for which we found group differences required a contribution of speed.

Immediate memory data shows the big difference between the control group and clinical group.Immediate memory was impaired in most of the patients and reverse digit memory is more compromised than control group. The obtained T-value 4.45 exceeds the cutoff of 2.048 shown on the table at the .05 level and 2.76 shown on the table at the .01 level. Therefore, $p < .05$. The results demonstrate a positive relationship between measures of cognitive performance such that individuals with diabetes show poorer performance on tests of verbal recall. In particular, in the Framingham Study, history and duration of Type 2 diabetes were linked to a decline in verbal memory.[28]Apossible explanation for these findings may be that uncomplicated diabetes does affect cognitive function to a limited extent: learning and memory skills seem to be particularly affected.

Elias et al.[28] also reported increased risk of a low score (bottom 25%) for those with diabetes on five of eight tests (immediate and delayed logical memory, digit span forward, word fluency, and similarities) which is consistent with our study. Arvanitakis et al.[29] and Ryan et al.[30] showed deficit in areas of psychomotor efficiency, global cognition, episodic memory, semantic memory, and working memory which is consistent with the results of our study.

The notion that earlier effects may be observed in tasks requiring rapid performance of executive-demanding processes may be tested in future research using samples of broader clinical severity and with longitudinal follow-ups. Such deficits may cascade throughout the executive functioning domain as diabetes progresses and the rates of aging- and disease-related structural changes in the brain accelerate.[31] In summary, results from this study demonstrate that thepatients with T2DM have impairments across all cognitive domains and support previous studies.

Limitation reflects several unmodifiable characteristics of sample: It is volunteer based, taken from selected hospital's OPD and a small urban population. It is not touched the vast area of population because of small number of sample, it may not represent the diabetic population on large scale.Abnormalities in cognitive functions mediated by frontal lobe (executive functions), including a number of complex behaviors such as problem solving, planning, organization, insight, reasoning, and attention will be missed in the study group. Many patients who attend our hospital are from urbanl population so the tool may loose some of its sensitivity and specificity. Result may generalize to a large and growing population of relatively healthy aging preboom and boomer populations. Future studies of greater diversity are encouraged.

Conclusion

In conclusion, there have been significant gains in our understanding of the effect of diabetes on cognitive dysfunction. Evidence from neuro-cognitive testing suggests that cognitive dysfunction should be listed as one of the many complications of diabetes. Closely related to attention is the domain of executive functioning, which has only recently gained attention in the literature and which has been studied less extensively in T2DM until now. Executive functioning involves the planning and monitoring of behavior, and mental flexibility.

Future studies examining longitudinal trends in neuropsychological sequels of diabetes will help determine whether different patterns of cognitive decline occur across both health condition (diabetes

group vs clinical group) and neuropsychological domains (executive function, working memory and focused attention).

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Original Article

A Cross-Sectional Study of Prevalence and Typology of Functional Somatic Complaints in Depression

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ABSTRACT

Back ground*: Functional somatic symptoms (FSC) are common in patients of depression but are often missed due to absence in current nosological system.* ***Aim:*** *To evaluate the prevalence and typology of FSC in patients diagnosed with depression and to find out correlation between the severity of depression and somatic symptoms. Additionally, we also studied to study FSC's in relation to socio-demographic variables.* ***Method****: 50 patients of first episode depression except for severe depression with psychotic symptoms aged between 18-60 years who gave written informed consent were included in the study. Hamilton Depression Rating Scale (HAM-D) was used to assess the severity of depression and Bradford Somatic Inventory (BSI) was used to assess functional somatic symptoms.* ***Results****: Out of total 46 symptoms in the BSI, the most commonly reported FSCs on BSI were severe headache (92%), lack of energy much of the time (84%), feeling of constriction in the head (78%), Pain/tension in neck and shoulders (76%), felt aches or pains all over the body (76%) and whole body felt heavy (76%). A significant positive correlation (p = 0.0421) was found between the total scores of the HAM-D scores and the BSI scores. No statistically significant correlation between any of the socio-demographic variables and BSI scores was seen.* ***Conclusion****: FSCs are highly prevalent in patients diagnosed with first episode of depression and its prevalence was significantly associated with severity of depression. Owing to its high prevalence it is important to include these symptoms in the diagnostic criteria of depression, so as to increase the sensitivity and specificity of the diagnosis.*

Keywords: Depression, Somatic complaints, Prevalence, Types

Introduction

The Global Burden of Disease (GBD) study projections show that depression will be the single leading cause of Disability Adjusted Life Years by 2020 in the developing world.[1] A large number of patients with depression have physical symptoms and the psychological symptoms of depression may be masked by a dominant reporting of these somatic (physical) symptoms.[5] The multicentre international study (n = 1146) conducted by the World Health Organization (WHO) confirmed that two thirds of the patients presented their depressive mood with somatic symptoms exclusively, and more than half complained of multiple medically unexplained somatic symptoms.[2] In the literature there are many terms used to describe somatic symptoms in depression: somatic, somatised, physical, bodily, somatoform, painful, psychosomatic, vegetative, medically unexplained, masked, etc.[3] As these somatic complaints are presumed to be a part of the depressive syndrome without any underlying physical cause, possibly a more appropriate term to

describe them could be functional somatic complaint (FSC).[4]

Researchers have found depression is less likely to be recognized in patients who present with predominantly somatic complaints compared to patients who present with predominantly psychological complaints.[3] It further leads to wrong diagnosis, delay in start of treatment and multiple medical consultations leading to increased burden of disease.

Grover et al 2013 in a multicentric study reported most of the patients (77%) had more than 10 FSCs, with 39.7% having more than 20 FSCs as assessed on Bradford Somatic Inventory.[5] Another study in India, reported a prevalence rate of FSC in patients of depression to be around 100%. The study evaluated the type of FSC by using PHQ 15 and reported feeling tired or having low energy (92.7%) as the most common symptom, followed by troubled sleeping (79.9%), nausea, gas and indigestion (68.2%), headache (68.2%), pain in arms, legs, or joints (65.9%), and feeling that heart is racing (65.2%) as other common symptoms.[6] Chakaraborty et al evaluated the type of FSC using Bradford Somatic Inventory(BSI) reported lack of energy much of the time (98%) as the most commonest symptom.[7] A study from Japan reported headache and loss of interest among the most commonly reported functional somatic complaints.[8]

Against this background, the present study aimed to evaluate the prevalence and typology of FSC in patients diagnosed with depression and to find out correlation between the severity of depression and somatic symptoms. Additionally, we also attempted to study FSC in relation to socio-demographic variables.

Aim

The aim of this study was to study FSC in patients of Depression.

Material and Methods

The study was carried out in a tertiary care multispecialty teaching hospital in Lucknow, North India. Individuals aged between 18-60 years who gave written informed consent were included in the study. The people eligible for the study were all consecutive out-patients receiving a ICD-10 diagnosis by a consultant psychiatrist of first-episode unipolar depression except for severe depression with psychotic symptoms. Patients with comorbid psychiatric illness, concomitant disability and physical illness, serious illness requiring urgent medical attention and chronic medical/surgical illness were excluded.

Instruments

The following instruments, as required, were used

- Semi structured proforma for socio-demographic profile.
  This was specially developed for this study and was used to record the relevant sociodemographic data on age, gender, marital status, domicile, religion, education, income, occupation and type of family.
- Hamilton Depression Rating Scale[9]
  The 17-item Hamilton Depression Rating Scale (HDRS) was used to assess the severity of depression. Items were rated from 0 to 4 or from 0 to 2 according to intensity and frequency of symptoms over the past week. With a total score ranging from 0 to 52, scores of 0-7 indicated no depression; 8-13 mild depression; 14-18 moderate depression; 19-22 severe depression; and $\geq$ 23 very severe depression.
- Bradford Somatic Inventory (BSI) [10]

The Bradford Somatic Inventory is a multi ethnic inventory of FSCs associated with anxiety and depression. It has 46 items which enquires about the FSCs during the previous month and, if the subject has experienced a particular symptom, whether the symptom has occurred on more or fewer than 15 days during the month (scoring 2 or 1, respectively). Based on the total score, FSCs are categorized into 3 grades (a score >40 is considered to be the 'high' range, 26-40 'middle' range, and 0-25 'low' range).

Procedure

During the study period 73 patients were diagnosed as case of unipolar first episode depression. Only 59 gave consent to be the part of study. Out of these 59, 9 cases were excluded because of comorbid substance (n = 3), other psychiatric illness (n = 3), age < 18(n = 1), age >60 (n = 1) and medical illness requiring medical attention (n = 1). The final sample consisted of 50

patients. These patients were then assessed on instruments described above.

Statistical analysis

The collected data were entered into Statistic package for Social Sciences (SPSS) version 15.1. Means and standard deviations (SDs) were calculated for continuous variables, and frequencies and percentages were calculated for discrete variables. Analysis of variance (ANOVA) was used to analyze the differences among group means and their associated procedures.

Results

Socio-demographic Profile

The mean age of the patients was about 34.84 years, with about 60% of patients in the age group of 31-45 years (Table 1). There was equal religion distribution. Majority of patients were females (66%), married (82%), from rural background (72%), educated up to high school (40%), were unemployed (52%), with total family income > 4000 (rupees) and belonged to nuclear family (68%).

Table-1: Socio-Demographic Profile of the Subjects

Socio-Demographic Variables			Numbers (%)
1.	Age (in years)	16-30	19 (38%)
		31-45	30 (60%)
		>45	1 (02%)
2.	Gender	Male	17 (33.3%)
		Female	33 (66.6%)
3.	Marital Status		
		Married	41 (82%)
		Unmarried	05 (10%)
		Divorced/widow	04 (08%)
4.	Religion	Hindu	25 (50%)
		Muslim	25 (50%)
5.	Domicile	Rural	36 (72%)
		Urban	14 (28%)
6.	Education	Illiterate	17 (34%)
		Up to high school	20 (40%)
		Above high school	13 (26%)
7.	Income (Rs)	2000-4000	20 (40%)
		> 4000-6000	23 (46%)
		> 6000	07 (14%)
8.	Occupation	Unemployed	26 (52%)
		Unskilled	07 (14%)
		Semi-skilled /skilled	17 (34%)
9.	Family	Nuclear	34 (68%)
		Joint	16 (32%)

Frequency and Type of functional somatic complaints

Out of total 46 symptoms in the BSI, the most commonly reported FSCs on BSI were severe headache (92%), lack of energy much of the time (84%), feeling of constriction in the head (78%), Pain/tension in neck and shoulders (76%), felt aches or pains all over the body (76%) and whole body felt heavy (76%) (Table 2). Other commonly reported symptoms present in about half of sample were Mouth or throat dry (72%), Feel giddy or dizzy (72%), Aware about palpitations (70%) and Head felt heavy (68%). Mean BSI score was 28.18± 7.21.All the patients (100%) had at least one FSC. Number of FSC's per patient was 19.21. Average no FSC's in female were 19.88 ± 3.51 while in males average FSC's were 22.37 ± 6.88 (excluding male specific FSC's). There was no statistically significant difference between males and females. The most common functional somatic complaints reported to be present for more than 15 days during the pre-vious month were severe headache (74%), lack of energy much of the time (64%), feeling of constriction of head (58%) and head felt heavy (52%).

Correlation between Severity of Depression and BSI

A significant positive correlation ($p = 0.0421$) was found between the total scores of the HAM-D scores and the BSI scores (Table 3). It implies that patients with higher severity of depression were prone to report more functional somatic complaints.

Relationship of Socidemographic variables and FSC's

Regarding socio-demographic variables, our study revealed that there was no statistically significant correlation between any of the socio-demographic variables and BSI scores (Table 4).

Discussion

The aim of our study was to examine functional somatic complaints (FSC's) in patients of first episode depression and its correlation with socio-demographic and clinical profile of the patient. The study sample consisted of patients with mean age of 34.85 yrs, higher number of females, belonging to rural background, educated up to high school,

Table-2. Frequency of various functional somatic complaints as per the BSI (in descending order of overall frequency)

Bradford Somatic Inventory items	Absent n (%)	Present n (%)	Present on < 15 days in last month n (%)	Present on > 15 days in last month n (%)
Severe Headache	4 (8%)	46 (92%)	9 (18%)	37 (74%)
Lack of energy much of the time	8 (16%)	42 (84%)	10 (20%)	32 (64%)
Feeling of constriction of head	11 (22%)	39 (78%)	10 (20%)	29 (58%)
Pain/tension in neck and shoulders	12 (24%)	38 (76%)	13 (26%)	25 (50%)
Felt aches or pains all over the body	12 (24%)	38 (76%)	10 (20%)	29 (58%)
Whole body felt heavy	12 (24%)	38 (76%)	19 (38%)	6 (12%)
Mouth or throat dry	14 (28%)	36 (72%)	18 (36%)	18 (36%)
Feel giddy or dizzy	14 (28%)	36 (72%)	12 (24%)	24 (48%)
Aware about palpitations	15 (30%)	35 (70%)	16 (32%)	19 (38%)
Head felt heavy	16 (32%)	34 (68%)	8 (16%)	26 (52%)
Feeling tired, even when not working	22 (44%)	28 (56%)	8 (16%)	20 (40%)
Pressure inside head /going to burst	22 (44%)	28 (56%)	7 (14%)	21 (42%)
Head felt hot or burning	23 (46%)	27 (54%)	10 (20%)	17 (34%)
Getting pain in your legs	23 (46%)	27 (54%)	13 (26%)	14 (28%)
Feeling of heat inside your body	24 (48%)	26 (52%)	9 (18%)	17 (34%)
Suffering from excessive wind orbelching	24 (48%)	26 (52%)	15 (30%)	11 (22%)
Pain in the chest or heart	25 (50%)	25 (50%)	19 (38%)	6 (12%)
Feeling sick in the stomach (nausea)	25 (50%)	25 (50%)	16 (32%)	9 (18%)
Troubled by constipation	25 (50%)	25 (50%)	17 (34%)	8 (16%)
Have you been having low back trouble	26 (52%)	24 (48%)	8 (16%)	16 (32%)
Passing urine more frequently	27 (54%)	23 (46%)	19 (38%)	4 (8%)
Stomach felt swollen or bloated	27 (54%)	23 (46%)	10 (20%)	13 (26%)
Bitter taste in your mouth	27 (54%)	23 (46%)	11 (22%)	12 (24%)
Pressure or tightness on your chest	29 (58%)	21 (42%)	11 (22%)	10 (20%)
Difficulty in breathing, even when resting	31 (62%)	19 (38%)	11 (22%)	8 (16%)
Burning sensation in stomach	32 (64%)	18 (36%)	8 (16%)	10 (20%)
Sweating a lot	32 (64%)	18 (36%)	10 (20%)	8 (16%)
Ache or discomfort in the abdomen	32 (64%)	18 (36%)	13 (26%)	5 (10%)
Have you suffered from indigestion	32 (64%)	18 (36%)	10 (20%)	8 (16%)
Feeling tingling all over the body	32 (64%)	18 (36%)	7 (14%)	11 (22%)
Fluttering /feeling Smt moving in stomach	34 (68%)	16 (32%)	6 (12%)	10 (20%)
Hands, feet had pins and needles/gone numb	34 (68%)	16 (32%)	7 (14%)	9 (18%)
Burning sensation when passing urine	34 (68%)	16 (32%)	9 (18%)	7 (14%)
Burning or itching all over skin	35 (70%)	15 (30%)	13 (26%)	2 (4%)
Darkness or mist in front of your eyes	35 (70%)	15 (30%)	9 (18%)	6 (12%)
Trembling or shaking	36 (72%)	14 (28%)	8 (16%)	6 (12%)
Felt pain or burning in your eyes	37 (74%)	13 (26%)	6 (12%)	7 (14%)
Hands or feet felt cold	39 (78%)	11 (22%)	10 (20%)	1 (2%)
Choking sensation in your throat	40 (80%)	10 (20%)	1 (2%)	9 (18%)
Heart felt weak or sinking	40 (80%)	10 (20%)	2 (4%)	8 (16%)
Palms been sweating a lot	41 (82%)	9 (18%)	8 (16%)	1 (2%)
Difficulty in swallowing, (lump) in the throat	42 (84%)	8 (16%)	3 (6%)	5 (10%)
Wanting to open bowels more than often	44 (88%)	6 (12%)	1 (2%)	5 (10%)
Hearing a buzzing noise in your ears or head	46 (92%)	4 (8%)	3 (6%)	1 (2%)
Difficulty getting full erection	48 (96%)	2 (4%)	2 (4%)	0 (0%)
Feeling passing semen in your urine	49 (98%)	1 (2%)	0 (0%)	1 (2%)

unemployed and with equal representation from both Hindu and Muslim religion. Higher number of females and mean age corresponds to the typical profile of depression stated in literature and found in many Indian studies.[7,11] Majority of the patients had moderate to severe depression which is similar to earlier studies.[5-7,12,13]

Bradford somatic inventory was used to assess

Table-3: Correlations between severity of depression and BSI

Severity of depression	No. of Patients (%)	HAM-D Score	BSI Score	Statical Significance (ANOVA)
Mild (8-13)	10	12.4 ± 0.70	25.9 ± 3.35	P =< 0.0421F = 3.391
Moderate (14-21)	18	16.56 ± 1.54	29.94 ± 5.59	
Severe (>= 22)	22	25.05 ± 1.70	31.68 ± 6.76	

Table-4 Relation Between Socio-Demographic Variables and Bradford Somatic Inventory (BSI)

Variables		Number	BSI (± SD)	Statical Significance (ANOVA)
1.	**Age (in years)**			
	16-30	19 (38%)	27.97 ± 6.17	p = 0.9575 F = 0.0246
	31-45	30 (60%)	28.39 ± 5.57	
	> 45	01 (2%)	28.39 ± 6.16	
2.	**Gender**			
	Male	17 (34%)	27.59 ± 6.26	p => 0.999
	Female	33 (66%)	27.59 ± 6.08	
3.	**Marital Status**			
	Married	41 (82%)	28.39 ± 6.26	p = >0.8493
	Unmarried/ others	09 (18%)	28.82 ± 5.34	
4.	**Religion**			
	Hindu	25 (50%)	28.39 ± 6.18	p =>0.999
	Muslim	25 (50%)	28.39 ± 6.16	
5.	**Background**			
	Rural	36 (72%)	28.59 ± 6.11	p = 0.4982
	Urban	14 (28%)	29.90 ± 6.05	
6.	**Education**			
	Illiterate	17 (34%)	28.82 ± 6.26	p => 0.999
	up to high school	20 (40%)	28.82 ± 5.96	
	above high school	13 (26%)	28.82 ± 5.94	
7.	**Income**			
	2000-4000	20 (40%)	28.59 ± 6.10	p = > 0.8729
	> 4000-6000	23 (46%)	29.32 ± 6.10	
	> 6000	07 (14)	29.84 ± 6.10	
8.	**Occupation**			
	Unemployed	26 (52%)	28.88 ± 6.26	p = > 0. 9937
	Unskilled	07(14%)	29.17 ± 5.78	
	Semi-skilled /skilled	17 (34%)	28.91 ± 6.08	
9.	**Family**			
	Nuclear	34 (68%)	28.39 ± 6.26	p = >>0.999
	Joint	16 (32%)	28.39 ± 6.10	

FSC's in the patients. A high prevalence of 100% was observed as all the patients (n = 50) reported of $\geq$ FSC(s) in our study. Another study which focused on FSC in depression reported prevalence of same to be 100%.[6] Chakraboty et al reported functional somatic complaints in 50 of the 51 eligible patients.[8] Prevalence rates of $\geq$ FSC(s) has been reported in 72 to 100% of patients attending psychiatric centers across several studies using different methods and instruments.[8,12-15]

The most prevalent FSCs according to BSI (46 items) were headache (92%), lack of energy much of time (84%), feeling of constriction in head (78%), aches or pains all over the body (76%) and Pain/ tension in neck and shoulder (76%). Other commonly reported symptoms were whole body felt heavy (76%), mouth or throat dry (72%), feeling giddy or dizzy (72%), palpitations (70%) and head felt heavy (68%). IPS multi centric study on functional somatic symptoms in depression had lack of energy (weakness) much of the time (76.2%) followed by severe headache (74%), and feeling tired when not working (71%) as the most common FSC.[5] Similarly many studies have reported feeling

tired or having little energy as the most common FSC.[6,7] Our study is comparable to previous studies from India which has reported headache as the most common functional somatic complaint among those who were found depressed.[16-18] However the overall profile of FSCs is similar to previous studies where painful symptoms and 'feeling fatigued, weak, or tired all over' dominates as the most common symptoms. There is significant association between major depression and painful FSCs, such as joint pains, lumbar pain, and headache and despite of this long-standing psychopathological view on the somatic foundation of depressive mood very few somatic symptoms are part of the diagnostic criteria of depression. Current nosological systems (ICD-10 and DSM-5) focus primarily on the psychological symptoms of affect and cognition.[19-21] Studies from the West, which have evaluated FSCs across various settings using different instruments like somatic symptom inventory (SSI) and self report 90 item symptom checklist, have also reported high prevalence of different painful symptoms similar to our study.[8,12,13,22] These data suggested that painful FSCs are quite common in patients with depression across varied cultures. Since these multiple somatic complaints often dominate the clinical picture, patients have poor understanding of their illness with many of them perceiving it to be of physical origin. Therefore it is important for clinicians to evaluate psychological symptoms of depression usually masked by somatic symptoms to avoid misdiagnosis in such patients.

The mean total BSI score in our study was 28.18 and the mean number of FSCs was 19.21 ± 5.22, which is similar to that reported in IPS multicentric study.[5] However these figures are more than the number of FSCs reported by Grover et al who had used PHQ 15 to assess somatic complaints in their study group.[6] It is to be noted that BSI has wider coverage and includes 46 symptoms in contrast to PHQ which covers only 15 symptoms. In the present study, the mean number of FSC per patient was 19 with most of the patient (68%) having > 10 FSCs. Another study using similar instrument for assessment of FSCs reported 21 FSCs per depressed patient.[7] The higher frequency and typology of FSC's in depressed patients suggests that functional somatic complaints comprise an important part of the depression syndrome and needs urgent attention.

We attempted to study socio-demographic and clinical correlates of FSCs in our study group. In the present study, no significant correlation was observed between total BSI score and socio-demographic variables of the study sample suggesting that these symptoms are not impacted by socio-demographic variables and occur independently. Previous studies have reported higher rates of FSCs in female gender, rural domicile and lower education level.[19,23-25] In our study mean number of FSCs in males were higher (22.37 + 6.88) but not statistically significant as compared to females (19.88 + 3.77) owing to relatively smaller sample size. Some studies from India have found FSCs to be more common in male patients,[16-18] while others have found them to be more common in females and a few have found no gender difference.[5-7]

In relation to clinical variables a significant positive correlation emerged between the total scores of the BSI and HAM-D, indicating that patients with higher severity of depression reported more functional somatic complaints. However other clinical correlates like duration of illness, family history and suicidality were not significantly associated with the prevalence of FSC. Higher prevalence of functional somatic com-plaints in patients with higher level of depression further validates that functional somatic com-plaints may be part and parcel of depression rather than a manifestation influenced by other factors. Similar correlations between FSCs, especially painful symptoms and severity of depression (BDI) and anxiety (CPRS AI) have been reported by Grover et al 2013.[5] Chakraboty et al also found a significant positive correlation (Pearson's product moment value = 0.362, $p < 0.01$) between severity of depression and number of functional somatic complaints.[6] A similar positive correlation has been reported between severity of depression and FSCs in western studies of psychiatric outpatients[13,19,22] and inpatients[12] while others have found no correlation.[26-29]

Conclusion

This study suggests that FSCs are highly prevalent in patients diagnosed with first episode of depression and its prevalence was significantly associated with severity of depression. Most of the patients have more than 10 FSCs and the common

FSCs are headache, lack of energy much of time, feeling of constriction in head, aches or pains all over the body and Pain, tension in neck and shoulder. Such functional somatic complaints are grossly ignored by physicians, are a burden for the sufferers, costly for society and difficult to treat. In view of the high prevalence of FSCs in depression, its inclusion in nosological system is need of the hour.

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Original Article

Effectiveness of Psychoeducation on the Behaviour of Patients with Alcohol Dependence Syndrome

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ABSTRACT

Background: *Alcohol abuse causes emotional, social and economic problems for the addict and his family, apart from causing medical illness and injuries to the abuser.* ***Aim:*** *The aim of the study was to determine the effectiveness of psycho education on the behaviour of patients with alcohol dependence syndrome, compared with the effect of routine clinical care.* ***Methods:*** *Experiment randomised controlled trial was employed to assess the effect of nurse led psycho education as it allows valid reference of cause and effect. 134 consecutive subjects satisfying ICD-10 criteria for alcohol dependence syndrome were included in the study. Pre procedure severity of dependence was assessed using Alcohol Use Disorder Identification Test (AUDIT), modified Michigan Alcohol Screening Test (MAST) Questionnaire and biochemical marker serum GGT level. For the control group (n=56) the standard treatment given in selected set up was administered. The experimental group (n=58), structured teaching was administered in 3 sessions beside standard treatment.* ***Results:*** *The mean AUDIT score in the control group had decreased from 12.4 to to 6.05 after the routine care; however there was a considerable reduction in the AUDIT score in the experimental group from 12.55 to 3.76 who received psycho education. The mean MAST score in the control group had decreased from 3.23 to to 2.66 after the routine care; there was a reduction in the MAST score in the experimental group from 3.365 to 2.71 who received psycho education.* ***Conclusions:*** *The findings of this study strongly emphasize the importance of providing psycho education to patients with alcohol dependence syndrome.*

Key words: *Alcohol Dependence Syndrome, Structured Psycho education, Effectiveness*

Introduction

"One key symptom of alcoholism is that the individual comes to need a drink for every mood–one to calm down, one to perk up, one to celebrate, one to deal with disappointment, and so on." — ***Phyllis A. Balch***

Alcohol is the most widely used psychotropic agent. Of late, as per quarterly report[1] India has been registering a rapid rise in the prevalence of alcohol use and abuse needless to say that as more and more people drink, more cases of alcohol dependence occur. The alcohol drinking patient presents a challenge as well as opportunity to the health care team to suitably and effectively intervene during clinical consultation Alcohol is not an ordinary commodity. While it carries connotation of pleasure and sociability in the minds of many, but harmful consequences of its use are diverse and widespread. Heavy drinking poses a significant risk to public health universally.

Alcohol consumption has health and social consequences via intoxication (drunkenness), alcohol dependence, and other biochemical effects of alcohol. In addition to chronic diseases that may affect drinkers after many years of heavy use, alcohol contributes to traumatic outcomes that kill or disable at a relatively young age, resulting in the loss of many years of life due to death or disability. There is increasing evidence that besides volume of alcohol, the pattern of the drinking is relevant for the health outcomes.[2]

Overall there is a causal relationship between alcohol consumption and more than 60 types of disease and injury. Alcohol is estimated to cause about 20–30% of oesophageal cancer, liver cancer, cirrhosis of the liver, homicide, epileptic seizures, and motor vehicle accidents worldwide.[3]

Relapse prevention (RP) is an important component of alcoholism treatment. The RP model proposed by Marlatt and George[4] suggests that both immediate determinants (e.g., high-risk situations, coping skills, outcome expectancies, and the abstinence violation effect) and covert antecedents (e.g., lifestyle factors and urges and cravings) can contribute to relapse. The RP model also incorporates numerous specific and global intervention strategies that allow therapist and client to address each step of the relapse process.Psycho educationhas important role in RP.

Opportunistic screening and brief interventions offer a cost-effective method of reducing the harm related to excessive alcohol consumption. The aim of the study was to determine the effectiveness of psycho education on the behaviour of patients with alcohol dependence syndrome, compared with the effect of routine clinical care. The findings will serve as an empirical basis to plan an ongoing nurse led educational programme in the area of alcohol dependencemore effectively.

Materials and Methods

The population of the present study constituted of patients diagnosed with Alcohol Dependence Syndrome who were admitted in selected tertiary hospital. As per the inclusion criteria, 134 patients were selected randomly and assigned to two groups: experimental and control. However only 114 subjects remained due to dropouts. The experimental group (n = 58) was given structured psycho education in addition to standard care, whereas the control group (n = 56) was given only the standard care.

The tools used were (a) Socio demographic data constructed by investigator, this consisted of sociodemographic characteristics and clinical profile. (b) AUDIT – which is a standardized structured questionnaire to establish alcohol use pattern, (c) MAST - a standardized self-administered test for screening alcoholism and Serum GGT – biological marker for identifying liver damage. Data collection was done on admission and repeated after 6 months after obtaining informed consent. Once the patients were evaluated, investigated and managed as per the clinical conditions like intoxication and withdrawal, psycho education was administered to the intervention group. It included – Session 1 (Individual counselling, duration 30 minutes)- Participant's perception of the problem, Session 2 (Group therapy, duration 60 minutes) – Education and motivation for change, Session 3 (Group therapy, duration 60 minutes) – Assisting with imparting skills and suggesting tactics for change. Defence mechanisms shown by the patients were carefully dealt with.

Results

The data collected was analysed using descriptive and inferential statistics. The statistical analysis revealed that the psycho education resulted in a significant rate of abstinence in the experimental group.

Table-1: AUDIT Comparison between Control and Experimental Group Before Psychoeducation

Score	Control Group (n = 56)		Experimental group(n = 58)	
	Mean	SD	Mean	SD
AUDIT	12.04	4.13	12.55	3.91

The mean AUDIT score in the control group had decreased from 12.4 to to 6.05 after the routine care, however there was a considerable reduction in the AUDIT score in the experimental group from 12.55 to 3.76 who received psychoeducation.

The mean MAST score in the control group had decreased from 3.23 to to 2.66 after the routine care, there was a reduction in the MAST score in

Table-2: AUDIT Comparison between Control and Experimental Group Before Psychoeducation

Score	Control Group (n = 56)		Experimental group(n = 58)	
	Mean	SD	Mean	SD
AUDIT	6.05	3.76	3.76	3.48
P (Pre vs Post Treatment)	Correlation = 0.409 SE = 0.575P P = 0.002		Correlation = 0.409 SE = 0.575 P = 0.002	

Table-3 : Serum GGT Comparison between Control and Experimental Group

Score	Control Group (n = 56)		Experimental group (n = 58)	
	Mean	SD	Mean	SD
GGT	80.25	84.97	91.93	76.94

t = (-)770, P = 0.717

Table-4: MAST Comparison between Control and Experimental Group Before Psychoeducation

Score	Control Group (n = 56)		Experimental group (n = 58)	
	Mean	SD	Mean	SD
MAST	3.23	1.53	3.36	1.44

Table-5: MAST Comparison between Control and Experimental Group After Psychoeducation

Score	Control Group (n = 56)		Experimental group (n = 58)	
	Mean	SD	Mean	SD
MAST	2.66	1.32	2.71	1.08

the experimental group from 3.365 to 2.71 who received psychoeducation.

Analysis

All data were entered into a database and data analysis was conducted using the SSPS version 17.0. Statistical inference procedures applied to analyse the data were Frequency distribution and percentage for demographic data. Pearson's Correlation Coefficient was used to compare between Initial and Final assessment among both the groups. An analysis of demographic variables, demonstrated that the randomization has succeeded in providing relatively homogenous group with regards to their key features such as age , education in years, service in years, duration of drinking in years.

Discussion

The findings of the study were in conformity to the studies reviewed.

Kausar and Nasr[5] studied on effects of family psycho education on relapse prevention among 108 schizophrenia patients in Pakistan Relapse rate in psycho education was lower (5.8%) compared with control group (35.7%) at six month follow up. Their symptoms were significantly less severe on PANSS.

In a study on 1794 male primary care attendees at six practices in SouthWales by Colin et al[6] evaluated the feasibility, effectiveness and cost effectiveness of a stepped care intervention for alcohol use disorders in primary care. 112 participants were randomised to receive either 5 minutes of minimal intervention delivered by a practice nurse (control group) or stepped care intervention consisting of three successive steps (intervention group), a single session of behaviour change counselling delivered by a practice nurse, and four 50 minutes sessions of motivational enhancement therapy delivered by a trained alcohol counsellor and referral to a community alcohol treatment agency.

It was found that both groups reduced alcohol consumption 6 months after randomization with a greater improvement for the stepped care intervention. The step care intervention resulted in greater cost saving compared with the minimal care intervention.

Irvin et al[7] conducted a meta analysis on efficacy of Relapse Prevention. Twenty-six published and unpublished studies with 70 hypothesis tests representing a sample of 9,504 participants were included. Results indicated that RP (relapse prevention) was generally effective, particularly for alcohol problems. Specifically, RP was most effective when applied to alcohol or polysubstance use disorders, combined with the adjunctive use of medication, and when evaluated immediately

following treatment using uncontrolled pre—post tests.

Present study confirms that there is much scope for structured educational programme in improving the outcome in managing patients with Alcohol Dependence Syndrome. With a little preparation and active application nurses can play a very useful role not only in early detection but also in effective counselling of problem drinkers encountered in their practice. They should adopt an active preventive stance. Every person who drinks alcohol is at risk of adverse health consequences. This study helps us to understand the treatment response of Alcohol Dependence Syndrome patients. Even if patients' response to the intervention may be temporary, it is a great achievement. Moreover, one success, even if temporary, is likely to help them in their future attempts to give up alcohol as they would learn the reasons for their relapses and might take corrective measures.

