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## *Editorial*

# Suicide in COVID 19: Is hope lost?

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The mayhem caused by COVID 19 virus is still not over and world is still under siege with it. It is more than one year since it started and we are yet to recover from the impact. This seems like a beginning rather than probably an end to long lasting consequences to a pandemic of this proportion. The psychosocial and economic ramifications are yet to be discovered.

People have suffered physically but also mentally. The mental health implications of this pandemic are not only short term but may have grievous and long-term repercussions. Fear of infection, grief over death of loved ones, acute stress reaction, anxiety, PTSD, depression and even a psychotic episode has been encountered in the population as a result of this pandemic. Uncertainties in the pandemic regarding its duration or the end along with different issues like treatment, resources etc. have prolonged biopsychosocial effects. Studies have commented in the past regarding increase number of suicide during bubonic plague, Spanish flu, Ebola infection and SARS etc.<sup>1-4</sup> This issue is of major concern because if measures are taken appropriately and adequately suicide is preventable and can thus aid in saving human lives.

Banerjee et al postulated various theories in pandemics like the current.<sup>5</sup> Social distancing, decreased human touch and contact, confinement in homes and restriction to move outside with freedom along with economical bans due to lockdown leading to financial breakdowns and disruption of the day to day schedule as an extension of Durkheim's theory while role of inflammation and sero-markers like IL-6 in COVID 19 and their relationship with stress

and immunity links to biological theories of suicide. Also, hopelessness and future uncertainty along with loneliness and existential crisis ensemble social stress theory. These conjecture brings into notice how precarious one's situation becomes during crisis like these pandemics.

SARS-CoV-2 has led to social disconnectedness due to its high contagion capacity. Fear and stigma propelled people to stay aloof and with imposition of lockdown brought on difficulty in accessibility of resources along with economic instability leading to psychological stress. An online survey from a developing Asian country<sup>6</sup> showed that almost twenty percent of their subject population reported suicidal ideation or planning during COVID 19 and these findings were almost comparable to that done in United States residents.<sup>7</sup> Risk factors associated with suicide risk were found to be female gender, those living in areas with high COVID 19 prevalence, those who suffered economic loss or loss of a near one due to the virus etc. These are alarming possibility and when we look at the vulnerable sections like children, elderly, pregnant female and those with special needs, the risk becomes manifold. In this pandemic, frontline workers who are working tirelessly without a worry for self, are also at increased risk and require special attention.

Suicide is a major concern for everyone and a need for active prevention and management strategy is the necessary requirement in existing scenario. General guidelines issued by WHO, CDC and others in managing suicide include strengthening economic supports, enabling access and delivery of suicide care, creating protective environments, promoting

connectedness, training public with coping and problem-solving skills, early identification of risk, gatekeeper training at community level and futuristic harm-prevention.<sup>8</sup> Telepsychiatry and digital platform seems to be ideal in these situations and can assist in mitigating the crisis situation. It may not equate to a face to face intervention but can be of great help when even at distance help can be sought without the fear of exposure to self and others. Integration of different mental health helplines and round the clock crisis helplines, community outreach as well as awareness programs can strengthen the available limited resources to be used judiciously and correctly. Misinformation and faulty guidance can be restricted through the use of media and can help to spread knowledge regarding suicide and strategies for prevention. Policy makers should include suicide prevention programs, crisis management and mental health integration in public health infrastructure. Active professional mental health support with regular follow up specially to the vulnerable groups will assist in dealing with immediate crisis and possibly in reducing the suicides. Establishment of self help groups so as to foster “we” feeling and connectivity will help in taking off loneliness. These measures are majorly preventive but can go a long way in curtailing the preventable loss through suicide.

Humanity seems to be standing at a precipice where the only way forward is to fight through the battles and not to lose hope. Suicide is seen sometimes as a solution but it is not and that is what everyone should remember.

*“There are far, far better things ahead than anything we leave behind”*

*C. S. Lewis*

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## *Review Article*

# COVID-19 and Psychological impact and issues in India

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### **Introduction**

COVID-19 (Corona Virus Disease-2019) is a global public health emergency declared to be a pandemic by World Health Organization (WHO) in March 2020 posing enormous health, economic and social challenges to the entire human population.<sup>1</sup> As has been seen in the past also, any infectious disease outbreak/pandemic, brings a major setback on the mental health front, as was seen with Ebola pandemic/HIV pandemic in the past.<sup>2</sup> Post-traumatic stress disorder (PTSD) and anxiety-depression were found to be more prevalent, even after 1 year of Ebola response. The global HIV pandemic also provides a similar picture.<sup>3</sup> It has been found that the prevalence of mental illnesses in HIV-infected individuals is substantially higher than in the general population.<sup>4</sup> With respect to COVID-19 pandemic, a similar picture has been seen as well, which is attributable to multiple factors. First one being, a prolonged lockdown which was done all over the country for more than 3 months in the initial part of the pandemic. The lockdown led to drastic changes in the normative way of life, which included isolation, confinement at homes, loss of social contact, which led to a surge of mental health problems, especially in the two extreme age groups.<sup>5</sup> Adding to this, a continuous social media and news coverage on COVID-19 had become one of the cause of panic and over-reactive behavior amongst the general public, especially in the initial part of the pandemic. The news channels being replete with incidents and personal accounts of general population, health care workers, quarantined families, patients etc., leading to an overload of information on the virus from all the quarters. A study conducted in China to estimate

the prevalence of mental health problems and their association with social media exposure, found a positive correlation between the two.<sup>6</sup> Another aspect which affects the population is the stigma attached to the disease, which has been observed against infected individuals, family members of such individuals and especially against health care workers.<sup>7</sup> The stigmatization stems from the fear of getting infected from the health care workers, with initial case reports emerging in multiple cities of India, of evicting health care workers from their homes for the same reason.<sup>8</sup> This added to the stress of health care workers, apart from long duty hours in personal protective equipment (PPE) in the summer heat. Another important aspect adding to the psychological stress due to the COVID-19 pandemic is the economic fallout and the resulting recession, which is by far the worst global economic crisis after 'Great Depression'.<sup>9</sup> Due to the same, there has been increased pay-cuts and job losses, and resultant unemployment, leading to a multitude of mental illnesses, including increased suicide risks amongst the youth and working population.

### **Covid-19 effects on Indian General Population Lifestyle**

In developing countries like India, urban and rural settings suffered significantly because of impact by COVID-19. COVID-19 created a deleterious impact on human livings. Firstly, to put control of the transmission, lock down, social distancing was ordered by our government from March 24 2020. From 24th March, 1.3 billion people were followed lockdown. In Overcrowding nation like in India social distancing was a difficult task in hand, people living in crowded places, faced great

difficulty to follow it. In reality, social distancing is an oxymoron in countries like India.<sup>10</sup>

During lockdown, the education system got hampered, due to closing of institutions and schools, which troubled our Academic process. Due to our limited resources, unavailability of online technology, among students of rural India because of inadequate economic situation. However, accessibility of technology, Internet, mobile phones services in the urban cities didn't faced too much crisis.<sup>11</sup>

The All India Association of Industries (AIAI) have estimation that our economy slated to be \$640 million with growth slated to be between 5 and 5.6% till 2022. Post First lockdown phase, within a week, electricity demand was decrease to 30%, traffic became 5% less, oil demand reduced by 70%, and Indian railway services activity went below 36% compared to previous year. The unemployment rate rose to 19% after a month of initiation of Lockdown and overall unemployment rate in nation was 26% by 24th April. Hence, the lockdown proved to be detrimental on the small, medium, and large enterprises of our country, which led to jobless and economic plunge.<sup>12,13</sup>

India is currently facing harmful effects from COVID-19 due to its fear and lockdown scenario, majority of our population will face unemployment which leads them on pathway of crisis, hunger issues, poverty, and mental illness. So far it is clear that COVID-19 created a mixed impact on society including the economy, lifestyle, and environment. It is vigorous to think or imagine that the stressful experiences of this pandemic will be forgotten quickly or disappear absolutely over this time.

### **Psychological Effects on Population**

In Indian perspectives, very few studies depicted that depression and anxiety are not in great prevalence as compared to other countries. The risk of Post-Traumatic Stress Disorder, anticipatory anxiety to get this infection and substance abuse cases can be a huge challenge and burden to the mental health system of country.<sup>14</sup> Major health issues in Indian context due to this pandemic were sleep related issues, depressive episodes, anxiety in daily functioning, aggression, irritability and confusion states in elderly mainly with underlying comorbid disorders.<sup>15</sup> In a recent study conducted

from India showed that this Pandemic may give birth to cases of severe depression, which may increase the risk of suicide or self-harm acts also. Mostly cases of suicide found in states of Maharashtra, Uttar Pradesh, Assam, Kerala during this Pandemic.<sup>16</sup>

Strict Lockdown, Social media news related to effects of pandemic, unemployment, lead to panic like state in individuals, which eventually make them to be vulnerable to illness like depression or anxiety.<sup>17</sup>

It is known that at the rise of pandemic, generally created havoc for people with pre-existing mental health conditions as they are mostly prone. The reasons include social stigmatization, risk of infection, low priority to matters concerning mental health etc. These coupled with cognitive impairment, little insight to risk, diminished efforts to take treatment. Discrimination and fear of social isolation due to practice of social distancing could add to the cause of their vulnerability. The outcome of all this poor emotional response, leading to triggering, relapse or worsening of pre-existing mental health comorbidities is another dreadful outcome of this COVID-19 pandemic.<sup>18</sup>

### **Psychological Effect of Covid-19 on Health Care Workers: Indian Context**

Our Doctors, Nursing staffs, community health workers, multipurpose workers in various health centers, are in an entirely unprecedented situation, having to make impossible self-decisions or left to work under extreme pressures or stressful circumstances without having look for self-safety. Working under such stressful conditions with scarcity of resources affect not just their personal integrity but also family life, which lead their ways to face self-moral injury, causing deleterious effects on mental health. These symptoms can add to burden on their mental health difficulties and may give rise to various psychological disorders, including depression, post-traumatic stress disorder, and even suicides. Apart from being at high risk of infection, front line healthcare workers including doctors are subject to social stigma by community and neighborhoods because of their too much confront and contact with infected active cases which sometimes, put them in trouble to even visit their houses after their emergency duties. Many instances of eviction and harassment from house owners, violence on duties against doctors at the workplace,

social isolation, and discrimination have been highlighted in India, with the help of mass media services.<sup>19</sup>

In a pandemic, the number of active patients requiring treatment increases impactfully, placing strain on our healthcare resources, medical services and on personal alike. Additionally, doctors and nurses perceived a greater risk-to-self due to their continuous exposure to the patients who are most poorly or negligent which adding further stress.<sup>20,21</sup>

Compounding this stress, there is the shortage of supply of personal protective equipment (PPE) from higher authorities that can be a alerting situation during the pandemic also, which is a hard thing to digest on part of our healthcare workers. The relationship between traumatic life events and suicide is also well documented<sup>22</sup> and trauma from this disaster events can increase suicidal ideation in our emergency workers because of undergoing too much stressors. Fears over risk to health and social isolation contribute to psychological distress as do perceptions of infection-stigma from the community.<sup>23</sup>

During this pandemic, lots of health crises, health services are placed under excess pressure, making working life even more stressful and painful than normal in this pandemic. Overall the pandemic Covid-19 proved to be a sad story for our health care services workers as they are the ones facing the extreme stress of their work timings and services.

### **Intervention strategies for mental health issues during COVID-19: Indian context**

The mental health issues in the context of the COVID-19 pandemic in India is more complex due to large proportion of socially and economically vulnerable population (children, geriatric, migrant laborers, etc.). High burden of pre-existing mental illness also contributes to the same.<sup>24</sup> Moreover, a constrained mental health services infrastructure, less penetration of digital mental health solutions, the panic created amongst the general public due to an information overload on social media adds to the current challenges.<sup>25</sup> Interventions suggested are therefore also specific and relevant to the circumstances in India.

The Ministry of health and Family Welfare-Government of India (MOHFW-GOI) has issued a toll-free helpline number for 'Behavioral Health'.

The Psycho-Social toll-free helpline number-08046110007, can be used by anyone needing mental health assistance during the COVID-19 pandemic. A list of videos, advisories and resource materials on coping with stress during the pandemic have also been released through the same portal. This also includes yoga and meditation advice, taking care of the mental health of especially elderly and adolescents, etc. have also been provided in the MOHFW-GOI web portal.<sup>26</sup>

The existing mental health-related initiatives include guidelines about mental health and psychosocial considerations during the COVID-19 outbreak, which have been developed by the WHO Department of Mental Health and Substance Use. These are provided as a series of messages that can be used in effective communication to support mental and psychosocial well-being in different target groups during the outbreak.<sup>27</sup> The Ministry of health and family welfare, Government of India has also published IEC materials on mental health care of the vulnerable population. It also has materials on understanding the lockdown situation, handling isolation, dealing with mental health issues after recovering from COVID-19. Various Government institutions like the National Institute of Mental Health and Neuro-Sciences (NIMHANS), All India Institute of Medical Sciences (AIIMS), Indian Psychiatric Society (IPS) have also started telemedicine services, online services etc., to help manage mental health issues during the pandemic.

NIMHANS has also proposed the formation of a 'Psychological intervention medical team' as a standalone team or as a part of the general medical team attending to people affected by the pandemic. As per the proposed intervention, the staff should consist of psychiatrists, clinical psychologists and nurses. The proposed strategy suggests different plans to be made for different groups e.g. for confirmed cases who are hospitalized with severe symptoms, suspected cases and close contacts of confirmed cases, people with mild symptoms who are in home quarantine and health care personnel and general public.

There is a definite need for specialized psychological intervention and proper and consistent risk communication and crisis communication. It is important to keep a positive approach and effective communication strategies which will help in dealing

with the mental health issues faced by the country in this hour of crisis. The intervention strategies should therefore be vulnerable group specific and further cause or risk factor specific also. These would be instrumental in guiding the planning and prioritization of mental health care resources so that the mental health of most vulnerable groups is well served.