Conclusion

The study evaluated an educational intervention for patients with ADS and assessed its effect in the immediate follow up period of six months for their current alcohol use pattern and motivational level. The results showed that screening for alcohol use disorder identifies a wide range of needs varying from hazardous and harmful drinking to alcohol dependence. Both groups reduced alcohol consumption 6 months after randomization showing significant improvement.

There is no stage of drinking which is beyond medical action. Even patient who is drinking should be engaged in a review of the problem and nudged in the direction of sobriety.

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Original Article

Factors causing Adjustment Problems among Married Women in Joint Family

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ABSTRACT

Background: *Marital adjustment is 'the state in which there is an overall feeling in husband and wife of happiness and satisfaction with their marriage and with each other. Marital adjustment, verbal aggression, and physical aggression have all been associated in the marital literature, &the nature of their associations remains unclear. The investigator felt the need of this study because very few studies of adjustment problems are conducted in India.* ***Aims and Objectives****: The present study was aimed to identify the cause of adjustment problem among married women in the joint family in Jabalpur M.P. state.* ***Material and Methods:*** *An Exploratory survey approach was adopted for the study. A convenient sampling technique adapted to select 100 married women of age group between 18-30 years and whose married life last from 1-4 years. Interview schedules was developed first Draft there is Socio-demographic Variable and second draft was to identify the cause of adjustment problems which is divided into different areas like–physical problems, psychological problems, and social problem to the women. The items are calculated with rank order method.* ***Results:*** *The result showed that 100 (28%) had mild, (68%) moderate ,(4%) severe adjustment Problem, The correlation was i.e* $r = 0.765$, $p < 0.01$. ***Conclusion:*** *The study concluded that after marriage when a girl goes to in-laws home, she finds difficulties in adjusting with new environment and thus needs screening and timely marital counseling.*

Keywords*: Adjustment problems, Married women, Joint family.*

Introduction

Man is a social animal. Society has been organized into various units. One that is most important and is basic to any society is the institution of family. In India there are mainly two types of family: joint family and nuclear family.[1] Family should be a source of support and encouragement. This does not mean that everyone gets along all the time. Conflicts are a part of family life.[2] Many issues can lead to conflict, such as illness, disability, addiction, job loss, school difficulties and marital problems. Listening to each other and working to resolve conflicts are important in strengthening the family. Every family has family problems.[3] The family relationship is often fraught with conflict, tension, and loyalty issue. Various factors that can be problematic in the family includes one spouse financially dependent on other due to lack of employment, wife isolated from work, friends or family, significant difference in the family background of the spouses, couple dependent on the family of origin physically, financially, the cessation of sexual satisfaction, loss of friendship, love or security, increased domestic workload for the remaining spouse, increased economic problems, household task and responsibilities.[4] The lack of awareness among people about adjustment problems can lead to problems in the woman and it will affect the growth and development of the child in the family. So there is need to find out the adjustment problems in the family and guide the family Members to

prevent mental disorder. Only then peace will prevail in the home. One of the study had shown results that there are more adjustment problems in a joint family.[5]

The investigator felt the need because very few studies of adjustment problems have been conducted in India, especially in Madhya Pradesh, Jabalpur City. Hence, it was considered important to study the adjustment problems in Indian setting, and prevent mental illness among families and society as well as in the community.

Material and Methods

Exploratory survey was done in Jabalpur; M.P. Target population was married women, whose married life was up to (1-4 years) in a joint family. In the present study the technique for the data collection was used as structured questionnaire interview schedule by Likert scale method. (a) Questionnaire interview schedule (QIS): A group of questions that people respond to verbally or in writing. (b) Likert scale: A scale of measurement in which respondents are asked to respond to statement based on how much they agree or disagree. An interview schedule was developed and the score was categorized on the basis of scores. In the first draft there were 7 items consisting socio-demographic data (Age, educational qualification, family monthly income, occupation, years of married life, head of family member, number of family members) and in the second draft there were 42 items consisting of adjustment problems among married women it was divided into 7 categories (Factors causing physical problems, and psychological problems, problems related to spouse, and in-laws, education, and work overload, general factors causing adjustment problems) Pilot study for the purpose of validity and reliability of the tool was conducted and was found to be feasible and valid. The tool was reliable as r value was 0.85. Total 100 subjects were selected from the target population by convenient sampling technique. All married women in joint family who were aged between 18-30 years and whose married life was up to 1-4years were included, Exclusion criteria: all Married women who were more than 30 years of age were excluded for the study.

Data was collected and analyzed using mean, median, percentage, Standard Deviation, ANOVA test and presented in the form of tables and diagram. Level of significance was set as $p < 0.05$.

Results

Table-1: Socio-demographic profiles of Subjects N = 100

Variables	N	(%)
Age in Years		
18-20 years	15	15.0
21-23 years	35	35.0
24-27 years	35	35.0
28-30 years	15	15.0
Educational qualification		
Illiterate	17	17.0
Primary	26	26.0
Middle	24	24.0
Higher Secondary	18	18.0
Graduate	9	9.0
Post graduate	3	3.0
Others	3	3.0
Family Monthly income (Rs.)		
Less than 5000/-	18	18.0
5000-10,000/-	58	58.0
10,000-15,000/-	22	22.0
More than 15,000/-	2	2.0
Occupation		
Laborer	35	35.0
Government service	11	11.0
Private Service	25	25.0
Unemployed	29	29.0
Years of married life		
1-2 years	42	42.0
2-3 years	34	34.0
3-4 years	24	24.0
Head of family members		
Male	60	60.0
Female	40	40.0
No. of family members		
6- 8	36	36.5
8-10	45	45.7
10-12	19	19.8

Table 1 indicates that 70% married women were in age group of 21-27 years, 26% were qualified up to primary school, and 35% were in laborer category and 42% were those whose married life is up to 1-2 years.

Table-2: Description of Overall identified adjustment problem of women in joint family N=100

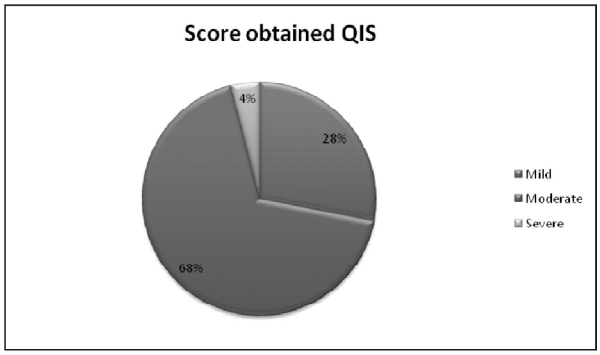
Category	Score	f	%	Mean	SD
Mild	0-42	28	28	32.32	6.47
Moderate	43-84	68	68.0	64.80	11.0
Severe	85-126	4	4.0	91.75	16.23

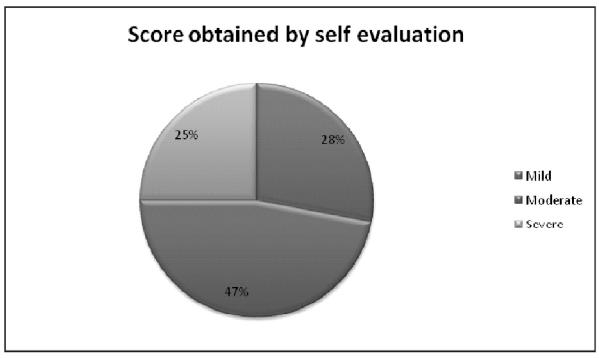
Table 2 indicates that among 100 subjects, there was only (28%) subjects had mild adjustment problems, and majority of them (68%) subjects had moderate adjustment problems and only (4%) subjects had severe adjustment problems.

Table-3: Association between scores of identified adjustment problems among married women in joint family N=100

Score Group	Mean	SD	r-Value	t- Value
Assessed by QIS	56.79	18.81		
Self evaluation	50.90	20.15	0.7615	< 0.01

Table 3 Shows that there was Positive correlation between score identified by QIS and score assessed by self evaluation was significant at (P < 0.01) level.





Discussion

The present study aimed to identify factors that leadto adjustment problems among married women in joint family. The major findings of the study showed that among 100 married women (28%) had mild adjustment problem, (68%) had moderate adjustment problem, (4%) had Severe adjustment problems.

Beena and Poduval (1997) conducted a study on sample of 80 female in rural community. They found that when age increases, experienced stress and adjustment problem decreases also due to the increase in the responsibility at home. Female showed higher rate of adjustment problem because women experience greater amount of work load. Score was (F = 0.311, p > 0.05) level.

Reddy and Ramamurthy (2000) analyzed the influence of age on conflicts and adjustment experience of women. Study was conducted on 200 samples. The results revealed that female in the age group of 21-31 years experienced more conflicts and adjustment problem than the age group of 31-60 years. The result was F = 0.299, p > 0.05 level.

Chand and Monga (2007) examined and correlates of job, adjustment, stress and burn out among 100 women from two communities. He found that, higher 85 education can combat adjustment, stress and burn out related problems among married women in the family. And found that education is non-significantly related. Score was (F = 0.497, p > 0.05) level.

Pastore & Techow (2004) studied the level of occupational stress, adjustment; anxiety experienced by the women those who are living in joint family. Showed significant higher levels of stress than the house wife on role over load, role ambiguity, role conflicts factor. Result was (F =0.189, p > 0.05) level.

Conclusion

The study concludes that after marriage when a girl goes to in-laws home, then she finds some difficulties in establishing adjusting with new different environment in in-laws home and develops some problem in adjustment and coping. The concept of adjustment problem is closely related to the concept of Dorothy Johnson's system model. According to this system men is bio-psycho-social being and disruptions of this system can leads to primary illness. At this point if women cope-up with the situation then it's all right otherwise she will enter into health care system. In the joint family women are confronting lots of problems because of the new environment and the things and situations are not the same at her home. The findings of the present study revealed that overall adjustment problem among married women mild = 28%, moderate = 68%, and severe = 4% in joint family.

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Original Article

Burden on Families in Patients of Substance Dependence: A Study among the Indoor Patients of a Deaddiction Centre in Amritsar

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ABSTRACT

Introduction: *Substance dependence is on a rise and family plays the most important role in care of such patients. A substance dependent person may affect almost all aspects of family life. In India, where families are more close knit, it is important to study its impact on families. The present study was attempted for the same.* ***Objective****: To study the burden on families of patients of substance dependence.* ***Method****: A cross sectional study was conducted among 500 admitted patients of Drug Deaddiction Centre in Amritsar. 500 patients who fulfilled the criterion for substance dependence according to ICD-10 were included in the study with caregiver. ASI (Addiction Severity Index) Scale was used to assess the severity of addiction. Family Burden Interview Schedule (FBIC) was used to assess the severity of family burden.* ***Results****: 66.6% caregivers had severe burden on objective scores while 79.6% had severe burden on subjective scores. The maximum burden was seen in the heroin group in which 85.9% had severe objective and 92.3% had severe subjective burden. In the domains of FBIC, maximum burden was in the financial domain with 73.2% of caregivers having severe burden whereas least burden was seen in the area of physical health of caregivers with only 2.2% having severe burden.* ***Conclusions****: Large proportion of distress is caused to the caregivers, especially to spouses by the substance dependent individuals specially in the areas of financial burden and disruption of routine family activities. Thus, there should be active involvement of the families in the therapeutic process.*

Key-words: *Family Burden, Substance Dependence*

Introduction

As a result of greater stresses related to rapid changes in life styles drug dependence has been showing a rising trend all over the world including India.[1]

In India, majority of the drug addicts are between the ages of 12 to 30 years. 17-26% of current users of various substances were dependent users. According to National survey in 2004, the prevalence for alcohol is 21.41%, for opioids and other opiates about 0.7% and for cannabis is 3%.[2]

Substance dependence is considered a 'family disease', in spite of being a complex biopsychosocial phenomenon .[3] All aspects of family life are affected in a substance dependent individual with the families being often affected more than the individual. Because the data in this regard are lacking, it was necessary to do this study.[4]

Material and Methods

This was a cross-sectional study which was conducted in a Deaddiction Centre in Amritsar. The approval of from IEC was obtained prior to the study. Five hundred patients admitted in the centre were included in the study along with their spouses or

other family members. The diagnosis of substance dependence was confirmed by the ICD-10 criteria.[5] The precise nature of the study, as well as aim of the interview was explained to the patient and the family members included in the study and their written informed consent was obtained. Addiction Severity Index (ASI) scale[6] was used to determine the severity of addiction by using the composite scores. Family burden Interview Schedule[7] was used to assess the severity of burden in caregivers.

Inclusion Criteria:

1. The patients of age group 18 to 65 years who reported to the psychiatry department, diagnosed as having substance dependence according to ICD-10 criteria and admitted to deaddiction centre, along with a caregiver/spouse, staying with the patient.

Exclusion Criteria:

1. Patients who had not given the consent and refused to get admission in deaddiction centre

Results

In our sample, majority of the patients 59.4% consumed heroin. 26.6% patients consumed propoxyphene. 9.2% of the patients belonged to the alcohol group while 4.8% of the patients abused more than one drug. 6.4% were illiterate. 10.2% had studied up to primary level, 43% had studied up to matriculation, 32.4% had studied upto 12th, and only 8% had studied up to graduation and above.

In case of heroin group maximum 52.9% were of age group 25-50 yrs, 46.1% < 25 yrs and 1% of > 50 years. In case of propxyphene, maximum 77.4% belonged to 25-50 years age group, 21.8% of < 25 years age and 0.8% > 50 years. In case of alcohol, majority 95.7% were of age group > 25 years (69.6% of 25-50 years and 26.1% of > 50 years). In those consuming more than 1 drug, 58.3% were of age group 25-50 years, 33.3% of < 25 years and 8.4% of age group > 50 years.

Family Burden

In the present study, subjects placed objective burden on areas of: financial, effects on family routine, family leisure, family interaction, and on mental and physical health of others.

33.4 % had moderate and 66.6% had severe objective burden. As far as subjective burden was concerned, 79.6% had severe burden whereas 20.4% had moderate burden.

The majority (50%) of the caregivers perceived severe burden in all areas except in physical and mental health component.

The maximum burden was seen in the areas of financial (73.2% perceived severe burden) and disruption of routine activities with 71.6% perceiving severe burden.

The maximum objective and subjective burden was seen in the heroin group.

The heroin group perceived maximum burden in the domains of financial burden (96.6% had severe burden), disruption of routine activities (83.5% had severe burden) and disruption of leisure(67.7% had severe burden).

In ASI, the maximum impaired area was "Family Component" followed by "Employment Component.

Table-1: Burden in various domains of family burden interview schedule (in percentage)

Domain	No Burden	Moderate Burden	Severe Burden
Objective	0	33.4	66.6
Subjective	0	20.4	79.6
Financial	0	26.8	73.2
Disruption of routine family activities	0	28.4	71.6
Disruption of family leisure	0	41.8	58.2
Diruption of family interaction	0	37.0	63.0
Physical health	40.8	57.0	2.2
Mental health	5.2	79.8	15

Discussion

In India, the problem of substance dependence has been on a rise with the prevalence of opioid dependence particularly showing an upward trend. Drug dependence is one of the foremost problems in the today's era with many medical, legal, social, employment and psychiatric complications.

Substance dependence and abuse impacts the family functioning and results in burden on the caregivers. In order to design and plan interventions to help the families to cope with substance dependence, it is useful to study the burden on

Table-2: Mean scores of each area of burden

	Mean	Std. Error of Mean	Median	Std. Deviation	Minimum	Maximum
Financial (0-12)	7.65	.091	8.00	2.043	3	11
Disruption of routine family activities (0-10)	6.02	.056	6.00	1.248	3	9
Disruption of family leisure (0-8)	4.91	.053	5.00	1.183	1	8
Disruption of family interaction (0-10)	5.88	.063	6.00	1.403	2	8
Physical health (0-4)	.68	.030	1.00	.660	0	3
Mental health (0-4)	1.63	.037	2.00	.819	0	4
Objective (0-48)	26.76	.199	27.00	4.453	11	37
Subjective (0-2)	1.80	.018	2.00	.403	1	2

Table-3: Financial burden in each type of drug group

Financial Burden	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	0	0	0	0	0	0	0	0	0	0
Moderate	10	3.4	33	71.7	84	63.2	7	29.2	134	26.8
Severe	287	96.6	13	28.3	49	36.8	17	70.8	366	73.2
Total	297	100	46	100	133	100	24	100	500	100

$X^{2=}220.17$; p=.000

Table-4: Disruption of routine family activities and type of drug

Financial Burden	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	0	0	0	0	0	0	0	0	0	0
Moderate	49	16.5	20	43.5	67	50.4	6	25.0	142	28.4
Severe	248	83.5	26	56.5	66	49.6	18	75.0	358	71.6
Total	297	100	46	100	133	100	24	100	500	100

X2= 57.55; p=.000

Table-5: Disruption of family leisure and type of drug

	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	0	0	0	0	0	0	0	0	0	0
Moderate	96	32.3	25	54.3	78	58.6	10	41.7	209	41.8
Severe	201	67.7	21	45.7	55	41.4	14	58.3	291	58.2
Total	297	100	46	100	133	100	24	100	500	100

X^2=29.45; p=.000

Table-6: Disruption of family interaction and type of drug

	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	0	0	0	0	0	0	0	0	0	0
Moderate	96	32.3	14	30.4	69	51.9	6	25.0	185	37.0
Severe	201	67.7	32	69.6	64	48.1	18	75.0	315	63.0
Total	297	100	46	100	133	100	24	100	500	100

X^2=17.75; p=.000

Table-7: Physical health and type of drug

	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	101	34.0	18	39.1	83	62.4	2	8.3	204	40.8
Moderate	190	64.0	28	60.9	48	36.1	19	79.2	285	57.0
Severe	6	2.0	0	0	2	1.5	3	12.5	11	2.2
Total	297	100	46	100	133	100	24	100	500	100

X2= 52.65; p=.000

Table-8: Mental health and type of drug

	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	9	3.0	5	10.9	11	8.2	1	4.2	26	5.2
Moderate	235	79.2	36	78.2	113	85.0	15	62.5	399	79.8
Severe	53	17.8	5	10.9	9	6.8	8	33.3	75	15.0
Total	297	100	46	100	133	100	24	100	500	100

X^2= 22.88; p=.001

Table-9: Objective score with type of drug

	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	0	0	0	0	0	0	0	0	0	0
Moderate	42	14.1	28	60.9	93	69.9	4	16.7	167	33.4
Severe	255	85.9	18	39.1	40	30.1	20	83.3	333	66.6
Total	297	100	46	100	133	100	24	100	500	100

X^2 = 147.91; P=.000

Table-10: Subjective scores with type of drug

	Heroin		Alcohol		Propoxyphene		> 1 drug		Total	
	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age	No. of patients	% age
No	0	0	0	0	0	0	0	0	0	0
Moderate	23	7.7	17	37.0	59	44.4	3	12.5	102	20.4
Severe	274	92.3	29	63.0	74	55.6	21	87.5	398	79.6
Total	297	100	46	100	133	100	24	100	500	100

X^2= 85.00; p=.000

families in patients of substance dependence.

This research was designed to study the socio demographic profile of patients visiting a Drug Treatment Centre and the burden on their family members.

In our study, 66.6% caregivers had severe objective while 33.4% had moderate burden. Mattoo et al[4] in a study in north India on substance dependent patients reported 45.8% had severe, 52.5% had moderate and 1.7% had no burden on objective scores. Shyangwa et al[8] in a study in Delhi on opioid dependent subjects reported, 56% had severe burden on objective scores whereas Gehlawat et al[9] reported that,60% had severe burden on caregivers.

As far as subjective burden was concerned a

Table-11: Addiction severity index scores

TOD group		N	Mean	Std. Deviation	Std. Error
MCOMP	Heroin	297	.290535	.1495865	.0086799
	Alcohol	46	.523671	.1636871	.0241343
	Propoxyphene	133	.209148	.1781446	.0154471
	More than 1	24	.352083	.1746618	.0356527
	Total	500	.293289	.1801141	.0080549
ECOMP	Heroin	297	.400579	.5412067	.0314040
	Alcohol	46	-.064667	.5177343	.0763358
	Propoxyphene	133	.452350	.4732368	.0410348
	More than 1	24	.229962	.5615126	.1146183
	Total	500	.363358	.5407167	.0241816
ACOMP	Heroin	297	-.000610	.0105208	.0006105
	Alcohol	46	.807426	.1707045	.0251690
	Propoxyphene	133	.001545	.0178206	.0015452
	More than 1	24	.064952	.2938358	.0599790
	Total	500	.077449	.2470807	.0110498
DCOMP	Heroin	297	.251308	.0267897	.0015545
	Alcohol	46	.004849	.0328909	.0048495
	Propoxyphene	133	.221554	.0189917	.0016468
	More than 1	24	.257158	.0382471	.0078072
	Total	500	.221000	.0748516	.0033475
LCOMP	Heroin	297	.037381	.1508760	.0087547
	Alcohol	46	.000000	.0000000	.0000000
	Propoxyphene	133	.009424	.0772235	.0066961
	More than 1	24	.026867	.1316229	.0268674
	Total	500	.026001	.1268532	.0056730
FCOMP	Heroin	297	.608174	.0830876	.0048212
	Alcohol	46	.595531	.0675877	.0099653
	Propoxyphene	133	.519774	.0783932	.0067975
	More than 1	24	.568287	.0871804	.0177956
	Total	500	.581582	.0891547	.0039871
PCOMP	Heroin	297	.103892	.1376328	.0079863
	Alcohol	46	.217325	.1636687	.0241316
	Propoxyphene	133	.043484	.1077733	.0093451
	More than 1	24	.194697	.1704909	.0348013

strikingly high number of caregivers, 79.6% had severe burden, 20.4% had moderate and 0% had no burden.

Mattoo et al[4] in a study in north India on substance dependent patients reported 1.7% had no burden, 52.5% had moderate burden and 45.8% had severe burden on subjective scores.

Shyangwa et al[8] in a study in Delhi on opioid dependent subjects reported a high percentage (74.0%) of spouses who had perceived severe burden due to their husband's opioid dependence, which is higher than burden consequent to chronic psychiatric and physical illness showed high burden.

Gehlawat et al[9] in a study in Rohtak reported that 70% had severe burden and 30% had moderate burden on subjective scores.

In this study more percentage of people experiencing subjective as compared to objective burden. This might have been due to the questionnaire format, where subjective burden was assessed by only one question which was basically related to emotional feeling. Objective burden was measured by adding score from multiple items (24 items).

In the heroin group 85.9% had severe objective and 92.3% had severe subjective burden while 14.1% had moderate objective burden and 7.7% had moderate subjective burden which was significantly more than in alcohol and propoxyphene group. The reason may be because alcohol consumption is a relatively accepted affair as compared to heroin. Heroin is also much more expensive and the patients were spending Rs 500-1000 daily on heroin.

This observation was different from previous

studies in Chandigarh[4] and Rohtak[9] where the difference between different drug groups was not statistically significant. This may be due to difference in size of the sample and the different socio-demographic profiles of both regions. Because Amritsar is in the border region the incidence of heroin addiction here is much more than other regions.

A large number of subjects, (39.8%) were unemployed indicating their financial hardship. Financial burden is likely to be experienced by the families due to loss of patient's income, especially when the individual happens to be the sole bread winner of the family, money spent on procuring drugs. 73.2% of caregivers had severe burden while 26.8% experienced moderate burden in financial area. (Mean 7.65 SD 2.04)

Shyangwa et al[8] in a study in Delhi on opioid dependent subjects reported mean was 6.24 and standard deviation 1.68.

Gehlawat et al[9] reported that 80% felt severe and 20% had moderate financial burden which was similar to our study whereas Mattoo et al[4] in a study in north India on substance dependent patients reported that 3.33% had no, 89.17% had moderate and 7.5% had severe burden. The difference may be because in our sample majority of the patients, 297(59.4%) belonged to heroin group. Because of the higher price of the drug patients often spend a majority of their own or family's income or sell household property to obtain drug leading to severe financial burden on caregivers.

Daily family routine like meals, spending time may be affected due to patient's drug dependence. They might not be able to give as much time to routine family activities as required.

In our study, in disruption of routine activities, 71.6% had severe burden while 28.4% had moderate burden. (Mean 6.02 SD 1.248).

Shyangwa et al[8] in a study in Delhi on opioid dependent subjects found that 46.0% of spouses of opioid dependence felt severe burden whereas Mattoo et al[4] reported 41.67 % had severe burden in disruption of routine activities.

58.2% had severe burden while 41.8% had moderate burden. (Mean 4.91 SD 1.18).

Mattoo et al[4] in a study in north India on substance dependent patients reported, 5% had no burden, 87.5% had moderate and 7.5% had severe burden in disruption of activities of leisure.

Shyangwa et al[8] in a study in Delhi on opioid dependent subjects reported the burden caused by disruption of family leisure activities was comparable to our study. (Mean 4.82, SD 1.43).

63% had severe burden on disruption of interaction. (Mean 5.88 S.D. ± 1.40). Clinical literature points out those substance abusers often lack social and communication skills, and have difficulties in involving in appropriate form of interactions with others.[10]

40.8% had no burden, 57% had moderate burden while 2.2% had severe burden on physical health of family members. (Mean 0.68 SD 0.66) which was similar to other studies.

79.8% of the caregivers experienced moderate, 15% had severe and 5.2% had no burden in the area of mental health with mean 1.63 ± 0.819. Majority of patients perceived moderate burden in previous studies by Mattoo et al[4] Shyangwa et al[8] and Gehlawat et al.[9]

In our study, the majority of the caregivers perceived severe burden in all areas except in physical and mental health component. This was similar to the previous study by Shyangwa et al[8] on opioid dependent patients.

The maximum burden was seen in the areas of "financial burden" and "disruption of routine activities" which was comparable to previous study by Gehlawat et al.[9]

Addiction Severity Index was used to calculate the severity of addiction. The highest score in mean medical score was seen in alcohol group 0.523 ± 0.16. This may be because majority of the alcohol dependent patients belonged to older age group and some of them suffered from chronic medical illnesses like diabetes and hypertension. Alcohol was also associated with medical complications like jaundice, alcoholic liver disease and gastritis.

Higher scores in employment domain were seen in opioid dependent patients (heroin 0.40 ± 0.54 and propxyphene group 0.452 ± 0.47) as compared to alcohol dependent patients. This may be because of the unemployment status which was more commonly seen in opioid dependent patients (44.4% of patients of heroin and 39.15% of propopoxyphene patients were unemployed) as compared to alcohol dependent patients (15.2% were unemployed).

In family/social relations scale of ASI, the

maximum scores were seen in heroin group 0.60 ± 0.08. This is in accordance to the results in the family burden interview schedule which showed the maximum burden on family in heroin group.

Maximum score in the component of psychiatric health was seen in alcohol dependent patients. This may be because alcohol is commonly associated with mood disorders, psychosis and delirium.

Therefore in Addiction Severity Index maximum impairment according to the objective scores was seen in the areas of family and social relationship composite scores and employment status composite score. This was comparable to previous study by Shyangwa et al[8] in Delhi on opioid dependent subjects.

Unemployment, peer pressure and easy availability of drugs is a cause for the rise in addiction in this part of India. Large amount of distress is caused to the caregivers, especially to spouses by the substance dependent individuals. Majority of the caregivers experienced severe distress in both subjective and objective scores. Maximum amount of distress was found in the heroin group with areas of financial burden and disruption of family routine being most affected. Thus, there should be active involvement of the families in the therapeutic process.

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Original Article

Epidemiological Findings of Psychiatric Morbidity in a Tertiary Level Hospital in Northern India

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ABSTRACT

Background: *There is dearth in studies which could throw light on the epidemiological findings on prevalence of psychiatric illnesses in northern India. The present study is an attempt to provide and supplement the existing database related to this vital topic.* ***Subject:*** *The present study is undertaken with the aim to study the diagnostic profile of patients attending the Out-Patient Department (OPD) of Department of Psychiatry at GSVM Medical College, Kanpur, that provides both outpatient and inpatient services to psychiatric patients residing in Kanpur and adjoining urban and rural areas.* ***Methodology:*** *It was a retrospective study of all patients attending the Psychiatry OPD from October 2013 to September 2014. All the patients fulfilling the diagnostic criteria of ICD-10 for psychiatric disorder were included in the study.* ***Results:*** *Most frequent psychiatric disorders were unipolar depression (22.9%), schizophrenia (17.7%), recurrent depression (13.4%) and bipolar disorder (10.9.). In unipolar depression, male to female ratio was almost equal.*

Key words: Epidemiology, Psychiatric Morbidity.

Introduction

Prevalence can be simply defined as total number of persons in the population who have a psychiatric disorder at a point or in a period. Psychiatric epidemiology is a field which seeks to study the conceptualization, aetiology, and prevalence of mental illness in society. Many epidemiological studies conducted in India on Mental and behavioural disorders report varying prevalence rates, ranging from 9.5 to 102 per 1000 population[1]. There is vast discrepancy between various studies due to difficulties encountered in conceptualization, diagnosing, defining a case, sampling, lack of resources[2]. Prevalence refers to both old and new cases. If the observational period is at a given point in time it is called as 'point prevalence' and if it is at a given specific period in time it is called 'period prevalence'. Previous studies found major discrepancies in prevalence of mental disorders[3]. Clinical prevalence is a measure of how many people who seek out mental health services are actually diagnosed with a psychiatric disorder, whereas Actual prevalence is the number of people in all of society who have a diagnosable psychiatric disorder.

Almost all previous studies done were general population studies, either urban, rural or mixed from India; community study design involving door-to-door/house-to-house enquiry of families and random sampling of families.

According to census 2011, Kanpur district has a population of 4,572,951. Patients visit to this hospital from neighbouring 14 districts, of rural and urban background.This hospital is providing psychiatric services to the community for last 40 years. So it is worthwhile to study what different

types of patients visit to this psychiatric hospital.

Objectives

Present study is specific hospital based study undertaken to provide and supplement the existing database on the psychiatric morbidity of patients attending tertiary level psychiatric hospital.

Methodology

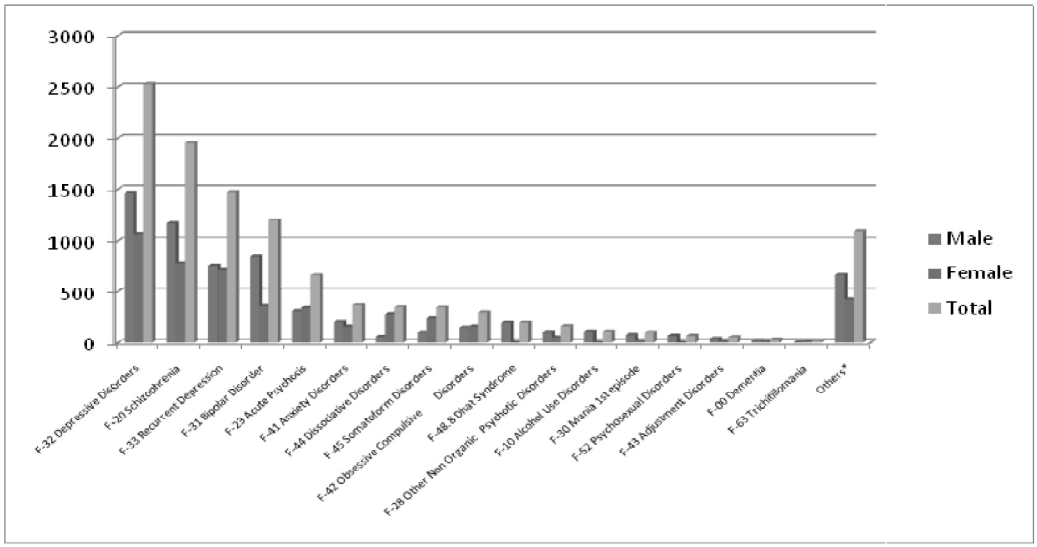
Study sample: Patients attending Psychiatric Outpatient department (OPD) of GSVM Medical College, Kanpur, during previous one year from September 2013 to August 2014 were included in the study. Diagnosis was made by Consultant in Charge OPD (Monday, Wednesday, Thursday & Friday) on the basis of ICD-10. Present State Examination was used as interviewing schedule for the patients.

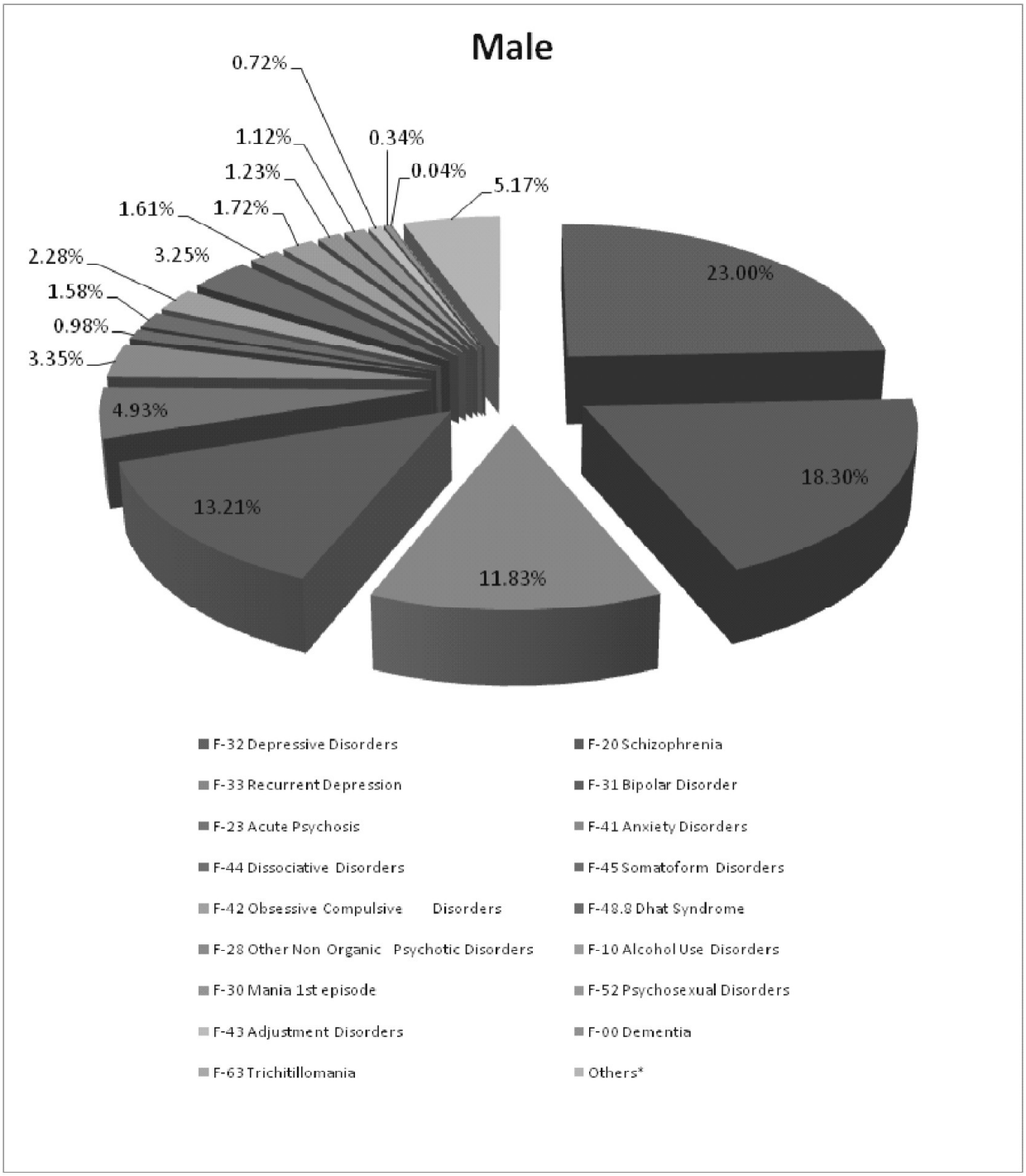
Results

Patient's data collected retrospectively from psychiatry OPD register from September 2013 to August 2014. It took around four months to compile whole data. A total of 11049 patients were seen

Table-1: Summarizes the prevalence of psychiatric morbidity of the present hospital based study

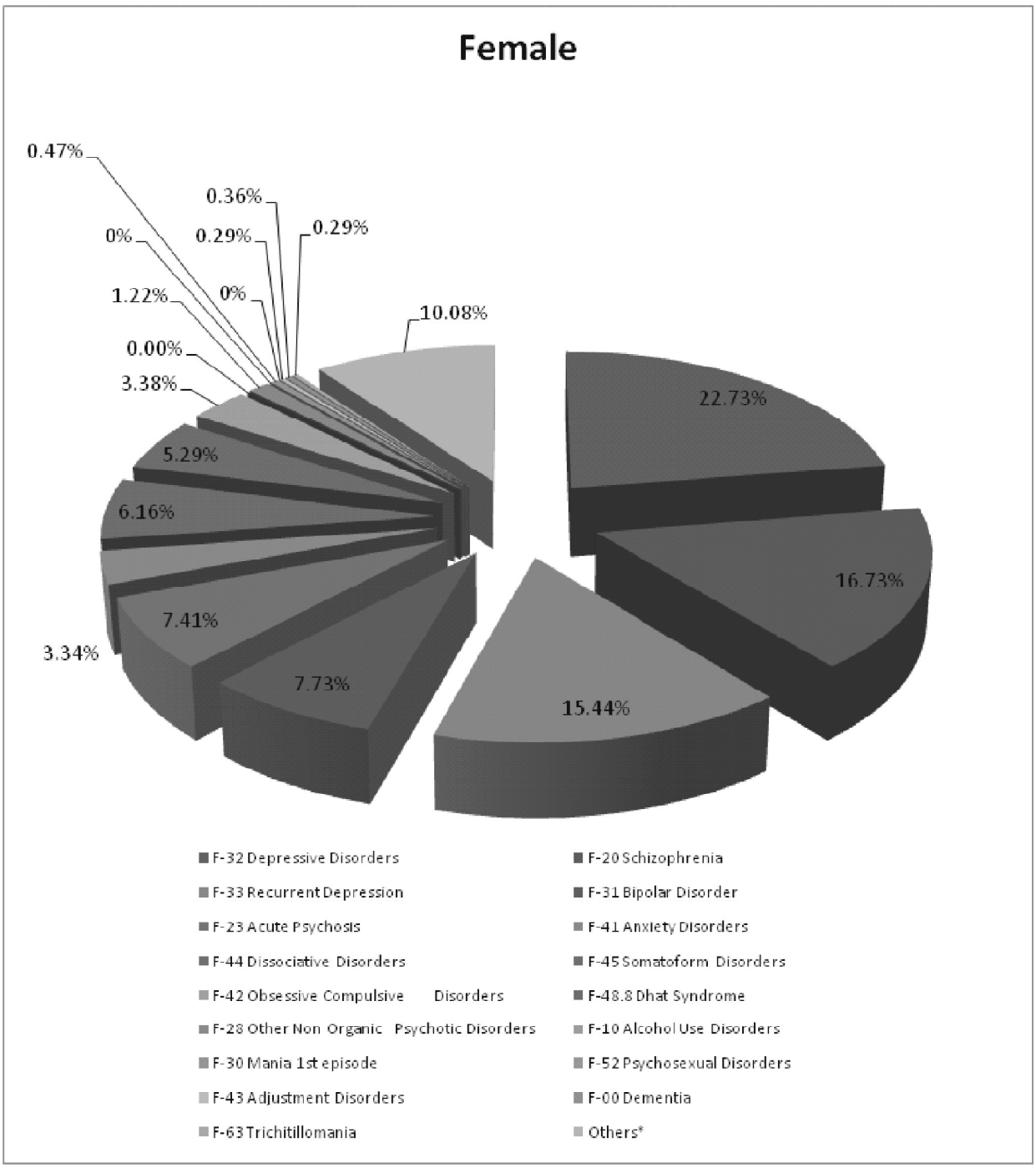
S. No.	Types of Disorder	Male		Female		Total	
		No.	%	No.	%	No.	%
1.	F-32 Depressive Disorders	1468	23.00%	1061	22.73%	2529	22.88%
2.	F-20 Schizophrenia	1168	18.30%	781	16.73%	1949	17.63%
3.	F-33 Recurrent Depression	755	11.83%	721	15.44%	1476	13.35%
4.	F-31 Bipolar Disorder	843	13.21%	361	7.73%	1204	10.94%
5.	F-23 Acute Psychosis	315	4.93%	346	7.41%	661	5.98%
6.	F-41 Anxiety Disorders	214	3.35%	156	3.34%	370	3.34%
7.	F-44 Dissociative Disorders	63	0.98%	288	6.16%	351	3.17%
8.	F-45 Somatoform Disorders	101	1.58%	247	5.29%	348	3.14%
9.	F-42 Obsessive Compulsive Disorders	146	2.28%	158	3.38%	304	2.75%
10.	F-48.8 Dhat Syndrome	208	3.25%	0	0.0%	208	1.88%
11.	F-28 Other Non-Organic Psychotic Disorders	103	1.61%	57	1.22%	160	1.44%
12.	F-10 Alcohol Use Disorders	110	1.72%	0	0%	110	0.99%
13.	F-30 Mania 1st episode	79	1.23%	22	0.47%	101	0.91%
14.	F-52 Psychosexual Disorders	72	1.12%	0	0%	72	0.65%
15.	F-43 Adjustment Disorders	46	0.72%	14	0.29%	60	0.54%
16.	F-00 Dementia	22	0.34%	17	0.36%	39	0.35%
17.	F-63 Trichitillomania	3	0.04%	14	0.29%	17	0.15%
18.	Others*	665	5.17%	425	10.08%	1090	7.24%
	Total	**6381**		**4668**		**11049**	





during the previous year on four specific days.

Present study has been done at tertiary level psychiatric hospital while previous studies were done in the community. In this study prevalence of unipolar disorder was 22.9%, recurrent depression was 13.4%, schizophrenia was 17.6% bipolar disorder was 10.9%, acute psychosis was 6%, dissociative disorder was 3.2%, somatoform disorder was 3.1%, alcohol use disorder was 0.99% and alzhiemer's dementia was 0.33%. In unipolar depression male to female ratio was almost equal (M = 23%, F = 22.7%). Bipolar disorders, first episode mania, adjustment disorder were more common in males, while dissociative disorder, somatoform disorder and trichitillomania were more common in females.



Discussion

In the present study most frequent psychiatric disorder found was depressive disorder i.e. unipolar depression 23% and recurrent depression 13%.Study done at Pune, India also shows depressive disorder was most common psychiatric disorder followed by substance use disorders and panic disorder.[8] Previous studies[4,10] showed that depression is more common in females but present study shows ratio of male and female patients with depression, attending psychiatric hospital, is almost equal. This may be due to gender discrimination that females are not brought to psychiatric services. Study done at Pune showed substance use disorder as second most frequent disorder[8] in the community but present study shows that second most frequent psychiatric

disorder was schizophrenia (18%) in patients attending tertiary level psychiatric hospital. In Suttur study prevalence of dementia[11] was found to be 0.9% and present study showed prevalence of alzhiemer's dementia was 0.33%. WHO 2001 estimates 1.4% prevalence of alcohol use disorder[10] in primary health care and present study shows 0.99% prevalence of these disorders at tertiary level psychiatric hospital. So lesser number of persons suffering from alcohol use disorder are attending psychiatric hospital. Point prevalence of alcohol use disorders (harmful use and dependence) in females has been estimated to be around 0.5% for women, but in present study no female with alcohol use disorder was found.

Conclusions

Most common disorder was depressive disorder (22.9%) followed by schizophrenia (17.7%), recurrent depression (13.4% bipolar disorder (10.9%).

This study shows that ratio of male and female patients with unipolar depression were equal.

More psychiatric epidemiological studies are required to know what is the actual prevalence psychiatric morbidity in the society so that people may be helped.

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Original Article

Phenomenological study of Acute and Transient Psychotic Disorder

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ABSTRACT

Introduction*: For many decades the clinicians have recognized the importance of some non-organic atypical psychosis that are associated with a benign course like affective disorder but are unlike affective disorders in their symptomatology and sometimes resemble schizophrenia in that regard. Previous Indian studies have been done on a broader sample of acute psychosis- a loosely defined term incorporating manic episodes, acute schizophrenic episodes, and other non-organic psychosis. Therefore, it was planned to study acute psychosis using the newer ICD-10 criteria.* ***Material and Method:*** *This study, prospective in design, was carried out on two samples of hospitalized inpatients meeting the specific inclusion and exclusion criteria. 32 patients of acute and transient psychotic disorder were included in patient group and 29 patients of first manic episode were included in control group. Patients beyond age range 17-65 years were excluded from both the groups. Patients suffering from schizophrenia other non-organic psychosis/mood disorder, substance abuse and other organic factors were also excluded. After obtaining informed consent patients were evaluated on standard proforma and they were also rated on the Comprehensive Psychopathological Rating Scale (CPRS) at the time of admission, at 2 weeks, 6 weeks and then at 12 weeks. The patients were also assessed on the Severity of Psychosocial Stressor Scale. The statistical analysis was done using a standardized computerized SPSS.* ***Results****: A large majority of control group cases had longer duration of illness ($p < .001$). A significant majority of patients from the study group had an abrupt onset of illness ($p < .001$). The phenomenology of the study group was assessed and compared with that of control group on the basis of the subjects' ratings on the CPRS items. Cases from the study group displayed a wide array of symptoms whereas the control group had a somewhat stereotyped symptomatology typical of manic episode.*

Keywords: *Acute Psychosis, Atypical Psychosis, CPRS.*

Introduction

The foundation of modern psychiatry was laid down by Kraepelin when he divided the functional psychosis into two main categories-dementia precox (later renamed schizophrenia by Bleuler) and manic depressive psychosis based on the course of the illness and difference in outcome. Since then the research on the nosology of functional psychosis has mainly concerned schizophrenia and affective disorder especially on the methods of refining the boundaries between the two. For many decades the clinicians have recognized the importance of some non-organic atypical psychosis that are associated with a benign course like affective disorder but are unlike affective disorders in their symptomatology and sometimes resemble schizophrenia in that regard. For most part they have been seen as variant

of schizophrenia or affective disorder. These remitting atypical atypical psychoses have defied easy categorization within conventional nosologic system and attempts to rename such atypical psychoses have provoked nosologic chaos. Attempts have been made mainly by European researchers and clinicians to describe these non-organic remitting psychoses under a variety of labels including Bouffee de'lirantes, reactive psychosis, schizoaffective psychosis, schizophreniform psychosis, cycloid psychosis and hysterical psychosis.[1-4]

Though the attempts to characterize these atypical psychosis started in European and Scandinavian countries, off late there has been a resurge of interest in these condition in the third world countries where the incidence of these acute psychosis is ten times higher than that of Western countries. Numerous studies have been done by various authors to establish or reject the validity of these concepts in order to redefine their nosologic status in ICD 10 or DSM. In a study of first admission patients with non-organic psychotic disorder, formulations of hysterical psychosis was tested.[5] The researchers have identified some features of hysterical psychosis in approximately one third of the patients but no patients exhibited the full syndrome as formulated by Hollander and Hirsch.[4,5] Bouffee de'lirantes which has been a concept given by Magnan still enjoys a place in the French psychiatric classification but has been accepted only in few European counties. Elsewhere it has been subsumed under the paranoid or delusional disorder category. One Canadian study reported the incidence of Bouffee de'lirantes being 0 .4% of all first admission and 1.3% of all first admission psychosis admitted to different institution of Canada.[6] Reactive psychosis, the concept of which originated in Scandinavia, is still firmly rooted in Scandinavian countries and many studies from the Danish countries have supported their validity. The other studies on reactive psychosis supported the view that this is nosologically distinct from both schizophrenia and affective disorder. Leonhard's cycloid psychosis has also been extensively investigated by Perris and Brockington who also gave a set of criteria for its diagnosis.[7]

The WHO international follow up study of schizophrenia reported that single episodes of psychoses with full remission were comparatively more common in India and Nigeria (51% & 58% respectively).[8] In India, the ICMR conducted a multicenter collaborative study on the phenomenology and natural history of acute psychosis which identified 8.7 % incidence of these cases reporting at various centers.[9] Out of these a substantial proportion of cases (approximately 40%) did not belong either to schizophrenia or affective disorder category. These acute psychoses have been classified differently in DSM-IV and ICD-10.[10,11]

After the emergence of ICD-10 there have been very few studies in India and other developing countries where the incidence of acute and transient psychotic disorder is fairly high. All the reported studies have been done on a broader sample of acute psychoses-a loosely defined term incorporating manic episode ,acute schizophrenic episode, other non-organic psychosis and psychosis NOS using ICD 9 criteria. Most of the studies have been retrospective in design and based on case summary or chart review. Therefore the need was felt to study these acute psychoses using the newer ICD-10 criteria to establish their nosological entity and the validity. That need has prompted this phenomenological study of acute psychotic disorder.

Material and Methods

This study, prospective in design, was carried out on two samples of hospitalized inpatients meeting the specific inclusion and exclusion criteria. 32 patients of acute and transient psychotic disorder were included in patient group and 29 patients of first manic episode were included in control group. Patients beyond age range 17-65 years were excluded from both the groups. Patients suffering from schizophrenia, other non-organic psychosis/ mood disorder, substance abuse and other organic factors were also excluded. After obtaining informed consent patients were evaluated on standard proforma and they were also rated on the Comprehensive Psychopathological Rating Scale (CPRS) at the time of admission, at 2 weeks, 6 weeks and then at 12 weeks.[12] The patients were also assessed on the Severity of Psychosocial Stressor Scale.[13] The statistical analysis was done using a standardized computerized SPSS.

Results

The phenomenology of the study group was

Table-1: Comparison of CPRS items (According to frequency of observation) between the patients and the control group

CPRS Variables	Patient Group N (%)	Control Group N (%)	X^2	p
Sadness	3 (9.37)	0	2.86	NS
Elation	1 (3.12)	23 (79.31)	37	< 0.001
Inner Tension	6 (18.75)	0	6.02	< 0.02
Hostile Feeling	1 (3.12)	8 (27.58)	7.23	< 0.01
Pessimistic Thought	2 (6.25)	0	1.87	NS
Suicidal Thoughts	4 (12.5)	0	3.87	< 0.05
Lassitude	2 (6.25)	0	1.87	NS
Fattiguability	2 (6.25)	0	1.87	NS
Concentration Difficulty	22 (68.75)	22 (75.86)	.37	NS
Reduced Appetite	31 (96.88)	12 (41.38)	22.5	< 0.001
Reduced Sexual Interest	7 (21.87)	0	7.17	< 0.01
Reduced Sleep	31 (96.88)	29 (100)	.92	NS
Increased Sex Interest	1 (3.12)	23 (739.31)	37	< 0.001
Loss of Sensation/Move	1 (3.12)	0	.94	NS
Feeling Controlled	2 (6.25)	0	1.87	NS
Disrupted Thoughts	1 (3.12)	3 (10.34)	1.3	NS
Idea of Persecution	17 (53.12)	14 (48.27)	.12	NS
Idea of Grandeur	4 (12.5)	29 (100)	46.89	< 0.001
Morbid Jealousy	0	1 (3.45)	1.1	NS
Other Delusions	1 (3.12)	4 (13.8)	2.27	NS
Other Aud. Hallucinations	6 (6.25)	7 (27.58)	.25	NS
Visual Hallucinations	1 (3.12)	0	.94	NS
Other Hallucinations	1 (3.12)	0	.94	NS
Apparent Sadness	5 (15.62)	0	4.94	< 0.05
Elated Mood	0	22 (75.86)	37.96	< 0.001
Hostility	10 (31.2)	18 (62.06)	5.82	< 0.02
Lability of Affect	4 (12.5)	0	3.87	< 0.05
Inappro. Affect	13 (40.62)	0	14.97	< 0.001
Distractible	10 (31.2)	22 (75.86)	12.14	< 0.001
Withdrawal	4 (12.5)	0	3.87	< 0.05
Perplexity	8 (25.0)	0	8.33	< 0.01
Disorientation	20 (62.5)	18 (62.06)	.006	NS
Pressure of Speech	13 (40.62)	26 (89.65)	15.86	< 0.001
Reduced Speech	15 (46.87)	1 (3.45)	14.84	< 0.001
Flight of Ideas	2 (6.25)	4 (13.79)	.97	NS
Incoherent Speech	4 (12.5)	0	3.87	< 0.05
Perseveration	2 (6.25)	0	1.87	NS
Over Activity	19 (59.37)	29 (100)	14.97	< 0.001
Slowness of Movement	6 (18.75)	0	6.02	< 0.002
Agitation	11 (34.37)	0	12.12	< 0.001
Mannerism/Postures	4 (12.5)	0	3.87	< 0.05
Hallucinatory Behaviour	7 (21.87)	0	7.17	< 0.01

assessed and compared with that of control group on the basis of the subjects' ratings on the CPRS items. Cases from the study group displayed a wide array of symptoms whereas the control group had a somewhat stereotyped symptomatology typical of manic episode.

Discussion

The subjects of the study group were more likely to have the symptoms of reduced appetite, reduced speech, inappropriate affect, perplexity, agitation, hallucinatory behavior, reduced sexual interest, slowness of movement, inner tension, mannerism and postures, labile affect, suicidal thoughts and withdrawal. The subjects of the control group were more likely to have the symptoms of grandiose ideations, over activity, and pressure of speech, elation, increased sexual interest, distractibility,

Table-2: Factor Analysis of the study group

Vaiable	Eigen Value	% of Variance	Cumula-tive %
Reduced Sleep	4.81	19.3	19.3
Reduced Appetite	3.18	12.8	32
Concentration Diff.	2.50	10	42
Disorientation	2.0	8	50
Overactivity	1.86	7.5	57.5
Ideas of Persecution	1.64	6.6	64
Reduced Speech	1.45	5.8	69.8
Pressure of Speech	1.2	4.8	74.7
Inappropriate Affect	1.04	4.2	78.8
Agitation			
Distractibility			
Hostility			
Perplexity			
Other Aud. Hallucinations			
Hallucinatory Behaviour			
Reduced Sex			
Slowness of Move			
Inner Tension			
Appearing Sad			
Ideas of Grandiosity			
Mannerism & Postures			
Labile Affect			
Suicidal Thought			
Withdrawal			
Incoherent			

Table-3: Factor Analysis of the Control Group

Variable	Egen Value	% of Variance	Cumula-tive %
Pressure of Speech	3.69	26.4	26.4
Elation	2.0	14.3	40.6
Increased Sex	1.59	11.4	52.0
Elated Mood	1.46	10.5	62.5
Concentration Diff.	1.18	8.5	70.9
Distractibility	1.01	7.2	78.2
Hostility			
Disorientation			
Idea of Persecution			
Reduced Appetite			
Hostile Feeling			
Other Aud. Hallucinations			
Flight of Ideas			
Other Delusions			

hostility, hostile feelings, flight of ideas and other delusions. CPRS items exclusively present in the study group were sadness, inner tension, suicidal thoughts, reduced sexual interest, apparent sadness, labile affect, inappropriate affect, withdrawal, perplexity, agitation, mannerism and postures, hallucinatory behavior, incoherent speech and slowness of movement. On the contrary only one symptom, elated mood was exclusively noted in the control group. However the patients with mania were significantly more likely to have increased sexual interest, elation, hostile feelings, grandiose ideations, pressure of speech, over activity and distractibility. The result of the comparison between the two groups' symptomatology supports the notion of polymorphism in acute psychotic disorder. Serial evaluation and assessment of the patient is at present the only reliable method of addressing the issue of rapid change in the symptomatology of the cases (polymorphism). The present study tried to test the formulations of polymorphism by serial mental state examination using a semi-structured instrument (CPRS) in the patient group. However as the clinical picture may change over hours and days and may not be picked by the mental status examination at few weeks intervals, those changes might have been missed in the study which carried out the mental status examination at fixed intervals. 'Acute and transient psychotic disorder' as defined in ICD-10 is a heterogeneous category including acute polymorphic syndrome with and without symptoms of schizophrenia, acute schizophrenia like psychotic disorder, acute predominantly delusional disorder other unspecified acute and transient psychotic disorder ; each of the sub category having somewhat different phenomenology. In this study, all the various subcategories were not taken into account because of the small number of patients in each group. A larger sample with sufficient number of cases would have addressed the study of finer phenomenological differences between various subcategories.

To find out variability contributed by different phenomenology in the study group, factor analysis was performed using those psychopathology which were observed more frequently as well as significantly more common in comparison to the control group. Principal component analysis has extracted nine factors i.e., reduced sleep, reduced appetite, concentration difficulties, disorientation, over activity, ideas of persecution, reduced speech, pressure of speech and inappropriate affect and they explain the variability upto 78.8%. Hence, with the help of these nine psychopathology, 79% population can accurately be diagnosed as acute and transient psychosis in ICD-10. The factor analysis of the control group yielded the following six factors i.e.,

pressure of speech, elation, increased sexual interest, elated mood, concentration difficulties and distractibility which explained variability upto 78%. The findings are compatible the concept of manic episode as in DSM-IV and ICD-10. Previous Indian study of reactive psychosis found increased frequency of psychomotor excitement, delusion (any content), hallucination (any modality), marked hypomanic affect, confusion, disorientation and marked depression in their cases.[14] The Egyptian study on acute psychosis which had approximately three-fourth of cases diagnosed as acute and transient psychotic disorder reported symptoms of delusion/ hallucination, mood swings, perplexity, thought disturbances, hypomanic effect and marked depression- the latter two symptoms point more towards the diagnosis of affective and probably these patients were not considered for inclusion in the study group.[15]

Conclusion

Further studies on larger sample are required to know the phenomenology and clinical characteristics of Acute Transient Psychotic Disorder.

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Psychomicrobiology

Toxoplasmosis and Psychiatric Disorders

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Introduction

Toxoplasma gondii is one of the most prevalent protozoan parasite in most areas of the world. It can infect all warm-blooded animals (mammals and birds) and humans. Parasite assumes a latent form predominantly in nervous and muscle tissues in infected hosts after the initial acute phase of infection. Up to 80% of the population may be infected, depending on eating habits and exposure to cats.[1] Until recently, latent infections in humans were assumed to be asymptomatic. However, there is growing data published, and evidence to show that *Toxoplasma gondii* infection is associated with several neuropsychiatric diseases and behavioral changes in humans and animals.[2] However, the mechanism of how it happens is not known, but there is growing data showing that the mechanisms are complex, comprising humoral, immune, neurotransmitter, genetic, and structural effects.[3] This review briefly discusses the association between toxoplasmosis and psychiatric disorders and their mechanism.

Life cycle of Toxoplasma gondii

T. gondii is capable of infecting an unusually wide range of hosts and many different host cells. Definitive hosts are members of the family Felidae, for example domestic cats. Intermediate hosts are probably all warm-blooded animals including humans.[4,5] There are three infectious stages in the life cycle of *T. gondii*, including: oocysts containing sporozoites, tachyzoites and bradyzoites contained in tissue cysts.[6] In intermediate hosts, *T. gondii* undergoes two phases of asexual development. In the first phase, tachyzoites multiply rapidly by repeated endodyogeny in many different types of host cells. Tachyzoites of the last generation initiate the second phase of development which results in the formation of tissue cysts. Within the tissue cyst, bradyzoites (or cystozoites) multiply slowly by endodyogeny.[7] Tissue cysts have a high affinity for neural and muscular tissues. They are located predominantly in the central nervous system (CNS), the eye as well as skeletal and cardiac muscles. However, to a lesser extent they may also be found in visceral organs, such as lungs, liver, and kidneys[7]. In some intermediate host species, they may persist for the life of the host. If ingested by a definitive host, the bradyzoites initiate another asexual phase of proliferation which consists of initial multiplication by endodyogeny followed by repeated endopolygeny in epithelial cells of the small intestine. The terminal stages of this asexual multiplication initiate the sexual phase of the life cycle. Gametogony and oocyst formation also take place in the epithelium of the small intestine. Unsporulated oocysts are released into the intestinal lumen and passed into the environment with the faeces. Sporogony occurs outside the host and leads to the development of infectious oocysts which contain two sporocysts, each containing four sporozoites.

All three stages are infectious for both intermediate and definitive hosts which may acquire a *T. gondii* infection mainly via one of the following routes (a) horizontally by oral ingestion of infectious oocysts from the environment, (b) horizontally by oral ingestion of tissue cysts contained in raw or undercooked meat or viscera of intermediate hosts, (c) vertically by transplacental transmission of tachyzoites. In addition, in several hosts tachyzoites may also be transmitted in the milk from the mother to the offspring. Thus, *T. gondii* may be transmitted from definitive to intermediate hosts, from intermediate to definitive hosts, as well as between

definitive and between intermediate hosts. Different conditions such as, number of parasite, virulence of the organism, genetic background, sex, and immunological status seem to affect the course of infection[6]. Most common form of the infections in humans are latent (asymptomatic) but in immunocompromised patients and congenitally infected fetuses may cause severe disease[8].

Association with psychiatric disorders

Schizophrenia

Schizophrenia is a chronic, neuropsychiatric disease of uncertain cause that affects approximately 1% of people.[9] Genetic and environmental factors including some infections (e.g. rubella, influenza, *T. gondii*, herpes simplex virus type 2) play roles in its etiology.[10] In 2003, E. Fuller Torrey of the Stanley Medical Research Institute in Bethesda, Maryland colleagues noted a link between Toxoplasma and schizophrenia – specifically women with high levels of the parasite were more likely to give birth to schizophrenics-to-be.[11] Other studies also confirmed that maternal and prenatal infection with *T. gondii* are risk factors for schizophrenia and psychoses in adult offspring.[12,13] Later, many studies conducted on anti *T. gondii* antibodies test in schizophrenia patients; confirmed the higher infection with *T. gondii*[14,15]. Another study demonstrated individuals with higher levels of *T. gondii* IgG antibodies significantly having more severe symptoms of psychoses and increased risk of mortality.[16] Recently, Horacek et al. found the gray matter density in the brain of schizophrenia patients who latently infected with *T. gondii* was significantly reduced than *Toxoplasma* negative schizophrenia patients in the caudate, median cingulate, thalamus and occipital cortex and in the left cerebellar hemispheres.[17]

Bipolar Disorder

There is indirect evidence for a role of *T. gondii* infection in the causation of mood disorders from intervention studies. Haloperidol and Valproic acid, mood stabiliser drugs, were found to be an effective inhibitor of *T. gondii* growth in cell culture.[18] Groër et al. observed higher titers of *T. gondii* IgG antibody was positively correlated with depression and anxiety in women during pregnancy.[19] Kar and Misra reported a depressed patient with *Toxoplasma* seropositivity that showed poor response to anti depressants drugs. The patient successfully treated with anti-depressant drugs only after treatment by anti-*Toxoplasma* drugs (pyrimethamine and sulphadiazine).[20] There are data from the third National Health and Nutritional Survey from the US showing that only bipolar disorder was significantly associated with increased seroprevalence but not all other kinds of depressive only disorders.[21] Study from France reported an OR (odds ratio) of 2.7 among all seropositive patients for having bipolar disorder.[22]

Obsessive–Compulsive Disorder

Obsessive-Compulsive Disorder (OCD) is an anxiety disorder characterized by recurrent, unwanted thoughts (obsessions) and/or repetitive behaviours (compulsions).[23] In one study, the rate of *T. gondii* IgG antibodies among OCD patients was (47.62%) significantly higher than in healthy volunteers (19%)[24]. Brynska et al. reported two children with symptoms of OCD along with acquired toxoplasmosis. Significant improvement of OCD symptoms were seen when they were treated with anti *Toxoplasma* drugs without any psychopharmacological treatment.[25]

Suicidal tendency

Suicide is the act of deliberately killing oneself. It is common in mental disorder (such as depression, personality disorder, alcohol dependence, or schizophrenia), and some physical illnesses, such as neurological disorders, cancer, HIV etc[26]. In Denmark, serum antibody levels for *Toxoplasma gondii* were taken from the children of over 45,000 women as a part of a neonatal screening study to better understand how the parasite is transmitted from mother to child. Since children do not form their own antibodies until three months after birth, the antibody levels reflect the mother's immune response. Thus in this study, the authors were both able to passively screen women not only for infection status, but degree of infection, as high levels of antibodies are indicative of worse infections. They were then able to use the Danish Cause of Death Register, the Danish National Hospital Register and the Danish Psychiatric Central Research Register to investigate the correlation between infection and self-directed violence, including suicide. Women with

toxoplasma infections were 54% more likely to attempt suicide – and twice as likely to succeed. In particular, these women were more likely to attempt violent suicides (using a knife or gun, for example, instead of overdosing on pills) and suicide attempt risk was positively correlated with the level of infection. Those with the highest levels of antibodies were 91% more likely to attempt suicide than uninfected women.[27]

In 2006, researchers linked *Toxoplasma* infection to neuroticism in both men and women. Neuroticism – as defined by psychology – is the "an enduring tendency to experience negative emotional states," including depression, guilt and insecurity. The link between neuroticism and suicide is well established, thus if the parasite does make people more neurotic, it's not surprising that it influences rates of self-violence.[28] Another global study was performed in 2011 and result of this study was that although the representative seropositivity rates used in the analysis were collected from women in their child-bearing years, the relationship between *T. gondii* and suicide rates reaches significance in older age groups, roughly corresponding to postmenopausal years.[29]

Mental Retardation

Mental retardation (MR) is one of the most common neuropsychiatric disorders among children and adolescents. Prenatal infection with *Toxoplasma* and rubella probably responsible for about 2-3% of all the cases of mental deficiency, cytomegalovirus infection is also associated with about 10% of microcephalic mental deficiency.[30] A cases-control study among 450 mental retarded and 395 healthy children in Brazil displayed that 54.8% of the cases and 29.3% of controls were seropositive to *Toxoplasma*.[31] Flegr et al. searched personality parameters of 857 *Toxoplasma* positive and negative military conscripts. They observed various personality parameters and intelligence quotient (IQ) in the infected individuals were significantly lower than non infected controls.[32]

Other Behavioural changes and Disorders

Extensive work has been done in the determination of the impact of *T. gondii* infection on the behaviour of apparently healthy participants. Flegr et al reviewed individuals with latent infections showing different personality profiles to those without infection, in a series of comparative studies from the czech republic using cattell's 16 Personality Factor (16 PF) questionnaire and the cloninger's temperament and character inventory (tci) personality tests. Men had "lower superego strengths (rule consciousness) and higher vigilance"; as well as being "more expedient, suspicious and jealous" compared to women. However, both men and women were found to have more apprehension compared with uninfected controls[33]. In animal models, change in the risk perception and novelty seeking behaviour of mice has been shown in those infected with *T. gondii*.[34-36] In humans, cognitive testing demonstrated reduced concentration and prolongation of reaction time and hence traffic accidents were also reported higher among those with *T. gondii* infection.[37,38]

Pathophysiology of psychiatric disorders in Toxoplasmosis

There are evidences that *Toxoplasma* infection have greatest impacts on the hippocampus and amygdala. Hippocampus is involved in physiopathological processes of higher functions, like learning, memory, consciousness, information processing and language.[39] The amygdala is associated with cognitive functions, including emotion, learning, memory, attention and perception.[40] Vyas et al. and Hermes et al. observed that inflammation and pathological changes were more common in hippocampus and amygdala region of brain of rats infected with *T. gondii*.[34] When we are infected with a parasite like *Toxoplasma gondii*, our immune system goes on the offensive, producing a group of molecules called cytokines that activate various immune cell types that may contribute to developing schizophrenia and related psychotic disorders[41]. Increased levels of the inflammatory cytokine IL-8 and TNFá are associated with an increased risk for psychotic illness among offspring.[42] Several reports described elevated IL-8, IL-6, IL-2 and IFN-ã levels in patients with T. gondii infection suffering from mental illnesses.[43,44] The exact mechanism by which cytokines cause depression and other mental illnesses is poorly understood, but it is well known that they are able to pass the blood-brain barrier and alter neurotransmitters like serotonin and dopamine in the brain. Dopamine is an important

neurotransmitter which plays various roles in etiology of neuropsychological disorders including schizophrenia and other neurological diseases such as depression, Alzheimer's disease and Parkinson disease.[45] Another possible correlation between *T. gondii* infection and schizophrenia is tryptophan metabolism. More than 95% of L-tryptophan in mammals is degraded through the kynurenine pathway. Elevation of kynurenine (KYNA) and its metabolites, secondary to activation of indoleamine 2,3-dioxygenase (IDO) by immune mediators targeting *T. gondii*, could result in changes in dopaminergic and glutaminergic neurotransmission, and thus contribute to affective and behavioral alterations leading to increased risk of schizophrenia and other mental illnesses.[46] Astrocytes play a pivotal role in the production of KYNA in the CNS, because astrocytes are the main source of KYNA and astrocytes are one of the most important cells that are invaded by *T. gondii.*[41,47]

Conclusion

The results of various studies analysed in the current review are consistent with a hypothesized association between a highly prevalent neurotropic parasite and mental illnesses. Recent studies indicated that latent toxoplasmosis may be playing various roles in the etiology of different mental disorders. Since brain is one of the most important sites for *T. gondii* cysts formation, hence various alterations in brain may occur during infection that play role in the etiology of various mental disorders. This review adds to the developing field studying the effect of the natural environment on affective and behavioral dysregulation. Further studies may lead to discovering novel prognostic, preventative and therapeutic approaches in these mental illnesses.