### Conclusion

COVID-19 pandemic has had a huge psychological impact on the general public as well as on front line workers at large. The youth and the elderly are amongst the most vulnerable groups. The mental health of youth has been affected by an economic stressor, physical illness, and changes in daily life, while the reduced human contact and self-isolation has been the major stressor for the elderly. For health care workers, apart from long strenuous working hours in the summer heat, the increased stigmatization has also contributed to the stress during the pandemic. The Government of India along with several government and private agencies has been working to revive the economy by promoting self-reliance. There has been an ongoing trial to help promote social and mental health through telepsychiatry and online consultations in conjunction with health care organizations. Government policy makers should develop, time crisis oriented psychological intervention to target the ever-growing burden of mental illnesses, which has become an even bigger problem during the pandemic.

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## Review Article

# Substance use in elderly: a way forward - Indian perspective

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### **Introduction**

World Health Organization (WHO) successfully defines elderly population as individuals chronologically aged more than or equal to 65 years. As the overall population is increasing, so is the population in geriatric age group. The magnitude of substance use disorders (SUDs) continues to increase across all age groups. The absolute number of individuals with substance use disorders among the geriatric population is thus increasing with time. Substance use is a major public health concern that affects every level of society. It is thus reckoned as an emerging national health concern. Multiple studies have found negative health outcomes associated with SUD in elder population. Alcohol, cannabinoids, opioids, stimulants and prescription drugs are commonly misused. Timely intervention with adequate history and screening tools can help identify these individuals. Various pharmacological and non-pharmacological measures have been followed over the years to help in detoxification. Additionally, aging in itself might act as an independent opportunity to quit substance.

### **Prevalence of substance use in elderly**

Worldwide, 8% of people are aged 65 and over. "An Aging World" a report published in 2015, says that by 2050 the percentage of elderly population is likely to increase to nearly 19%.<sup>1</sup> With the ever-increasing population, the magnitude of substance use disorder is likely to increase. The prevalence of SUDs varies markedly across countries and between different geographic regions depending on the type of substance used. The magnitude of substance use disorder in India is rising with the growing popula-

tion and the problem is only expected to expand and intensify. The estimates are still not in concordance with the reality due to under reporting, under identification, under diagnosis and under treatment. The most commonly abused substances include alcohol and prescription opioids.<sup>2</sup>

### *Global Scenario*

As per the systematic analysis of the Global Burden of Disease Study which was carried across 195 countries and territories during 1990 to 2016, dependent users of alcohol, cannabis and opioids were the most prevalent. There were an estimated 100.4 million users of alcohol, followed by 26.8 million cases of opioids and 22.1 million cases of cannabis. The illicit drugs were less commonly used, with cocaine dependence the least common.<sup>3</sup>

The National Surveys on Drug Use and Health (NSDUH) conducted in the USA reported that alcohol use in the elderly is around 6.7%. Around 0.8% misused prescription drugs and 0.4% misused marijuana. The abuse of these drugs is generally unintentional in this age group. Amongst these, benzodiazepines (such as alprazolam, lorazepam, clonazepam and diazepam) and opiate analgesics are the most commonly used/misused drugs. The data on use of opioids, tobacco and other stimulant drugs is scarce in elderly population.<sup>4</sup> The Epidemiologic Catchment Area (ECA) study reported a lifetime prevalence of illegal drug use to be around 1.6% in the elderly which typically declines after young adulthood.<sup>5</sup>

### *Indian Scenario*

According to the report published by Ministry of Social Justice and Empowerment, Government

of India and National Drug Dependence Treatment Centre (NDDTC) of All India Institute of Medical Sciences (AIIMS) on the "Magnitude of Substance Use in India" current users of alcohol are about 14.6% of the people in the age group among 10-75 years. Of the total 16 crore users, more than 5.7 crore people are harmful or dependent users of alcohol. About 2.8% use cannabis, of which 0.66% need help for their cannabis use. Prevalence of current use of opioids is nearly 2.06% and about 0.55% are harmful or dependent users. Nearly 1.08% use sedatives and inhalants, though the prevalence is higher among children and adolescents than adults. In India lowest prevalence is of stimulant drugs.<sup>6</sup>

In India, no nationwide study has been carried out to estimate the prevalence of individual substance use in elderly. Most of the studies carried out have focused on alcohol use in the elderly. The initial epidemiological study by Sethi and Trivedi in 1979 found alcohol misuse in 16.8% of the people in the 65-74 years age group.<sup>7</sup> Another community-based study reported 10% prevalence of alcohol use in the population more than 60 years of age.<sup>8</sup> The prevalence of alcohol use disorders in elderly is usually higher in the urban population as compared to the rural population.<sup>9,10</sup> A study done on 63 subjects aged 60 years and above reported alcohol (60%) to be the most commonly abused substance, followed by opioids (35%).<sup>11</sup> In 2005, Goswami et al studied the prevalence of tobacco and alcohol use in rural elderly population. The prevalence of smoking was found to be 71.8% and 41.4% in men and women respectively. Alcohol use was seen in 16.3% of the men compared to 0.8% of the women.<sup>12</sup> Various other small sample studies focusing on addictions among elderly population have been carried out. Mundada et al in 2013 studying the addiction problems in rural areas of Aurangabad district found that nearly 68.34% of the males were addicted to one or the other form of substance. Tobacco (smoking: 29.96%, chewing: 29.92%) and alcohol (18.18%) were the most commonly used substances.<sup>13</sup> As per the study carried out on the elderly population in urban slum of Pune city by Pandve and Deshmukh (2010), tobacco chewing was seen in about 68% males and 17% females. Alcohol consumption was seen in 42.1% of the males and none in females.<sup>14</sup>

### Potential triggers for substance use in elderly

The pattern of substance use in older adults is suggestive of a growing trend. The ever increasing population,<sup>15</sup> increased life expectancy and longer life spans<sup>16,17</sup> are the major contributing factors in the rising statistics. Elderly tends to initiate or increase substance use because of various risk factors, including physical, psychological and social stressors thereby leading to addiction.<sup>18</sup> Physical risk factors include chronic pain, physical disabilities, reduced mobility, poor health status, chronic illness, polypharmacy. Psychiatric risk factors include history of substance use disorders, previous or current mental illness, avoidance coping style, trouble sleeping and social risk factors include nuclear family, lack of social support, loss of loved ones, ego centrality, the desire for personal gratification, transitions in living or care situations, family conflict, forced retirement, change in income, fewer traditional responsibilities, cultural changes and attitudes surrounding drugs.

### Probable hazards of substance use

Substance use in elderly is found to be associated with altered pharmacokinetics, brain structure and function, affecting general well-being, psychomotor activity, mood, speech, perception, consciousness, and memory. All this may in turn lead to deficits in physical and psychological functioning of a person.

#### *Pharmacokinetics*

Normal aging has been associated with a variety of physiological, social and cognitive challenges. There occurs decrease in body mass, motor functioning, gastrointestinal blood flow and cardiac output, raised sugar levels and deranged liver and kidney functions. All these factors have a huge impact on the absorption, metabolism and elimination of the drugs thus increasing sensitivity and decreasing tolerance making the elderly more susceptible to the effects of the psychoactive substances.<sup>19</sup>

#### *Physiological effects of substance use*

Every drug that is abused by an individual at any age has opposing side effects, the intensity and frequency of these ill effects increase with growing age. Alcohol, benzodiazepines, cannabinoids,

opioids, stimulants, tobacco and other prescription drugs makes the elderly vulnerable to visual, auditory, and/or locomotor impairment. Dependent use of these psychoactive substances increases the risk of organ damage, incidence of various cancers and premature death. Additionally, under intoxication there occurs impaired judgment, coordination and reaction time, increasing the risk of accidents and falls.<sup>20,21</sup>

Heavy and regular use of alcohol increases the range of health problems, including diabetes, hypertension, liver damage, bone problems, congestive heart failure, visual impairment and risk of hemorrhage.<sup>22</sup> Benzodiazepines can result in cognitive impairment and falls making them prone to forgetfulness and fractures.<sup>23</sup> Marijuana use has been linked to chronic respiratory conditions, adverse cardiovascular functions, and altered motor skills.<sup>24</sup> Smoking also increases the risk of hypertension, atherosclerosis, cerebrovascular accidents, chronic obstructive pulmonary disease, cancers, erectile dysfunction and osteoporosis.<sup>25</sup> The use of cocaine is associated with cardiovascular, pulmonary, gastrointestinal, cerebrovascular accidents, bleeding disorder and immune dysfunction.<sup>26</sup>

#### *Psychological effects of substance use*

There occurs impaired judgement, memory loss and confusion with chronic use of alcohol, benzodiazepines and other prescription drugs. Alcohol usage over prolonged durations can result in Wernicke-Korsakoff syndrome.<sup>27</sup> Resulting confusion can hugely impact biological functions and self-care, making independent living difficult.<sup>28</sup> Studies have found an association between substance use disorders and psychiatric illnesses. There occurs behavioral change ranging from irritability, frequent verbal altercations to low mood and decreased interaction. Depression, affective disorders, anxiety, panic disorder, post-traumatic stress disorder and sleep disorder are some of the commonly studied psychiatric co-morbidities. Severe depressive episode can make an individual vulnerable to suicide.<sup>29,30</sup>

#### **Screening, assessments and challenges in elderly**

The magnitude of substance use in elderly is much higher than thought off. As per some estimates, up to 9% people initiate substance use in later life.<sup>31</sup>

It is one mental health issue that is generally overlooked due to numerous reasons. These include physician, patient and other environmental factors leading to under-diagnosis and under management. Physicians generally tend to overlook SUDs in elderly considering it to a problem of younger generation.<sup>32</sup> Furthermore, due to similar looking signs and symptoms of drug abuse and co-existing medical illness, there occur faulty diagnosis. Such confounding variables include falls, impaired sleep, cognitive impairment, and many others which might occur due to frailty, normal aging, and existing dementia or due to abuse of alcohol, opioids, benzodiazepines or other illicit drugs.<sup>18</sup> Lack of training<sup>33</sup> and therapeutic nihilism are other important contributing factors. Due to prevailing stigma and prejudice and many other reasons, elderly often do not disclose their substance use and may even become defensive and hostile on questioning.<sup>18,34</sup> The classical features of dependence, such as tolerance and craving, may be absent in older individuals. Other environmental and social challenges include social isolation, retirement, absence of fear of job loss and lack of legal issues.<sup>35</sup>

All these factors comprehensively affect the real impact of SUDs in older individuals. Therefore, it is of utmost importance that all old age individuals should undergo comprehensive assessment by clinicians for alcohol and drug abuse at the time of the physical examination. Some of the soft indicators of substance use include poor oral intake, malnutrition, unexplained vomiting, weight loss, unkempt appearance, self-neglect, amnesia, diminished psychomotor performance, loss of coordination and excessive day time drowsiness. Individual may present with complains of sleep disturbances such as oversleeping or insomnia, and at times urinary incontinence or retention which might be possible indicators of substance misuse. Laboratory findings showing deranged liver function tests, hypercholesterolemia, hyperuricemia, hypoglycemia, macrocytic anaemia, low urea and blood folate levels, with an increased gamma glutamyl transferase activity might suggest substance use.<sup>36</sup> A detailed history, gathering collateral information from a variety of possible sources such as care takers, family members and friends, routine blood investigations, assessment as per diagnostic scales, like Alcohol, Smoking and Substance Involvement Screening Test (ASSIST),

Michigan Alcohol Screening Test (MAST), Alcohol Use Disorders Identification Test (AUDIT), CAGE Questionnaire, urine and/or serum drug screening, can be useful tools for diagnosis.

### **A Way forward**

Certain individuals after reaching a particular age desire to quit substance voluntarily or under the influence of doctors or family members. Various social, environmental, religious, medical reasons play a major role. The foremost role is of the internal drive and motivation which is the key component in de-addiction.

#### *Old age and involvement in religious activities*

Spirituality, life meaning and religiousness reduce stress, enhance quality of life and coping, confer hope for the future, and provide a heightened sense of control, security and stability. It further provides support and strength to resist the opportunity to use substances. There are many reports that suggest that a spiritual or religious connection is part of their recovery.<sup>37,38</sup> Though there are no studies in elderly population to support the above-mentioned findings however, after a through clinical experience it can be well said that many elderly desire to quit substance and want to invest more time in spirituality and religious practices and ongoing consumption of substance is an obstacle to it.

#### *Old age and family responsibilities*

In India, older adults often live with their extended families. An older adult with a substance abuse problem can affect everyone in the household. In order to live peaceful life and in harmony with family members, patients express the desire to quit the long term dependent usage of substance. Many patients express concerns about exposing their children and grandchildren to the ill effects of substance and that with continuous usage they might increase their vulnerability to use substance later in life. The social gatherings and family celebrations in the rural parts of India generally last for more than a couple of days. The elderly visiting such gatherings finds it inconvenient and inappropriate, also the people around them finds the continuous usage of substance unacceptable. Few of the older adults with SUDs do report that it is morally and socially inappropriate to use substance in the house

of married daughter, whenever he has to go and meet his daughter for any social, family or other responsibility. All these above mentioned factors aids in bringing the patient to clinical setting and motivate to quit substances.

#### *Old age, retirement and financial constrains*

Peer pressure and company of friends are few of the important reasons to start the substances and continue the substances. Abuse of substance at workplace is a well-known phenomenon.<sup>39</sup> After retirement, individual disengages from the workforce and co-worker friends and remains at home for most of the time. Also he survives on his full or partial retirement benefits. With the meagre income, individual finds it difficult to make ends meet. The ongoing family burden and further building responsibilities pushes an individual to get rid of his compulsions and discontinue using substance.

#### *Old age and medical problems*

As mentioned with aging there occurs social, cognitive, physiological and psychological effects on an individual. Multiple morbidities are common in old age population. Geriatric population is more likely to receive polypharmacy than adult population. Substance use adds to the already existing burden and leads to complex interaction and which may lend up the patient in emergency. Stress builds up due to the co-morbidities occurring secondary to the ill effects of substance and un-healthy life style the individual has lived. The negative consequences of substance use like worsening of pre-existing medical/surgical problems, stress, lack of energy and anhedonia might indirectly create aversion for the substance and motivates to give up this habit permanently.