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Psychophysiotherapy

Huntington's Disease and Rehabilitation

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Introduction

Huntington disease (HD) is an inherited, autosomal dominant, neurodegenerative condition caused by an expanded Cytosine Adenine Guanine (CAG) repeat in the Huntington gene.[1,2] Excitotoxicity has been suggested as the inducing factor of the neurodegeneration in HD.[3] HD affects spiny neurons of the striatum, which result in triad of mobility, cognitive and behavioral symptoms[4]. The clinical symptoms of HD are progressive movement disorder (chorea), dystonia, cognitive deficits, psychiatric symptoms like depression, apathy, irritability, obsessive compulsory disorder, apathy andbehavioral changes in addition to weight loss, sleep disturbances and dysregulation of autonomic nervous system.[1,2,5] Multiple areas of the brain degenerate mainly involving the neurotransmitters glutamate, γ aminobutyric acid and dopamine[6]. It eventually leads to loss of independence in all functional activities[1]. HD is transmitted genetically. The offspring of an individual with HD have a 50-percent chance of inheriting the disease.[7]

Huntington's disease is associated with physical, mental and neurological disabilities.[2] Onset is frequently in midlife with gradual progression of disease and mobility problem over a period of 15-20 years[4] with dystonia, dementia, mutism predominating in advanced diseases.[6] Average age of diagnosis is 40-45 years. Men and women are equally affected.[6] A clinical diagnosis is usually made when an individual has overt motor symptoms and a family history of HD.[8] In the early stages defects in attention, working memory, speech, planning and inhibition occur. Loss of grey matter is correlated with decline in cognitive performance in HD.[4] Impairments in planning and sequencing of complex tasks secondary to degeneration in basal ganglia along with damage to corticostriatal pathway result in difficulties in walking , sit to stand , transfers and standing balance like functional activities which result in deterioration of quality of life.[9] Motor symptoms are most visible and result in gait and balance problems.[8] Larger amplitude movements of chorea may become safety issue causing injuries and poor positioning of body.[6] Juvenile HD is onset before the age of 20 years. It accounts for less than 10 % of all patients with HD. In 80-90 % cases of Juvenile HD transmission is parental. Patients with Juvenile HD have less chorea and their clinical manifestations are dominated by rigidity.[10]

The genetic mutation in Huntington's protein has deleterious effect on skeletal muscle, which results in muscular weakness, skeletal muscle atrophy and impairment of adenosine triphosphate metabolism. Ciammola et al observed low anaerobic threshold and early increase in blood lactate in HD patients during cardiopulmonary exercise testing.[11]

Stages of Hundtington's Disease According to American Physical Therapy Association[12]

Early Stage : characterized by trouble in problem solving and decision making, slowing of movement, chorea and occasional loss of balance. Patients may feel depression, worries and irritation.

Middle Stage : characterized by balance and walking problems with fall. Patients require help in ADL's and might become frustrated and angry due to problems with thinking and memory.

Late Stage : Characterized by need during all ADL's, special living arrangements for sitting, sleeping and eating due to severe chorea and loss of controlled movements.

Treatment

Treatment of HD is purely symptomatic with no disease modifying therapies available at present.[4] Thus treatment of HD aims at alleviating symptoms, maintaining and improving function and quality of life.

HD patients need multidisciplinary health care services like counseling from neuropsychologist, active physiotherapeutic interventions, speech therapy, dieticians and occupational therapy.[2,8]

It was observed that multidisciplinary rehabilitation is capable of increasing in grey matter volume along with improvement in some aspects of cognitive function in HD[9].Crickshank et al observed improvement in grey matter volume in Dorsolateral Prefrontal Cortex and Caudate of brain after 9 months of multidisciplinary rehabilitation. They also observed improvement in verbal learning and memory.[9] Exercises improve memory and learning ability, it also protects from neuro-degeneration and alleviates symptoms of neuro psychiatric disorders.[3] Piira et al did multidisciplinary rehabilitation in HD patients for an year which involved Physical therapy focused on improvement of balance and gait, Occupational therapy focused on improvement of cognitive function, fine motor exercises, training of activities of daily living and assessment of the need for assistive devices. Their rehabilitation team also included dieticians and speech therapists. They observed that structured intensive multidisciplinary rehabilitation program resulted in improvement of gait function, balance, quality of life and reduction in depression and anxiety in early to middle stage HD.[8]

Medical Treatment

Medication should be considered along with alternative and complementary therapies, behavioral plans and cognitive interventions.Tetrabenzine, Amantadine, Riluzole can be used if chorea requires treatment.[6]

Psychiatry Treatment

24-79 % of patients have psychiatric symptoms as the earliest presenting syndrome.[13] Depressive symptoms are associated with more rapid decline in functional ability and specific cognitive abilities[14]. Depression, obsessive compulsive disorder, aggressive, impulsive behavior and anxiety can be treated by pharmacological agents.[6]

Occupational Therapy Treatment

OT focus in improvement of ADL performance, assess for adaptive equipment needs, recommend home modifications, provide compensatory strategies for cognitive loss, and educate on home safety and caregiver training. Occupational therapists with expertise in dysphagia can also address swallowing difficulties. Patients have difficulty in distinguishing hot and cold, which can result in burns or over-exposure. OC includes educating on subtle changes in sensation and perception. As cognitive changes become more prominent, occupational therapy can assist patient and his family members to develop compensatory strategies for memory loss, difficulty with planning and poor concentration in the early stages of the disease. In the middle stage of the disease, cognitive deficits and declining motor control can create obstacles toward achieving success with activities of daily living. Impaired postural control can result in decreased independence with self-feeding. Occupational therapy can help in modifying the items of daily usage like Built-up handles on utensils, divided plates and cups with lids. They can be provided to compensate for weakness, fatigue and poor coordination.[7]

Speech Therapy

Speech and Language Therapy (SLT) has an important role in the management of HD. As the disease progress the HD patients will experience communication problems, language difficulties, dyspaghia and dysarthria. Regular assessment and treatment by a speech therapist is an essential component of the management in HD.[15]

Physical Therapy Intervention

Previously very few researches have been done on the benefits of physical therapy for patients with HD. Physical therapy plays animportant role in assisting people with HD to maintain their independence in activities of daily living by addressing their impairments and functional limitations.[16] Evidence suggests that physical therapy combined with exercise is a valuable tool for maintaining and improving mobility, strength, balance, and function in this population.[1,17,18] Early engagement and participation in regular physical activity may promote

achievement of physical therapy goals in this population.

As there is no curative treatment, the management is focused on symptoms according to different stages of disease[17,19].During early stages, exercise program includes aerobic exercise such as walking or riding a stationary bicycle to improve overall health and fitness, stretching exercises to prevent muscle tightness, strengthening exercises for muscles that are important for good posture and balance and ways to keep their energy high so that patients feel less tired during the activities.At the middle stage, physical therapy involves providing valuable advice about exercises to improve balance and prevent falls, equipments such as wheeled walkers or wheelchairs to help the patient to be able to move around safely, ways to make the home safe such as reducing slippery surfaces to prevent falls. In the later stages, physical therapy aims at suggesting special chairs to assist in eating, teaching caregivers how to help the person get in and out of a bed or car and teaching how to do exercises that keep muscles loose and promote general well-being[12].Improvement in verbal learning , memory and volume of grey matter was observed in the study of Cruickshank et al which consisted of a clinical exercise program of supervised weekly aerobic and resistance exercises for an hour, a home-based exercise program for a period of 9 months involving thrice weekly self-directed muscle strengthening and fine motor exercises for an hour and fortnightly occupational therapy consisting a variety of paper and pencil, verbal planning, memory, and problem solving exercises designed to enhance cognition and

Physiotherapy Intervention for Huntington's Disease[17]

Huntington Disease Stages	**Early stage**	**Middle stage**	**Late stage**
Main problems according to stages of disease	**Impairments (Minimal)** • Chorea • Occasional balance loss • Muscle tightness **Functional limitations (Minimal)** • Fine motor problems • Unsteady gait	**Impairments (increase in severity)** • Postural changes • Impaired balance • Muscle weakness • Muscle tightness • Dystonia • Decreased ROM • Chorea **Functional limitations (moderate to severe)** • Unsafe Ambulation	**Impairments (numerous)** Impairments of middle stage increase in severity • Postural changes • Pain • Skin breakdown • Respiratory limitations; risk of pneumonia **Functional limitations (very severe)** • Falls • Mobility problems
Main goal of physical therapy intervention	**Delay the Onset of Mobility Restriction**	**Maintain Function and Delay Further Deterioration**	**Limit Impact of Complications**
Intervention strategies	**Preventive** • Aerobic exercises for general body fitness • Stretching exercises to prevent muscle tightness • Strengthening exercises to prevent muscle imbalance • Falls prevention • Recommend environmental modifications **Restorative** • Balance training; core stability training; develop consistent exercise program	**Preventive** • Falls prevention; Maintain safety during functional activities **Restorative** • Active or active/assistive exercises to maintain mobility; core stability; range of motion • Ambulation training and walking programs • Functional training for daily life skills – sit to stand; bed transfers • General strengthening programs • Aquatic exercises **Compensatory** • Assistive devices for ambulation • Environmental modifications for home	**Restorative** • Exercises for range of motion and postural alignment • Chest physical therapy **Compensatory** • Seating system for maintaining posture and maximizing comfort

executive function[9].

Workout Protocol[16]:

Ideal exercise program should address the person's abilities, likes and functional challenges and should involve:

- A warm up and cool down,
- Exercises to improve strength, balance and functional skills
- A cardiovascular session such as
  - — *Walking:* 10 min a day/ 3 times a week is started and gradually increased in speed and pace to the point where the person builds up a sweat but is not out of breath.
  - — *Using an exercise bike:* 10 min a day/ 3 times a week with comfortable resistance to start with gradual increase in resistance.
  - — *Aquatic exercises like swimming:* Begin with standing in waist-deep water and kicking one leg at a time out to the side. If involuntary movements make swimming too difficult, kick board can be used to support the upper body.
- Frequency, duration and intensity of workouts : The American College of Sports Medicine suggests the following general exercise guidelines:

3 workout sessions per week with 30 minutes of cardiovascular exercise (50–80% of the age-predicted maximum heart rate) per session and 2 sets of each weight-training exercise, with a maximum of 10 repetitions per set. Regarding Intensity, the person with HD should exercise at a level around 13 ("somewhat hard") on the Borg RPE Scale. Symptoms of over-exertion like shortness of breath, excessive fatigue, paleness, dizziness an increase in HD symptoms such as involuntary movements should be precisely watched for. If at any point the person feels short of breath, they should stop immediately, rest, and see their doctor.

Safety Precautions

Proper usage of equipment and performing exercises correctly on them should be taught to patients. Before starting, the exercise program should be discussed with the multidisciplinary treatment team. Because the symptoms of HD can include involuntary movements, reduced coordination and problems with balance, not all equipment may be suitable for people with Huntington's. Equipments should be adapted as per the needs.

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Commentary

Understanding Psychosocial Consequences of Armed Conflict in Kashmiri Youth

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Introduction

Youth is a time of change, exploration, exuberance and youth searching. Especially in today's world it can be problematic and time of worry. This crucial period begins from puberty to maturity, culturally defined childhood to adulthood or early teens to early twenties. It involves external environment with outer world and adjustment with biopsychological changes. It is the most challenging period of one's life in which a number of problems have faced, seeking freedom, casting of all attachments, forming new interpersonal contacts. Most of the adolescents find it difficult to handle and often leads to adjustment and emotional instability.[1] During the period of adolescence a person's identity and moral values come into a sharp focus. Adolescence is defined as the period of life between 10 and 19 years of age.[2] Adolescence from Latin word "Adolescere" means to grow into maturity is viewed as beginning with onset of puberty when sexual maturity or the ability to produce their young ones is attained. It is important for any nation to develop their youth. The population of world remains relatively youth with 1.15 billion people present between 15 and 24 accounting 17.8 percent of world's total population.[3] In world, India has the largest youth population consistently increasing. Seventy percent of India's total population is the age of 35 years[4]. The population of adolescents in India is round about 550 million, Census Report (2011) among them the Kashmiri adolescent are relatively more susceptible to mental health problems due to psychosocial and political insecurity. According to the words of Wortley Scot Discovering and documenting the root causes of crime and violence has been a principal purpose of crime scholars for over a hundred years. It is believed that when we identify the cause of criminality we will be better able to prevent violence at early stage, or at least be in a position to treat, rehabilitate those identified as violent offenders. Specific theories were developed by anthropology, biology, criminology, psychiatry, psychology, social work, and sociology to explain the onset and persistence of violent behavior. Several theories focus on how individual propensities including biological and psychological disorders increase the probability of violence. At the other end of the spectrum, structural theories propose that variables like poverty, oppression, social inequality and racism must be considered in any explanation of violent behavior. Others maintain that the source of violence lies in family dynamics, neighborhood characteristics or peer socialization processes. It is quite difficult to negotiate and organize the plethora of ideas, hypotheses and empirical findings that mark the study of crime and violence.

Conflict Injecting Psychosocial Well-Being

Conflict is defined as an incompatibility of goals or values between two or more parties in a relationship, combined with attempts to control each other and antagonistic feelings toward each other.[5] Kashmir is a conflicted zone and it has its background from the last two and a half decade. It is not a new concept for Kashmir's youth but it is a kind of endowment which has been transferred from parents to off springs and have well documented since July 1931 and gained its moment in 1939 and

especially in post 1947 period which results in a full-blown armed conflict in 1989 being followed by a mass killings, disappearances, alarming widowhood and other countless of crimes and human right violation[6] and thus weakens the governments' ability to offer education and employment even more. As has been rightly said by someone that "Older ones decide to fight, but young men fight" There is no denying the fact that armed conflicts are notorious for promoting the involvement of young people as perpetrators, often resulting in them becoming victims. The armed conflict going on since year 1989 in Kashmir has affected every section of society not only physically but psychologically as well. Various studies confirm that situation has not only deteriorated the social setup but economic conditions as well. Social relations have been destroyed thousands have been killed and thousands became widows and orphans. And in addition to this family breakdown, family conflicts, unemployment, late marriages, orphanage culture, etc grew at fast rate in Kashmir valley, and it is the youth who are the majority victims. It is worthwhile to mention here that the impact of armed conflict on the lives of youth and on society as a whole is enormous. Youth are at once targets, perpetrators and survivors of conflict and other rights violations in the upheaval of conflict. Conflict often destroys the safe environment provided by a house, a family, adequate nutrition, education and employment, thus forcing them to vulnerable to physical as well as mental disequilibrium.[7]

Psychological Perspective

Numerous studies indicate that conflict is the mother of all psychological disorders and economic damage. In a study done by Grove et al, 2005 that 87.64 percent of the respondents reported that psychological problems were at increase in Kashmir among youths due to ongoing conflict.[8] From the last two and a half decade there is a physical, emotional, mental and behavioral consequence for one and all living in the valley. Each and every living being in one way or another has got seriously effect on their wellbeing. Before the emergence of insurgency, the psychological problems were inconsequential which at the moment emerging significantly. According to the Srinagar Psychiatric Hospital (SPH) there was hardly twenty patients registered per day in 1980s. The number shows deflection in an average of 200 per day in 2002[9] and the existing report showed that near about 63,000 are reported in 2006.[10] Among them in 2004, 15%–20% of cases were diagnosed as PTSD. It was found that illnesses are chronic and severe with a mean duration of 40 months in PTSD victims. Out of 167 PTSD victims 20% were tortured, 35% were witnessed to their close relatives killed violently, 30% were injured in shootouts and explosions Ali, Margoob, and Hussain[11]. Another report specify that more than 60% of the patients reported were women and almost 50% suffered from major depression[12]. Further report by Hussain[12] that 25% of the people suffer from lifetime depressive disorder, women are more severely than men. The hospital saw 1,700-50,000 cases from1989-2003[13] and the persons missing during the year 2000-2003 were 3,744.[14] Their wives are termed as half widows still they are in chaos. They go under suicidal ideation and some attempts to complete it. The unrest armed conflict has claimed suicide as a second highest figure in Kashmir. Suicidal cases registered in Srinagar's main hospital from1998 to April 2000 and March 2001 was 167-567.[15] It is a common phenomenon among Kashmiri Adolescent girls in which two or three such cases were receiving every day and many of them never made it to the hospital[16]. It is reported that stress fear, tension, and uncertainties are the main reasons behind the occurrence of suicide. Women are committing suicide more than men especially in rural areas of Kashmir due to failure in school, unemployment, the family problem are common reasons for suicide but the actual cause underlying is conflict. It was found that children between the age group of 5-12 had PTSD and Major Depressive Disorder (MDD) it was diagnosed that PTSD is the most prevalent disorder diagnosed 40% of them. MDD followed 25% along with conversion disorder 12% panic disorder 9% Attention Deficit Hyper-kinetic Disorder 6% and seizure disorder 6%.[17] Substance abuse is an increasing health problem in Kashmir. A pre and post study reveals that the use of substance is ever increased and showed 30% alcohol use in society which was almost nonexistent anywhere in the society. Substance use like opioids has increased from 9% to 73% multiple use of substance abuse has increased from 15% to 41% and 15% characterized their drug use to prevailing

trauma and turmoil.[17] Benzodiazepines, codeine and opioid based preparations are easily available in the market and abuse of these non-prescription drugs is very common. It was found that most adolescents who were found engaging in drug abuse started with the consumption of cough syrups to opium which are mostly educated. Psychological and social stresses on victimized families in order are deliberately created for social break down. Due to the ongoing conflict the whole society is effected on physical and psychological complications which in turn affect people to spoil in illegal means for earning money. Thus it can be said that from the last two and a half decade Kashmiri youths have lost their childhood in the incidence of conflict it is difficult to socialize them in proper culture and ethos because they are extremely exposed to the environment shaped by guns, killings and the fear of conflict.

Social Perspective

Being a traumatized state Kashmir from the last two and a half decade shows insecurity in the state at social and political plane. It has mostly affected the young generation socially as well as mentally. They feel alienated and ignored, mostly youths are the bread winners especially in Indian families. Parental and social expectations lead to different behavioral problems among adolescents such as frustration, worries, and fears[18]. The armed conflict in Kashmir effect the social setup and economic condition as well. Destroyed social relations and social expectations, thousands of youths have been killed and kidnapped; thousands became widows and orphans. People became psychologically ill and are unable to carry out their daily activities. The fast growth of family breakdown, family conflicts, unemployment, late marriages, and orphanage culture comes into play. Most of the educated youth of Kashmir are Unemployed or under employed. With the result most of them either switch to drugs or indulge in antisocial activities resulting damage of social and economic fiber[19] The fact is that they are not criminals, drug abusers but a future less living being. Mainly they feel that they are hopeless and their future seems to be dark and nobody take care of them. Instead of that, they were booked in jails and labeled with violent acts; some are arrested under different acts like public safety act (PSA). Primarily this act was made for jungle smugglers but at the moment it is applied for Kashmir youth. Army Safety Act (ASA) and Armed Forced Special Powers Act (AFSPA) which is an unbearable act under which the army has been given special powers against Kashmir people in general and youths in particular. Under this act Kashmiri youths are kidnapped, tortured until they became disabled; they are somewhere, they never come back. But their family and their children waiting for the day they will come. Such circumstances spoil future and life expectations and personality development of Kashmiri adolescents. Prolonged exposure of armed conflicts may contribute to a general culture of terror that increases the incidence of youth violence[20] which ultimately leads to worldwide revulsion, aggression and there will be no source of hope. According to Gilligan's theory of shame which states that it is a loss of self-esteem and the need to restore it in a context where non-violent means are not available that leads people to commit act of violence,[21] thus come to the conclusion with the great words by Alvin Powell as "Those that don't die of their wounds tell stories of horrific atrocities, of gang rapes, of beatings, of stabbings, of violation with gun barrels and pieces of wood; of husbands, fathers, and sons being beaten, forced to watch, or lying dead nearby. They tell of kidnappings and sexual slavery, all perpetrated on women and girls no matter their age."

Political Perspective

Unstable politics have had a direct effect on Kashmiri youths.[22] According to Seema Mustafa,[23] a well known journalist stated, "Driven into a corner-youth in Kashmir look back in anger".

Young articulated boys who have been in and out of jail, beaten and tortured for doing nothing, let us know that they have nothing more to lose as they have lost it all. Their lives are ruined, their future is vacant, and they live with harassment and humiliation on a daily basis.

Here she describes the actual position and way of thinking of youth who have lost their identity. Serve as a slave, and are not able to take right decisions for future because of insecurity and unstability. She further writes about their political belief:

They dislike Pakistan, they hate India, they

detest and despise the Abdullah's they are critical of the separatists, and they do not know what to do, how to restore harmony in their lives, where to go from the point where the state and the government of India have left them. Freedom is the only hope, the only option that prevents them from turning into schizophrenic wrecks. And like children, that they are, they sling on to this as the only hope, their only option for a peaceful existence.[23] Here the journalist expresses the political view of Kashmiri youths even they are not satisfied with either of the nation and their governing body. They are totally confused about their future plans. They are waiting for the day of freedom which is the only hope and option to prevent them from splitting of mind. In addition to this Tariq Ali, Pakistan born author, wrote in London Review of Books quoted by A.G. Noorani, "A working paper on Kashmir:

Now a new generation of Kashmir youth is on the march. They fight like the Palestinians, with stones. Many have lost their fear of death and will not surrender. Ignored by politicians at home, abandoned by Pakistan, they are developing the independence of spirit that comes with isolation and it will not be easily suppressed. It is unlikely however that Prime Minister of India and his colleagues will pay any attention to them.[24]

The Pakistani well-known columnist stated that the youth comes in bunch and fight like Palestinians used their trusted weapon (stones) they don't take care of death wanted to come back because they are ignored by politicians and no attention is paid to them which ultimately leads to develop the only spirit of their independence. From the above expressions it is clear that how youths have been affected by violence and threat to their security. They are exposed either by victim or by perpetrators of violence. Actually war would not be possible without youth in any part of the world. However, there is the lack of attention to and thorough documentation of, the positive contributions of youth in society.[26] The Indian political class is superbly corrupted doorway of politics is seen as a route for upward class mobility by enabling wealth accumulation, because in such adverse condition proper political consciousness is rare. They are fed by 'national integration' mantra and lap it up, unable to perceive the way in which Kashmiri youths are being dehumanized. Thus they are waiting for hope as stated by Sachs,[25] let the future say of our generation that we sent forth mighty currents of hope, and that we worked together to heal the world.

Discussion

From the above conversation it is said that the youths of Kashmir are suffering from all its dimensions because of distorted psychosocial and political environment. Many youth face that they have lost everything and nothing remains for loosing. Someone has rightly said that older are decided but youths fight and die. They don't take care for themselves because they have been deceived from the last six decades and their rights are abused and are crushed under different acts; their education, mental power, social set-up have been destroyed and youths are getting engaged into different substance to loss their identity. It is not good for a nation where the youth are unstable because they are the foundations of that nation. This means that when they are unstable the whole nation is unstable. The new coming generation would not be able to smell their childhood if such a chaotic state of reality continues; and they are forced directly or indirectly exposed to the environment of arms conflicts. To get rid out of the conflict it is essential to understand them as soon as it is possible otherwise this poison spreads just like uranium and nobody would be safe with it. The youth has the ability to build or destroy the nation depending on the physical and psychosocial environment. If the governing body of Kashmir wants to build the nation they have to build their youth and engage them in different prosperous and nation building activities.

Conclusion

A large number of youths are involved in an ongoing conflict; many of them have lost their lives and many of them are in jails, custody and interrogation centers. Thousand Kashmiri youths suffering with hunger, poverty, un-employment, loss of their siblings, relatives in front of him, reoccurrence of thoughts, flashbacks are vulnerable to psychological disorder. They are losing their lives, their mental balance their well-being and facing religious pressure, peer pressure, family pressure, community pressure leading to stress and strain, loss of autonomy negativity drive hostile environment detrimental to psychosocial health. The armed conflict affects the youth's psychosocial and

emotional stability which leads to failure in their coping mechanism.

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Commentary

Dhat syndrome and co-morbidities: Potential Ayurvedic Interventions

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Introduction

Ayurveda conceptualizes the healthy human body in the form of seven essential elements (*dhâtus*). These elements are seven body tissues (*Saptadhatu)* i.e., fluid components of the body (*Rasa),* Blood *(Rakta),* Muscle tissue *(Mamsa),* Adipose tissue (*Medas*), Bone tissue (*Asthi),* Bone marrow (*Majja*) and reproductive elements (*Sukra).* The last of seven dhatus, *shukra* is considered to be the most concentrated, powerful bodily substance and its preservation contributes to health and longevity. The *ojus,* a substance responsible mainly for immunity is formed from seven *dhatu.*[1-3] Utmost importance has been given to *Brahmacharya* (set of rules regarding sexual behaviour) in the ancient Indian literatures related to medicine, culture, spirituality and philosophy. Added with cultural belief the strong feeling of loosing vital fluid frightens psychologically vulnerable individual thereby producing a series of somatic symptoms.[4] There are enough historical evidences that similar kinds of syndromes were prevalent in Europe, USA and Australia in the 19th century, which disappeared in response to changes in social and economic factors.[5,6] From the times of Hippocrates and Aristotle, semen is considered an extremely important part of the body. "Sperms are the excretion of our food; or to put it more clearly, the most perfected component of food" (Aristotle, 384-322 B.C.). Andrew Tissot (1728-97) commented in his treatise on the disease produced by onanism that "losing one ounce of sperm is more debilitating than losing 40 ounces of blood". His statement seems to be closer to the Indian myth. In many Western European cultures, masturbation was prohibited by religion. Henry Maudsley (1835-1918) even considered that semen loss, especially if it occurs through masturbation, results in serious mental illness. George Beard (1838-1883) considered nocturnal emissions of semen as one of the commonest reasons for neurasthenia. Therefore, the concept of *Dhat* syndrome or semen-loss syndrome was prevalent among Western cultures with different names at some point of time.

To this kind of disorders having cultural influences, Yap coined the term "culture-bound syndromes", which seem to be episodic, dramatic and discrete patterns of behavioral reactions specific to a particular community that articulate both personal predicament and public concerns.[7,8] The term "*Dhat* syndrome", characterized by vague somatic symptoms of fatigue, weakness, anxiety, loss of appetite and guilt attributed to semen loss through nocturnal emissions, urine and masturbation.[9] Thus, in this syndrome, hypochondriacal, anxiety and depressive symptoms become subsumed in the major visible pathology of semen loss.[10] Contrary to the belief of the sufferer, the fluid that comes out is actually not semen but the secretion from cowper's glands which acts as a natural lubricant. Currently this syndrome lies with DSM IV- Appendix I- culture-bound syndromes and under "other specific neurotic disorders" (F48.8) in ICD-10.[11,12] This syndrome is more prevalent in the Indian subcontinent.[13-16] Therefore, it is considered as "neurosis of the orient" but it showed global presence, like "shen-k'uei" in China.[17,18] Strong claims for cures by quacks are advertised on walls, on television, in newspapers and on roadside hoardings in India.

Patients having *Dhat* syndrome can be further

divided into three categories[19] as follows :

1. *Dhat* alone - Patients attributed their symptoms to semen loss; presenting symptoms - hypochondriacal, depressive or anxiety symptoms
2. *Dhat* with co morbid depression and anxiety - *Dhat* was seen as an accompanying symptom
3. *Dhat* with sexual dysfunction

Several scientific publications are available on the concept and management of Dhat syndrome and comorbidities.[20-22]

Management

Wig suggested empathetic listening, a non-confrontational approach, reassurance and correction of erroneous beliefs, along with the use of placebo, anti-anxiety and antidepressant drugs, wherever required. Other group advocated psychoeducation and culturally informed cognitive behavioural therapy. Good response was reported with anti-anxiety and antidepressant drugs as compared to psychotherapy.[23] Depressive symptoms of this syndrome showed effective response to selective serotonin reuptake inhibitors along with regular counselling.[24] Therefore the available intervention studies suggest that the management of *Dhat* syndrome involves sex education, clarification of misconceptions, cognitive restructuring, behavioural counselling and medication.[25] The arguments about whether it is due to myth, misconception or disbelief does not offer help to suffering patients. Since none of the available therapies provides the patients satisfactory aid, this is the time to look for an alternative solution to the problem.[26]

Dhat syndrome can not be correlated exactly to any of the conditions mentioned in Ayurveda. But the disorder related to passage of semen in urine is mentioned in ancient treatises like *Charaka* and *Susruta Samhita* as *shukrameha* (literally meaning passage of sperm in urine).[27,28] The following medicines which are recommended for sexual and neuro-psychological problems, in different combinations and dosage forms based on the individual's condition may offer relief:

1. Ashwagandha *(Withania somnifera)* – This is a well-known drug for sexual dysfunctions and male infertility. This plant also is reported to be having anti depressant and anxiyolytic action.[29]

Active Compounds: Alkaloids and with anolides. With anolides are believed to account for the multiple medicinal applications of Ashwagandha.

2. (*Sida cardifolia*) – Bala is nerve tonic and possesses aphrodisiac properties.[30]

Active Compounds: Alkaloids: The whole plant (including leaves, seeds. stems and roots) contains about 0.085% alkaloids. The main portion of the alkaloid is identified to be ephedrine, found in the different varieties of *Ephedra*.

3. Musli (*Chlorophytum borivillianum*) - Musli is health tonic used in general and sexual weakness.[31,32]

Active Compounds: Safed musli contains saponin and alkaloids and these are the components that give safed musli its medicinal activity. Two of the key saponins are hecogenin and stigmasterol. Stigmasterol is very similar in structure to testosterone. Consequently, it can occupy the testosterone receptor sites -doorways to the cells, which can act like an aphrodisiac. Hecogenin has steroidal-like effects that help synthesize anabolic hormones. Anabolic hormones allow men to retain nitrogen more readily, which helps form larger more bulging muscles. Safed Musli is often referred to as Viagra.

4. Kapikacchu (*Mucuna pruriens*) - Kapikacchu is nerve tonic and possess aphrodisiac properties.[33]

Active Compounds: Main constituent responsible for its action is L-Dopa. Others are resin, tannin, fat, trace manganese/ Seeds, free fatty acid and its glyceride (oleic acid) an acid resin, a few amino acids, seeds have four alkaloids, mucunine, mucunadine, prurienine, prurieninine. Seed oil contains stearic, palmitic, myristic, arachidic, oleic, linoleic acids and a sterol.

5. Vidari kanda (*Ipomoea digitata*) - Vidari kanda is aphrodisiac, cholagogue, demulcent, diuretic, emmenagogue, galactogogue, mucilaginous, rejuvenative and tonic.[34]

6. Shilajit (*Mineral pitch*) - Shilajit strengthens nervous system and immune system and is urinary tract rejuvenator, useful in depression, mental stress and fatigue, known to increase sperm count.

Active Compounds: It is now known that the composition of shilajit is influenced by factors such as the plant species involved, the geological nature

of the rock, local temperature profiles, humidity and altitude. Although the composition varies from place to place, the general consistency of samples from various sources points to a common production process that results from biological and chemical action on plant remains. Early work on shilajit showed that it is mainly composed of humus - the characteristic organic constituent of soils - together with other organic components. Humus contains two components of interest: fulvic acid and humic acid. The former has the lowest molecular weight components, containing uronic acids, phenolic glucosides and amino acids, while the latter is composed of high molecular weight compounds and contains a high proportion of phenolics. Among other compounds, it contains biphenyl metabolites.

7. Brahmi (*Bacopa muneri*)- Brahmi rejuvenates the body, a promoter of memory and nerve tonic. It is unique in its ability to invigorate mental processes whilst reducing the effects of stress and nervous anxiety.[35]

Active Compounds: The primary active constituent is triterpenoid compounds. Saponins (also called triterpenoids) known as asiaticoside, madecassoside and madasiatic acid are the primary active constituents. Also contains a green, strongly volatile oil composed of an unidentified terpene acetate, camphor, cineole, and other essential oils. Cintella oil also contains glycerides of fatty acids, various plant sterols such as campesterol, stigmasterol, and sitosterol, and various polyacetylene compounds.

8. Shankhapushpi (*Convolvulus pluricaulis*) - Shankhpushpi is a rasayana drug specially promoting intellect. It is used in insomnia, anxiety and depression.[36]

Active Compounds: Chemical studies of whole plant have shown the presence of glycosides, coumarins, flavonoids and alkaloids. Shankha pushpine, (the alkaloid) has been identified as active principle. B-sitosterol glycoside, Hydroxy Cinnamic acid, Octacosanol tetracosane alongwith glucose, sucrose also have been isolated from the plant drug.

9. Manduka parni (*Centella asiatica*)- It is useful in insomnia, anxiety and depression.[37]

Active Compounds: The first is asiaticoside, which is a triterpene glycoside and classified as an antibiotic. The second constituent is a pair of chemicals, brahmoside and brahminoside, which are saponin glycosides. Finally, there is madecassoside, a glycoside. The plant is also a source of Vitamin K, magnesium, calcium and sodium.

10. Vacha (*Acorus calamus*)- Vacha is a brain tonic.[38,39]

Active Compounds: acorin - a volatile essential oil, acoretin (choline) - a bitter principle, Calamine, starch, mucilage, a little of tannin.

11. Jatamansi (*Nardostachys jatamansi*)- is used to combat the effects of day-to-day stress, possesses mild sedative effect.[40]

Active Compounds: A new sesquiterpene acid, nardin and a new pyranocoumarin have been isolated from the rhizomes of *Nardostachys jatamansi* and characterized as E-2-methyl, 3-(5,9-dimethylbicyclo[4.3.0]-nonen-9-yl)-2-propenoic acid and 2',2'-dimethyl-3'-methoxy-3',4'-dihydropyranocoumarin, respectively using spectral studies and chemical correlation. The stereochemistry of nardin has been determined using X-ray crystallographic studies.

Conclusion

Dhat syndrome is a problem affecting the middle lower and lower class youth mainly in Indian sub continent. The main symptom is passage of sticky fluid from the penis during urination or defecation. Because of the cultural belief that the passage of *dhat* a vital fluid is causing illness the individual exhibits psycho sexual symptoms. Actually it is not vital fluid but the secretion from cowper's glands which acts as a natural lubricant. But it is culturally believed and misinterpreted version of concept of semen loss in ancient scriptures. The research studies reported that the urine analysis of patients with dhat syndrome did not show any abnormality. The patients exhibited number of psychological problems and psychotherapy, use of anxiolytics, antidepressant drugs helped in reduction of symptoms. However, so far complete relief could not be established and medications have side effects and produce dependency. Therefore, there is need for alternative treatment. Ayurvedic medicines (aphrodisiacs, anxiolytics, anti depressants, brain and nerve tonics) if used along with the strategic combination psychotherapy and correction of erroneous beliefs may offer a better alternative.

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Viewpoint

Is "open schooling" possible in Medical Science? An Overview

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Introduction

History of open schooling

Every government in the world has an obligation to provide education to all its citizens, chiefly because education is not only a human right but is also a critical factor in economic development and poverty reduction. In particular basic (primary and secondary) education helps reduce poverty "by increasing the productivity of the poor, by reducing fertility and improving health and by equipping people with the skills they need to participate in the economy and in society"[1]. The philosophy of Open Educational Resources (OER) conceives of educational materials as common public goods from which all should benefit, but most especially those who receive the least benefit and support from current systems of education, whether publically or privately funded. This view is supported by the idea that knowledge itself is a collective social product, one that naturally forms a common pool that needs to be accessible to all. The view is strongly aligned with the financial reality of educational funding, since the vast majority of educational materials are publically funded in diverse ways, directly or indirectly, but the view is not aligned with the reality of the materials distribution, which is frequently non-public, closed, and tightly controlled[2]. Almost all that is written about Open Schools comes from the early 1970s. These are schools sharing a common goal: the desire for students and teachers together to discuss, explore, investigate, and learn. "The basic theory of open education is that children learn in different ways at different times from things around them [that] interest them. Ideally, the teacher acts as a guide and resource person and encourages pupils to proceed at their own pace and develop independence of thought. The goal is to develop in children initiative, creativity, and critical thinking"[3]. The term Open Educational Resources (OER) was adopted at a UNESCO meeting in 2002 to refer to open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes. The idea behind the concept is to promote access to education to a wider audience, especially those from deprived regions of the world, where the open resources can be freely reused, improved and repurposed to fit in to different contexts. Currently most OERs are generated by Educational organizations, usually Universities, using new or existing grant funding to do so[4]. Open and distance learning (ODL) has developed as a popular form of education since 1840, when Pittman sent his students lessons in shorthand by post[5]. Distance education (DE) has a history that spans almost two centuries, and this time period represents significant changes in how learning occurs and is communicated. From basic correspondence through postal service to the wide variety of tools available through the Internet, society has embraced new forms of communication through the years. One such form, online learning, is known to have a history of access beginning in the 1980's whereas another term, referred to as e-Learning, does not have its origins fully disclosed.[6]

The definition and nature of open education

Education has long been one of the most decisive of our life choices, the key to opportunity and ladder to advancement. Without education and especially without equal educational opportunities of skills and qualifications, men and women alike, of certain classes and social groups over the years, have been condemned to inferior status, especially in their personal development, in their choice of work as citizens and in their power to influence government and work.[7] Education plays a key role in transforming information into knowledge. A better education enables an individual to assimilate, understand, comprehend information and create new knowledge. A knowledge society exists with educated citizens and well trained workforce depending on their ability to exploit the potential of learning. Thus, "education is the foundation for access to the benefits of the information revolution that is opening up new vistas on the whole world".[8] As new technologies become apparent, learning seemed to be the focus of all types of instruction, and the term distance learning once again was used to focus on its limitations associated with "distance", i.e. time and place.[9,10] DE has certainly become a major form of teaching and learning around the world. It has earned for itself the reputation of being a truly innovative education phenomenon in both developed and developing countries.[11] Because management of distance education has cost implications, managers should be familiar with budgeting for DE provision as an integral part of planning. To facilitate the execution of programs, managers will need towork out projections for the future or make appropriate budget provision. Appraisal, developmental evaluation and monitoring of progress are important to program success.[12] The quality of distance learning programs can also be measured in terms of outputs such as completion rates, graduation rates, persistence rates, examination levels and performance in examinations, post-graduation work performance, and rates of admission into post-graduateprograms.[13] Open and distance learning may become discredited, seen as the second-best option or the quick fix that its critics always said it would be. It is imperative for open and distance learning institutions to develop a tradition of quality assurance practices.[14] In many institutions that have begun to offer distance education, staff knowledge and experience rests in traditional methods of education delivery. Therefore there is a lack of qualified professionals to support the technological demands. Many poor countries have limited telecommunication networks, while the internet entirely depends on a minimum level of telecommunication infrastructure for its operation.[15] Online learning is a form of distance education whose central defining characteristic is the separation of teacher and learner.[16] Open and distance learning (ODL) has emerged as a "business unusual" approach in increasing educational opportunities to reach the unreached.[17] The open and distance learning system, because of its inbuilt learner friendly features and flexibilities, has the potential to enable the learners to deal with the challenging and difficult situations and thus help them in reducing stress as compared to their counterpart in the conventional system.[18] The open school meets the needs of those who are unable to attend a school at all, as well as those who are in school but want to take a subject not offered in their school.[19] Open schooling have the advantage of being less expensive compared to the conventional school system.[20] Increasingly people, most notably 'knowledge workers' (educators), will create and actively maintain online personal learning environments as a way of capturing their continuous learning journey.[21] ODL methodologies encourage learning as a resource in itself and not simply as an end. ODL inherently fosters Autonomous Learning. Any teaching/ learning process that does not develop learner autonomy can be only a half success at best. In ODL, the separation between the teaching and the learning process places the onus on the learner rather than on the teacher. Academic performance depends not only on proper course design, but also on the acquisition of efficient learning skills, which in turn encourage learner independence. The ability of the ODL model to foster this necessary condition for lifelong training sets tertiary education institutions apart from otherinstitutions.[22] Particularly at the secondary level, open schools have added greatly to the number of educated school leavers. However, the proportion of those who enter and drop out before they graduate can be high: the "open door" can all too easily become a "revolving door" – particularly where students are unsupported in their

studies. Comparisons in terms of quality are acknowledged to be difficult, not least because so many open and distance learning projects cater to audiences not normally reached by conventional schools – students on the margin, students in work and adults. Many of these students start with more handicaps than do conventional students.[23] Open schooling programs can significantly expand and improve educational opportunities, for disadvantaged groups especially women and girls. Such programs "can address in a comprehensive manner the most important obstacles to women's participation in education: lack of access to schools, poverty, inflexible schedules, irrelevant curricula, and lack of female teachers".[24] Distance education for teacher training has potential advantages. It can provide the means of side-stepping the slowness and dilution factor of the cascade approach by putting 'information about curricula and teaching approaches directly in to the hands of individual teachers'[25] and by cutting down the time between learning about new teaching practices and trying them out in the classroom. In fact early distance education theory focused on matters of organizational structure.[26] Distance students include those whose learning journey is a means to overcome ethnic or age differences. As Elias suggests, distance education students 'may face a variety of physical, learning, psychological, visual, and hearing challenges'. Furthermore, distance learners may feel isolated from one another, the tertiary education provider and their instructor, since they are often studying while working and bringing up families or caring for relatives.[27] The main determinants of quality in the distance learning tertiary organization are public accountability, student learning, faculty productivity and performance, program effectiveness and institutional evaluation.[28] Traditionally, distance education remediated the disadvantages of those whose 'life role, geographical location, disabilities, and socio-economic circumstances' have made conventional learning difficult.[29] More recently, distance education theorists have posited that it is a natural extension of face-to-face learning, through re conceptualizing ways in which the proximities of traditional education delivery can be seen as 'less distant' forms.[30] In distance education the importance of structure in developing text materials is designed to compensate for the geographical remoteness of the lessons and the temporal shifts that distance students enjoy.[31] Butin generally care must also be taken to avoid the tendency of online interaction to force a sameness of pace that removes the flexibility distance education has traditionally provided for the individual learner.[32] There is now more awareness of the benefits of non-formal alternative schooling approaches for children and, for some, the view of the formal school model as dysfunctional; that 'techniques' approaches to improving the formal system by providing more schools and investment is only entrenching rather than addressing a more fundamental problem.[33] One difficulty with open learning terminology is its close association with technological development. The rapid advances in technology have meant that open learning has continued to evolve.[34]

Open schooling, in viewpoint of Scientists and Specialists

Online learning is described by most authors as access to learning experiences via the use of some technology.[35-37] Macdonald argues that education serves both broad and narrow purposes. He says that access to education is a guarantee to a less divided world. However, this does not automatically mean that if substantial in roads are made on the issues of access that disparities will be closed[38]. Watson, Winograd, and Kalmon defined online learning as "education in which instruction and content are delivered primarily via the Internet".[39] Distance education is timelessly defined by Holmberg (1977, p. 9) as including: the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises, but which, nevertheless, benefit from the planning, guidance and tuition of a tutorial organization.[40] Barker, Wendel, and Richmond provided a similar but more exclusive definition of a virtual school as "one that offers the mandated provincial instructional program to students through web-based means (i.e., computer-mediated and online via the Internet"[41]. As Phillips stated, open schooling means different things to different people but, in general, it "concerns using alternative and usually less resource-based approaches which characterize distance education methods and open

learning, to deliver basic education and training"[42]. Mukhopadhyay traced the first open school program to Australia where correspondence lessons were prepared at the request of a parent in Beech Forest in the Otway Mountains in 1914. Open schools were introduced in Canada in 1919 and in New Zealand in 1922.[43] According to Perraton "at secondary level, African distance teaching institutions have long experience of using correspondence courses, with some radio support and face-to-face guidance, for students outside school."[44]According to Moore and Kearsley, a systems approach is the essential basis for understanding and practicing distance education. A systems approach recognizes the interdependence of various organizational functions (enrolments, teaching, course design, institutional management, marketing, finance and so on), and appreciates that each of these systems includes operational subsystems. This interdependence means that 'as we focus on any part of the system we need to hold in the back of our minds a picture of the total context'.[45] Peters writes that strongly industrialized nature of distance education is evident to anyone able to recognize and analyze the structure of pedagogical situations and processes and to compare them to the structure of industrialized production processes'.[46] He said distance education is unique in that it requires the bringing together of complementary skills for the purposes of tuition. One implication of this is that, unlike on-campus tuition, 'where teaching had been individualized to a great extent by the personality of the teacher, it was now standardized, normalized and formalized'.[47] While as Brown (2001) has commented there may be a disappearing distinction between face-to-face and distance education, as the traditional close-proximity modes engage with new technologies and synchronous delivery, a leading feature of distance education remains it's a synchronicity – the fact that online teaching modes are available to the student 24/7.[48] As Murgatroyd and Woudstra state, most research concerning the management of distance education is either 'descriptive, prescriptive or speculative', or narrowly focused on the practice of management. According to Murgatroyd and Woustra, the keys to effective planning may include: organizational identity; a sense of purpose; core business; and responses to new opportunities.[49] Both Benson (2002) and Conrad (2002) identified online learning as a more recent version of distance learning which improves access to educational opportunities for learners described as both nontraditional and disenfranchised.[35,37] Other authors discuss not only the accessibility of online learning but also its connectivity, flexibility and ability to promote varied interactions.[50-52] Benson makes a clear statement that online learning is a newer version or, and improved version of distance learning. These authors, like many, believe that there is a relationship between distance educations or learning and online learning but appear unsure in their own descriptive narratives.[35] As Weedon so eloquently argues, however, we should not rush intosimply considering the "hows" of overcoming any perceived "distance". Our understanding of the nature and purposes of education will influence the kinds of decisions we make.[53] Kinyanjui (2000) notes that African countries are increasingly under pressure toopen up access to learning opportunities and identifies four main phases in this process:

- The drive towards universal access to primary education
- The drive towards universal access to secondary education
- The drive towards universal access to tertiary education; and
- The drive towards universal access to lifelong learning.[54]

Shabani and Okebukola suggest that what informs the demand is the perception that distance education can expand the limited number of places available, reach a wider student audience, meet the needs of students who are unable to attend on-campus classes, provide continuing professional development to graduates, be used to meet the demand for lifelong learning, involve outside experts who would otherwise be unavailable (for example, there is a lack of trained teaching personnel relative to the demand, teachers are geographically concentrated and teachers with expertise are in short supply), and improve access to education for women who have been treated as second class citizens as far as development is concerned.[55] Saint (2000) also argues that distance education increases access to education, especially to four groups: secondary school leavers unable to obtain a place at a college or university, students who are geographically isolated, women with domestic

responsibilities and the economically disadvantaged.[56] Chale stated that the application or adoption of distance education methods in Tanzania can be justified by the extent to which distance learning programs have broadened access to education for numerous groups.[57] Mwagiru points out that learners tend to access distance teaching in four sites, namely, the home, the workplace, dedicated study centers and, like their counterparts in the conventional system, traditional classrooms.[58] Dhanarajancontends that because investment in education as a portion of the Gross National Product (GNP) of African countries is probably the lowest in the world, many SSA countries need to establish distance education to compensate for the past deprivation and to meet the demands of the present and future.[59] According to Jegede, for example, in countries such as Zimbabwe and Tanzania, DE has increased the numbers of trained teachers in the class rooms to an extent that would have been impossible using conventional teacher training colleges. Supporting the move towards DE provision, statistics from Kenya and Nigeria suggest that part-time students learning at a distance achieve similar results to part-time, on-campus students.[60] Kinyanjui also supports the argument that distance education is a viable option for educational provision. He emphasizes that governments and distance education associations should work together to identify common issues and challenges facing SSA. This will help them to develop appropriate strategies and policies for distance education and open learning at national, regional and international levels.[61] Dhanarajan[62] and Bertram[63] argue that distance education presents a good option because through this mode providers open access to education for such groups as students inremote rural areas and in-service teachers who want to study while working.[62,63] Darkwa and Mazibukoargue that the distance education process is a Western social, cultural and educational construct that has been exported into Africa quite quickly.[64] Dodds and Edirishingha[65] alert us to the diverse nature of the Audience for distance education, which includes people of all ages, from young children to ageing adults. Curriculum designers must bear in mind that the curriculum needs to be flexible enough to accommodate the needs and experiences of a range of people, including urban and rural dwellers; the employed, self-employed and unemployed; learners who have the language of instruction as a first or as another language, and other sub-groups. Koumi argues that to assure the quality of distance learning materials, it is necessary to recruit highly qualified staff for materials development. The professional experience of course developers is an important input in course development and a major determinant of the quality of course materials. One of the main tasks of a course developer is to ensure that the curriculum is sufficiently and systematically presented using print or non-print course materials. They develop outlines on which units are based. Therefore, staff recruitment processes should lay down procedures and requirements for the recruitment of people who are competent, experienced and professionallyqualified[66]. Bagwandeen et al argue that distance education is an effective strategy for addressing the issue of access. Therefore, the quality of distance education is of paramount importance.[67] Akinade[68] also argues that distance learners encounter a wide range of difficulties with which they need support to overcome. Haasbroek[69] agrees that education institutions that have been successful throughout the world have integrated learner support as one of their distance education provision strategies. Tait[70] also argues that distance education institutions have demonstrated an increased awareness in the importance of providing learner support. Mackintosh argues that in the context of the information technology revolution, distance education is simply not possible without technology. The time-space divide in distance education needs to be mediated or bridged bytechnology.[71] Mwagiru argues that Instructional Technology (IT) can play a significant role in expanding and enhancing distance teaching and learning[58]. Mac Kenzieet al argue that open learning is "an imprecise phrase which eludes definition".[72] Hodgson and Boot are advocates of the argument that open learning has a strong developmental orientation through which emphasis is placed on the development of the whole person and the learners' ability to construct meaning in and through their lives, and where the removal of constraints is essential.[73] Dhanarajan[74] presents a positive view of the current direction of distance education. He suggests that institutions that provide distance education in the Common wealth are

heading in the right direction. In general, as David and Weinstein point out, 'open-space, in and of itself, does not have a universal effect' (1987, p.12), while Canter and Donald argue that in studies comparing open and traditional environments "the essential element was the school's educational philosophy and physical layout, not merely the physical layout on its own".[75]

Open schooling during the centuries and in deferent places

The twentieth century saw a global expansion of such "dual mode" provision as increasing numbers of universities offered programs both on-campus through regular face-to-face classes, and off-campus through various forms of distance education using correspondence and audio-visual methods. Examples include the Indian universities' Correspondence Directorates and the external degree program of the University of Zambia.[76] From the 1920s on there was also a range of universities and other tertiary level institutions offering programs solely at a distance, including a number of Soviet All-Union Correspondence Polytechnics set up in the mid-1920s and early 1930s, and the University of South Africa, rechartered as a correspondence-based university aimed at supporting "external" students in 1951. Higher education provision was given a further boost by the foundation of multi-media distance teaching universities in the 1960s – the first of these being the Open University in the UK (1969).[77] Open and distance learning institutions, especially in developing countries share similar inhibiting factors which include: inadequate, or at least, varying financial resources from national governments that are inclined to destabilize both planning and operational stages at critical phases of development; inadequate or unreliable communications systems; limited access for the population at large to electrical and electronic communications technologies on Which such large-scale systems may wish to depend; lack of qualified teaching, media production and administrative personnel; instinctive resistance of many, if not most, conventional teachers and educational administrators to the unfamiliar philosophies inherent in distance education.[78] Early open schools tended to arise from efforts to help individual out-of-school children pursue their studies, either because they could not get to a school, or because they were unable to stay in school. In Sweden, H.S. Hermod started what became Hermod when he sought to support an individual student who had moved away from Malmö. Similarly, the exclusive, private Baltimore-based Calvert School (set up in 1897), following experiments dating from 1905, began from 1908 to educate children at home, including children who were house-bound and those whose parents were in the armed forces, the diplomatic and consular services, or who worked overseas in other capacities.[79] In North America and other industrialized countries, distance education for elementary and secondary students is seen as a solution to several educational problems, including crowded schools, a shortage of secondary courses for remedial or accelerated students, a lack of access to qualified teachers in a local school, and the challenge to accommodate students who need to learn at a pace or in a place different from a school classroom.[80] It should be understood that there is a great deal of variety in the different types of virtual schools that currently operate in North America, and virtual schooling is primarily a North American phenomenon.[81] It was developments in Australia, however, that showed the way to the provision of state-funded primary and secondary education through correspondence teaching when in 1914 the Victorian Education Department began systematically supporting home learners – a development that, with the use of radio, was formalized in 1951 into the Australian Schools of the Air. This enabled children in isolated homesteads to study from specially designed teaching materials and communicate with their teacher and fellow students using two-way radio. The system now uses a two-way broadband satellite network.[82] The New Zealand Correspondence School, set up to meet the needs of children in rural areas, provides the same primary and secondary syllabus as conventional schools to some 20,000 children and adults.[83] In the 1960s and 1970s, in the wake of de-colonialization, correspondence education was adopted widely in Africa as a means of expanding educational provision and meeting the needs of adults who lacked school qualifications.[84] In India, an Open School was set up in 1979 to meet the frustrated demand for secondary education, and to provide opportunities to disadvantaged sectors of society such as girls,

women, and working adults. Open schools also continued to be set up in developed countries where there was a need – as the foundation of the National Extension College (1963) in the UK demonstrated.[85] Linked to these developments were efforts to ensure that such institutions protect themselves from the worst excesses of the private correspondence sector through the establishments of trade associations designed to establish and maintain minimum standards. The US National Home Study Association was set up in 1915, and similar bodies followed in other countries.[86] Australia has one of the longest histories of open and distance learning in the Commonwealth. This has been well documented by Lugg.[87] A new primary program for distance learners in British Columbia, Canada, was developed in 1989. It is administered through the Technology and Distance Education Branch of the Ministry of Education. The Branch has a mandate to provide educational opportunities "to students who cannot attend a conventional school because of distance or illness; because they are temporarily living outside the province; or because they are travelling".[88] Probably the largest of its kind (offering secondary education through distance learning) in the Commonwealth, the National Open School (NOS) in India was established in 1979. It is "an autonomous institution with the mission to provide relevant, continuing and development education to prioritized client groups, and as an alternative to the formal system". Gaba identified two problems with regard to the application of information technology in NOS. The first is that some of the schools have the technical infrastructure without technically skilled people. Secondly, some schools do not even have the basic infrastructure.[89] Zimbabwe has a wide range of open learning schemes. One example is the study group scheme in which groups of students (15 in rural areas and 20 in urban areas) meet for the purpose of studying courses leading to junior secondary and "O" and "A" level certificates. Students register with one of the correspondence colleges in the country, from which they receive tuition and regular guidance and assessment by distance methods. Mentors whose appointment must be approved by the Ministry of Education supervise study groups. The Ministry of Education provides logistical, professional and financial support. A second open schooling scheme in Zimbabwe[90] is the Government Correspondence School, which was established in 1930 to cater for white children only. It is now open to everyone. It offers primary education from Grade 1 to Grade 4 and there are plans to extend provision to Grade 7. Among the largest systems in Latin America are the Telesecundaria in Mexico and Telecurso in Brazil. Telesecundaria had in the early years of this century an annual enrolment of 750,000. The Bangladesh Open School is one of the six original schools of the Bangladesh Open University (established 1992). The school offers school equivalency courses including (from 1995) the two-year Secondary School Certificate across a range of subjects[91] and (from 1998) the two-year Higher Secondary School Certificate. There were 70,990 students taking the former program in 2006, and 34,023 students taking the latter[92] in 2005. Television also began to be used in the late 1950s and 1960s to deliver the school curriculum (or at least, substantial parts of it). Large-scale projects were set up in American Samoa, the Ivory Coast, El Salvador, Mexico and elsewhere. Some of these projects were set up to provide schools where none had existed before. An early project in Niger (Télé-Niger, started in 1964) pointed to the way in which remote classrooms supported by adult monitors (rather than trained teachers) could be used successfully to deliver primary school educational content through television. While the scale and economics of this experiment did not live up to expectations, the use of similar methods in the Mexican Telesecundaria project (starting in 1968) quickly expanded to provide high quality, cost-efficient secondary level education to large numbers of school-age students.[93] In Indonesia, enrolment in the open schools in 1996-1997 was 197,000, with about 92 per cent of enrollees graduating. Against these levels, one has to place completion levels in the National Open School in India (400,000 students, completion rate of 43 per cent in 1998-1999), the open school in Thailand (2.548 million enrollees, completion rate 39 per cent), and Zambia and Malawi (completion rates of 35 per cent)[94]. Tamana, a non-profit NGO, especially for multiply challenged and autistic individuals in special consultative status with United Nations Social and Economic Council is one of the creative partnerships with National Institute of Open Schooling for providing education for differently abled children. Tamana worked on

special curriculum with its course coordinator, which was put into practice after Tamana received the status of Special Accredited Center. Initially, Tamana started educating disabled and disadvantaged learners at Open and Basic Education (Level A and B). Now, Tamana is also running classes at the secondary and senior secondary level. Now, it has put into its policy that learners from other schools also can apply for the courses at Tamana. Students are first assessed by special educators of Tamana to assess their readiness for education in NIOS, which mightn't be an easy task for NIOS.[95]

Review of literature

Much of the literature on open and distance learning was, up to the turn of the 1990s, on distance higher education and less on open schooling. However, the Commonwealth of Learning (COL) has since then played a leading role in disseminating information about the practice of open schooling particularly in the Commonwealth through its publications and workshop reports.[96] The information and literature on paradigms and models suitable to researching open and distance learning are very limited in scope. Yet they can be extremely useful, particularly in a research community where they serve as a screen on which to interpret findings.[97] Perraton concluded that "at their peak", Latin American radio schools providing basic education "demonstrated that their combined technologies of radio, print and supported group study could be effective in offering a basic education to children and to adults".[98] Unfortunately the area where there are the fewest studies of the benefits open and distance learning is in schools education – either at primary or junior secondary level. Nevertheless, some studies exist: the Telfesecundaria, with 817,000 enrolments (2001) representing some 15 per cent of the total junior secondary market (1997-1998), had a pass rate of 93 percent.[99] Over the past decade, several studies have shown that the only students who were typically successful in online learning environments were those who had independent orientations towards learning, who were highly motivated by intrinsic sources, and who had strong time management, literacy, and technology skills.[100] These characteristics are consistent with traits that are typically associated with adult learners. The problem with this focus is that adults learn differently from children and adolescents.[101-104] Powell and Patrick (2006) found that while many other countries operate some form of Web-based or online curricular support program for students and teachers e.g., a School Net and some even offer Web-based or online distance education programs, of the 30 countries surveyed, only Canada and the United States operate entities that can be classified as virtual schools. In fact, Australian Glenn Russell is one of the few scholars outside of North America who has written about virtual schooling.[105] Barbour and Reeves argued that the benefits could be divided into five main areas: expanding educational access, providing high quality learning opportunities, improving student outcomes and skills, allowing for educational choice, and achieving administrative efficiency.[106] Reeves concluded that there is almost no evidence to support the claim that instructors who adopt new and emerging technologies also adopt new pedagogy.[107] Further, Herrington, Reeves, and Oliver (2005) concluded that commercial course management systems restrict most instructors to the delivery of information rather than to the provision of engaging, authentic learning experiences.[108] Research results indicate that students attending Open Schools view schools and teachers more positively. Also, "On the whole, results for open classrooms tend to indicate improvement in cognitive areas. However, little statistically significant difference was found in other test areas. The data appear to indicate that the success of the open school is largely dependent on the individuals in the school who plan, organize and implement curriculum".[3] Oliveira and Orive[109] indicated that with only 8,000 student-semester enrolments, and with students studying less intensively than in other systems, the Efficiency Ratio of IRDEB's distance teaching system was 4.36 compared to conventional private institutions (i.e. much more expensive). To compete with them on cost grounds, IRDEB's student numbers would have to expand significantly in order to spread its fixed costs over a wider student base. With 17,700 students, the Minerva project in Brazil provided a cost-efficient route to the madurez.[69] The Malawi Correspondence College, with 2884 students, provided an efficient correspondence/radio-based alternative route to secondary education (Efficiency Ratio of between 0.23 and 0.62, depending on the

costs in the comparator institutions).[110] The Mexican Telesecundaria provides classroom delivered televised lessons supported by monitors and study guides. An early cost study by Mayo, McAnany and Klees suggested that the system was efficient (Efficiency Ratio of 0.76 with 33,840 students)[111], but later cost studies indicated Efficiency Ratios of 1.09 (with 170,000 students) and 1.32 or greater (with 400,000 students).[112] Arena[113] may provide one of the clues for this loss of efficiency: even though the number of students in the Telesecundaria had risen, the school was so successful that it expanded into smaller and smaller communities, with the result that the average group size fell from 29 in 1975, to 27 in 1981, to 20 in 1989. However, there may have been other factors at work as well: for example, the traditional school system may have become more efficient. Research has shown that the print, audio and pre-recorded instructional television tend to be cheaper, together with radio where audience sizes are above 1,000; and that the most expensive technologies tend to be face-to-face tuition and computer-based communication (except for relatively small numbers of students). The cost of computer-based teaching and learning – which includes hardware, software, connectivity, consumables, electronic library and other site access, and academic and technical support – varies enormously, depending upon what is being offered. Current studies on the costs of computers in schools include those by Cawthera and Bakia.[114] In practice, as Bakia observes, many Open Schooling projects have high variable (i.e. flexible) costs – as well as substantial costs arising from the investment in materials and student support systems.[115] Taplin and Jegedefound that most of the students studied through ODL system for self-satisfaction and for raised employment status.[116] Ojo found that distance education programs provide literacy education as well as vocational skills development to women thereby empowering and enabling them to live a more comfortable life.[117] In the euphoria that followed the development of mass educational media, money was poured into educational television and, to a much lesser extent, educational radio. Educational radio – the less expensive of these two media – has survived in corners of the world and remains in the view of many an unexploited medium of instruction. The achievements of educational television in projects such as the Telesecundaria in Mexico and in some of the Brazilian projects need to be set against the problems encountered in El Salvador and in the Ivory Coast. As David Hawkridge remarked of the latter, "the project has 'sunk without trace' and educators say that never was so much wasted, including [World] Bank funds, on such poor television broadcasts with so little effect".[118] Results of studies of NIOS by Rumble and Koul (2007) in 1986 when the then Open School was a relatively small experimental operation with an enrolment of just 3,164 in 1982/83 rising to a projected 11,000 in 1986/87, showed that the cost per student in the Open School was just under two-thirds of the cost of the conventional day schools run by the Delhi Administration, but between 3.2 and 3.9 times as expensive as the Delhi Administration's correspondence school.[119] Open and distance learning can serve a range of teacher-training uses for basic education. Perraton (2007)[120], Perraton et al. (2001, 2002)[121,122], Creed and Perraton (2001)[123] and Robinson (1997)[25] all provide examples of a wide range of innovative distance teacher-education initiatives that could act as models for expanding provision. Phillips' (1994) observation that open schooling can be a successful alternative to conventional teaching, especially in its ability to reach disadvantaged sub-groups of the population in a cost-effective manner. However, although open schooling for primary and secondary education has made significant impact in all countries and have tremendous potential, the challenges for open schools are enormous.[42] Scherer (2006) indicated that as the range of students with new and different needs expands, research is required to ensure that online learning is a realistic and accessible opportunity.[124] Dipietro et al. (2008) was one of the few studies that examined effective asynchronous teaching strategies in virtual schooling.[125,126] Saba (2003) observes that distance education operations are characterized by complexity, hierarchy, dynamism, non-linearity, self-organization (spontaneous adaptive behavior), chaos and order.[127] Moore and Kearsley (1996) model the teaching and learning process in distance education in terms of sources, design, delivery, interaction and the learning environment. While one leads to the next, each also interdependently influences the overall study experience of the student.[128] Lynch and Paasuke

(2010) indicate how post-industrialization might be applied in an interactive online distance setting. Lynch and Paasuke discuss the tutorial support model (TSM), a model developed for Open Universities Australia. This model suggests how online learning mightbe used to improve student outcomes by adopting a certain tutorial style that is both educationally effective and scalable.[129] Moore (1993; 1996) observes that there is a degree of distance in all forms of education provision: The transaction that we call distance education occurs between teachers and learners in an environment having the special characteristic of separation of teachers from learners. With separation there is a psychological and communications space to be crossed, a space of potential misunderstanding between the inputs of instructor and those of the learner. It is this psychological and communications space that is the transactional distance. Psychological and communications spaces between any one learner and that person's in structure are never exactly the same. In other words, transactional distance is a continuous rather than a discrete variable, a relative rather than an absolute term. It has been pointed out … that in any educational program, there is some transactionaldistance.[130,131] Rumble observes that distance education is becoming "parasitic" on the facilities which students have available in their own homes or workplaces as aids to self-learning.[132]

Conclusion

The main tactics of curriculum formula in open schooling is to set a series of aims and meanings and consider how these can be best supported by online learning materials.