### **Management of substance use in elderly population**

As the prevalence of illicit drug use among the elderly is increasing, the burden on health care system is likely to increase because of multiple substance and health related problems. The management for the same requires holistic approach, focusing on emotional, social, medical and spiritual challenges.<sup>40</sup> As observed, integration of treatment in the general medical settings and home-based care can be of great help. Although, there is not much

literature focusing on treatment of addiction in elderly population, however, it has been suggested that through careful and more vigorous monitoring, the problems in older individuals can be addressed. Treatments that have been shown to be effective for younger patients might be effective for older adults.

#### *Pharmacological treatment*

The management of SUDs requires close monitoring and liaising with health professionals from other disciplines for possible co-morbid medical/surgical conditions. As already mentioned that due to altered pharmacokinetics in older age, the dosage requirements decrease and have to be monitored and evaluated carefully. The management should focus on gradual tapering rather than abrupt cessation. Withdrawal symptoms more commonly results in disorientation and confusion than restlessness, tremors and sleep disturbances. Drug-drug interactions should also be kept in mind, as the elderly might be on several medications due to co-morbid illnesses. For the treatment, usually the least intensive options should be explored first. Side effect profile of the drug being given needs to be closely monitored. Follow-ups should be spaced closely for effective and vigorous monitoring.

#### *Non pharmacological approaches*

Several psychological interventions done for de-addiction in younger age group might help in later life. These include brief intervention, psycho-education of patient and care givers, motivational counseling, psychotherapies like cognitive-behavioral therapy (CBT), interpersonal therapy, group therapy and psychodynamic therapy.<sup>41</sup> Self-help programs, such as Alcoholics Anonymous or Narcotics Anonymous are also potential options. Brief intervention has been found to be effective in elderly.<sup>42</sup> Other modalities, such as individual and group psychotherapy are still under the scope of study.

#### **Conclusion**

In this modern era, with up scaling population the magnitude of substance use disorder continues to rise in every segment of the society. In elderly SUDs comes with a lot of challenges and co-morbidities. However, adequate screening and timely intervention can prevent them from unwanted health

hazards. Also every individual after reaching a certain age meets with a number of opportunities which might help them in quitting substance of which willingness to quit out stands all the available factors. To mention some of the other important contributing factors include engagement into religious activities, social stigma and upcoming responsibilities. Many of these elderly upon facing reality and after out weighing the risks and benefits of substance use visit de-addiction clinics seeking treatment and live a life free of substance thereafter.

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## Original Article

# A Comparative Study of First Episode of Schizophrenia and First Episode of Bipolar Disorder (Mania) Patients on Measures of Neurological Soft Sign

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### ABSTRACT

**Background:** There is a higher prevalence of Neurological Soft Sign (NSS) in first-episode patients compared with healthy controls. In particular, significantly higher total rates of NSS in patients with first-episode schizophrenia or schizophreniform disorder have been reported. NSS abnormalities have also been reported in other neuropsychiatric disorders, like Schizophreniform disorder and psychosis within the affective spectrum, especially bipolar disorders. However, among the limited studies specifically comparing the NSS abnormalities between Schizophrenia and other neuropsychiatric disorders, the findings had been inconsistent with reference to the specificity of NSS in Schizophrenia. **Method:** A cross sectional hospital based Analytic type of Observational study was carried out between September 2016 and August 2017 on patients of first episode of Schizophrenia and Bipolar Disorder (mania) attending at psychiatric centre, department of psychiatry, SMS Medical College & Hospital, Jaipur. Study included cases of first episode of Schizophrenia and Bipolar Disorder (mania) [diagnosed as per ICD-10 criteria] satisfying inclusion criteria and exclusion (via screening Performa) and healthy controls. **Results:** The total NSS score and four components - Primitive reflexes, motor coordination, sensory integration, and response inhibition were significantly higher in the schizophrenia patients compared to the bipolar patients and controls ( $P < .001$ ). First Episode Schizophrenia (FES) and First Episode Bipolar Disorder (FEBP) patients were significantly impaired in the performance of NSS items compared to healthy controls, but there are no statistical differences between FES and FEBP groups. **Conclusion:** Present study results concluded that FES and FEBP patients had significantly more NSS on all items compared to the healthy controls. A poorer neurocognitive performance was found amongst FES and FEBP patients as compared to the healthy controls in all the cognitive domains.

**Keywords:** Neurological Soft Sign, First Episode Schizophrenia, First Episode Bipolar Disorder

### Introduction

#### Neurological soft sign (NSS) in schizophrenia and Bipolar disorder

NSS are defined as those signs that do not in themselves signify to a definite manifest specific neurological response, but taken together may indicate organicity.<sup>1</sup> Hard signs on the other hand

refer to impairment in basic motor, sensory, and reflex behaviour.<sup>2</sup>

There is still a lack of consensus on the neuro-dysfunctional area underlying NSS; some suggest it to reflect a failure in the integration within or between sensory and motor system,<sup>3</sup> while others view it as deficit in neuronal circuits involving

subcortical structures (e.g. basal ganglia, brain stem, limbic system).

Although the categorisation of neurological signs as 'soft' (e.g. frontal release and cerebellar signs) and the batteries used to measure them have varied, neurological abnormalities in schizophrenia seem to be localised to three main neurological domains: integrative sensory function; motor coordination; and motor sequencing.<sup>4</sup> Paucity in integrative sensory function (possibly resulting from a parietal dysfunction) are reflected in higher rates of bilateral extinction, impaired audio–visual integration, agraphesthesia and astereognosis.<sup>3,4</sup> Deficits in motor coordination are reported through tests of general coordination, intention tremor, finger–thumb opposition, balance and gait. Finally, poor pursuance in complex motor tasks (possibly resulting from a dysfunction of the frontal–basal ganglial circuitry) has been reported in tests that involve repetitive alternating hand positions, like the fist–edge–palm, the fist–ring and therefore the Ozeretski tests. Studies that evaluated patients with first episode psychosis have reported a high prevalence of NSS, the percentage of patients with NSS varying from 20%<sup>5</sup> to 97.1%.<sup>6</sup> There is a higher prevalence of NSS in first-episode patients compared with healthy controls. In particular, significantly higher total rates of NSS in patients with first-episode schizophrenia or schizophreniform disorder have been reported.<sup>7,8</sup>

NSS abnormalities have also been reported in other neuropsychiatric disorders, like Schizophreniform disorder and psychosis within the affective spectrum, especially bipolar disorders.<sup>9–11</sup> However, among the limited studies specifically comparing the NSS abnormalities between Schizophrenia and other neuropsychiatric disorders, the findings had been inconsistent with reference to the specificity of NSS in Schizophrenia and Bipolar Disorders.<sup>12–24</sup> So, our specific aim to study neurological soft sign in patients of schizophrenia and bipolar affective disorder (mania) to establish the relationship between NSS and Psychotic Disorders.

## Methodology

### Inclusion Criteria

- Age 18–45 years, both sex
- First episode only
- Meeting the ICD-10 criteria for schizophrenia disorder and bipolar disorder

(mania)

- No history of any psychoactive drug.
- Literate enough to understand and perform the questionnaires.
- Willing to participate in the study.

### Exclusion Criteria

- Violent and agitated
- Having a physical disability (e.g. Blind, deaf, speech problems, paralysis, amputation)
- History of significant substance abuse, in last 3 months, except nicotine (ICD-10)
- History of electroconvulsive therapy in the previous six months
- History of neurological disorder/significant head injury
- Mental retardation
- History of any chronic medical illness

### Selection Criteria for Controls

#### Inclusion Criteria

- Age 18–45 years, either sex
- Literate enough to understand and perform the questionnaires.
- Willing to participate in the study.

#### Exclusion Criteria

- Past history of psychiatric illness
- Having a physical disability (e.g. Blind, deaf, speech problems, paralysis, amputation)
- History of significant substance abuse, in last 3 months, except nicotine (ICD-10)
- History of neurological disorder/ significant head injury
- History of any chronic medical illness

### The study setting

The study was conducted at the Psychiatric Centre, SMS medical college, Jaipur, is a government runs tertiary care hospital providing highest level of care and treatment of the state.

### Study Design

A cross sectional hospital based Analytic type of Observational study was carried out between September 2016 and August 2017 on patients of first episode of Schizophrenia and Bipolar Disorder

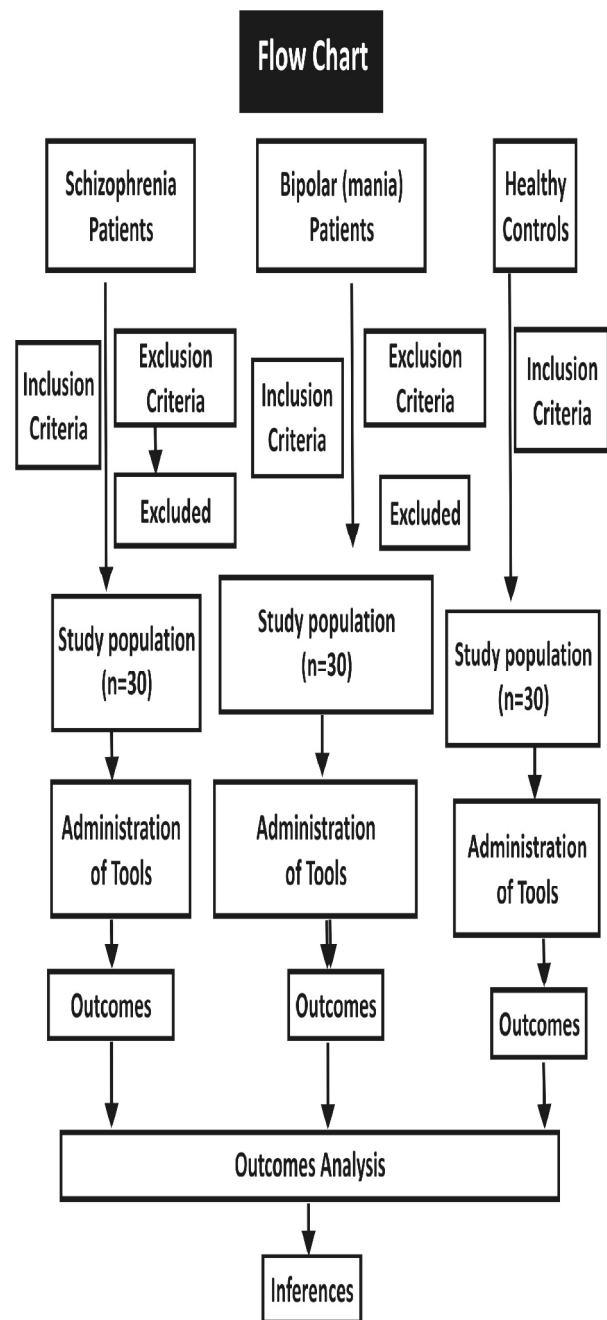
(mania) attending at psychiatric centre, department of psychiatry, SMS medical college and hospital, Jaipur. Ethical Consideration was taken from research review board and ethical committee of the institution. Study included cases of first episode of Schizophrenia and Bipolar Disorder (mania) [diagnosed as per ICD-10 criteria] satisfying inclusion criteria and exclusion (via screening Performa) and healthy controls. Control group included normal and healthy persons who were taken from hospital staff and bystanders of hospitalized patients (not first degree relatives) and was screened for psychiatric illness by two psychiatrists independently.

Prior to participation in the study informed written consent was taken then after applying exclusion and inclusion criteria participants were screened with a specially designed Performa for the study. Those patients who satisfied the screening process were recruited in the study, followed by recording of socio-demographic profile, clinical data.

**Instruments used in study**

1. **Consent form** – This form would be formatted in Hindi language & would be given to patient. The written consent would be taken after screening procedure.
2. **Screening Performa** - The Performa will include all inclusion and exclusion criterions with the Yes/No option before each question.
3. **Socio-demographic profile** - This will include name, age, sex, address, marital status, education, type of family, monthly income, Family H/O of psychiatric illness & other relevant information of the patient.
4. **Clinical Profile Performa:** This will include detailed history of the psychiatric illness.
5. **Positive and Negative Syndrome Scale Score (PANSS):**<sup>25</sup> It is a clinician- administered rating scale used to measure severity of psychotic illness, mainly on 3 domains- Positive (7 items), Negative (7 items) and General (16 items).
6. **Young Mania Rating Scale (YMRS)**<sup>26</sup>: The Young Mania Rating Scale (YMRS) is one of the most commonly used rating scales to assess manic symptoms.
7. **Cambridge Neurological Inventory (CNI):**<sup>27</sup> - Cambridge Neurological Inven-

tory has been constructed for standardized neurological assessment of psychiatric patients. Part 2 of the inventory is for Soft sign examinations. There are three groups: The first group of soft sign tests assesses some “primitive reflexes”. The second group is concerned with “repetitive sequential motor execution”. The third group consists of tests related to “integration of sensory information”



**Results****Table-1: Comparison of Socio-demographics between groups**

Parameter	FES Patients (N=30) Mean (SD)	FEBP Patients (N=30) Mean (SD)	Healthy Controls (N=30) Mean (SD)	P value
Age	32.56 (7.84)	32.80 (7.29)	32.63 (7.21)	0.815
<b>Gender</b>				
Male	24	25	23	0.812
Female	6	5	7	
<b>Marital Status</b>				
Married	22	20	21	0.853
Unmarried	8	10	9	
<b>Education</b>				
Illiterate	6	8	8	0.990
Primary	16	14	14	
Secondary	4	5	4	
Graduate or P.G.	4	3	4	
<b>Religion</b>				
Hindu	25	22	26	0.39
Muslim	5	8	4	
<b>Locality</b>				
Rural	26	26	22	0.149
Urban	4	4	8	
<b>Family Type</b>				
Nuclear	14	18	19	0.214
Nuclear -Extended	6	2	2	
Joint	10	10	9	
<b>Socioeconomic Class</b>				
Lower	25	22	26	0.39
Middle	5	8	4	

**Table-2: Comparison of the neurological soft signs among groups A (Schizophrenia patients), B (Bipolar patients) and C (healthy controls)**

	Group A (N=30)		Group B (N=30)		Group C (N=30)		P Value
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	
<b>Primitive reflexes</b>							
Snout reflex	.47	.507	.37	.490	0.00	0.000	.000
Grasp reflex	.60	.675	.50	.682	0.00	0.000	.000
Palmomental reflex	.47	.507	.37	.490	0.00	0.000	.000
<b>Motor coordination</b>							
Finger-nose test	.63	.669	.37	.556	.10	.305	.001
Finger-thumb tapping	.73	.691	.50	.731	0.00	0.000	.000
Finger-thumb opposition	1.13	1.332	1.17	1.440	.23	.504	.003
Diadochokinesia	.67	.711	.53	.681	.13	.434	.004
Fist-edge-palm test	1.63	1.542	1.57	1.569	.13	.346	.000
Oseretsky test	2.00	1.531	2.00	1.531	.10	.305	.000
Rhythm tapping test	1.27	.907	1.27	.907	.27	.521	.000
<b>Response Inhibition</b>							
Go/no-go test	.80	.714	.80	.714	0.00	0.00	.000
<b>Sensory integration</b>							
Extinction	.20	.407	.17	.379	0.00	0.00	.040
Finger agnosia	.80	.664	1.00	1.017	.17	.461	.000
Stereognosia	.30	.466	.30	.466	.03	.183	.013
Graphesthesia	1.30	1.088	1.57	1.305	.07	.254	.000
Left-right orientation	.47	.571	.47	.571	.10	.305	.006

Table 1 is showing that three groups were comparable to each other according to the socio-demographic data as no statistically significant difference was found among these three groups ( $P > .05$ ). Majority of the patients were married, Hindu males of rural background belonging to lower socioeconomic class and living in a nuclear family.