Distance education or open schooling has some positive points and positive results in learning. **First** it can facilitate school-based training, enabling a closer relationship between theory and practice. **Second** that open schooling, notably broadcasting, can help by-pass the inertia of the traditional educational system and facilitate the reflection of topical and teacher-led interests. **Third**, this method of education can also play a role in community development. **Forth**, the establishment of a decentralized of open schooling structure can also be used for supporting training in general in the districts and serve as a basis for the development of a wider program of continuing development of teachers. **Fifth**, in print-poor countries, self-study materials can become a permanent resource. **Sixth**, open schooling have been successful in both bringing down the costs of education and educating out-of-school youths as well as adult learners. **Seventh**, the experience of learning in open schooling for lower performing students will assist personnel to design appropriate supports as this particular population of students continues to grow within virtual schools. **Eighth,** in open schooling, the learning time, learning style, the pace of learning, and the evaluation system is such that it does not create any pressure and stress on the learners. The open and distance learning system has tried and tested flexibilities in the teaching-learning and evaluation system and found that hardly any such untoward incident, like suicide has happened. Therefore, it is suggested that the entire education system, including the formal system of education, may provide a flexible and learner friendly education system which causes little stress among the learners. **Ninth**, open schooling's focus of education is on the life skill development rather than making the children bookworms. The learners should be made capable of using their potential and capabilities for a happy and stress free life. For this they should be provided with an open and free environment at home as well as in the school.

Therefore we can say that open schooling in medical science requires both specific cognitive abilities characterized as knowledge and skills, and executive abilities, which are needed to plan and anticipate future needs, set priorities and self-regulate. Open schooling have many positive points that they have been explained in 9 items. These realities about open schooling in medical sciences are correct but they are not enough. Whoever wants to be an expert in medical sciences, he/she should be reinforce his/her skills by work and practice in practical courses. Therefore, it can be concluded that open schooling in medical sciences just is possible in theory part. And in second part that students should practice their knowledge and their skills, open schooling can't be useful.

Generally, open and distance learning has solid records of achievement, and grand claims of potential. But, the amount of empirical research was still limited. Yet the ability of virtual schools to support a broad range of student abilities appears to be

limited. Thus, based on our goal in review of the literature for the preparation of this manuscript, we have identified some items for future research. First is to establish best practices for online teaching strategies. Second, researchers experiment the method of open schooling in the field of medical sciences.

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Drug Review

Olanzapine — Long Acting Formulation

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Introduction

Olanzapine pamoate is the intramuscular depot formulation of the atypical antipsychotic olanzapine. Since the advent of its oral formulation in 1996, it had become a popularly used atypical antipsychotic. Now with the introduction of this once/twice monthly long acting preparation of olanzapine , FDA approved in 2009,[1] this molecule attempts to surpass the long suffered barrier of noncompliance to treatment in schizophrenia.

Mechanism of Action

The mechanism of action for olanzapine is not completely known. It is thought to be due to antagonist activity at dopamine (D2) receptors and serotonin (5-HT2A) receptors. In addition, the drug also has high antagonist activity for other dopamine (D1, D3, and D4), serotonin (5-HT2C, 5-HT6), adrenergic (α_1), and histamine (H_1) receptors, while having moderate affinity for serotonin 5HT3 and muscarinic M1-5 receptors.[2]

Chemical Structure and Pharmakokinetics

Olanzapine long-acting injection (OLAI) is a crystalline salt. OLAI is composed of olanzapine and pamoic acid in the form of micron-sized crystals suspended in water. The pamoate salt of olanzapine provides a sustained-release intramuscular dosage form of olanzapine.[3] Once injected into the gluteal muscle, the organic salt dissolves slowly, dissociating into acid and base organic molecules, olanzapine (free base), and pamoic acid.[3,4] The intramuscular in-situ rate of dissolution of the olanzapine pamoate salt is slow, but the absorption of the dissociated free base olanzapine in muscle tissue is very fast. The absorption half-life for OLAI is $\leq$ 30 days. Therefore, each injection releases measurable olanzapine for $\leq$ 5–6 months.

Therapeutic Indication

Olanzapine LA is approved for maintenance treatment of adult patients with schizophrenia who are adequately stabilised during acute treatment with oral olanzapine.[5]

Efficacy Studies

One large, double-blind, placebo controlled, 8-week study of olanzapine LAI in 404 inpatients with acute schizophrenia patients compared 210 mg every 2 weeks, 300 mg every 2 weeks, 405 mg every 4 weeks and placebo in a 1:1:1:1 randomized design. All three olanzapine doses separated significantly from placebo on the total Positive and Negative Syndrome Scale (PANSS). The two higher doses separated from placebo on the PANSS at day 3, while all three doses separated at day 7 from placebo. Also, olanzapine LAI was found to show a comparable magnitude of symptom reduction compared to oral olanzapine.[6]

In a 6-year, multinational, single-arm, open-label study on long-term safety and efficacy of olanzapine long-acting injection in patients with schizophrenia , olanzapine LAI appeared to show sustained effectiveness in maintaining clinical stability.[7]

A study comparing six-week trial of olanzapine LAI with that of 3 oral studies showed a similar pattern of improvement , efficacy and tolerability to that seen historically with oral olanzapine.[8]

A 24-Week, Randomized, double-blind trial of olanzapine LA in the maintenance treatment in patients with Schizophrenia revealed olanzapine long-acting injection was efficacious in maintenance

treatment of schizophrenia for up to 24 weeks.[9]

Dosage and Dose Equivalents

Olanzapine LA is given at 210 mg every 2 weeks, 300 mg every 2 weeks and 405 mg every 4 weeks in patients with schizophrenia. Oral supplementation appears not to be needed. Nevertheless, patients should be treated initially with oral olanzapine before administering long acting , to establish tolerability and response.[5]

Recommended dose scheme between oral olanzapine and Olanzapine LA[10]

Target oral olanzapine dose	Recommended starting dose of Olanzapine LA	Maintenance dose after 2 months of Olanzapine LA treatment
10 mg/day	210 mg/2 weeks or 405 mg/4 weeks	150 mg/2 weeks or 300 mg/4 weeks
15 mg/day	300 mg/2 weeks	210 mg/2 weeks or 405 mg/4 weeks
20 mg/day	300 mg/2 weeks	300 mg/2 weeks

Adverse Effects

Most common adverse reactions ($\geq$ 5% in at least one of the treatment groups and greater than placebo) associated with olanzapine LA are headache, sedation, weight gain, cough, diarrhea, back pain, nausea, somnolence, dry mouth, nasopharyngitis, increased appetite, and vomiting.[11]

Similar to oral olanzapine, the rates of extra-pyramidal symptoms, prolactin elevation and cardiovascular side effects is low , but metabolic effects are significant, including significant weight gain, lipid abnormalities (increase in cholesterol, low-density lipoprotein cholesteraol levels and triglycerides) and glucose dysregulation.[12]

A small number of patients have experienced PDSS during the participation in olanzapine LAI trials and clinical use, signs and symptoms of which include sedation (61%), confusion (56%), dysarthria (54%), somnolence (46%), dizziness (45%) and disorientation (35%) and are probably related to an inadvertent intravascular injection of part or the entire olanzapine LAI dose.The incidence rate of PDSS is 0.07% per injection.[13]

Clinical trials showed the incidence of injection site-related adverse reactions to be approximately 8%. The most commonly reported injection site-related adverse reaction was pain (5%); others were injection site nodule-type reactions, erythema-type reactions, non-specific injection-site reactions, irritation, oedema-type reactions, bruising, haemorrhage, and anaesthesia.[11]

Precautions

It is recommended to have a postinjection observation period of at least 1 hour up to 3 hours in a healthcare facility and require advising patients not to drive or operate heavy machinery and to be vigilant for signs and symptoms of potential inadvertent intravascular injection events in the 24 hours after OLAI injection.[13]

Contraindications

Olanzapine LA is contraindicated in cases of hypersensitivity to the active substance or to any of the excipients and in patients with known risk of narrow-angle glaucoma.

Drug Interactions

Since olanzapine is metabolised by CYP1A2, substances that specifically induce or inhibit this isoenzyme may affect the pharmacokinetics of olanzapine.

The metabolism of olanzapine may be induced by smoking and carbamazepine, which may lead to reduced olanzapine concentrations. Fluvoxamine, a specific CYP1A2 inhibitor, has been shown to significantly inhibit the metabolism of olanzapine. It is recommended to consider a lower starting dose of olanzapine in patients who are using fluvoxamine or any other CYP1A2 inhibitors, such as ciprofloxacin.[11]

Conclusion

Given its potential to improve adherence to treatment, and hence longterm outcomes, Olanzapine LA is a valuable addition to the existing theraputic options available for the maintenance phase in schizophrenia patients. In comparision to its oral congener, its equivalent efficacy has been established with comparable side effect profile, with the exception of post injection delirium sedation syndrome. Given its benefit/risk ratio, it appears to

be ideal for patients who, despite considerable response to oral olanzapine,are unable to remain compliant to medication.

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Drug Review

Cariprazine: a novel antipsychotic for acute Mania and Schizophrenia

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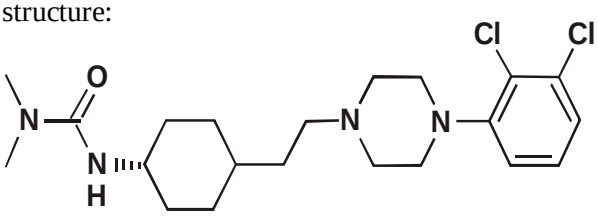
Introduction

The treatment approach for bipolar illness comprises management of acute manic episodes and bipolar depression followed by a maintenance therapy to prevent recurrences of these episodes. Lithium and anticonvulsants form the mainstay for prophylactic therapy while acute episodes are managed by antidepressants and /or antipsychotics. Current treatment for mania includes control of agitation, aggression and impulsivity. Mood stabilizers and second generation antipsychotics (SGA) are preferred drugs for monotherapy and the their combination form second line treatment options.[1]

Cariprazine (trade name vraylar) earlier known as RGH-188 is an antipsychotic drug developed by Gedeon Richter. It is a partial agonist at D2/D3 receptor showing high affinity towards D3 receptor. Cariprazine has been approved for bipolar depression and schizophrenia by the US-FDA in September 2015.[2]The drug is also being investigated as a potential adjunct for treatment resistant major depressive disorder. Cariprazine has this chemical structure:



Pharmacokinetics

Cariprazine attains a peak plasma concentration in 3-4 hours, with food causing no significant effect on its absorption. The mean half-life for cariprazine is 2–5 days over the antipsychotic dose range of 1.5–12.5 mg suggesting that once a daily dose may improve treatment adherence. The elimination of cariprazine is by hepatic metabolism mainly by cytochrome CYP3A4 and to a lesser extent by CYP2D6 and has a moderate first pass effect. Multiple administrations led to marked accumulation in plasma concentration of cariprazine and its metabolites desmethylcariprazine and didesmethyl-cariprazine. Systemic exposure to desmethyl-cariprazine was 30–40% of cariprazine, and was seen to be dose proportional. Didesmethyl-cariprazine's half-life is considerably longer than the half life of cariprazine, and in the study of healthy volunteers was found to be 2–3 weeks; thus, systemic exposure to didesmethyl-cariprazine was higher than that for cariprazine. Steady state was achieved for cariprazine and desmethyl-cariprazine within the dose duration of 3 weeks, but not for didesmethyl-cariprazine.[3,4]

Pharmacodynamics

Cariprazine (RGH-188, trans-4-{2-[4-(2,3-dichlorophenyl)-piperazine-1-yl]-ethyl}-N,N-dimethylcarbamoylcyclohexyl-amine hydrochloride), a novel antipsychotic is D2/D3 receptor partial agonist with preferential binding with D3 receptors. In vitro, the drug shows maximum binding to D3 receptors followed by D2L and D2S receptors (subtypes of D2 receptors). Cariprazine has more resilient D3 antagonist–partial agonist affinity and 3- to 10-times greater D3 versus D2 selectivity. The

D3 autoreceptor controls phasic activity of dopaminergic neurons and has been found to mediate the NMDA receptor blockade elicited behaivioural abnormalities .Animal studies have shown that preferential D3 agents have procognitive effects. Cariprazine shows high binding affinity for serotonin 5HT2B receptors which may modulate dopamine release in nucleus accumbens. The drug shows moderate affinity at 5HT1A receptors, (is a partial agonist) which may be the reason for its beneficial effects on negative symptoms and cognitive functions as seen in some preclinical studies. Cariprazine shows low affinity for 5HT2A, 5HT2C, 5HT7, histamine H1 and adrenergic receptors.[5,6]

Efficacy/Clinical Trial Results

Cariprazine in schizophrenia

The efficacy of cariprazine in patients of schizophrenia was estabilished in three 6-week, randomized, double-blind, placebo-controlled trials in patients (aged 18 to 60 years) who met Diagnostic and Statistical Manual of Mental Disorders 4th edition,criteria for schizophrenia. Two out of three trials used an active control arm (either resperidone or aripiprazole) and in all the three trials cariprazine was found superior to placebo. Positive and Negative Syndrome Scale (PANSS) and Clinical Global Impressions-Severity (CGI-S) rating scales were used as primary and secondary efficacy measures, respectively, to assess psychiatric signs and symptoms in each trial. In each study, primary endpoint was change from baseline in PANSS total score at the end of 6 week. The change from baseline for cariprazine and active control groups was compared to placebo. The efficacy of cariprazine was demonstrated at doses ranging from 1.5 to 9 mg/day compared to placebo. There was, however, a dose-related increase in certain adverse reactions, particularly above 6 mg.[7,8]

Cariprazine in acute treatment of bipolar disorder

The efficacy of Cariprazine in the acute treatment of bipolar mania was seen in three, 3-week placebo-controlled trials in patients (mean age of 39 years, range 18 to 65 years) who met DSM-IV-TR criteria for bipolar 1 disorder with manic or mixed episodes with or without psychotic features. In all of those trials, cariprazine was found to be superior to placebo. Young Mania Rating Scale (YMRS) and Clinical Global Impressions-Severity scale (CGI-S) were the primary and secondary efficacy measures, respectively, for assessing psychiatric signs and symptoms in each of the trial.

		Primary Efficacy Endpoint: PANSS Total		
Clinical Trial	**Treatment Group (Intention to treat subjects**	**Mean baseline score (SD)**	**Least Square Mean Change from baseline (SE)**	**Placebo substracted Difference (95%) CI**
Trial 1	Cariprazine (1.5 mg/day) (n=140)	97.1 (9.1)	-19.4 (1.6)	-7.6 (-11.8,-3.3)
	Cariprazine (3 mg/day) (n=140)	97.2 (8.7)	-20.7 (1.6)	-8.8(-13.1,-4.6)
	Cariprazine (4.5 mg/day) (n=145)	96.7 (9.0)	-22.3 (1.6)	-10.4(-14.6,-6.2)
	Placebo (n=148)	97.3 (9.2)	-11.8 (1.5)	
Trial 2	Cariprazine (3 mg/day) (n=151)	96.1 (8.7)	-20.2 (1.5)	-6.0 (-10.1, -1.9)
	Cariprazine (6 mg/day) (n=154)	95.7 (9.4)	-23.0 (1.5)	-8.8 (-12.9, -4.7)
	Placebo (n=149)	96.5 (9.1)	-14.3 (1.5)	—
Trial 3	Cariprazine (3-6 mg/day) (n=147)	96.3 (9.3)	-22.8 (1.6)	-6.8 (-11.3, -2.4)
	Cariprazine (6-9 mg/day) (n=147)	96.3 (9.0)	-25.9 (1.7)	-9.9 (-14.5, -5.3)
	Placebo (n=145)	96.6 (9.3)	-16.0 (1.6)	—

SD-Standard Deviation, SE- Standard Error, CI-Confidence interval

The efficacy of cariprazine was established at doses 3 to 12 mg/day. Doses above 6 mg did not appear to have additional benefit over lower doses and there was a dose-related increase in certain adverse reactions.[7,8]

Adverse Effects

		Primary Efficacy Endpoint: Young's Mania Rating Scale Total		
Clinical Trial	**Treatment Group (# ITT subjects)**	**Mean baseline score (SD)**	**Least Square Mean Change from baseline (SE)**	**Placebo substracted Difference (95%) CI**
Trial 1	Cariprazine (3-6 mg/day) (n=165)	33.2 (5.6)	-18.6 (0.8)	-6.1 (-8.4,-3.8)
	Cariprazine (6-12 mg/day) (n=167)	32.9 (4.7)	-18.5 (0.8)	-6.1(-8.4,-3.8)
	Placebo (n=160)	32.6 (5.8)	-12.5 (0.8)	—
Trial 2	Cariprazine (6-12 mg/day) (n=118)	30.6 (5.0)	-15.0 (1.1)	-6.1 (-8.9, -3.3)
	Placebo (n=117)	30.2 (5.2)	-8.9 (1.1)	—
Trial 3	Cariprazine (6-12 mg/day) (n=158)	32.3 (5.8)	-19.6 (0.9)	-4.3 (-6.7, -1.9)
	Placebo (n=152)	32.1 (5.6)	-15.3 (0.9)	—

SD-Standard Deviation, SE- Standard Error, CI-Confidence interval

Cariprazine was well tolerated in manic patients and the serious adverse event rate was comparable to placebo as seen in randomized controlled trials. The most common adverse events were extrapyramidal symptoms, headache, akathisia, constipation, nausea, and dyspepsia. Cariprazine treatment was associated with an increased incidence of treatment-emergent adverse events, notably akathisia and tremor, but common side effects of marketed SGAs such as weight gain, metabolic disturbances, prolactin increase or QTc prolongation were not seen. Adverse event related discontinuation rates due were 10% with cariprazine and 7% with placebo. Cariprazine's failure to demonstrate the common longterm adverse effects of SGAs, may increase the popularity of the drug.[10]

Dosage and Administration

Cariprazine can be given orally once daily with or without food. The approved dose in schizophrenia is 1.5 mg to 6 mg and for bipolar disorder is 3 mg to 6mg. The dose is adjusted according to patient tolerability and clinical respone.[7,11]

Drug Interactions

Concomitant use of cariprazine with CYP3A4 inhibitors increases exposure of the drug and its major active metabolite, therefore appropriate dose adjustment is advised. Interaction with CYP3A4 inducers has not been evaluated but it is recommended to avoid using it with a CYP3A4 inducer.[1]

Contraindications

Cariprazine is not recommended in elderly patients with dementia related psychosis as it is associated with increased risk of death. Further it is contraindicated in patients with history of hypersensitivity reaction to it.[7]

Conclusion

Cariprazine is a recently developed drug that shows partial agonism at D2 and D3 receptors with tenfold increased affinity for D3 receptors and classifies as a novel second generation antipsychotic. It has been approved for acute mania in bipolar disorder and schizophrenia.

In schizophrenia cariprazine treats both positive and negative symptoms better then placebo. Moreover the greater affinity for D3 receptors enhances cognitive functions. The incidence of extrapyramidal side effects is also less although acute events such as akathasia and tremors do occur. Cariprazine has no adverse effects on metabolic parameters also which is another favourable feature as compared to other second generation antipsychotics. But the safety profile of

the drug for long term use in schizophrenic patients is still to be estabilished.

In patients of acute mania there is symptomatic improvement after 3 weeks of drug treatment as compared to placebo.[12]

Clinical trials should be conducted to elucidate long term safety and efficacy of cariprazine in patients of acute mania in bipolar disorder and schizophrenia, more so in comparison with the other second generation antipsychotics available in the market.

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Forensic Psychiatry

Spousal violence : Risk assessment and management

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Introduction

World Health Organization (WHO) has defined Intimate Partner Violence (IPV) as "any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship."[1] Several reports of Intimate Partner Violence are covered in the newspapers quite often. Domestic violence is a form of partner violence but also encompass child or elder abuse or abuse of any member of a household.

A literature search was carried out using the key words "Intimate Partner Violence risk assessment" and were "retrieved 691 articles". Search using keyword domestic violence risk assessment" revealed 2398 articles on Pub med. Relevant material was searched using internet, standard textbooks and journals.

Epidemiology

National Family Health Survey (2005-2006) reported that 37.2% of women experienced violence after marriage.[2] A study by Sabri et al, 2016 reported 125 intimate partner killings in the data collected from the newspapers and foeticide killings in the year between 2000 to 2005.[3] A cross-sectional survey in Eastern Uganda found that the prevalence of any form of IPV was 43.7%. No gender differences were found in this study.[4] In a data collected from sixty six countries, one in seven homicides reported globally and one third of female homicides were perpetrated by intimate partner violence.[5] In a study on 406 patients from a Psychiatric Outpatient Clinic of a tertiary care teaching hospital, 64% had emotional abuse, 39% physical abuse and 21% sexual abuse.[6]

Risk factors

Risk factors for Intimate Partner Violence (IPV) has been found at an individual level (substance abuse/dependence, personality disorders, witnessed childhood abuse, low level of education, young age), relational problems (mal-adjustments, male dominated society), community and society level (gender inequality, weak legal systems, religious beliefs, lack of political will). In a study by Abramysky et al 2011, higher socio-economic status, formal marriage, higher education are some factors found to be protecting Intimate partner violence.[7] In a national study on correlates of domestic violence from India, female gender belonging to the scheduled class category and muslim religion were the victims.[8] The study highlighted that weak economic status of women and controlling behavior of husband were found to be the contributing factors to domestic violence victims.[8]

Clinical presentations

Intimate Partner Violence (IPV) has been reported from all societies since times immemorial. The various clinical manifestations have been outlined in the vignettes mentioned below. Often, the clinicians in their busy practice tend to ignore and under-report these pertinent issues. The clinicians tend to label psychiatric diagnosis based on classifications rather than to look into finer details. Often the burden on clinicians to handle a large number of cases may be the reason to miss out the issues related to IPV. We present below the vignettes to familiarize us about the scenarios.

Case Vignettes

Case Vignette 1

A 40 year man, accompanied by his colleague, presented in Psychiatry Outpatient Clinic with complaints of inability to concentrate in work. On

further history taking, he revealed that his wife had gone to her parental home in another city with eight month old son two days back. Prior to this, there was a quarrel in which she expressed the wish to take out all her jewellery from the locker which the patient refused. She used abusive words and involved the neighbors. Patient was currently staying with his mother and children in his house. The patient and his colleague insisted that some treatment be given to relieve his stress. The patient also expressed a fear that he might be accused for dowry case. When presented to the OPD, the patient was evaluated in detail and counselled. For management of stress, patient was advised yoga, meditation and aerobic exercises. Most importantly pertaining to the case, the patient was cadvised premediation counseling and to seek legal help. He was asked to follow up after 3 days to counsel and reassess the need for medication in the follow up visits.

Case Vignette 2

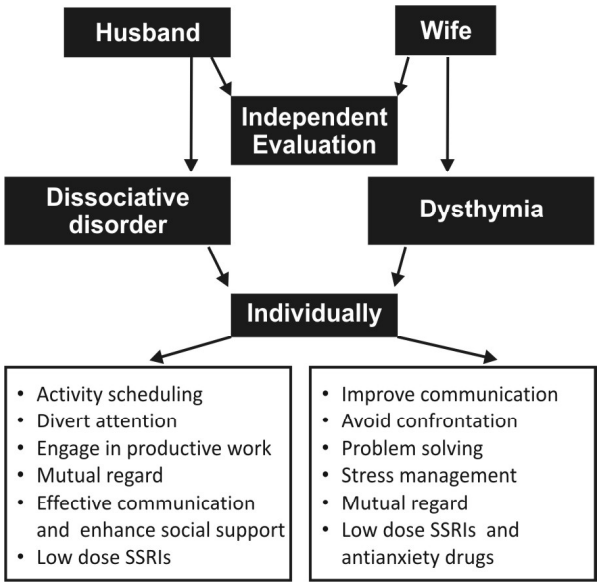
A 42 year old hospital female employee, graduate, married for 15 years presented with occasional crying spells, negative thoughts, low self esteem, on and off symptoms since last several years. Marital discord precipitated these symptoms. After incidents of physical assault by her husband, patient had gone to her maternal house. Women cell mediation was carried out and patient agreed to return to her house only after being assured that the assault would be stopped. Husband had initially presented to the OPD.

Husband of the patient was a middle aged male who presented to the OPD with dissociative symptoms since last few months. Detailed evaluation revealed corroborative history of marital discord and the co-occurrence of dissociative symptoms with stress, such as nearing of court hearing dates, altercations etc. In subsequent sessions, evaluation of the wife revealed symptoms of occasional crying spells, negative thoughts, low self esteem, on and off symptoms since last several years. Other psychosocial stressors, being unemployed further precipitated the problems.

The following chart outlines the line of management of the aforementioned case.

Case vignette 3

A middle aged male, software professional,



currently unemployed, with a working spouse, presented with complaints of sleep disturbance, preoccupation with problems leading to lack of concentration and fear that his wife would implicate him in a false case. There was history of household discord and patient reported being constantly nagged by his wife regarding his unemployment and incidents of physical assault by the wife on the husband. In this case as well, following detailed evaluation, the patient was counseled. Stress management techniques in form of yoga, meditation and aerobic exercises were taught. Medication was given for induction of sleep. It was advised to come for followup along with wifefor further evaluation and management or to consult a mediation cell.

Consequences

Although men and women are both the sufferers, but women have a higher tendency to suffer from long term deleterious health consequences of IPV.[9] Spousal violence has been associated with sexually transmitted infections and suicidal attempt.[10] The physical health problems associated with IPV are gynecological problems (premature births, low birth weights, stillbirths), mental health consequences (low self esteem, depression, anxiety disorders, substance abuse), physical consequences (fractures, hypertension, Homicide, injuries). Children who are the victims of IPV are less likely to be immunized, have higher rates of diarrheal disease; and/or are at greater risk of dying before the age of five.

Risk Assessment

Assessment for IPV should include socio-demographic details, detailed history taking, physical examination including medico-legal evaluation for physical and sexual violence, video recording if feasible and mental status examination. Screening questionnaires like General Health Questionnaire, Hamilton Depression rating scale, Hamilton Anxiety Rating scale, Abuse/ Violence Assessment Questionnaire-World Health Organization (WHO) Hindi adaptation[11] can be used for better evaluation.

Management

Management of IPV includes a multi factorial approach that involves changing the mindset of the people towards gender equality and strengthening of existing laws like Domestic Violence Act. The provisions of mental cruelty are often used as a plea in marital disharmonycourt cases. Gender sensitization and awareness campaigns need to be organized more often in schools and colleges. Restriction in the use of alcohol and addicting substance needs to be carried out with the political will and support for such measures should be mobilized from general public. Media needs toplay a pivotal role in curbing the menace of gender violence through articles, workshops, role plays etc and not invest resources in merely highlighting or glamorizing the gender sensitive issues.[12] Mental health professionals should address the need of the society in early, prompt identification and management of mental health problems. Enhancing social supports and inculcating healthy lifestyle helps in pushing society towards positive mental health.

Acknowledgement

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Case Report

Use of ECT in a Bipolar Mood Disorder Patient having Space Occupying Lesion

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Introduction

Arachnoid cysts are benign, congenital intra arachnoidal space occupying lesions filled with clear cerebrospinal fluid. Majority of them are stable over time but there are cases of spontaneous enlargement and even resolution.[1] ECTs are often relatively contraindicated in patients with intracranial space occupying lesions, especially those with increased intracranial pressure, edema or mass effect.[2]

Hereby we present a case report of patient with left temporal, subarachnoid cyst not leading to any neurological complications treated successfully with ECT for Bipolar Mood Disorder.

Case Report

A 20 year male doing his graduation in Mumbai was brought by his parents to us with 3rd episode of altered behavior since 3 months. He started excessive spending of money on unnecessary things since last 3-4 months like buying 3 pairs of sport shoes, etc which weren't necessary. He also started spending excessive time in playing football. He started consuming cannabis in form of smoking *ganja* and *charas* since last 3 months. His sleep had reduced to 3-4 hours a day only. Gradually his condition started worsening in form that since last 3-4 days he started getting angry without any reason. He started indulging in breaking things like glass mirror of his room and also had dashed his fists on the window, which led to injury to his both hands. For above behavior he was brought to us.

On enquiry parents gave history of two episodes of altered behavior in the past. First episode was about six years back where he used to be suspicious that his friends and other students in the class are against him. Whenever other students would talk with each other, he used to feel that they were talking about him and were spreading bad things about him. He used to say that the principle of the college have plotted some students to keep watch on him and had a plan to kill him with the help of other students. His complaints lasted for about a month and he was taken to a private psychiatrist. He was diagnosed as having paranoid schizophrenia and treated with tablet Risperidone 6 mg in divided doses. According to father he got 100% improved with treatment in about 4 weeks duration and later on discontinued with medications.

Second episode was about 4 years back while he was doing his nursing course. He suddenly started with MBA preparation and also planning of doing big things for the nation. Also he had started consuming cannabis in form of *charas* and *ganja* which he never used in past. There was history of disruptive behavior. There was spontaneous improvement in these complaints within 2-3 months. This was followed by persistent sadness of mood, remaining alone, not interacting with friends and other people. He used to get easily irritable on trivial issues. His sleep was decreased. Patient was again showed to same private psychiatrist and diagnosis was revised to Bipolar Mood Disorder. He started on Tab Divalproate Sodium 1000 mg and he improved over a period of 4-6 weeks but stopped medications after few days of improvement.

During the current episode due to his behavior

of self harm, harm to others and history of non-compliance with treatment he was started on Tab. Divalproate Sodium 1000 mg and Tab. Olanzapine 15 mg per day in divided doses. Giving ECTs was considered due to violent behavior but as he had history of multiple generalized seizures in childhood CT Brain was advised. CT scan was suggestive of subarachnoid cyst of 5cms by 3.4cm by 3.1 cms size in left temporal region. Neuromedicine and Neurosurgery reference sought in view of ECT fitness, who advised to start the patient on Tab Phenytoin 300 mg in divided doses along with ECT. Ophthalmology reference sought for fundoscopy, which was not suggestive of Papilledema and other fundus changes. Patient received four ECTs when he was admitted and was about 80-90% improvement. He received 4 more ECTs on OPD basis and later maintained on oral medicines, Tab. Divalproate 1000mg and Tab. Olanzapine 20 mg in divided doses. ECTS were given with Nivicure Meditech machine which imparted Brief Pulse Fixed Dose current. Details of charge used and duration of seizures are seen in Table 1. There were no side effects or any complications during the course of ECT treatment.

Table 1: Details of charge used and seizure duration

ECT Number	Charge used (mC)	Duration of Seizures
1.	60 mC (1st attempt)	No seizure
	120 mC (2nd attempt)	20 secs
2.	120 mC	20 secs
3.	120 mC	25 secs
4.	120 mC (1st attempt)	No seizure
	180 mC (2nd attempt)	32 secs
5.	180 mC	25 secs
6.	180 mC	26 secs
7.	180 mC	24 secs
8.	180 mC	21 secs

Discussion

Caution has to be taken while giving ECTs to patients with intracranial mass. Arachnoid cysts may be connected to CSF and increased intra cranial tension during ECT might lead to enlargement and rupture.[3,4] There have been many cases in literature showing safety of ECTs in such patients mainly in major depressive disorder.[5-7]

Ours is a case of Bipolar Mood Disorder diagnosed accidentally as having subarachnoid cyst and responding well to ECTs without any complications. We conclude that ECTs can be safely given in patients with intracranial space occupying lesions without an increase in morbidity and mortality, provided pre-treatment neurological evaluation is properly done.

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Case Report

Kluver – Bucy Syndrome following Herpes Simplex Encephalitis

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Introduction

Kluver Bucy syndrome is a neuro-behavioural syndrome of diverse etiologies with core features of visual agnosia, hyperorality, hypersexuality, hypermetamorphosis and placidity.[1-7] Few cases of Kluver Bucy syndrome have been reported world-wide and there is scanty literature on the syndrome especially so on their prognosis and rehabilitation. Here we present a case of Kluver-Bucy syndrome caused by Herpes Simplex Encephalitis presenting with features of hyperorality, hypersexuality, hypermetamorphosis, constructional apraxia, impaired memory and regressive behaviour with an improving course on follow up.