Table 2 and 3 showing that total NSS score and four components - Primitive reflexes, motor

coordination, sensory integration, and response inhibition were significantly higher in the schizophrenia patients compared to the bipolar patients and controls ( $P < .001$ ). FES and FEBP patients were meaningful impaired in the performance of NSS items compared to healthy controls, but there are no statistical differences between FES and FEBP groups.

Table 4 and 5 shows that FES and FEBP

**Table-3: Comparison of the neurological soft signs among groups A (Schizophrenia patients), B (Bipolar patients) and C (healthy controls)**

	Group A		Group B		Group C		P value
	Mean	SD	Mean	SD	Mean	SD	
Primitive reflexes	1.53	1.63	1.07	1.20	0.00	0.00	<0.001
Motor coordination	8.07	5.19	7.40	5.58	0.97	1.00	<0.001
Response Inhibition	.80	.71	.80	.71	0.00	0.000	<0.001
Sensory integration	3.03	2.24	3.50	2.73	0.37	0.56	<0.001
Total score	13.47	7.651	10.80	5.792	1.33	1.213	0.000

**Table-4: Inter group comparison of the Neurological soft signs among groups A (Schizophrenia patients), B (Bipolar patients) and C (healthy controls)**

Neurological soft signs	Group A VS B		Group A VS C		Group B VS C	
	Mean diff	P Value	Mean diff	P Value	Mean diff	P Value
<b>Primitive reflex</b>						
Snout reflex	0.1	0.61	0.467	0.001	-0.367	0.002
Grasp reflex	0.1	0.765	0.6	0.001	-0.5	0.002
Palmomental reflex	0.1	0.61	0.467	0.001	-0.367	0.002
<b>Motor coordination</b>						
Finger-nose test	.267	.133	.133	.001	-.267	.133
Finger-thumb tapping	.233	.271	.733	.001	-.500	.004
Finger-thumb opposition	-.033	.993	.900	.010	-.933	.007
Diadochokinesia	.133	.685	.533	.004	-.400	.038
Fist-edge-palm test	.067	.978	1.500	.001	-1.433	.001
Oseretsky test	0.000	1.000	1.900	.001	-1.900	.001
Rhythm tapping test	0.000	1.000	1.000	.001	-1.000	.001
<b>Response Inhibition</b>						
Go/no-go test	0.000	1.000	.800	.001	-.800	.001
<b>Sensory integration</b>						
Extinction	.033	.915	.200	.047	-.167	.116
Finger agnosia	-.200	.559	.633	.004	-.833	.001
Stereognosia	0.000	1.000	.267	.028	-.267	.028
Graphesthesia	-.267	.553	1.233	.001	-1.500	.001
Left-right orientation	0.000	1.000	.367	.015	-.367	.015

**Table-5: Inter group comparison of the Neurological soft signs among groups A (Schizophrenia patients), B (Bipolar patients) and C (healthy controls)**

	Group A VS B		Group A VS C		Group B VS C	
	Mean diff	P Value	Mean diff	P Value	Mean diff	P Value
Primitive reflex	.467	.276	1.533	.000	1.067	.002
Motor coordination	.667	.830	7.100	.000	6.433	.000
Response inhibition	0.000	1.000	.800	.000	.800	.000
Sensory integration	-.466	.662	2.668	.000	3.133	.000

patients were consequential impaired in the performance of NSS items compared to healthy controls, but there are no statistical differences between FES and FEBP groups.

### Discussion

Major focus of the this present study was to assess the Neurological soft Signs (NSS) in first episode of Schizophrenia and first episode of Bipolar Disorder (Mania) patients and compared the findings with healthy control group.

### Socio-demographic profile

Table 1 is showing that three groups were comparable to each other according to the socio-demographic data as no statistically significant difference was found among these three groups. Majority of the patients were married, Hindu males of rural background belonging to lower socio-economic class and living in a nuclear family.

### Neurological Soft Signs (NSS) in Schizophrenia and Bipolar patients

In present study, the total NSS score was significantly higher in the schizophrenic patients compared to the bipolar patients and controls ( $P=0.000$ ). While assessing NSS, it was divided into four components of Primitive reflexes, motor coordination, sensory integration, and response inhibition and the mean scores in the FES patient group were  $1.53 \pm 1.63$ ,  $8.07 \pm 5.19$ ,  $3.03 \pm 2.24$  and  $0.80 \pm 0.71$  respectively. Whereas the mean scores in the FEBP were  $1.07 \pm 1.20$ ,  $7.40 \pm 5.58$ ,  $3.50 \pm 2.73$  and  $0.80 \pm 0.71$  and mean in healthy controls were  $0.00 \pm 0.00$ ,  $0.97 \pm 1.00$ ,  $0.37 \pm 0.56$  and  $0.00 \pm 0.00$  in the same order. Our study also showed that FES and FEBP patients were significantly impaired in the performance of NSS items compared to healthy controls, but there are no statistical differences between FES and FEBP groups. These findings of present study consistent with Nasrallah et al,<sup>16</sup> in which chronic schizophrenia, bipolar I disorder patients and healthy controls compared on NSS, no significant difference between the two diagnostic groups was found but both schizophrenic and bipolar I patients performed worse on NSS scale compared to controls.

This present study showed that neither the total NSS nor subscale scores distinguished patients of

FES from FEBP. Our findings are consistent with those of Whitty et al.'s results in that patients with schizophrenia and manic depression were indistinguishable supported NSS measurement alone.<sup>13</sup> Discordant findings reported by previous study<sup>12</sup> were due to differences in the sample characteristic of patients with mood disorders, which consisted of both patients with major depression and bipolar disorder. Findings of this present study in accordance with high score of NSS being demonstrated in drug-naive first-episode psychosis patients.<sup>10,17</sup> Some studies had suggested that NSS expression during the remission phase of illness could also be a far better indicator of real trait-like features of schizophrenia.<sup>15</sup>

In fact, NSS are considered to be the consequence of an integration failure between the motor and there for the sensory systems and in sub-cortical systems.<sup>10,17</sup> Impaired motor coordination would be the result of a dysfunction in the striato--thalamo-frontal and fronto-cerebellar circuits, involved in both schizophrenia and mood disorders.<sup>12</sup> The excess of sensory integration abnormalities, found in other studies,<sup>11,18</sup> is correlated with the reduced volumes of the left medial frontal area and right superior lateral parietal cortex in first-episode psychosis patients. In accordance with other studies,<sup>11,19</sup> the sub score of motor integration was significantly higher in FEBP than in comparison groups. This might be associated with a dysfunction with in the fronto-subcortical circuit, involved with in the genesis of cognitive impairment which is common in BP and in their healthy relatives.<sup>1,19,20</sup>

Our results also suggest that patients with schizophrenia and bipolar affective disorder appear to be biologically more almost like one another. This notion is supported by evidence at several levels. Genetic studies have shown that schizophrenia and bipolar affective disorder share an identical genetic architecture<sup>21</sup>; while neurobiological studies have shown that patients with schizophrenia and bipolar affective disorder share a similar reduction in densities of reelin<sup>22</sup>. Reelin and GABA are well-known to be involved in neurodevelopment, like neuronal migration, synaptogenesis; and therefor the disturbance of GABA and reelin systems could also be associated with the pathophysiology of schizophrenia<sup>23</sup>. Indeed, Murray, et al<sup>24</sup> had proposed a model that positioned schizophrenia and bipolar



affective disorder on similar genetic background, and attributed their differences in clinical manifestation to environmental factors. Our results have provided further evidence supporting this.

### Conclusion and future directions

According to the socio-demographic data no significant difference was found among the three study groups.

The total NSS score and four components - Primitive reflexes, motor coordination, sensory integration, and response inhibition were significantly higher in the schizophrenia patients compared to the bipolar patients and controls.

FES and FEBP patients were significantly impaired with in the performance of NSS items compared to healthy controls, but there are not any statistical differences between FES and FEBP groups.

Extending the assessment with follow-up observation of neurological evaluations, in FES and FEBP of patients, would be of great clinical interest, in order to assess that they are also present or absent in chronic patients of schizophrenia and bipolar patients.

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**Abbreviations:** Schizophrenia – (SZ); Bipolar disorder – (BP); First-episode schizophrenia – (FES); First-episode Bipolar disorder – (FEBP); Positive and Negative Syndrome Scale Score - (PANSS); Young Mania Rating Scale – (YMRS); Cambridge Neurological Inventory – (CNI); Neurological soft sign – (NSS).

## Original Article

# Patterns of substance use in children and adolescents and associated comorbidity: a retrospective study

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### ABSTRACT

**Aim:** To study the pattern of substance use in children and adolescents and the presence of psychiatric comorbidity in the group. **Methodology:** A total of 326 patients (adolescents and children) with a diagnosis of substance use were taken into the study. Data were extracted from the case files of patients and analyzed using SPSS. **Result:** Only 6 were girls. The average age at which patients were seen at the hospital was 13.54 years. The mean age of initiation of substance use was  $10.12 \pm 1.93$  years and the treatment gap was found to be  $3.42 \pm 1.79$  years. Most of the patients, around 55%, were taking one substance. Most common substance use was cannabis followed by tobacco, alcohol and inhalants. Psychiatric comorbidity was found in 80% of patients with the most common being conduct disorder (61.7%). **Conclusion:** Substance abuse and comorbid psychiatric disorders are a norm rather than the exception in adolescents. The health care system and society need to overcome this big challenge.

**Keywords:** Substance use, Adolescents, Psychiatric comorbidity, Cannabis, Conduct disorder.

### Introduction

Substance use is a chronic condition leading to poor clinical outcomes. It warrants continuous monitoring and care.<sup>1,2</sup> Substance use disorders occur in presence with other mental and behavioural problems. This co-occurrence is the norm for both adolescents and adults. In adults, around 50% - 80% of substance abusers have one or the other psychiatric diagnosis their lifetime;<sup>3,4</sup> 78%–90% substance users have psychiatric disorder consistently across all age groups.<sup>5</sup> Most of these disorders start before 20 years of age as per the epidemiologic catchment area (ECA) study of adults.<sup>6</sup> These psychiatric symptoms might be new in onset or previous preexisting psychiatric symptoms may get worsened. It has been seen that substance use is also common by patients with psychiatric disorders to self-medicate

their symptoms.<sup>7</sup> Extensive literature is available for psychiatric comorbidity in adults for substance use<sup>8-10</sup> but very little is known in the adolescents about the same.<sup>11</sup>

Substance use in adolescence is associated with brain dysfunction, poor neurocognitive performance, white matter quality, changes in brain volume and neuronal activation patterns, these changes can be permanent.<sup>12</sup> Youth with psychiatry morbidity has higher chances of substance use, sexual or physical abuse, legal problems, severe social, occupational, family dysfunction and suicidal behaviour.<sup>13</sup> The outcome for even dual diagnosis and substance use disorders in youth is poor.<sup>5</sup> Various studies on adolescents have shown that the magnitude of risk for the comorbidity of psychiatric disorders and substance use disorders is as high as that for adults.

A report by Diamond et al stated that when entering treatment, 72% of adolescent marijuana users have two or more psychiatric syndromes.<sup>14</sup>

The knowledge about the prevalence of comorbidity is important for any population as patients with dual diagnosis seek treatment more often than people with either one of them.<sup>15</sup> It also helps in planning interventions and carrying out further research. Moreover, studies have shown the low levels of service utilization and high levels of unmet need in youth with dual diagnosis.<sup>16</sup>

Thus, in the present study, we aim to study the pattern of substance use in adolescents and the presence of psychiatric comorbidity in this group.

## Material & Methods

### Methodology

The present study was a retrospective chart-based review of outpatients (OPD) and inpatients (IPD) visiting the child and adolescent psychiatry (CAP) unit at tertiary care institute IHBAS, Delhi, India. CAP unit deals with patients aged less than 18 years of age. In the outpatient services at IHBAS, the participants who visit for the first time are evaluated by a qualified psychiatrist, diagnosis is made as per the International Classification of Diseases, 10<sup>th</sup> revision (ICD-10)<sup>17</sup> and treatment is initiated. A unique Central Registration Number is assigned to every subject seeking treatment. In inpatient services, different CRF number is allotted and patients are diagnosed as per ICD-10 criteria after detailed evaluation.

Case files of adolescents and children with a diagnosis of substance use seeking treatment at CAP unit (IPD and OPD) from October 2017 till March 2020 were studied and data was anonymously extracted from the case files for the analysis. Data were analyzed in terms of age of onset of substance use, years of use of substance before seeking the treatment, the total number of patients visiting OPD and IPD, type and the average number of substance use, psychiatric co-morbidity.

### Data analysis

Analysis of data was done by using percentage and frequency for categorical variables and for continuous variables-mean and standard deviation was used. Statistical Package for Social Sciences (SPSS-14) was used for the same purpose.

## Results

### Sociodemographic profile of patients

Out of a total sample of 326, only 6 were girls and rest were boys. Around 18% never went to school, 24% dropped out and rest were continuing studies at school. (See Table 1)

**Table-1: Socio-demographic profile of patients**

Parameters	Mean (SD)/N(%) N=326
Sex	
1. Male	320 (98.2%)
2. Female	6 (1.8%)
Literacy	
1. Never gone for formal education	61 (18.7%)
2. Drop out	80 (24.5%)
3. Informal education system	185 (56.7%)
Religion	
1. Hindu	254 (77.9%)
2. Non-Hindu	72 (22.1%)
Locality	
1. Urban	158 (48.5%)
2. Rural	168 (51.5%)

### Clinical profile of patients

Table 2 shows the clinical profile of the study groups. Total patients of less than 18 years of age with substance use seen in the hospital were 326. The average age at which patients were first seen at the hospital was 13.54 years. Patients presented were in the age range of 9-17 years of age. The mean age of initiation of substance use was  $10.12 \pm 1.93$  years and the treatment gap was found to be  $3.42 \pm 1.79$  years. Most of the patients, around 55%, were taking one substance. Only 16% in the study were taking >2 substances. Most common substance use was cannabis followed by tobacco, alcohol and inhalants. Psychiatric comorbidity was found in 80% of patients with most common being conduct disorder (61.7%) followed by attention deficit hyperactive disorder (53.7%), depressive disorder (42%), anxiety (40.5%). Around 14% were seen to have other psychiatric disorders like mental retardation, psychosis, oppositional defiant disorder, emotional problems of childhood-onset, specific developmental disorder of scholastic skills as comorbidity. Another significant finding was that majority of patients i.e. 276 (84.7%) were treated at OPD basis. Comorbidity was most commonly seen with the use of cannabis (89.7%), followed by alcohol (85.1%),

**Table-2: Clinical profile of patients**

Parameters	Mean (SD)/ N(%) N=326
Age at presentation	13.54 (2.36) range (9-17)
Mean Age of initiation of substance (in years)	10.12 (1.93) (range 7-15)
Mean Number of substances taken	
One (1)	178 (54.6%)
Two (2)	94 (28.8%)
More than two (>2)	54 (16.6%)
Mean number in years passed before seeking treatment	3.42 (1.79) (range 0-8)
Primary substance taken	
1. Cannabis	136 (41.7%)
2. Inhalants	89 (27.3%)
3. Opioids (Non -Injectables)	50 (15.3%)
4. Opioids (Injectables)	36 (11.0%)
5. Tobacco	113 (34.7%)
6. Alcohol	94 (28.8%)
7. Others*	10 (3.1%)
Comorbid psychiatric disorders	262 (80.4%)
1. Conduct disorder	201 (61.7%)
2. ADHD	175 (53.7%)
3. Anxiety	132 (40.5%)
4. Depressive disorder	137 (42%)
5. Others#	46 (14.1%)
Treatment setting of patients	326
1. Inpatient setting	50 (15.3%)
2. Outpatient setting	276 (84.7%)

\*Other substance uses include amphetamines, cocaine, Benzodiazepines

# Others include Psychiatric disorders like Mental retardation, Psychosis, Oppositional defiant disorder, Emotional problems of childhood onset, Specific developmental disorder of scholastic skills

opioids (79.5%), tobacco (77%) and inhalants (73%) as seen in Table 3.

When substance use was categorized as per specific age groups, it was seen that cannabis was most common for the patients with age between 16-

**Table-3: Percentage of psychiatric illness associated with specific substance use**

Substance	Psychiatric disorder
Cannabis	89.7%
Inhalants	73%
Alcohol	85.1%
Tobacco	77%
Opioids	79.5%

18 years, followed by 13-15 years of age group. However, the younger age group of 9-12 years most commonly used inhalants. This group was found not to take any opioids, which were used by 33% of the study group in 13-15 years of age and 36% by 16-18 years of age group. Similarly, only around 4% was seen to use alcohol in the age group of 9-12 years, which was more commonly used by older age adolescents.

### Discussion

The co-occurrence of mental disorders and substance use disorders is well known. The earlier the age of substance use, the higher is the risk for substance use disorder.<sup>18</sup> Since the formative years of childhood is the time of acquiring life and social skills along with cognitive and academic development, it is an obvious fact that substance use will markedly hamper the child in achieving the same and the desired goals of our society and nation in general. Thus, treatment programs should be age and need based for better prognosis. Therefore, it is of paramount importance for us as medical health professionals to gather ourselves and help tackle the menace of substance use disorders among children and adolescent.

### Socio-demographic profile of patients

In the present study, it was observed that out of

**Table-4: Percentage of substance use within the age group**

	9-12 years n(%) N=100	13-15 years n(%) N=154	16-18 years n(%) N=72
Cannabis	28 (28.0%)	72 (46.8%)	36 (50%)
Inhalants	49 (49%)	30 (19.5%)	10 (13.9%)
Opioids (Non Injectables)	0 (0.0%)	30 (19.5%)	20 (27.8%)
Opioids (Injectables)	0 (0.0%)	20 (13.0%)	16 (22.2%)
Tobacco	27 (27%)	52 (33.8%)	34 (47.2%)
Alcohol	4 (4.0%)	52 (33.8%)	38 (52.8%)
Others*	0 (0.0%)	10 (6.5%)	0 (0.0%)

\*Other substance uses include amphetamines, cocaine, Benzodiazepines

treatment-seeking population only 1.8% were females as compared to around 98% males. This socio-demographic profile is similar to data from other Indian studies.<sup>19,20</sup> The reason for such low referral to treatment can be the stigma associated with seeking treatment in girls and the cultural norms of the society. However, more research is needed on this aspect as treatment and implications might differ based on gender differences.

### **Clinical profile of patients**

As per the Indian study of 2019,<sup>21</sup> the mean age at onset of substance use is 12.3 years with increasing age associated with the increased use of illicit drugs. Our study also showed the mean age for the same to be  $10.12 \pm 1.93$  years, i.e., 8-12 years. However, the mean age for seeking treatment in the population under study was  $13.54 \pm 2.36$  years. This variable has not been studied previously and more research is required for generalization on population. Patients usually reported, on average, after  $3.42 \pm 1.79$  years of substance use in the current research. The reason for the delay in seeking treatment can be attributed to stigma, poor knowledge about treatment options for substance use disorders or treatment might be sort when co-morbid psychiatric illnesses become prominent along with substance use. But we must remember that substance use problems start at a very young age and have life long implications with respect to relapses, treatment resistance, comorbidity and other social and legal consequences. To prevent the delay, early detection and intervention programs should be adopted so that chronicity and associated problems can be prevented.

Another important point to be considered is that the average rate of admission in our study sample was 15% only. This low number points to the treatment gap present in the society and unmet needs of youth, consistent with previous findings.<sup>22-26</sup>

The most common substance used by the population under study was cannabis, followed by alcohol, excluding tobacco. Inhalants were also used commonly, but in younger age groups as shown in Table 4. Other substances like amphetamines, sedatives were used in minimal percentages, possibly due to poor availability. This data is in lines with previously existing literature, which states that the highest prevalence of a specific substance use in adolescents was cannabis (41.6%), followed by

alcohol (21.7%). Other substances like sedative use, amphetamine and hallucinogen problems are less prevalent world wide.<sup>27-29</sup> Higher prevalence of cannabis use in the adolescent population is consistent with the "gateway hypothesis".<sup>30,31</sup>

Most of the patients were taking one substance (54.6%), and around 15% only were taking more than 2 substances. This is in contrast with other studies, which states that earlier the age of onset of substance, more is the prevalence of polysubstance dependence.<sup>32,33</sup> The reason for the same could be under reporting by patients in front of family members, which is a very common phenomenon.

### **Comorbidity of substance use disorders and psychiatric illness**

Relationship between substance use and other psychiatric disorders is complex. Higher rates of comorbid psychiatric disorders have been associated with substance use disorders. Epidemiological studies have shown comorbidity varying from 61% to 88%.<sup>3,34-38</sup> In our study, comorbidity present was around 80%.

The psychiatric disorder commonly found comorbid with substance use was conduct disorder, followed by attention deficit hyperactive disorder, depression, anxiety and other disorders. Previous studies report similar findings with comorbidity of conduct disorder varying from 24% to 82%; attention deficit hyperactive disorder-conduct disorder from 27% to 30%, attention deficit hyperactive disorder from 3% to 38%; anxiety disorders from 1% to 38%; mood disorders varying from 3% to 48%.<sup>39-43</sup>

Conduct disorder is a powerful predictor of substance use and antisocial personality disorder (ASPD) in adolescents.<sup>44</sup> Though attention deficit hyperactive disorder (ADHD) is common among adolescents with substance use disorders, association with substance use disorders is difficult to know, because of high co-occurrence of ADHD with conduct disorder which acts as a confounding factor. Some researchers are of opinion that the influence of attention deficit hyperactive disorder is completely because of conduct disorder<sup>45</sup> while others opine independent relationship between substance use disorders and attention deficit hyperactive disorder.<sup>46,47</sup> This finding of the independent relationship between the two is further substantiated by

changes in the prefrontal cortex in a few studies.<sup>48</sup> Another school of thought suggests that attention deficit hyperactive disorder's interaction with conduct disorder may result in a higher risk for substance use disorders than may either disorder alone.<sup>49</sup>

Researchers also suggest individuals with anxiety and affective disorders tend to self-medicate to reduce the negative effects of disorders.<sup>50</sup>

When substance-specific comorbidity was calculated, the highest rates of comorbidity were found with cannabis (89.7%) followed by with opiates (79.5%). Previous research has shown the highest rates of comorbidity being found in opiate abusers.<sup>3,51</sup> This difference can be explained by culturally accepted norms associated with cannabis use in India and availability of substance.

#### Age-specific substance distribution

The most common substance use in the younger age group, from 9-12 years, was inhalant use. In the study sample, from 13-15 years, the most common substance was cannabis (46.8%), followed by alcohol (33.8%). This finding is consistent with the previous study by Chan et al<sup>5</sup> which showed that the most common substance-specific problem among adolescent under 15 years of age is cannabis (41.6%), followed by alcohol (21.7%) whereas opioids and cocaine are more common in older adolescents than in younger age groups. However, the study by Chan et al., 2008 did not consider a subdivision of the population under 15 years of age, unlike in the present study.<sup>5</sup> In our study in a very young age group (9-12) inhalants (49%) was the most common substance use problem, which was found with lower prevalence (19.5%, 13.9%) among older (13-15, 15-18) age groups. The previous study from India also showed inhalant is the most prevalent substance use problem among children.<sup>19</sup> Another reason for the high prevalence of inhalants use among younger children can be easy availability of substance.

#### Limitations of the study

We are well aware of the limitations of the study, which enforces the requirement of more research before generalizability to population. The first being retrospective nature of the study and small sample size. Also, in the study substance use was taken as

criteria and not further categorized into abuse and dependence because children may have difficulty in comprehending questions for fulfilling diagnosis of dependence. The relationship between severity of substance use and psychiatric illness was not considered. Socioeconomic status of the families, age at onset of psychiatric disorders, physical and sexual abuse are few of the factors that affect the patterns of substance use in children but were not considered in the study.

However, this study is important considering the little amount of literature available with respect to substance use in children as substance use itself, irrespective of severity, is a threat to the developing brains of little ones who are our future.

#### Conclusion

Substance abuse and comorbid psychiatric disorders are a norm rather than the exception in adolescents. These are a big challenge for any society. Hence it becomes important to detect such youth at an early age, at less severity of the problem, so that adequate interventions can be done. Treatment programs thus, should target this complex web of interrelated problems. These programs should focus on age specific needs and interventions as the needs and responses to treatment may vary depending upon age. Early recognition and treatment can help in preventing long term complications, decreases risk of relapses and lead to better outcomes. Further, interventions should have easy assessable as service utilization seems to be very low.

Future research should focus on means for early detection of comorbidity, easy availability of resources and their linkage in society.

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## Original Article

# Efficacy of parent training programme in enhancing quality of life dimensions income, access and maintenance of individual with intellectual disability

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### ABSTRACT

**Background:** Intellectual Disability (ID) is one of the most common developmental disability. There is a strong need to support the social, emotional, physical and personal support systems among the parents of the ID. **Aims:** The purpose of the study was to assess the difference between the experimental and control group on the Quality of Life of individual with Intellectual Disability (IID) on its dimension, Employment –Income and Maintenance (EIM) in terms of its four domains support, access, participation and satisfaction, after the Parent Training Programme. **Methodology:** Pre and Post treatment research designs was used. 120 IID (60 each in experimental and control group) were selected randomly. Binet-Kamat Test of Intelligence and Quality of Life Scale for Persons with Disabilities were applied. Analysis of covariance (ANCOVA) was applied on the pre test scores and post test scores obtained by the participants in the experimental and control group before and after the Parent Training Programme. **Result and Conclusion:** It has observed that parent training programme of individual with intellectual disability is effective in enhancing quality of life dimensions income, access and maintenance of Individual with Intellectual Disability (IID).