Case History

29 yrs old male without any known co-morbidities, developed acute onset high grade fever on 07 Mar 14 and on 08 Mar 14 had a generalized tonic-clonic seizures which was followed by decrease in level of consciousness and confusion. He was admitted to a local hospital where he was given symptomatic treatment. At admission to the hospital, he moved his limbs and opened eyes on painful stimulus but did not vocalise. When there was no improvement after 2 days of conservative treatment, he was shifted to zonal hospital in town. He was diagnosed as a case of Herpes Simplex Encephalitis and was started on IV antibiotics with other supportive measures. He improved with treatment, started speaking after a week but was noted to be disoriented, failed to recognize his family members and had incomprehensible speech with use of new words. As he improved during the next few days, he could identify his family members, follow instructions and answer coherently to simple questions, but was incontinent. He had to be taken to the toilet periodically as he would not indicate when he wanted to evacuate. In the toilet he would pass stools in standing position, fidget with the stools and sprinkle it all over. During the next few days as his speech and sensorium improved, he started passing sexual comments on the female nursing staff in the ward. He was also noted to be fiddling with his genitals when he went to the toilet. At times he took off all his clothes and would pass stools anywhere in the ward.

He was transferred to tertiary care centre for management by the neurologist. His sensorium had now improved as he was now conscious and alert but he still passed stools anywhere in the ward and displayed dis-inhibited behaviour. During the next few days he started exploring things with his mouth. He drank half a bottle of shampoo, was seen to be eating a cake of soap and a peice of cloth. He did not show any anger or happiness during conversations. Psychiatric referral was sought owing to his disorganized behaviour. Mental state examination revealed him to be unkempt, cooperative, with slow movements and slow pace of gait, increased blink rate and increased psychomotor activity. He was curious about his surroundings and would examine everything within his reach. He displayed decreased emotional reactivity, and apathy. He was noted to be fidgety and distractible. He spoke relevantly in low volume and rate. He had decreased spontaneity and increased latency of speech. He described his mood as “theek hai” which was congruent and stable. He had blunted affect with decreased reactivity and restricted range. He had decreased

stream of thought with tangentiality and circumstantiality. His judgement was impaired and insight was lacking.

PGI BBD total score on admission at tertiary care centre was as - 37/57 which improved by 6 months to 15/57 (Table 1). With period of recovery and home based training, the recovery was evident but not complete and the individual was not able to function in day to day activities without assistance.

Table-1: PGI BBD results on admission to tertiary care centre and six months later

S. No.	Name of sub test	Interval	
		On admission	6 months later
1.	Mental balance	+	+
2.	Retention of similar pairs	+	+
3.	Performance quotient (Koh's blocks and Pass Along)	+	+
4.	Information	+	+
5.	Arithmetic	+	
6.	Comprehension	+	
7.	Remote memory	++	+
8.	Recent memory	++	+
9.	Delayed recall	++	
10.	Immediate recall	++	
11.	Retention for dissimilar pairs	++	++
12.	Visual retention	++	
13.	Recognition	++	+
14.	Difference in PQ and VQ	—	+
	Total	**37**	**15**

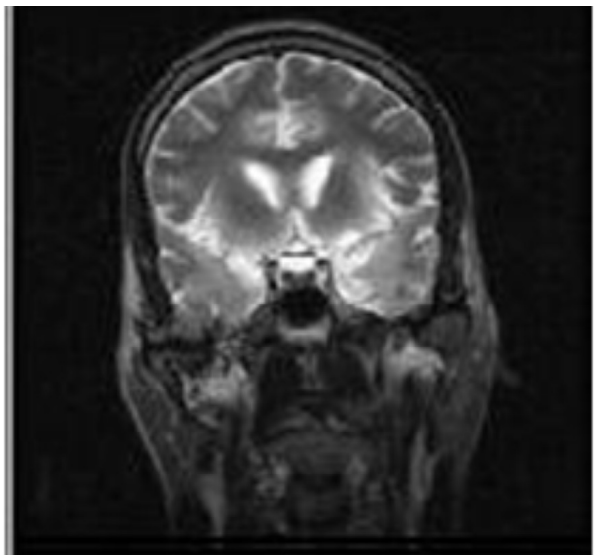

Fig. 1. T2 weighted coronal section

MRI Findings

Hyperintensities seen in the bilateral medial and anterior temporal lobes in T2 and FLAIR sequences

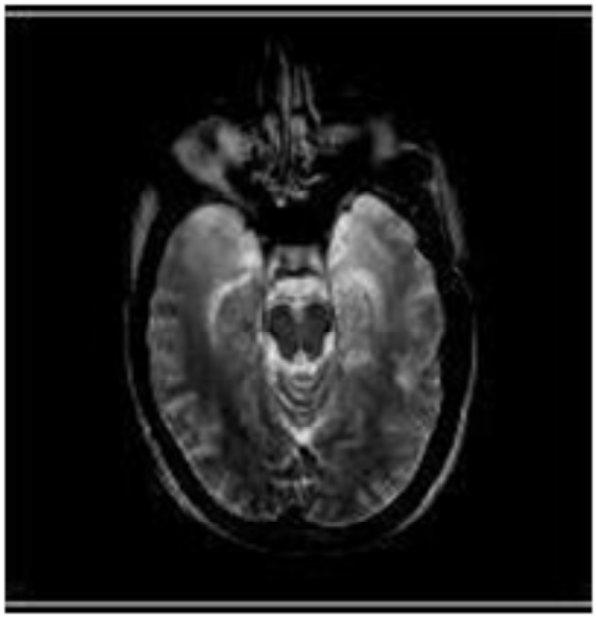

Fig. 2. T2 weighted axial section

left side involved more than right. Hippocampus, amygdala, parahippocampal gyrus, mamillary bodies, cingulate gyrus and bilateral insulae were involved. Gyral hyperintensities were noted in the T1 sequences in the anterior temporal regions (Lt > Rt) and bilateral Insular region suggestive of inflammation or necrosis. There was significant loss of volume of the hippocampus along with marked atrophy of the anterior and medial temporal lobes. In the frontal lobes, gyri recti were involved in the basifrontal region while there was minimal involvement of the orbitofrontal region on the left side. Parietal lobes were spared. Subcortical white matter in the temporal and frontal lobes also showed hyperintensities and restriction of diffusion.

Asymmetrical altered signal intensity areas involving the sub-cortical and deep white matter (Lt > Rt) were seen in bilateral frontal lobes involving cingulate, orbito-frontal and gyri recti, temporal lobes involving middle and inferior temporal gyri bilaterally, medial temporal lobes involving the uncus, amygdala and Hippocampi and in anterior temporal pole of left temporal lobe, bilateral insular cortex, postero-medial thalami and external capsule sparing the lentiform nucleus and internal capsule. These are hyperintense on T2W and FLAIR and hypointense in T1W sequences. There were gyriform cortical T1W hyperintensities seen in the left temporal lobe suggestive of petechial haemorrhages. There is restriction of diffusion. Post contrast subtle gyriform

and patchy parenchymal enhancement was seen in the left temporal lobe in involved gyri and in right inferior temporal gyrus. There was patchy dural enhancement seen bilaterally in the temporal region in the superior aspect. There was marked atrophy of the anterior and medial temporal regions with significant loss of volume of bilateral hippocampi.

Management

For behavioural control, he was started on tablet haloperidol 5 mg twice a day, to which he responded. He started indicating when he wanted to defecate, stopped eating non-edible things and started following instructions. He was discharged with instructions to the family members regarding training and relearning of basic social and day to day activities based on the deficits noted during neuropsychological evaluation. Patient was periodically reviewed and reassessed after 6 months along with family members. He had significant improvement in behaviour. His sexual indiscretions had improved, he was no more fidgety, had improved attention and concentration but lack of emotional response was still present. Deficits on neuropsychological testing were still significant. He was more amenable to instructions and requirement of medication was less.

Discussion

This case presents a patient with partial features of Kluver – Bucy syndrome with deficits in many faculties. A number of cases of Kluver Bucy syndrome have been reported in literature from around the world, arising from a variety of etiologies.[1-6] Some of them have been reported to be due to transient etiologies and hence recovered completely.[7-14] In some cases, the syndrome is said to have a progressive course with deterioration of cognitive faculties[2,5]. However little is known about whether there is improvement in the cognitive abilities with training and if so, in which all cases. Here we present a case in which there was significant improvement in many of the domains of disability as evident by the scores on neuropsychological testing. The individual however could not become functional in this organisation as the recovery was not adequate to make him fit for the required duties. It is expected that he can made functional in other occupations and will be able to earn some livelihood after more training and recovery.

Most of the times, the syndrome is a result of a one-time insult on the brain eg Herpes Simplex encephalitis. With the exception of some progressive etiologies such as Pick's disease or Huntington's disease, these patients can be made sufficiently functional with adequate training. It is therefore prudent to conduct more research on the rehabilitation aspect of such cases.

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Case Report

Eagle's Syndrome – an overlooked entity in General Medical Practice

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Introduction

In 1937, Watt W. Eagle first described stylalgia, which was later called Eagle's syndrome.[1,2] Stylalgia (also known as elongated styloid process/long styloid process syndrome/Stylohyoid Syndrome/Eagle's syndrome) is related to either abnormal length of the styloid process, or mineralisation of the styloid ligament complex, or calcification of digastric muscles.[3]

The normal length of the styloid process may vary, but in the majority of population it is about 20-30 mm long.[4,5] However, a 30 mm or longer process, with or without any deviation, is considered anomalous and is responsible for the so-called Eagle's syndrome. Eagle's syndrome occurs mainly in 30-50 year old patients, because regional ligaments and the soft tissues of the styloid process become less elastic with age and offer more resistance to surrounding hard tissue structures.[6] An elongated styloid process occurs in about 4% of the general population, while only a small percentage (between 4-10.3%) of these patients is symptomatic. So the true incidence is about 0.16%, with a female-to-male predominance of 3:1.[7]

Case Report

A 32 year old female patient referred from Medical Physician to the Psychiatry OPD, to rule out psychosomatic disorder, presented with the chief complaints of difficulty in chewing and opening her mouth, with pain in right side of jaw and upper neck, since last 4 years. The pain was insidious in origin, dull to moderate in intensity and intermittent in nature, and progressed gradually. The intensity of pain was exacerbated by movements such as wide opening of the mouth, looking up or turning the face to right side. During the course of illness, she consulted various Medical Physicians, Dentists, and Otorhinolaryngologists, but diagnosis could not be made and she was being managed symptomatically. Since last 3 months, the pain increased in intensity and the patient started to have depressive features with suicidal thoughts and negative cognition about her illness. During Physical Examination, the patient presented with tenderness around right mastoid process and on palpation of the right paratonsillar fossa.

The patient was then referred to Oral and Maxillofacial Surgery Department for expert advice, where physical examination and radiological examinations like lateral neck and head radiograph, Orthopantomogram and Cephalogram – (Right lateral), were done and she was diagnosed as a case of Eagle's Syndrome presenting with enlargement of right styloid process. The patient was advised surgical treatment, but she refused and therefore conservative management was done with Methylcobalamine, Pregabalin and Diazepam tablets, and the patient was called for regular follow-ups.

Discussion

The diagnosis of Eagle's Syndrome must be based on a good medical history and physical examination. Eagle's syndrome is characterised by the following symptoms: pharyngeal pain localised

in the tonsillar fossa, radiating to the oesophagus, to the hyoid bone, painful head rotation and lingual movements. The pain is exacerbated by swallowing and chewing. Other symptoms include foreign body sensation (Globus hystericus)[8] and voice change lasting for only a few minutes. A variety of additional symptoms have been reported such as clicking jaw,[9] unilateral pain, pain radiating to the neck, to the tongue, chest or temporomandibular joint (TMJ), facial paraesthesia, hypersalivation, visual problems, dysphagia and pharyngeal spasm. Since the symptoms are variable and non-specific, patients seek treatment in several different clinics such as otolaryngology, family practice, neurology, neurosurgery, psychiatry, and the last but not the least dentistry.[10]

It should be possible to feel an elongated styloid process by careful intraoral palpation, placing the index finger in the tonsillar fossa and applying gentle pressure.[11] If pain is reproduced by palpation and either referred to the ear, face, or head, the diagnosis of an elongated styloid process is very likely. A styloid process of normal length is usually not palpable. Injection of local anaesthetic into tonsillar fossa relives pain and can be used as a diagnostic tool.[12]

In the literature it has been referred to as a secondary pathology following traumatic fracture. It can be the consequence of a difficult endotracheal intubation leading to a mineralisation of the styloid process and calcification of the ligament complex. Some studies have shown a close correlation between long styloid syndrome and previous tonsillectomy, rheumatoid diseases and endocrinological disorders.[1,3] Diagnosis can usually be made by a physical palpation of the styloid process in the tonsillar fossa. In addition, orthopantomography or a cranial radiograph using a lateral projection, and computed tomography (three-dimensional CT) are necessary to confirm the diagnosis.

A full differential diagnosis of Eagle's syndrome should include trigeminal neuralgia, migraine headache, tension headache,atypical facial pain, myofascial pain syndrome, salivary gland disease, tonsillitis, temporomandibular joint disorders, temporal rachitis,[13] unerupted or impacted molar teeth, faulty dental prostheses,[14] and psychosomatic disease.[15]

Since the incidence of the Eagle's Syndrome is about 0.16%, which is quite low, therefore a diagnosis of Eagle's Syndrome can be made by the General Medical Practitioners and Psychiatrists only if this entity is kept at the back of the mind while listening the chief complaints of the patient, which are often quite vague, ranging from visual problems to Globus hystericus. In General practice, often the patients are managed only symptomatically for a long time before being referred to a specialist. This leads to substantial amount of discomfort and mental stress to the patent, which can sometimes result in emotional distress and even negative cognitions.

Conclusion

Cases of Eagle's Syndrome are quite uncommon for General Health Practitioners, which leads to overlooking of this syndrome, but it can be diagnosed easily by a detailed history, physical examination, and radiological investigations, if the diagnosis is kept at the back of the mind. An awareness of pain syndromes related to the styloid process is important to all health practitioners involved in the diagnosis and treatment of neck and head pain, to rationalize the line of management and the ultimate clinical outcome.

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Case Report

Conversion Disorder in Males

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Introduction

Conversion disorder was earlier termed as "hysteria", "functional" or "psychogenic" by clinicians. Conversion disorder is presented with deficits in the sensory and motor functions. These symptoms are suggestive of a neurological deficit but are generally due to psychological stressors.[1,2] These motor and sensory symptoms include abnormal movements, gait disturbances, tremors, paresthesia, weakness, pain. It may also present as difficulty in swallowing, inability to speak, non epileptic seizures, episodes of unresponsiveness and aphonia. The onset is generally associated with stress or traumatic event and it causes a disruption in the normal socio-occupational functioning of the individual. Its occurrence is more common in adolescents or early adulthood. It appears more commonly in females, especially below 50 years of age. These symptoms occur more commonly in rural population, lower socio-economic groups, less educated population.[3-5]

Case Report

A 22 years old male, student of Diploma Civil Engineering (IIIrd year), was brought to emergency by friends with complaints of breathlessness, pain in chest and tremors since last 4 hours. According to his roommate these symptoms started after telephonic conversation with someone. Patient was studying for his exams when he got a phone call. He had gone out of the room to attend the call. Upon being back to the room he closed the books and lay down for some time. When his roommate asked him about going out for tea, he refused to accompany him. When the roommate came back he saw the patient tightly clutching his chest and breathing heavily. When made to sit up the patient was trembling and breathing heavily through mouth. Soon he started crying and yelling. He was given water, which he drank, but his condition remained the same.

Patient was rushed to a local general practitioner near to their hostel. He was given an injectable (intravenous); details of which were not known. When after half hour his condition remained the same, he was referred to emergency at MMIMSR. On being brought to the casualty, his general physical examination and neurological examination was normal.

Oxygen saturation (noted by pulse oxymeter) was 99%. Patient was sent for further investigations. During the investigations patient was cooperative, although he complained of being in constant pain. His electrocardiogram (ECG), chest x-ray and complete blood count were normal. On being interviewed patient was breathing heavily and lying down in bed. He did not sit still and would lie down again. On being interviewed patient was not cooperative about the events that took place in the afternoon. When his roommate was being interviewed, he would occasionally lie still and try and overhear the conversation. On being alone patient would lie still and breath normally. Patient was given tab clonazepam 0.5 mg after admitting him. Patient reported improvement in his symptoms after some time. The re-examination of his physical and neurological system showed no abnormality. Patient was interviewed again and was more cooperative.

On mental status examination (MSE) patient had downward gaze and avoided eye contact. He conveyed his mood to be sad and affect was appropriate. He expressed ideas of helplessness and

hopelessness. Stressors regarding his ongoing conflict with his girlfriend and poor preparation for impending exams in next month were expressed. No psychotic symptoms of any kind were elicited during interview.

There was no past history of any similar episode or any other psychiatric disorder. No history of substance abuse. Family history revealed no psychiatric illness in his family. The birth and developmental history was normal. Patient has been an average student academically though out his academic career with no failure in exams as reported.

Management: Patient was admitted and started on antidepressant tablet Escitalopram 10 mg OD and tablet Clonazepam 0.5 mg BD. He was sent to clinical psychologist for psychotherapy and relaxation techniques. He was administered with Jacobsons' progressive muscle relaxation (JPMR). Psychological assessment was done and the conflicts bothering him were noted. He revealed strained relationship with his girl friend and poor preparation for his oncoming exams. Patient was given cognitive psychotherapy. A short term and structured plan was made to resolve his current problems. His episodes reduced during his stay in the hospital. He was discharged after 5 days. Patient was continued on the medication on follow ups and his therapy was continued. After 1 month the Clonazepam was reduced to 0.25 mg BD and subsequently weaned off. Patient is on regular on regular follow up for the last 6 months after discharge without any further episodes.

Discussion

Psychiatrists face a diagnostic dilemma when it comes to conversion disorder, owing to the fear of misdiagnosis. So, at times there is a delay in diagnosing. Furthermore, the history provided at the time of interview may also lack the necessary information regarding any stressor or conflict. Even the accompanying members of the family are evasive about apparent stressors. This can cause delay in treatment and unnecessary investigations.

Conversion disorder is prevalent in both males and females.[6] However, there are differences in the two genders. But, there are a higher number of married females suffering from this disorder, as compared with males.[7,8]

The reason of stress and conflict formation may differ in both the genders. In males it could be more about educational issues, financial issues, familial issues, unemployment. Whereas, in females, it could be more due to difficulty in marriage, problems with in-laws and relationship issues.

The treatment of choice for conversion disorder is antidepressants and anxiolytics, along with psychological intervention. The psychopharmacological model of treatment is considered more effective than either of them alone. A good doctor-patient relationship should be established for the therapy to be effective. Patient should be reassured and psychological and emotional issues should be highlighted to lay a foundation for therapy. Amongst the different psychotherapeutic options available, cognitive behaviour therapy and psychodynamic therapy can be used to address the conflicts. Focus should be laid on cognitive restructuring and behaviour modification. Amongst the pharmacological options available, SSRI's and benzodiazepines are commonly used.[9,10]

Acute onset, identifiable conflicts, early start of treatment and good pre-morbid personality are good prognostic factors. Long duration of illness, history of depression and poor social support are bad prognostic factors.[11-13]

Conclusion

Due to the gender bias associated with conversion disorder, it's generally missed or skipped in males. Also owing to the fear of misdiagnosis, the diagnosis also gets delayed. Thus, resulting in delay of psychological and pharmacological interventions. It could lead to prolonged period of illness and delay in treatment. There is a need to accept conversion disorder in males so that treatment can be meted out.

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Case Report

Clozapine and Oculogyric crisis: should we become more vigilant?

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Introduction

Dystonia is a sustained state of muscle contraction resulting in abnormal posture.[1] Oculogyric crisis is the focal dystonia of ocular muscles.[1,2] In psychiatric practice, neuroleptics are commonly seen to be associated with oculogyric gyric crisis. Aside from Neuroleptics, literatures have shown that drugs like Carbamazepine, Levodopa, Reserpine are likewise having inclination towards severe dystonic reaction.[2] Among the antipsychotics, low potency antipsychotic like clozapine are not commonly seen to be causing oculogyric crisis due to its lower affinity, early dissociation from dopamine receptors and high anticholinergic action.[3] But scientific literatures have demonstrated cases that had developed severe ocular dystonic reactions with use of clozapine.[1,2,3] Here we are reporting a case of oculogyric crisis which was induced by clozapine during its dose titration.

Case Report

A 52 years old man, who was a diagnosed case of treatment resistant schizophrenia presented to us with sustained spasm of his eye muscles. On reviewing his file records, it was uncovered that he was on Clozapine 350 mg for the last 2 months. But 15 days back as his improvement was stagnant and he was hearing voices not heard by others, dose of clozapine was titrated upto 400 mg. Initially there was no significant problem but for the last 10 days he was feeling unusual sensation of his eye muscles but it had become severe for the last 2 days. Patient had no history of any physical illness. Drug history revealed no history of getting any other drugs apart from Clozapine. On examination, specially testing of the cranial nerves did not reveal any abnormality. On mental status examination the patient was found to be conscious, alert, having normal psychomotor activity, anxious affect, 3rd person auditory hallucination, intact insight and judgment. Observing the whole scenario patient was diagnosed to be having oculogyric crisis possibly induced by Clozapine. Injection Promethazine 50 mg was injected immediately. After some minutes, patient showed significant decrease in spasm of the ocular muscles. Dose of Clozapine was temporarily decreased upto 350 mg and tab Trihexiphenidyl 2 mg was added with current medication. On subsequent follow-up patient was found to be keeping up well with Clozapine and Trihexiphenidyl. Picture 1 is showing the patient with oculogyric crisis with clozapine.

Fig. 1 : Showing the patient with oculogyric crisis with Clozapine.

Discussion

Antipsychotics are well known for their dystonic reactions.[1] Low potency antipsychotic like Clozapine is less associated with these types of acute distressing side effects.[2] However, our case has shown comparable findings with past studies. Uzun and Doruk demonstrated three cases of oculogyric crisis upon receiving Tablet Clozapine.[3] They reported that their patients were recieving clozapine for 6 months.[3] But they did not provide the follow-up scenarios of individual cases.[3] Chakravarty R et al, also demonstrated development of oculogyric crisis in case of a 37 years old man who developed oculogyric crisis during the 9 the day of receiving clozapine at a dose of 150 mg/ day.[1] Study reported by Dave also revealed that, a male patient who had encountered multiple episodes of severe dystonic reactions of eye muscle during the treatment with clozapine.[4] Hoseini and Sheikh revealed that their patient also had suffered from severe oculogyric crisis during their treatment with clozapine.[5] However oculogyric crisis has not been found so commonly with clozapine. In our case also as suggested by Uzun and Doruk et al., prolonged exposure to antipsychotic, resulting into increased sensitisation of the striatal area might be the possible pathophysiology behind the unexpected oculogyric crisis.[3] Risk factors of dystonic reactions are mainly young adult, rapid escalation of the dose, high potency drug and intramuscular preparations etc.[1,2,4] But in our case rapid escalation of the doses of Clozapine, use of higher dosage and increased sensitization of the striatal area due to prolonged use might be playing as predisposing factors.

Here we recommend increased cautiousness towards this uncommon side effect while administration of clozapine, especially during dose escalation.

Authors will be glad to know similar observation by others.

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Case Report

Mood states: the role of information technology as a coping behavior

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Introduction

The excessive and preoccupation with the computer use/internet is being associated with its problematic use.[1] The manifestation of pathological symptoms are phenomenological similar to signs of addictive disorders i.e. anger, tension and anxiety.[2] Social media usage is also contributing to avoidance of face to face social interactions as well as on their social relation and social well beings.[3,4] Presence of lack of satisfaction in one's life, an absence of intimacy or strong connections to others people, a lack of self-confidence or compelling interests, or a loss of hope predisposed the users to develop addictive use of technology.[5,6] It has been seen that anxiety and depression during childhood predisposed the adolescents to develop internet addiction.[7] Video game addiction has an association with higher levels of trait anxiety, aggressive behaviour, neuroticism, life satisfaction, loneliness, social competence, self esteem depression, lower academic achievement, and conduct problems. 41% of people used computer games as a method of escape from the real world.[6,8,9] Users with co-morbid disturbed interpersonal relationship frequently engage in online gaming.[10] Online gaming constitutes a way to escape from the numerous problems of daily reality, allowing users to devote more and more hours to it.[8] Communication among users provided through interactive gaming interfaces can act as a catalyst towards online gaming addiction.[11] The present approached SHUT clinic (Service for Healthy use of Technology) for management of technology addiction. It is India first technology de-addiction clinic.

Case Report

A 22-year-old male from upper socioeconomic status presented with complaints of excessive use of online game and feeling uncomfortable in social situations. He started playing online game from the age of 13 year. Initially it was 2 hours a day. It increased to 6-7 hours day when he was 14 years. He attributed the usages to feeling good, boredom and he did not have to face the others. Due to his usage pattern, his interaction with family members decreased significantly. By the age of 16 years, his usages increased upto 12-14 hours a day. The usages was frequently related with feeling of well being associated with avoidance of offline contact or others in the environment. It was mediating the excessive use of technology. It led to psychosocial dysfunctions in the form of disturbed sleep, having irregular eating habits, and decreased communication with family members. Whenever caregivers attempted to stop his internet use or took away the connection, he reported presence of irritability, feeling sad, having frequent arguments with parents especially with his father. He changed college/ stream of subjects due to ongoing decline in studies as well as due to preoccupation with gaming. Clinical Interview as well as assessment using internet addiction test[12] indicate significant problem due to internet use as well as presence of craving, loss of control, compulsion and consequences related to usage of video game. Clinical interview also revealed presence of expressed emotion seen in the family due to his excessive use of video game. Assessment revealed on Beck Depression Inventory[13] and

Hamilton Anxiety Rating Scale[14] he showed the score of severe distress (36) and anxiety (35) respectively. The family was given psycho-education for enhancing communication with users and engagement in pleasurable activities, behavioral intervention work was initiated with the user for management of anxiety as well as for life style changes in form of sleep hygiene, enhancing outdoor activities, use of break in form doing yoga based exercise whenever the usage exceed more than 30 minutes. Family was referred formanagement of expressed emotion,communication skill as well as enhancement of support toward the user.

Discussion

The case documents the use of online activities in the form of video game to manage the social anxiety. The mediator variable associated with excessive use of technology was feeling of well being associated with avoidance. It has been corroborated with available literature. Online gaming constitutes a way to escape from the numerous problems of daily reality, urging students to devote more and more hours to it[8] A problem in interpersonal relationships can usually lead to constant occupation with online gaming.[10] The case implies highly interactive applications available on the Internet (e.g., virtual social chat rooms, virtual games called Multi-user Dungeons played inreal time simultaneously with multiple on-line users) and the excitement associated with the usages played a significant role in the development of Internet abuse.[15] It has implications for screening the technology use as co morbid condition with psychiatric disorder and educate the users for promotion of healthy use of technology.

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Case Report

Psychotherapeutic Management of Alcohol Dependence and Emotion Dysregulation in young female

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Introduction

Alcohol dependence is a major problem now a days and it is not affecting only the physical health but it creates problem of mental health and leads to emotional disturbances.Clients with alcohol use will report multiple health and social problems. It is often difficult to establish whether these problems were the cause or effect of the client's alcohol use.[1] In addition, emotional and psychological difficulties will act as both predictors and outcomes of alcohol and drug use problems.[2] Peers will exert considerable influence on problematic drug and alcohol use, with clients often limiting their social networks to those that reinforce their drug taking behaviours. As such, considering the 'psychosocial' factors of alcohol use in any treatment plan is important. The American Psychiatric Association,[3] in the revised Practice guideline for the treatment of clients with substance use disorders, highlight psychosocial treatments as essential components to any comprehensive treatment program. National Institute on Alcohol Abuse and Alcoholism (National Institutes of Health, USA) and the American Psychiatric Association uses the term 'psychosocial' to describe the social and psychological behaviours involved in alcohol use.[4,5] Specifically, this may include: The emotions, attitudes and behaviours that are characteristic of an individual (Psychological, internal context), The social/external context (family, community, cultural factors) that is characteristic of the environment in which the individual lives and The interaction between these two sets of factors.[1]

Alcohol dependence is more commonly found in male patients but in this present case study I want to discuss about a 22 years old female and how biopsychosocial factors and multiple stressors lead her to alcohol dependence and other associated problems.[6] For the assessment of dependence, Severity of Alcohol Dependence Questionnaire (SADQ) has been used. Clinical Institute Withdrawal Assessment of Alcohol Scale, revised (CIWA-Ar) has been used to check the severity of withdrawal symptoms.[7] Psychological formulation focussing on predisposing, precipitating and perpetuating factors was done using available information and resources. Psychotherapeutic management has been done including Motivation enhancement therapy (MET), cognitive coping skills enhancement, anger management techniques, assertiveness training and Maintenance and relapse prevention.[8] The effect of therapy has also been examined by post assessment using Severity of Alcohol Dependence Questionnaire (SADQ) and Clinical Institute Withdrawal Assessment of Alcohol Scale, revised (CIWA-Ar)[9] again after psychotherapeutic management. Significant improvement has been found in decreasing dependence and withdrawal symptoms.

Case Report

Miss X, 22 years old unmarried female from urban background, educated upto Graduation and belonging to middle socio-economic status came with the chief complaints of heavy Alcohol consumption, participating minimally in different activities, anger outbursts, disturbed sleep and appetite from

last two years with insidious onset and continuous course. She was apparently well two years back and was doing well in her studies. All of a sudden, she was supposed to take the responsibility of whole family after her fathers sudden death due to heart attack and her mother was also not physically fit. Patient was the only highly educated member in the family and her younger brother and sister were studying in school. So she stopped her studies despite her inner wish to continue and started working in a company for the survival of the family. She had a long desire to become Lecturer which she could not fulfil because of her family responsibilities which she had to shoulder.

The work environment in the company where she was working was not good and her boss was also not behaving properly with her. She would remain distressed most of the time and would remain thinking how to manage all the upcoming difficulties in her life. She was not satisfied with the job, however she could not quit it at the same time. She was depressed for not being able to fulfil her dreams of her life which was to go for higher education and to do some administrative job. After few months she started developing positive feelings/liking for a guy who was her colleague in the company who was often helping her. She would share her thoughts and issues with him. She got gradually attached with him and would spent most of the time with him as she would feel happy in his company. With the passage of time, they developed good mutual understanding and she finally planned to marry with him. However when she proposed him for marriage, he refused to marry her. This setback was a severe blow to her ego and it resulted in depressive feelings and feeling of inferiority in her. Her distress further escalated when she got to know that the guy was already married. She wanted to share all these things with someone but there was no one to whom she can share her feelings and thoughts. She started feeling very alone and had frequent crying spells.

One day her colleagues planned a party in which she was also invited. It was a small group of both boys and girls. For the first time she had alcohol in the party. She consumed more alcohol out of frustration than she can tolerate. It gave her a good feeling that time and she expressed her frustration that she wanted to express. Gradually the intake of alcohol consumption increased, and she found it as the only option to cope with her depressive feelings. When the family member observed her behavioural changes especially when she would come from office, they forced her to leave the job. However she could not do so as she didn't have any other option. Initially family members were not aware of her alcohol intake as she used to work regularly at office. However from last one year, she would leave the office early evenings and would reach home late at night. On enquiry by family members, she would not provide any proper reason for the same. At the same time, family members would often found her smelling of alcohol, even though on asking she would not accept it. Family members would comment on her critically. Informants reported that she would occasionally sell house hold things at lower rates to get money for drinking, and would not give earned money to her mother. Day by day her consumption of alcohol increased and she started taking alcohol on daily basis. She got dependent on alcohol and would not feel better without consuming alcohol. Her aggressive behaviour increased day by day and started showing anger outburst on petty issues. When her behavioural problems aggravated, her family member took her to hospital for treatment. In hospital initially pharmacological treatment was started in which benzodiazepine with diazepam has been used. She was also referred for psychological intervention.

Initially for baseline assessment Severity of Alcohol Dependence Questionnaire (SADQ) was used to assess the level of severity of alcohol dependence and Clinical Institute Withdrawal Assessment of Alcohol Scale, revised (CIWA-Ar) has been used to check the severity of withdrawal symptoms. On Severity of Alcohol Dependence Questionnaire her score was 21 which indicates that she has moderate level of dependence. On Clinical Institute Withdrawal Assessment of Alcohol Scale, revised (CIWA-Ar) her score was above 20 which indicates that her dependence was of severe level. After taking the baseline assessment psychological case formulation was made. The diagnosis of harmful use of alcohol was made.