**Key words:** Intellectual Disability, Parent Training, Quality of Life, Employment.

### Introduction

Intellectual Disability (ID) is one of the most common developmental disability. ID is one of the most common developmental disability. It is estimated that seven to eight million people in the United States have an intellectual disability. It has also seen that more than 425,000 children (ages 3-21) have some level of ID and receive special education services in public school.<sup>1,2</sup> In India, the prevalence of ID was found to be 1.71% in the study population. The prevalence was higher among the males in all study populations [rural: 1.9%, urban (non-slum): 1.6%, and urban slum: 7.14%]. The prevalence was similar among the urban (non-slum)

(1.75%) and rural (1.11%) populations, whereas it was higher (4%) in the urban slum population. A prevalence of 2% was seen in families from the lower middle class and 1.8% among families from the lower class in the rural population, whereas a prevalence of 2% was seen among lower middle-class families of urban (non-slum) areas.<sup>3</sup> Parents of children with intellectual disabilities have facing many challenges in their life. They often reported to have physical and psychological distress related to caring for their children, thus affecting their quality of life and increasing family burden. Earlier studies have shown that parents of children with disabilities feel the sense of failure, helplessness and guilt.<sup>4</sup>

Mothers of children with ID displayed lower physical health, impairment in social relationships, in their psychological state and poorer perception of the environment<sup>5</sup> Kumar et al emphasized that quality of life negatively related with economic family burden, family functioning, family relations, interpersonal relations of parents, other family burden.<sup>6</sup> It has also found that both parents perceive an equal level of psychosocial well-being on family burden and quality of life.<sup>7</sup> Parents of intellectual disability child have been perceived poor psychosocial well beings especially on area of quality of life and family burden domain. Negative correlations have been found between Quality of life, Family burden and IQ functionin.<sup>8</sup> Some studies have been conducted in low-and middle-income countries such as Kenya, Kuwait, Qatar and India which similarly report rates of 47–50% prevalence of psychological disorders amongst these parents.<sup>9</sup> Parenting such children may lead to difficulties with family functioning, parenting stress, and different parenting style compared to parenting normally developing children.<sup>10</sup>

Individual with Intellectual Disabilities (IID) need help with adaptive skills, these skills are needed to live, work, and play in the community. Professionals, teachers and parents can help IID through teach and learn adoptive behaviour. Some of these skills include: communicating with others; taking care of personal needs (dressing, bathing, going to the bathroom); health and safety; home living (helping to set the table, cleaning the house, or cooking dinner); social skills (manners, knowing the rules of conversation, getting along in a group, playing a game); reading, writing, and basic math; and as they get older, skills that will help them in the workplace. Coren et al has mentioned about randomised controlled trials (RCTs) of parent training programmes to improve parenting skills in parents with intellectual disability.<sup>11</sup> Hodes et al has discussed about adapted a video-feedback intervention to improve parent–child interactions and promote sensitive discipline by filming parent–child

interactions then reviewing them with the parent and therapist to reinforce positive behavior.<sup>12</sup>

QOL has been categorized into six domain (Quality of Home and Community Living, Health and Wellness-(HW), Rehabilitation and Education (RE), Employment-Income and Maintenance (EIM), Social-Recreational-Cultural (SRC), Personal-(P)) by Mishra,<sup>13</sup> which was specially developed to measure the QOL of children with intellectual disability. There is paucity of studies found on this subject. **Aims:** Therefore, present study has been planned to find out the difference between the experimental group and control group on the Quality of Life of IID on its dimension, Employment–Income and Maintenance (EIM) in terms of its four domains support, access, participation and satisfaction, after the Parent Training Programme (PTP). **Hypothesis:** There would be significant difference between experimental group and control group after the Parent Training Programme (PTP) on Quality of Life of Children with Mental Retardation on its dimensions Employment-Income and Maintenance (E) in terms of its four domains, support, access, participation and satisfaction.

### Methodology

**Design:** Pre and Post treatment research designs was used to study the effect of Parent Training Programme on the quality of life of the parents having IID. Place and duration of the study: The study was conducted between the periods of May 2013- July 2014 at three districts of Haryana Rohtak, Jhajjar and Sonipat. **Participants:** A group 240 sample was recruited in the present study, in which 120 persons with mild ID and 120 parents (both mother and father) with ID. Further 60 parents each in the experimental and control group were grouped.

**Tools Used:** The Following standardized tools were applied in the present study to take the observation of the participants of both experimental and control group. **Binet-Kamat Test of Intelligence** (Indian Adaptation by Kamat (1934, 1957 & 1967) was used to assess the Intelligence Quotient

**Table-1: Design to study the Effect of Parent Training Programme on the Quality of life Home**

	Pre-test	Post-test
Experimental Group	60 Parents (Both Father & Mother)	60 Parents (Both Father & Mother)
Control Group	60 Parents (Both Father & Mother)	60 Parents (Both Father & Mother)

(IQ) of the mentally retarded children to identify their level of retardation.<sup>14</sup> **Quality of Life Scale for Persons with Disabilities** (Mishra, 2001)<sup>13</sup> was used to measure the Quality of Home & Community Living (QHCL) dimension of the children with mental retardation.

**Procedure:** The study was divided into two phases In the First phase of the study: Permission from the different authorities of special school in Haryana was obtained. After that, tentative time schedule was developed in consultation with the authorities of the special schools in Haryana and data was collected from the respondent who came to special school for consultation. They were briefed about the study tools. They were also informed about anonymity and confidentiality of the whole process of data collection. The Binet-Kamat Test of Intelligence was administered on 200 IID between the age group of 15-25 years. Out of 200 IID 120, 60 each in experimental and control group were selected randomly. The selected sample of 120 children (Experimental & Control Group) having ID were administered the “Quality of life Scale for Persons with Disabilities,” individually to explore the quality of life of these children. In the Second phase of the Study: Parent Training Programme was conducted for the experimental group in regular interval (quarterly) for two days (each day for 06 hours) throughout one year for the parents. They were exposed parent training programme through different modes i.e., by lectures method, providing written materials, audio-video presentation, individual and group counseling, role plays and Group

(h) Govt. Schemes and Benefits (i) Points to be remember. After the one year of training, all the subjects i.e. 60 parents (Both father & mother) of experimental and 60 parents (both father & mother) of control Group were re-assessed to assess the impact of parent training programme on the Quality of Life Scale for the Children with Mental Retardation.

**Results**

In order to apply analysis of covariance on the pre test scores and post scores of the quality of life of the children with mental retardation on the Employment-Income and Maintenance dimension, besides satisfying the basic assumptions of applying Analysis of Covariance.

To satisfy the assumption of the “control” on the independent variable i.e., pre test scores on the Employment–Income and Maintenance dimension of the quality of life of the children with mental retardation in the experimental group and control group Analysis of Covariance was applied to see the difference between pre test scores in the experimental group and control group (See Table-2)

The Table -2 showed F value .004 which is not significant at .05 level of significance indicating no significant difference between experimental and control group on their pre test scores and indicating no significant difference between experimental and control group on their pre test scores i.e., the independent variables and covariate that is outcome are not

**Table-2: The F Value Table Showing the Difference between the Scores Quality of Employment-Income and Maintenance Dimension of Quality of Life of the Children with Mental Retardation in the Experimental and Control Group in the Pre Test**

Source	Sum of Squares	df	Means square	F value
GROUPS (Pre Test scores)	.013	1	.013	.004
Error	385.049	118	3.263	
Total	44458.813	120		

discussion etc. In the parent training programme, many topics related to mental retardation and its issues were taken which are as follows: (a) Stress Management/Coping Strategies (b) ID (Issues and Management) (c). Misconceptions about ID. (d) Behaviour Modification (e) Training to Children with ID (f) Child Abuse, (g) Role of Families and Parents

different across the group and satisfied the assumption to apply Analysis of Covariance.

To test the assumption of homogeneity of regression, the result in the Table-3 showed the F value .321 which is not significant at .05 level of significance indicating no difference on the between subject effects on group time pretest and thus

**Table-3: The F Value Table showing the Scores of Quality of Employment –Income and Maintenance Dimension of Quality of Life of the Children with Mental Retardation in the Experimental and Control Group to test the Homogeneity of Regression**

Source	Sum of Squares	df	Means square	F value
GROUPS* (Pre Test scores)	.321	1	.321	.095
Error	393.031	116	3.388	
Total	50797.000	120		

satisfied the assumption of homogeneity of regression to qualify for Analysis of Covariance to test the significant difference between experiential and control group on the dependent variable i.e., post test scores of Employment –Income and Maintenance dimension of the quality of life of the children with mental retardation with covariate independent variable i.e., pretest scores of Employment –Income and Maintenance dimension.

accepted. The result of the earlier researches also corroborated with result of the present study. Previous literature relating to the quality of life the IID regarding supported employment converging on three fundamental questions. First, workers in supported employment show high levels of quality of life than those working in sheltered employment. Second, workers in the supported employment show quality of life levels similar to those workers without

**Table-4: The F Value Table Showing the Difference between Experimental and Control Group on the Employment-Income and Maintenance Dimension of the Quality of Life of the Children with Mental Retardation in the post Test**

Source	Sum of Squares	df	Means square	F value
GROUPS (Post Test scores)	77.849	1	77.849	42.395
Error	214.843	117	1.836	
Total	49447.688	120		

After applying Analysis of Covariance to test the significant difference between the experimental group and control group on the dependent variable i.e., post test scores of the Employment–Income and Maintenance of quality of life of the children with mental retardation, the F value came out to be 42.39\*\* which is significant at .01 level of significance (See Table - 4) and the mean values of post test scores of experimental group (21.00) and the control group (19.40) revealing the significant improvement on the Employment–Income and Maintenance dimension of quality of life of the children with mental retardation in the experimental group than the control group.

**Discussion**

The hypothesis of the study is “There would be significant difference between experimental group and control group after the Parent Training Programme (PTP) Employment-Income and Maintenance dimension in terms four domains, support, access, participation and satisfaction”, is

a disability.<sup>15</sup> Finally, the level of quality of life does not improve immediately after gaining employment in an ordinary company as the initial stress can decrease it,<sup>16</sup> but subsequently quality of life may reach similar levels to those of workers without a ID. It has also seen that workers in supported employment show the same quality of life as those in sheltered employment centres. In Spain, the greater the typicalness of the employment, the higher the quality of life. The implications of this for the amount of direct external support for workers with disability is that such support should be used only when absolutely necessary the minimum support necessary to encourage development the minimum support necessary to encourage development.<sup>17</sup> Another finding also revealed that in relation to natural supports, typicalness has recently been advanced as the degree to which the characteristics of job accessibility, the job itself (duties, bene-fits, etc.) and the job environment (places, co-workers, etc.) are similar to those of co-workers without a disability in the same company.<sup>18,19,20,21</sup> Trostre

showed that teaching strategies for effective coping with mental pressures to parents of IID had positive effects on reduction of their stresses and mental health improvement of both the parents and children with mental retardation.<sup>22</sup> Brad et al found during a meta-analysis of 63 peer-reviewed studies of the ability of parent training programs to modify disruptive child behaviors and parental behavior and perceptions. They found that parent training was least effective for economically disadvantaged families; importantly, such families benefited significantly more from individually delivered parent training compared to group delivery.<sup>23</sup> Now the developing country like India, the importance of family as well as parental training has been recognised for enhancing the quality of life of both (parents and IID). The facility of family cottage is available for the families coming from far-off places to avail themselves of services at National Institute of Mentally Handicapped, Sikandrabad. The clients occupying the family cottage can stay for a period of two weeks and receive professional services and training such as skill training, individual family counseling, and management of problem behaviors, speech-language therapy, medical advice, physiotherapy, recreational activities and other help. During their stay at these cottages, parents have the opportunity to concentrate on the needs of the child while being away from their daily routine chores.<sup>24</sup> May & Harris emphasized about better quality research and longer term follow-up studies are needed, with increased inclusion of fathers. Lack of availability of these types of targeted parenting programmes in the community may be a substantial barrier and may vary by geographic location. Specific training of professionals in how best to help parents with ID and associated service development, in an evolving disability funding environment, may create a new pathway to support these parents in need.<sup>25</sup>

#### **Implications of the Present Study**

(a) implementation of individualized programme  
 (b) Planned with an annual schedule for parent involvement in different activities, where attendance should be carefully monitored  
 (c) Encouraging parent's visit to rehabilitation centers  
 (d) Strengthening periodic professional – parent consultation programme, parent to parent intervention programme and the training of the parents through parent workshop/training programme at least twice a year.

#### **Conclusion**

Parent training programme of individual with IID could be more effective. That provides parents knowledge, guidance and understanding about their children and ways how to respond them in a positive, nurturing and proactive manner. This has also helped the parents to increase their confidence and reduce family burden, so that they can perform their job successfully. Esther et al highlighted the fact that there is some low quality evidence that parent training interventions for parents with ID may support their parenting. However, given the low quality of the evidence, the results should be interpreted with caution. Better quality research is needed to evaluate the effectiveness of parent training interventions for parents with ID.<sup>26</sup>

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## Original Article

# Development and validation of a scale to measure Positive Impact of COVID19 Lockdown

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### ABSTRACT

**Background:** COVID 19 pandemic a tiny entity has halted everyone's life across the globe. Confinement at home has altered our fast life styles, given us opportunity to rebound with family members, and adapting healthy life style. **Methods:** Adults from various government and private colleges, people living in welfare societies and rural localities of Chandigarh were enrolled through snowball convenient random sampling technique. Development and Hindi translation of the scale was done and its psychometric properties were assessed. **Aim:** To develop a Scale to measure the positive impact of Lockdown during COVID 19 and to translate and validate this Scale in Hindi. **Results:** At baseline assessment mean age of participants was  $36.50 \pm 10.51$  years. At baseline observation 107 (52.2%) were male and 97(47.5%) were female. Substantial agreement among experts shows good content and face validity. Five factors were extracted and these retained five factors explained the 42.39 % of total variance. Cross language concordance was assessed and Cronbach's alpha for items ranged from 0.88-0.98 and ICC 0.88-0.98. For test-retest reliability Cronbach's alpha value ranged from 0.76 – 0.96 and ICC value ranged from 0.74 – 0.93. **Conclusion:** Overall, our result indicates good internal consistency, face, content and constructs validity of the COVID19 positive Impact questionnaire. This is a precise and easy to understand.

**Keywords:** Positive impact, lockdown, COVID19, Scale

### Introduction

COVID 19 pandemic a tiny entity has halted everyone's life across the globe. Confinement at home has given us opportunity to rethink about our fast life styles, social bonding. Applauding health care workers nationwide by clapping, lighting the lamps, showing act of kindness. These experiences brought us closer to each other and given us opportunity to connecting with people with whom we were not able to connect due to our busy life styles and we started to clearly prioritize the essential from the non-essential.

This prolonged confinement at home has also brought challenges also. Many had found it hard to

adapt and cope up with new responsibilities due to this challenging period and lot has been studied. Consequently, it emerged the need to develop psychological scales to assess the potential effects of COVID 19. Various scales have been developed to measure impact of COVID 19 on mental health of clinical and non-clinical population. Fear of COVID-19 scale;<sup>1,2</sup> Coronavirus Anxiety Scale;<sup>3</sup> COVID-19 Peritraumatic Distress Index;<sup>4,5</sup> COVID-19 stress scale;<sup>6</sup> questionnaire to assess lifestyle-related behaviour during COVID 19 pandemic.<sup>7</sup>

During literature search we did not find any scale to assess the positive impact of COVID 19 except on environment has also been studied<sup>8-10</sup>.

Hence, we planned a study to develop a questionnaire to measure the positive impact of Lockdown during COVID 19 and to translate this into Hindi for Hindi speaking population in India.

### Objectives

To develop a Scale to measure the positive impact of Lockdown during COVID 19.

To translate and validate this Scale in Hindi.

### Methods

#### Inclusion and exclusion criteria

Adult population (aged 18 – 60 years), of either gender who gave consent were recruited.

People with prior chronic physical and mental health disease were excluded.

#### Study Design

This was observational study and conducted in two stages :

*Stage I:* Development of Scale to Measure Positive Impact of Lockdown during COVID 19.

*Stage II:* Translation of Scale in Hindi and assessing its Psychometric properties.

#### Procedure

Adults from various government and private colleges, people living in welfare societies and rural localities of Chandigarh were enrolled through snowball convenient random sampling technique. After obtaining Institute ethics committee approval, permission was sought from the competent authorities (Director Education, Chandigarh Administration) to conduct an online survey. Participants in urban areas were also approached through Resident Welfare Associations and in rural locality through sub centers of health care. Principal of various government and private colleges, Residents welfare Committees and in charge Health Care Centers were contacted through e-mail, Whats app and telephonically to explain the objectives of the study and Google forms were sent through email and Whats app.

#### Stage I: Development of Scale

The development of the scale was carried out methodically by following these steps: literature review, focus group discussions (FGDs), evaluation by panel of experts and pilot testing.<sup>11</sup>

*Literature Review:* Review was done using search engines through various websites to get wider view of positive impact of lockdown and existing scales to measure this. On the basis of this review items pool was generated.

*Focus Group Discussion:* Focused group discussions were also conducted with experts (2 Psychologist, 2 Pediatrician, 2 Psychiatrist, 1 each from education and Community Medicine) and general public to seek their opinion through audio and video calls. On the basis of this FGD 4 more items were added in the pool of items. Total 32 items were generated in English and 5 point Likert scale was used to record the participant's responses. Main focus was to keep appropriate questions, avoid overlapping.

*Face Validity and Content Validity:* Face and content validity of the purposed COVID 19 Positive Impact Survey Questionnaire was examined by team of experts. To ensure the face validity 5 items were reframed on the basis of panelist expertise (i.e. Have you spend quality time with your family during COVID19 lockdown?" was reframed into "Have you enjoyed the quality time you spend with your family members during lock down?) and 7 items were converted for subjective experiences of the participants (i.e. What was the positive impact of lockdown on you?, How did you utilize this time?, Which hobbies have you restored? and How work from home concept has given new dimension to work culture?). Thus, total 25 items were finalized.

*Pilot Testing:* Once item pool was finalized, subsequent version was administered on 10 adults of either gender to explore their perception and acceptability. Participants were encouraged to give additional comments on clarity and relevance of items. Finally 2 items were modified as per experts' recommendations (i.e. "Do you think that lockdown has given you vision to adapt to healthy life style" was modified with "Do you think that lockdown has given you vision to adapt to healthy life style?" (i.e. exercise, yoga, reading introspection etc.).

#### Stage II: Translation of Scale in Hindi and assessing its Psychometric properties.

We planned to use this scale on Hindi speaking population. Thus, by following WHO guidelines, we translated the final English version in Hindi by two bilingual experts who were fluent in reading, writing

and speaking English and Hindi. Both versions of Hindi translation were reconciled and first draft was retranslated into English by two different bilingual experts. Back translation was reviewed by trained psychologist and discrepancies in terminology were resolved. Finally refined version was discussed and evaluated by experts of English and Hindi language and final version was prepared.

Subsequently, cognitive debriefing was done and the scale was administered on 204 adults (aged 18-60), who were able to read and understand through online survey. To ensure the diversity participants was recruited from different starts. Google forms were sent through email or Whats app. Responses of participants and their suggestions were reviewed by experts. If three or more participants had difficulty in comprehending a particular item that item was modified as per suggestions and the final Hindi version was locked down for validation phase. To assess the test-retest reliability Questionnaire was sent to 204 participants through Google form after 5-7 days gap from baseline observation to avoid impact of any life event on the participant’s response on the questionnaire and 89 responded for second assessment.

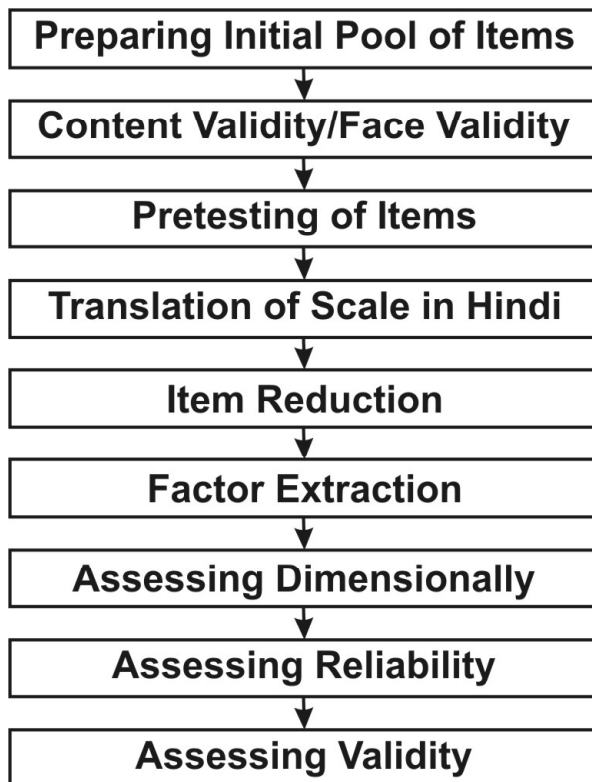


Fig. 1: Flow Development and validation of Scale

**Sample Size:** By following the guidelines for participants to item ratio 5:1,<sup>12</sup> to ensure optimum participation Google forms were sent to 300 participants to ensure optimum participation. Out of 300 total 204 participants responded and for test-retest reliability 89 out of 204 approached participants responded.

**Statistical Analysis**

Obtained data was analyzed using IBM SPSS version 17.0 Statistics for Windows, (IBM Corp., Armonk, NY). Descriptive statistics was used (frequency, percentage, mean and standard deviation) for demographic variables of the children and parents. Skewedness of the data was also checked and parametric tests were used for further analysis. Internal consistency of all the scales was computed by using Cronbach’s  $\alpha$  and with reference to values  $\geq 0.9$ , excellent;  $\geq 0.8$ , good;  $\geq 0.7$ , acceptable;  $\geq 0.6$ , questionable;  $\geq 0.5$ , poor; and  $\leq 0.5$ , unacceptable.<sup>13</sup> For test retest reliability intra class correlation was computed. Two-way random effect model was used with 95% as class interval and ICC of  $\geq 0.70$  was considered acceptable.<sup>14</sup> To assess the association between baseline and retest total scores Pearson’s correlation coefficient and ICC were computed.

**Results**

**Demographic Description of Participants**

Results of pre testing revealed that no discrepancies were notice in used terminology of Hindi version of the scale. Out of 300 eligible participants 204 gave consent and completed baseline assessment. At baseline assessment mean age of participants was  $36.50 \pm 10.51$  years. At baseline observation 107 (52.2%) were male and 97 (47.5%) were female. Among Participants 92 (45.1%) had attained education up to graduation level, equal proportion of participants 80 (39.2%) were involved in clerical/ministerial jobs and earning INR  $> 39,033$ . About half of participant population living in joint families 105 (51.5%), majority living in urban locality 145 (71.1%). At Second observation (test-retest) participant mean age was  $36.59 \pm 10.46$ , less than half 39 (43.8%) had attained graduation level education and engaged in ministerial jobs. Detailed demographic description of participants is given in Table 1.

**Table-1: Demographic profile of the Participants**

	Mean $\pm$ Sd	Baseline (Frequency)	Retesting
Age (in Years)	36.50 $\pm$ 10.51 Range (19-58 Years)	—	36.59 $\pm$ 10.46 Range (19-58 Years)
Gender	Male	107 (52.2%)	45 (50.6%)
	Female	97 (47.5%)	44 (49.4%)
Education:	High School	68 (33.3%)	10 (11.2%)
	Higher Secondary	24 (11.8%)	23 (25.8%)
	Graduation	92 (45.1%)	39 (43.8%)
	Post-Graduation & Above	20 (9.8%)	17 (19.1%)
Occupation	Skilled workers	12 (5.9%)	6 (6.8%)
	Students	46 (22.5%)	13 (14.6%)
	Ministerial Jobs	80 (39.2%)	39 (43.8%)
	Associate Professional	30 (14.7%)	17 (19.1%)
	Professional	36 (17.6%)	14 (15.7%)
Income (in Rupees)	< 19,515	64 (31.4%)	31 (34.8%)
	< 39,032	60 (29.4%)	38 (42.7%)
	> 39,033	80 (39.2%)	20 (22.5%)
Family Type	Nuclear	99 (48.5%)	43 (48.3%)
	Joint	105 (51.5%)	46 (51.7%)
Locality	Urban	145 (71.1%)	69 (77.5%)
	Rural	59 (28.9%)	20 (22.5%)
SES	Lower	6 (2.9%)	2 (2.2%)
	Upper Lower	32 (15.7%)	11 (12.4%)
	Lower Middle	58 (28.4%)	28 (31.5%)
	Upper Middle	108 (52.9%)	48 (53.9%)

**Table-2: Cross Language Concordance between Hindi/English Version of COVID 19 Positive Impact Survey Questionnaire**

	English	Hindi	$\alpha$ value	ICC	t	p
Q1	3.40 $\pm$ .90	3.38 $\pm$ .94	0.97	0.94	.894	.372
Q2	4.63 $\pm$ .92	4.62 $\pm$ .85	0.95	0.92	.407	.684
Q3	2.43 $\pm$ 1.78	2.45 $\pm$ 1.73	0.98	0.98	-1.293	.197
Q4	3.13 $\pm$ 1.23	3.13 $\pm$ 1.22	0.97	0.95	-.192	.848
Q5	2.17 $\pm$ 1.35	2.24 $\pm$ 1.37	0.95	0.95	-2.431	.016
Q6	4.50 $\pm$ .56	4.49 $\pm$ .56	0.96	0.93	.706	.481
Q7	3.46 $\pm$ .90	3.44 $\pm$ .87	0.97	0.94	.943	.347
Q8	3.18 $\pm$ 1.05	3.20 $\pm$ 1.04	0.98	0.96	-.943	.347
Q9	2.92 $\pm$ 1.03	2.19 $\pm$ 1.01	0.98	0.96	.499	.618
Q10	3.05 $\pm$ 1.00	3.07 $\pm$ 1.02	0.98	0.96	-1.214	.226
Q11	1.89 $\pm$ 1.31	1.90 $\pm$ 1.24	0.97	0.96	-.377	.706
Q12	3.27 $\pm$ .84	3.30 $\pm$ .84	0.97	0.94	-1.390	.166
Q13	3.04 $\pm$ 1.63	3.05 $\pm$ 1.62	0.99	0.98	-.471	.639
Q14	2.57 $\pm$ .98	2.58 $\pm$ .95	0.96	0.92	-.499	.618
Q15	2.92 $\pm$ .88	2.91 $\pm$ .88	0.95	0.90	.556	.579
Q16	2.58 $\pm$ 1.07	2.61 $\pm$ 1.03	0.96	0.94	-.962	.337
Q17	2.64 $\pm$ .94	2.63 $\pm$ .90	0.96	0.92	.192	.848
Q18	2.96 $\pm$ .75	2.95 $\pm$ .76	0.92	0.86	1.741	.083
Q19	2.39 $\pm$ 1.12	2.41 $\pm$ 1.15	0.98	0.96	-.943	.347
Q20	3.59 $\pm$ 1.02	3.60 $\pm$ 1.03	0.96	0.92	-.499	.618
Q21	4.43 $\pm$ .63	4.41 $\pm$ .58	0.88	0.79	.706	.481
Q22	4.22 $\pm$ 1.00	4.24 $\pm$ .93	0.94	0.90	-.648	.518
Q23	2.91 $\pm$ 1.31	2.94 $\pm$ 1.26	0.95	0.91	-.944	.346
Q24	3.70 $\pm$ 1.33	3.71 $\pm$ 1.28	0.97	0.95	-.521	.603
Q25	4.22 $\pm$ .79	4.21 $\pm$ .78	0.95	0.92	.446	.656

**Table-3: Test-Retest Reliability of COVID 19 Positive Impact Survey Questionnaire**

	Hindi Baseline	HindiRetest	$\alpha$ value	ICC	p
Q1	3.40 ± .95	3.38 ± .84	0.94	0.90	.596
Q2	4.66 ± .83	4.64 ± .75	0.95	0.91	.530
Q3	2.53 ± 1.73	2.56 ± 1.62	0.94	0.90	.775
Q4	3.21 ± 1.35	3.24 ± 1.20	0.94	0.88	.604
Q5	2.17 ± 1.35	2.24 ± 1.37	0.93	0.89	.225
Q6	4.51 ± .50	4.55 ± .50	0.76	0.75	.369
Q7	3.40 ± .90	3.38 ± .87	0.91	0.84	.672
Q8	3.13 ± 1.10	3.17 ± 1.07	0.95	0.91	.349
Q9	2.95 ± .99	2.98 ± 1.00	0.96	0.92	.408
Q10	2.94 ± 1.05	3.00 ± .98	0.95	0.90	.227
Q11	1.82 ± 1.20	1.86 ± 1.14	0.96	0.93	.322
Q12	3.25 ± .85	3.28 ± .73	0.92	0.85	.620
Q13	2.95 ± .90	3.00 ± .92	0.90	0.82	.436
Q14	2.60 ± .97	2.64 ± .96	0.96	0.92	.408
Q15	2.92 ± .86	2.97 ± .90	0.94	0.89	.198
Q16	2.56 ± .99	2.60 ± .97	0.93	0.88	.374
Q17	2.69 ± .93	2.86 ± .96	0.88	0.79	.010
Q18	2.92 ± .71	2.96 ± .76	0.93	0.87	.250
Q19	2.65 ± 1.15	2.69 ± 1.09	0.95	0.92	.349
Q20	3.65 ± 1.02	3.74 ± .98	0.93	0.86	.103
Q21	4.43 ± .63	4.41 ± .58	0.90	0.82	.369
Q22	4.20 ± .96	4.25 ± .79	0.85	0.74	.401
Q23	2.97 ± 1.31	3.12 ± 1.21	0.92	0.86	.037
Q24	3.88 ± 1.23	3.94 ± 1.17	0.96	0.92	.254
Q25	4.16 ± .78	4.22 ± .73	0.91	0.83	.227