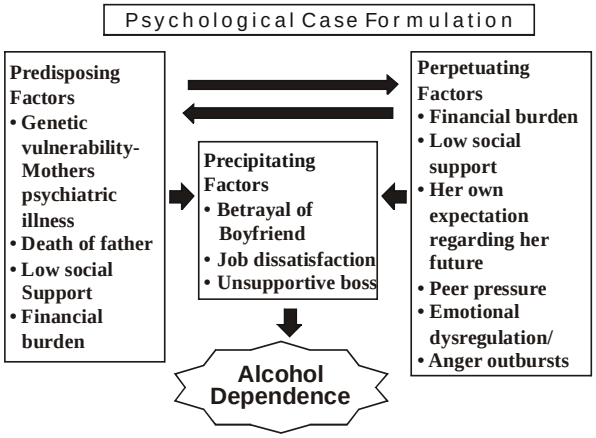
Therapeutic Alliance and case Formulation

Management Techniques and skills

Post assessment and Follow-up plan

See Figure below :

PSYCHOLOGICAL FORMULATION:



PSYCHOLOGICAL MANAGEMENT:

THERAPY PROCESS:

Goals of Therapy

Therapy session was planned weekly session with 45 minutes duration of each session. Psychotherapeutic management was planned for three months as per the therapeutic goals.

Short term goals

- Reassurance, building motivation and trust towards treatment.
- To lessen the distress associated with hospital admission.
- To deal with guilt feelings of the client.
- Anger management.
- To ensure complete abstinence

Long term goals

- Motivation Enhancement Therapy[10 12]
- Cognitive Coping skills training[13].
- Assertiveness training[15].
- Maintenance and relapse prevention [11].

Session 1

Session first was focused on the establishment of the therapeutic alliance, rapport formation and exploration about patient's concern. History was briefly reviewed from the patient. During assessment it was found that the patient has difficulty to accept the fact that she has abusing alcohol although she has been suffering from many problems due to her abuse of alcohol. Denial was present in the form of justification and minimizing. Initially the patient was explained about the rationale and limitations of the treatment. She was explained about the freedom of choice in taking decision to change and she has to take the responsibility over the decision. Patient would express some distress that she was unnecessarily kept in hospital. Patient's distress was accepted and was encouraged to ventilate her feelings and emotions about her past experiences. Later patient was given some education regarding alcohol abuse and the way it leads to dependence with regular consumption and the vicious cycle it makes at the end which is difficult for a person to escape. Patient was explained that alcohol helps to get rid of some worries and other tensions apparently for some time but it in return creates some need of the same thing after the effect is over. So to overcome this new arising need, a person takes alcohol .so alcohol demands alcohol and a vicious cycle is formed out of which a person could not free herself.

Session 2

In second session, psychological formulation was discussed with the client and feedback was taken about the formulation, although patient did not involve herself much actively in it. Both short term and long term goals were set and patient was made to prepare for motivation enhancement therapy, as patient was found on pre-contemplation stage of motivation. Patient was made clear that therapist will only help in thinking about his problem situation and consider what, if anything, she might want to do. It was made clear that we are in collaborative relationship where the responsibility of change lies more in the hands of the patient. Examples were given to make this clear to the patient. The patient was interviewed and asked to elaborate about her drinking. The therapist listened carefully what the patient is saying about her problems and reflect back to the client, with slight modified form. The patient was not thinking that alcohol is harmful for her. Interview was done through the strategies to break resistance like Affirmation, compliment and reinforcement. Enhanced her attitude of self

responsibility, verbal reinforcement was given for her effort and self motivational statements. Her self esteem has been enhanced through the reinforcement of her effort and self motivational statements. Double sided reflection was used throughout the interview. The pros and cons of alcohol intake was told her to write down in a paper, it was given her as a homework assignment and the rationale of homework has also been explained to her and ask her to come with it in next session At the end session was summarized to the patient.

Session 3 and 4 (Building phase of motivation)

Motivation Enhancement Therapy (MET) session started with the assessment of pros and cons in which cost benefit analysis of drinking was done. Patient was given various hypothetical situations like she was asked how she will decide what to do in case someone asks her to buy a pen whose cost is slightly more than actual price. Later she was encouraged to make active involvement in the identification of the problem and in the cost benefit analysis. Focus was on eliciting the self motivational statement from the client. These include being open to input about drug abuse, acknowledging real and potential problems, expressing need, desire and optimism about possibility of change. Client was later given a questionnaire as homework assignment. It included some questions regarding effects of alcohol, need for change and few plans of change. Client was asked to fill the change plan worksheet and told her to come in next session after completing it.At the end session was summarized to the patient.

Change Plan Worksheet

The content of the change plan worksheet are as follows:[16]

The changes I want to make:

The most important reason why I want to make these changes

The steps I plan to take in changing are:

The ways other people can help me are:

Some things that could interfere with my plan are:

Session 5 and 6: Building phase of motivation

In session, homework assignment was reviewed which was done by the patient. All the questions were answered but have given brief description. Motivation was renewed and patient was found accepting her problem of alcohol. Discrepancy was highlighted on the basis of client's responses to questions. Patient would at times show some resistance by changing the subject, not responding or by not paying attention. This was handled by shifting attention away from problematic situation or by rolling with it instead of opposing it. During interview reframed her perceptions and new meaning has given to them. Provided new meaning to what she has been said. Hope for change was instilled by reassuring him about the possibility of change their drinking behaviour and thereby reduce related problems. In session she was found in action stage in MET. Session was summarized.

Session 7 and 8

In this session, feedback was taken for previous session. In view of the complaint of anger outbursts in family, anger management was discussed with the patient which included teaching in delaying the response, distracting oneself , leaving the situation, counting backwards and performing ablutions, soon after the client feels that he is about to get angry. Patient was taught to identify the trigger situations and how to express anger in assertive ways.

She was explained about adaptive problem oriented coping skills and advised to develop healthy life styles. Clients self efficacy was enhanced by appreciating his motivation for change. Self esteem enhancement was focused by discussing about the strength and assets of the patient. The patient was advised to focus on her strengths. The patient was taught to give positive strokes generously and explained how to appreciate through words, facial expressions and gestures. She was taught how to improve her self esteem through treating people with dignity, respect and love. Later session was summarized to the client.

Session 9 and 10

In these sessions the focus of the therapist was to enhance the cognitive coping skills and communication skills mainly with assertiveness training. Coping skills enhancement regarding- focus on skills for managingspecific emotions, Client's self efficacy was enhanced by appreciating her motivation for change. Self esteem enhancement was focused emphasized on the assets in patient strength. She was advised to focus on her strengths.

Assertiveness training and communication skills training were also given. Communication skills training do not focus on high-risk situations but, instead, focuses on communication skills that can be used to handle a variety of risky situations. These skills include- refusing a drink, giving positive feedback, giving criticism effectively, receiving criticism about alcohol and other drug use, developing listening skills, improving conversation skills, developing sober supports, andlearning effective approaches to conflict resolution. Some additional skills that can be covered in it, includes- nonverbal aspects of communication, expression of feelings, being assertive, request refusal, and management of criticism in general.

Session 11

The session was focussed on Relapse Prevention Training. In Relapse Prevention Training we generally focused on only one type of situation that poses high risk for relapse. These high risk situations fall into following major areas: frustration and anger likeinterpersonal conflict, Interpersonal temptation as, an offer of a drink, negative emotional states (e.g., depression, boredom, and loneliness), and intrapersonal temptation like craving or finding a bottle of an alcoholic beverage. The various high-risk situations, as well as the appropriate coping skills for dealing with them, have been described in detail to the patient and told her to keep it in mind in various high risk situations.

Session 12

As the patient was found in maintenance stage so the therapy session was plannedto terminateafter Post therapy assessmentof alcohol dependence and withdrawal. So SADQ and CIWA was re-administered post therapy.On Severity of Alcohol Dependence Questionnaire (SADQ) her score was 15 indicates mild level of dependence and on Clinical Institute Withdrawal Assessment of Alcohol Scale, revised (CIWA-Ar)her score was 12 which shows that ssignificant improvement has been found.

Follow up session was emphasized and ensured after one month.The therapist and the patient together discussed and made a Short term and long term plan for future. The plans suggested were :

- Staying away from first drunk
- Routine plan
- Postponing the use of alcohol
- Remembering the last episode of her alcohol dependency
- Changing old routines develop good eating habits
- Always staying with people

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Case Report

Toluene Abuse: Case of a Ten year boy

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Introduction

The chemical formula for toluene (methyl-benzene) is $C_6H_5CH_3$and iscolourless, flammable, refractive liquid with sweet and pungent odour. It is used in manufacturing of acrylic paint, varnish, adhesive, glue, gasoline, polishes and absorbed through skin or by breathing.[1]

Acute exposure through inhalation can cause fatigue, sleepiness, headache and nausea. It can also lead to cardiac arrhythmias, constriction and necrosis of myocardial fibres, swollen liver, congestion and hemorrhage of the lungs. In chronic abusers the symptoms include drowsiness, ataxia, tremors, cerebral atrophy, nystagmus, impaired speech, hearing, and vision.It can cause toxicity to human beings, with central nervous system (CNS) being the primary target. Chronic inhalationcan cause irritation of respiratory tract and eyes, sore throat, dizziness, headache, and sleep disturbances. There can also be mild effect on liver and kidneys.[2,3]

Toluene is increasingly used as a substance of abuse, especially in adolescent and pre-adolescent age groups.[4-6] Toluene abuse or "glue sniffing" is widespread now, which involves inhalation of the fumes. It is also called by slang names such as "huffing" or "bagging". Toluene causes psycho-active effects from both acute and chronic use. Toluene can induce euphoria, hallucinations, psychosis and neurological damage.[5] It can also cause sudden sniffing death syndrome, which is a most dramatic outcome of volatile substance inhalation.[7]

Case Report

10 years old boy of 4th class was brought by his father to psychiatry OPD with complaint of sniffing glue from a tube since the last 1 year. As reported, patient was apparently alright 1 year back, when it was made aware by the school authorities about his occasional absenteeism from school. He also started being away from home more than the usual time. He would run away from home to play as soon as he was back from school. This was unnoticed for first few months as his father works at a factory and spends much time away. Mother being a housewife would be busy with work and not pay much attention.

Initially, patient denied any addiction. Later on he accepted that he started consuming the substance about a year back. He was introduced to the substance by his classmates. They would buy tubes of adhesive, which was available over the counter from any shop. Tube would be 10mg rubber based adhesive which cost around Rs.10. He would generally buy the adhesive tube with pocket money. But if he had no money he would steal money from his house. He would put the compound in an envelope or plastic bag and inhale or sniff it. He would hold it tightly over mouth and nose and inhale for 2-3 minutes. At one time only 2-3 tubes were used.

The substance would make him relaxed and happy. Initially patient reported that upon inhaling he would feel nauseous and dizzy. But he continued the use as it relaxed him and he felt numb. Occasionally he would have colours flashing in front

of his eyes. Over a period of few months the substance use increased from once a day to 7-9 times a day. Patient would skip classes and hide in the nearby shed to consume it. On being caught he later started using it during recess time and in evenings. Because of his frequent absenteeism, his parents had to change his school. His consumption decreased as he could notskip classes in his new school. So he hid in a secluded place and consumed substance in recess. On reaching home he would run out on the pretext of playing and consume the substance with his friends and kept away from home for long hours.

Whenever on occasions he would not be able to procure and consume the adhesive, he would feel lethargic and irritable. He would grow restless and not feel good. The continuous consumption made him lose concentration in studies.There were also reports of him picking up unprovoked fights with school mates. Parents became aware about his problem as he would smell of the substance whenever he came home in evening. Parents observed that he spent too much time loitering outdoors than usual and would remain aloof. He had poor appetite. Parents discovered the adhesive tubes in his school bag on few occasions. Upon confronting he broke down and admitted to inhaling the adhesive from the tube. He also got angry at his parents and fought and ran away from home and had to be brought back.

His developmental history was uneventful. He is youngest of 3 siblings and belongs to a low socio economic background. No past or family history suggestive of psychiatric disorder or drug abuse. Physical examination was normal. On mental status examination (MSE) patient was cooperative and had intact orientation and memory. He had crying spells during the interview. Subjective mood was anxious and affect was sad; Insight was grade II. He reported no thought abnormalities or perceptual disturbances.

Investigations including complete blood count, liver function tests, renal function tests, blood sugar, electrolytes, and urineanalysiswere normal. Chest radiograph, electrocardiogram (ECG), electro-encephalography (EEG), CT head were also normal. He was of above normal intelligence quotient (Mean IQ– 116, done by Raven's Progressive Matrice and Malin's Intelligence Scale).

Children Apperception Test (CAT) was done. Stories were short but well described. Future and past was omitted in some stories. Patient strives for independence and pleasure. He has conflict with male authority (esp. Father) and uses defiance as compensatory mechanism to avoid or deal with anxiety/punishment resulting from it. Consistent themes of food or feeding suggest striving for oral gratification. He is more comfortable with his mother. He has feelings of loneliness, desertion and fear of losing parental love, especially that of his mother's. He wishes to be looked after by both parents. Perhaps he is trying to compensate for unfulfilled needs through substance use.

Management

Patient along with family was counselled about the harmful effects of drug abuse. He was put on tablet Naltrexone 25 mg OD. Family and supportive psychotherapy sessions were undertaken. Patient showed improvement in his social habits and academics. He responded well to treatment and was gradually weaned off the medication. He is maintaining abstinence since 3 months.

Discussion

There is increase in the use of toluene as a substance of abuse. It is available over the counter easily and has no legal restrictions on its purchase. It is cheap and available in every neighbourhood shop. And its packing arise no suspiciousness in anyone's mind. Thus, increase in abuse by children and adolescents. Children from low socio-economic strata and from troubled and broken families are at higher risk.[8]

Peer pressure and need of acceptance by social groups or friend circles often lead to children taking up drugs. Poor scholastic performance, problems at school and family further aggravate the chances of abuse. Idolising poorly depicted role models and too much exposure to substance use shown on media also leads to experimentation with drugs.

Acute and chronic use of the substance is associated with behavioural and physical adverse effects. These range from psycho-active and behavioural disturbances to physical illnesses. Severe conditions such as sudden sniffing syndrome, cardiac arrhythmias, cerebral atrophy, liver and kidney damage are also associated. There is no

existing antidote for toluene toxicity. It can be managed through public awareness, involvement of parents and school supporting staff along with the treating physician. "Prevention is better than cure" holds true for such an easily available menace which is going unchecked in our society.

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Case Report

Valproate Induced Hyperammonemic Encephalopathy

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Introduction

Valproate is a common drug used in neurology and psychiatry. Valproate induced hyperammonemic encephalopathy in elderly is not a commonly reported complication and may be fatal unless looked for specifically in cases of delirium.[1] Cases of bipolar affective disorder on long term valproate therapy may also present with behavioural abnormalities,[2] when a high index of suspicion is needed to diagnose hyperammonemic encephalopathy. Here we present a case of valproate induced hyperammonemic encephalopathy in an elderly female with multiple comorbidities, which was referred for psychiatric evaluation for refusal of food and remaining quite, suspecting depressive relapse of bipolar illness.

Case report

62 years old lady, non vegetarian by diet, an old case of diabetes mellitus type II, hypertension, rheumatoid arthritis, bipolar affective disorder on multiple medication (Metformin, Amlodipine, Ramipril, Valproate, Quetiapine); old treated case of fracture neck femur (right) 16 years back suffered a fall about 15 days prior to hospitalization and was unable to bear weight on right hip since then. Medical attention was sought by relatives only when she started remaining quite and refusing food, 15 days after the fall. History revealed that she was apparently well and functional till about 15 days prior to admission when she slipped at home and suffered injury to her right hip following which she was confined to bed as she was not able to bear weight on her right leg. She was continued on the medication for her existing morbidities but no medical attention was sought due to various inconveniences and because pain was not there. Over the next 7 days, her food intake progressively reduced, and she started talking irrelevant occasionally. There was however no history of low mood, lack of interest in pleasurable activities, excessive talking or elevated mood. Medical attention was sought by the relatives when she stopped eating, was noted to be quite and slept most of the time. With time, she passed urine and stool in bed, failed to recognize relatives and would talk irrelevant most of the time. Psychiatry referral was sought by the physician citing depressive features and she being an old case of bipolar affective disorder. At admission, she was noted to have fever (100^0 F), tachycardia (100/min), raised BP (150/100 mm Hg) and was disoriented to time place and person. No focal neurological deficit was found and other systemic examination was essentially normal except tenderness in the right hip. Mental state examination revealed her to be drowsy, disoriented and uncooperative. There were no features of depression/mania/psychosis. A relapse of bipolar illness was ruled out and a rigorous search for cause of encephalopathy ensued. She was managed with Ryle's tube feeds, institution of Low Molecular Weight Heparin, deep vein thrombosis prevention measures and continuation of anti-hypertensives and oral hypoglycemic. Investigations revealed repeat fracture neck of femur (right). All her biochemical parameters including liver function were within normal limits and no focus of infection was found. Neurological consultation was taken. NCCT head revealed chronic lacunar infarcts in the lenticulo-striate nuclei and non specific age related changes. CSF studies were within normal limits. MRI brain did not reveal any fresh findings or any

evidence of encephalitis. On the fourth day of admission, investigations revealed elevated total leucocyte count (13000/cu mm) and metabolic acidosis. She was started on antibiotics empirically while awaiting results of urine and blood culture. Blood ammonia levels were also sent suspecting hyperammonemia since patient was on valproate. Serum ammonia level was found to be raised (61 mmol/L). Tablet valproate was tapered and stopped over the next few days and this resulted in remarkable improvement in the patient's sensorium. On the third day of stopping valproate, she became oriented to time, place and person, started taking orally and no behavioural anomaly was noted. No surgical intervention was contemplated by orthopaedic surgeon since the fracture had started uniting. Her antibiotics were stopped since the total leucocyte count had come down and no focus of infection was found. She was discharged with advice to review on outpatient basis for various disabilities.

Discussion

Valproate induced hyperammonemia is not very commonly reported and here is a case of an old lady with multiple comorbidities in which it could have been easily missed unless persistence in the search for cause of delirium was continued. The case is unique, firstly because the presentation was unusual. Secondly, in the absence of any localizing signs, it became difficult to pin point the cause of encephalopathy. Liver function was normal. Also, the ammonia levels were not excessively raised as has been found in earlier studies[1-4]. But because of her already compromised brain (old ischaemic changes), possibly delirium set in early. However she recovered completely on stoppage of valproate.

Valproic acid is a broad-spectrum anti-epileptic drug (AED) and a mood stabilizer; a drug of immense importance in both neurology and psychiatry. Valproate has a number of recognized side effects, including hepatotoxicity, renal toxicity, thrombocytopenia, blood dyscrasias, coagulopathy and teratogenicity.[5,6] Hyperammonemia induced by valproic acid is rare complication and has been reported infrequently.[1,6,7] Possible mechanism suggested for the hyperammonemia so caused is valproate-induced inhibition of hepatic carbamoyl-phosphate synthetase I, the first enzyme of the urea cycle.[1,4,8] Elevated blood ammonia levels have been observed in 16–52% of patients receiving valproic acid,[6,9] with a reported incidence of 20% for asymptomatic and 5% for symptomatic cases.[6] The experience with our patient shows that even though the rise in serum ammonia was not to a very high level, but an associated compromise in the form old lacunar infarct, other comorbities and a catabolic state possibly reduced the threshold to cause encephalopathy, with even a moderate increase in the serum ammonia level. The relationship between valproate-induced hyperammonemia and hyperammonemia-induced encephalopathy is not clear as per existing literature.[6-8] DeWolfe et al[7] found that the hyperammonemia was transient and not associated with changes in consciousness, while others have suggested that hyperammonemia can cause encephalopathy.[7,10] Elevated serum ammonia can inhibit glutamate uptake by astrocytes and exacerbate extracellular glutamate accumulation, leading to excitotoxic neuronal injury.[3,10] Another hypothesis suggests that elevated serum ammonia is conjugated in the brain with alpha-ketoglutarate to produce glutamate. This could lead to alpha-ketoglutarate depletion and a subsequent block in the Kreb's cycle, which could precipitate cell damage and neuronal death[10,11]. Elevated serum ammonia has also been reported to increase the risk of seizure due to excessive activation of N-methyl-D-aspartic acid-type glutamate receptors.[8] Known risk factors for VHE include congenital enzymatic defects of the urea cycle, underlying liver disease, long-term valproic acid treatment, concomitant anti-epileptic therapy, and strict vegetarianism.[6,10] Tsia and Chen[8] added three other major risk factors - initiation of valproate treatment, high initial dose, and catabolic state. At therapeutic concentrations, 90–95% of serum valproic acid is bound to serum protein. Consequently, a decrease in protein binding capacity caused by conditions such as metabolic acidosis, low albumin level, and older age could lead to unusually high serum valproic acid concentrations.[8] Primary treatment for Valproate induced Hyperammonemic Encephalopathy is immediate discontinuation of valproic acid. Hydration, sodium phenylacetate, lactulose, and L-carnitine may also be of benefit. When ammonia levels are in excess of 680 µg/dL (400 µmol/L) hemodialysis could be an additional therapeutic option[8,10]. In the case of our patient, discontinuation of oral valproic acid after the first

episode of mental deterioration was sufficient to allow her to regain full consciousness.

Conclusions

Valproate induced hyperammonemia is a life threatening adverse event and should be suspected in all patients on valproate therapy presenting with encephalopathy. Although stopping valproate is usually sufficient treatment for the same, other treatments including hemodialysis may be warranted in severe cases. Since valoproate finds use in a large no of diseases including seizures, migraine and bipolar affective disorder; physicians, psychiatrists and general practitioners should be sensitized about this important reversible cause of encephalopathy in patients on long term valproate therapy.

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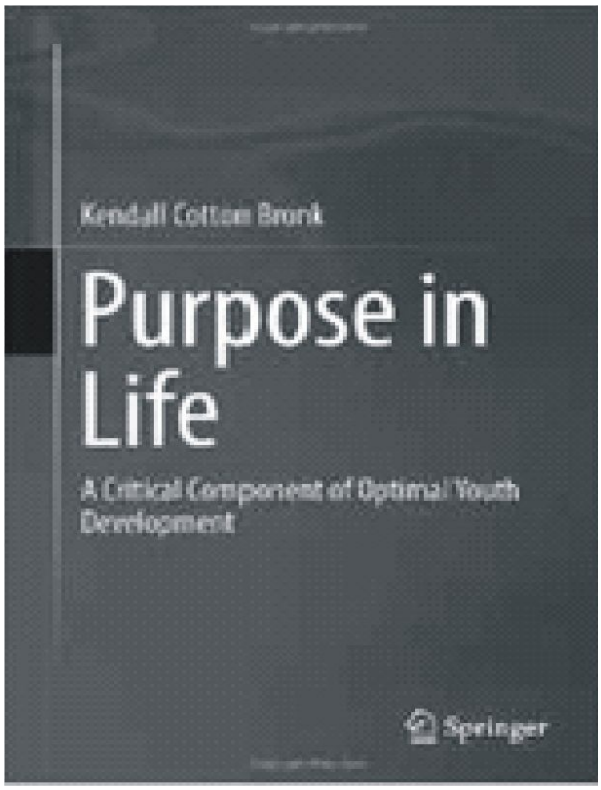
Book Review

Purpose in Life: A Critical Component of Optimal Youth Development

Authors: Kendall Cotton Bronk, 2014, Springer Netherlands, 978-94-007-7491-9

Purpose in Life is an immortal, all inclusive component of human experience. It is a quest that is common to people of all age, culture, religion, economic strata, and gender. Discourse on Purpose of Life is available in many books however most of it is eitherfrom a religious/ spiritual perspective or is author's own outlook of the construct but none have deliberated on the construct from a scientific viewpoint. The current book is the first of its kind which has unified theoretical and empirical research studies conducted on Purpose. The book attempts to review the growing body of research available on the construct. The book has been authored by Kendall Cotton Bronk, an educational psychologist who has investigated extensively on youth's Purpose and has been a part of Youth Purpose Project at Stanford University. The author hasbeen successful in synthesizing earliest to recent research conducted on the construct in the book. It has imparted the reader with different methodologies and treatments that are employed in studying the construct systematically. Purpose of life was always viewed as a construct which is concerned with older adults. However, this book has put forward researches that have established Purpose as adevelopmental construct and also has depicted its relevance across the human lifespan.



The initial chapters of the book orient the reader about the construct. It offers a comprehensive account of the definitions, dimensions, nature, functions and history of the construct. It has incorporated prominent studies of purpose as opposed to studies of meaning and related concept. The author has made an attempt to place Purpose of life as a distinct yet inter-related psychological construct to meaning in life and other similar constructs like goals and ultimate concerns. A chapter is been dedicated to tools and methods used to assess Purpose. The author has collated a meticulous and comprehensive list of tools that have been used by researchers in their study of Purpose.Another chapter sheds light upon the significance of the construct in optimal human development. Researches confirming the presence of Purpose to optimal human functioning and absence to negative outcomes and psychological states have been embodied in the chapter. It established the association between purpose with psychological and physical health. The latter half of

the book explores the trajectory of purpose across the lifespan of human development.It introduces different categories of purpose that exist and could be fostered by youth. It has empirically validated steps that parents, teachers, educators and mentors could take to foster purpose among youth.The book closes with recommendations for future research on the topic. The chapter has mentioned some glaring loop holes in the study on the construct.

It is a book that would be useful for scholar and researchers who would like to scientifically study the construct. It provides rich literature on the construct at one place. It would even be of great help to teachers, parents and mentor who work closely with youth. It is an amalgamation of different perspectives that the construct has been viewed with. Though the book has brought together various aspects of purpose, but major emphasis has been on the theoretical concepts of the researchers at Stanford University's Youth Purpose Project. Other theoretical models and relevant empirical studies conducted outside Stanford University could have been a more extensively viewed in the book. The contribution of purpose for optimal human functioning has been repeated in many chapters which had already been discussed extensively in one of the chapter's in the book. This repletion seems futile and wastage of space.Another important observation is that for many Purpose of life is expressed in the form of their profession. Bearing this in mind a review of the studies related to purpose and professions or career counseling could have been explored in the book which otherwise is very briefly described. A final word, the entire book is one of its kinds in the domain of purpose. It acts as a comprehensive guide for educators, researchers and people interested in the construct and are highly recommended.

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June

1. International Conference on Cognitive Behavioral Therapy; June 13-14, 2016 | Philadelphia, PA, United States.
2. 7th International Regional Stress And Behavior Neuroscience and Biopsychiatry Conference (North America); 22 Jun 2016 - 24 Jun 2016; Miami Beach, United States Event website: http://www.stressandbehavior.com/Years/2016/Miami/Miami2016.html Email: isbs.congress@gmail.com

July

3. The European Conference on Psychology and the Behavioral Sciences 2016 Brighton, United Kingdom 4 th July 2016-6 th July 2016. Website: http://iafor.org/conferences/ecp2016/
4. World Psychiatric Association International Congress "Integrating Clinical, Community, and Public Health In Psychiatry" 2016; July 6, 2016 - July 10, 2016; Harbiye, Turkey. Event Website: http://www.wpaistanbul2016.org/ Email : leventkuey@wpaistanbul2016.org
5. International Society For Affective Disorders Congress And 18th Annual Conference of The International Society For Bipolar Disorders 2016 July 13, 2016 - July 16, 2016 Amsterdam, Netherlands Event Website : http://isbd2016.com/
6. 2nd International Conference on Mental Health and Human Resilience July 14-15, 2016 Cologne, Germany
7. 8th International Neuroscience and Biological Psychiatry Regional ISBS Conference Stress And Behavior: Yokohama; 23 Jul 2016 - 24 Jul 2016; Yokohama, Japan Event website: http://www.scribd.com/doc/273245305
8. IACCP 23rd International Congress 2016 Jul 30 - Aug 3, 2016, Nagoya, Japan

August

9. 17th International Mental Health Conference 2016 August 10, 2016 - August 12, 2016 Main Beach, Australia
10. GCBP 2016 — 2nd Global Conference of Biological Psychiatry; 12 Aug 2016 - 14 Aug 2016 ; Bengaluru, India. Event website: http://gcbpindia.com/ Email: info@gcbpindia.com
11. Annual congress of SGPP, SGKJPP with IKS, MHN, PMS, and 5th COPMI conference — Transgenerational Mental Health ;17 Aug 2016 - 19 Aug 2016; Basel, Switzerland Event website: http://www.psy-congress.ch Email: alfred.kuenzler@npg-rsp.ch
12. 10th International Conference on Frontotemporal Dementias 2016 August 31, 2016 - September 2, 2016 Munich, Germany.

September

13. World Congress on Alcohol And Alcoholism Joint Meeting of The International Society of Biomedical Research on Alcoholism and The European Society for Biomedical Research on Alcoholism 2016 September 2, 2016 - September 5, 2016 Berlin, Germany.
14. European Society for The Study of Personality Disorder 4th International Congress 2016 September 8, 2016 - September 10, 2016 Vienna, Austria
15. ESSPD — 4th International Congress on Borderline Personality Disorder and Allied Disorders ; 08 Sep 2016 - 10 Sep 2016; Vienna, Austria Event website: http://www.borderline-congress.org Email: borderline2016@cpo-hanser.de
16. 15th European Symposium of Suicide and Suicidal Behaviour 2016 September 8, 2016 - September 10, 2016 Oviedo, Spain.
17. 7th International Conference on Schizophrenia 2016 September 8, 2016 - September 10, 2016 Chennai, India

18. World Congress on Eating Disorders, Nutrition and Mental Health September 12-13, 2016 Philadelphia, Pennsylvania, USA.
19. 4th Asia Pacific Behavioural And Addiction Medicine Conference 2016 September 16, 2016 - September 18, 2016 Kota Kinabalu, Sabah, Malaysia
20. European College of Neuropsychopharmacology 29th Congress 2016 September 17, 2016 - September 20, 2016 Vienna, Austria
21. International Association for Child and Adolescent Psychiatry and Allied Professions World Congress 2016; 18 Sep 2016 - 22 Sep 2016 ; Calgary, Canada Event website: http://www.iacapap2016.org/
22. ICCCAP — International Congress of Clinical Child and Adolescent Psychiatry; 23 Sep 2016 - 25 Sep 2016; Istanbul, Turkey Event website: http://iccapistanbul.org/index-en.html
23. The Brain Conferences — New Insights into Psychiatric Disorders through Computational, Biological and Developmental Approaches; 25 Sep 2016 - 28 Sep 2016; Copenhagen, Belgium Email: brain@fens.org Event website http://www.fens.org/Meetings/The-Brain-Conferences/New-insights-into-psychiatric-disorders-through-computational-biological-and-developmental-approaches/
24. International Marce Society for Perinatal Mental Health Biennial Scientific Conference ; 26 Sep 2016 - 28 Sep 2016 ; Melbourne, Australia Event website http://www.marce2016.com

October

25. Experts Meeting on Forensic Psychology and Criminology October 06-07, 2016 London, UK
26. 2nd International Conference on Adolescent Medicine and Child Psychology October 06-07, 2016 London, UK.
27. Global Addiction 2016. October 13, 2016 - October 15, 2016. Venice, Italy
28. 10th International Conference On Early Psychosis 2016 October 20, 2016 - October 22, 2016 Milan, Italy.
29. 10th International Conference On Early Psychosis 2016 October 20, 2016 - October 22, 2016 Milan, Italy
30. ISBS — 9th International Regional Neuroscience and Biological Psychiatry Conference "Stress and Behavior" (China and South East Asia); 27 Oct 2016 - 29 Oct 2016; Zhanjiang, China Email: isbs.congress@gmail.com
31. WCPG 2016 — XXIV World Congress of Psychiatric Genetics 2016; 30 Oct 2016 - 04 Nov 2016 at Jerusalem, Israel. Email: wcpg2016@target-conferences.com Event website http://www.wcpg2016.org/

November

32. WPA 2016 — World Psychiatric Association International Congress. 18 Nov 2016 - 22 Nov 2016; Cape Town, South Africa. Email: charlene@soafrica.com. Event website http://www.wpacapetown 2016.org.za
33. The 2016 Sleep Summit, November 22-24, 2016 London, United Kingdom.
34. ***WASP2016 — XXII World Congress of Social Psychiatry. 30 Nov 2016 - 04 Dec 2016; New Delhi,*** India. Email: drrakeshchadda@gmail.com. Event website http://www.wasp2016.com/index.php

December

35. 5th International Conference on Psychiatrist and Geriatric Psychiatry December 08-09, 2016 San Antonio, USA MARCH -APRIL 2017
36. International conference on Paediatric Psychiatry. March 07-08, 2017; Madrid, Spain.
37. 6th World Congress on ADHD — 6th World Congress on ADHD; 20 Apr 2017 - 23 Apr 2017; Vancouver, Canada. Email: adhd@cpo-hanser.de. Event website http://www.adhd-congress.org

NATIONAL

1. 69th ANCIPS at Raipur, Chhatisgarh, 5-8th Jan, 2017. www.ancips2017.com
2. 17th Annual Conference of IAPP to be held at 3-6th Nov, 2016 at Kolkatta.www.anciapp2016.com

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Sample References

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  2. Bremner JD, Shearer KD, McCaffery PJ. Retinoic acid and affective disorders: The evidence for an association. J Clin Psychiatry 2012; 73 : 37–50.

- **Book**
  1. Stahl SM. The Prescriber's Guide (Stahl's Essential Psychopharmacology, 4th ed. Cambridge, U.K.: Cambridge University Press, 2011.

- **Chapter of a book**
  1. Blacker D. Psychiatric Rating Scales In: Sadock BJ, Sadock VA, editors. Kaplan and Sadock's Comprehensive Text Book of Psychiatry. Vol. I. Philadelphia: Lippincott Williams and Williams; 2000. pp 755-782.

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