**Table-4: Factor Loading, Percentage of variance explained and Eigen Values for Retained 5 factors**

Item No.	Factor I	Factor II	Factor III	Factor IV	Factor V
Item No 1	.563	—	—	—	—
Item No 2	.401	—	—	—	—
Item No 3	.543	—	—	—	—
Item No 4	.717	—	—	—	—
Item No 5	.574	—	—	—	—
Item No 6	.502	—	—	—	—
Item No 7	—	.576	—	—	—
Item No 8	—	.572	—	—	—
Item No 9	—	.406	—	—	—
Item No 10	—	.512	—	—	—
Item No 11	—	—	.458	—	—
Item No 12	—	—	.599	—	—
Item No 13	—	—	.546	—	—
Item No 14	—	—	.482	—	—
Item No 15	—	—	—	.359	—
Item No 16	—	—	—	.649	—
Item No 17	—	—	—	.704	—
Item No 18	—	—	—	—	.557
Item No 19	—	—	—	—	.481
Item No 20	—	—	—	—	.417
% of Variance Explained	11.71%	9.55%;	7.11%;	7.03%	6.97%).
Eigen Value	2.971	1.506	1.395	1.362	1.043

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

### Face Validity and Content Validity

Total 32 items were generated and referred as COVID 19 Positive Impact Survey Questionnaire. On the basis of people experiences during COVID 19 lockdown the survey was divided into five different dimensions i.e. Face and content validity was assessed by substantial agreement on ambiguity and content relevance for most of the items by expert panelist. To ensure the face validity few items were reframed on the basis of panelist expertise and total 25 items were finalized. Substantial agreement among experts shows good content and face validity.

### Construct Validity

To ensure parsimonious and internal consistency among items construct validity was assessed by using item reduction (factor analysis). To measure sample adequacy the Kaiser Meyer Oklin was used and value of .67 (mediocre) was above the commonality value of 0.60. Factors analysis was performed by using principal component analysis method and varimax rotation. Five items were filtered as they did not meet the optimal criterion of having factor loading  $\geq 0.30$ . Factor loading  $\leq 0.30$  considered inadequate as they contribute  $\leq 10\%$  of variance.<sup>14</sup> Initial factor structure revealed that total 8 factors with Eigen value  $\geq 1.00$ , explained 60.83% of total variance. First factor had Eigen value of 11.83 and explained 8.11% of variance. For rest of the seven factor Eigen value ranged from 1.5 to 2.9. The scree plot showed 5 relevant factors and these retained five factors explained the 42.39% of total variance (Factor I: 11.71%; Factor II: 9.55%; Factor III: 7.11%; Factor IV: 7.03% and Factor V: 6.97%). Table 4

### Assessing Reliability

Internal consistency was assessed by using Cronbach's alpha and ICC and for mean comparison for both the observations was measured using paired t-test. Significant correlations between English and Hindi versions were observed on total scores of all the study measures and also between test-retest observations. Reliability was assessed by using Cronbach's alpha and ICC. Both English and Hindi versions were administered to check the cross language concordance. Cronbach's alpha for items ranged from 0.88-0.98 and ICC 0.88-0.98. These values suggest good internal consistency. Comparative mean scores of both the observations are presented in Table 2.

### Test Retest Reliability

Test-retest reliability was assessed by Using Cronbach's alpha and ICC.<sup>15</sup> For test-retest reliability baseline scores were compared with scores on same measure after the gap of one week by using paired t test. Hindi version of the scale was given to 89 participants after the gap of one week. Cronbach's alpha value ranged from 0.76 – 0.96 and ICC value ranged from 0.74 – 0.93. (Table 3)

### Discussion

COVID 19 has stunned everyone and staying within the home boundaries during lockdown has forced us to spend endless time together, better social bonding and prioritizing essential from non-essential.

As content validity is defined as “the degree to which elements of an assessment instrument are relevant to, and representative of, the targeted construct for a particular assessment purpose”<sup>16</sup> and is explored through appraisal of expert panel and targeted population.<sup>17</sup> Face and content validity of this scale was assessed by panelist expertise and targeted population suggestions and by substantial agreement was found on most of the items that shows good content and face validity. Principal component analysis yielded a 5 factor model with 25 items and these factors explains 42.39% of total variance.

This is first study of its kind in India to develop a validated questionnaire using a standardized procedure<sup>11</sup> that will help to assess the positive impact of pandemic related changes in behavior. This questionnaire is precise, easy to understand. The incorporated 25 items covers all the important aspects related to behavioral changes in crisis. First factor was labeled as Family Dynamics (Item number 1,2,10,12,13,15) as most of the items are related to family functioning. Second factor was named as Environmental Impact (item number 8,9,18,23), factor third (items number 5,16,17,19) assess the various positive changes during this pandemic period thus labeled as Lockdown related positive changes and finally most of the items in factor five (item number 14,21,22) examined the adaptation to new roles and responsibilities and labeled as personal responsibilities.

Final English version was translated in Hindi for Hindi speaking Indian population by following standardized methodology of translation assuming that questionnaire in native language would be easy

for targeted population easy to understand. Significant correlations between English and Hindi versions were observed on total scores of all the study measures and also between test-retest observations. Results on cross language concordance revealed that Hindi version is a reliable tool to be used for Hindi speaking population.

Internal consistency of items of a scale is assessed by Cronbach's alpha and alpha coefficient  $\geq 0.70$  has been observed as acceptable.<sup>14</sup> Test-retest reliability is referred as coefficient of stability and can be assessed by ICC<sup>15</sup> and Pearson's product moment correlation.<sup>18</sup> Good to excellent Cronbach's alpha and ICC values shows good internal consistency.

Overall, our result indicates good internal consistency, face, content and constructs validity of the COVID19 positive Impact questionnaire. This is a precise and easy to understand.

### Limitations

We did not assess the predictive and convergent validity of this scale. Secondly, online survey was conducted.

### Conclusion

We aimed to develop a scale to measure positive impact of COVID 19 lockdown. This scale has good internal consistency and validity. This scale can be used to explore the positive changes during the time of crisis or pandemic situations.

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## Original Article

# Impact of Self-Directed IEP on Developing Self-Esteem of Individuals with Intellectual Disability

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### ABSTRACT

**Background:** The self-directed Individualized Education Program (SDIEP) can be a powerful tool for individual with disabilities to learn and practice decision-making and other skills leading to enhanced self-esteem. Active participation encourages empowerment and ownership by the individual. The SDIEP can be extremely important because it teaches children how to manage their own meetings and helps to deal with their future. **Objective:** This study tried to investigate the impact of SDIEP on self-esteem of Individuals with Intellectual Disability (IID). **Sample:** 6 individuals with mild intellectual disability age ranging from 16-18 years, IQ between 50 to 69 were selected randomly. **Design:** Pre-post equivalent group design of experimental method was used. **Statistical Analysis:** Wilcoxon and sign rank z test of non-parametric statistics were used to find out the differences of mean of pre and post-tests. **Result:** The better performance in the post-test was noticed compared to pre-test of experimental group. This indicated that teaching through SDIEP was very effective and helped in increasing the self-esteem of IID. **Conclusion:** Intervention of SDIEP enhanced the involvement of the participants as a result. The positive outcome of the research is helpful in creating consciousness between professionals and parents. This could be the platform for IIDs which will boost their interest in learning.

**Keywords:** Self-directed IEP, Self-esteem, Self-determination, Intellectual disability

## Introduction

Everyone should love himself or herself above or at least for any other person or thing. It will be understood as the way you will treat others is the way you would like to be treated. Self-esteem means how we appreciate ourselves, how we show our value to the world and how important we are to others. In another words we can say that perception is all about our values with regards to our work, our position in the society, our success, aim in life, strengths and weaknesses, how can we correlate with others and our capabilities to raise on own feet. It is overall evaluation of oneself either in a positive or negative way. Development of self-esteem is a long journey.

Parents and teachers can play a great role in developing self-esteem. The amount of self-esteem is a reflection in the attitude and behaviour in both home and school settings.<sup>1</sup>

Researchers have proved that individual having positive self-esteem do better at school and they have more friends and fewer problems with their parents and teachers. The Individualized Education Program (IEP) is a document that helps teaching a child with special educational needs (SEN) and reviewing his/her progress. According to Nugent,<sup>2</sup> the IEP is special and individual, because it is going beyond the common curriculum which is meant for all. It specifies what is particular and special about the

provision that is being offered to a student with SEN. The findings of the study conducted by Ahmad<sup>3</sup> suggests that teaching self-determination skills to IID is a relatively new concept in India even teachers are not much aware about it. The perception of special educators towards self-determination of skills IID got changed after training. The concept of SDIEP aims to elevate the dynamic involvement of the IID in the domain of analysis, drafting, examine, and evaluation to bloom the self-esteem. Study conducted by Nazli et al<sup>4</sup> suggest that unified play was to be found effective in developing self-esteem among IID.

The SDIEP is a part of the choice making of self-determination curriculum. Martin et al<sup>5</sup> highlights three components i.e., choosing goals, expressing goals, and taking action. Numerous findings proved that the result of SDIEP helps students with more talk, they more engaged in leadership program and showed positive perspective of their meetings. Therefore, SDIEP helps students to become self determined for making their decisions and responsibilities and enhances self-esteem also. Self-esteem took time to develop over a lifetime and as a result we all experienced various up and downs that are important part of our journey through life. As a special education teacher our role is to help the special children to understand their own worth, to help them to learn the skills they need so that they can feel more capable when faced with any challenges in life.

### **Objective**

To find out the impact of SDIEP on developing self-esteem of individuals with intellectual disability.

### **Method**

#### **Sample:**

List of 15 IID studying at Govt. Rehabilitation Institute for Intellectual Disabilities, (GRIID), Chandigarh, India was made and based on the following exclusion criteria: participants having any associate conditions like Autism Spectrum Disorders, Cerebral palsy, Epilepsy, ADHD, Speech disorder and who have undergone any kind of self-esteem management intervention(s) in last six months were selected purposively. Finally, from the list 6 students age ranging from 16-18 years having IQ between 50 to 69 were selected randomly. The selected IID were randomly grouped into two groups

of three children each using lottery method. First group was controlled group and second one was experimental group.

### **Design**

The Pre-Post equivalent group design of experimental method was used.

### **Tool**

Self-esteem scale developed by Rosenberg (1965) and published by Princeton University Press<sup>6</sup> was engaged for data collection. There are 10 items in this self-esteem scale out of which five items (1,2,4,6,7) are positively worded while the other five items (3,5,8,9,10) are negatively worded. The responses on the scale are to recorded as "Strongly Agree, Agree, Strongly Disagree & Disagree". There is a provision of reverse scoring for the following 2, 5, 6, 8, 9 items of this scale.

### **Procedure**

The administration of the tool was scheduled as per the convenience of the sample. Written informed consent was obtained from the parent of participants. Pre-testing was done for both groups by making use of self-esteem scale Rosenberg (1965). The items were read for the students having difficulty in reading and explained wherever it was required. Instructions were written on the tool and the same given verbally by the researcher to the participants and enough time was provided to the samples to complete the tool. Researchers were available to look for their query, if they have regarding understanding the item while filling up the tool. After knowing the pre-test, intervention was given to experimental group for 40 days on regular basis, except weekends and holidays. Intervention was given 5 days a week for 45 minutes per session. After intervention, researcher conducted post-test for both groups. The subject played the main role in SDIEP and the researcher was played the role of facilitator or guide. Subjects of experimental groups selected 5 goals each individually for themselves. The investigator also demonstrated the skill wherever required and provided the prompt. The session wise performance of the student was also recorded after each session of intervention. The subjects of control group were also given the same intervention of 20 sessions which was offered to the experimental group

at the end of the research as part of ethical consideration. The post-test was conducted with the help of same tool data were tabulated for statistical analysis using Z-test.

## Results

Table-1 shows the mean of experimental group.

**Table-1: Mean and SD of pre-test and post-test of experimental group**

Group	Tests	N	Mean	SD	Z-value	p-value
Experimental	Pre	3	22	1.00	2.21	.027
	Post		32.66	5.43		

The pre and post-tests mean were 22 and 32.66 respectively. Significant difference in the pre and post-tests mean was noticed. The Z-value was found to be significant ( $Z=2.21$ ;  $p<.027$ ) which indicates there is a significant difference between the mean of pre and post-tests of experimental group.

As shown in Table 2 the mean of post tests of

**Table-2: Mean and SD of post-test of control and experimental group**

Groups	Tests	N	Mean	SD	Z-value	p-value
Control	Post	3	22.33	1.37	1.997	.047
Experimental	Post	3	32.66	5.43		

control and experimental groups were 22.33 and 32.66 respectively. Significant difference in the mean of post-test of control and experimental group was found. The Z -value ( $Z=1.997$ ;  $p<.047$ ) indicated the significant differences and showed that SDIEP was found very effective in developing the self-esteem of IID.

## Discussion

The outcome of the present study shows significant impact of SDIEP on developing self-esteem of IID. The result highlight that teaching through SDIEP was very efficient and tremendous improvement in self-esteem among IID. SDIEP is better at enhancing the self-esteem among IID. Students of experimental group victoriously accomplished the intervention. The positive effect of the active participation of IID was evident through the process of SDIEP. The investigation reported increase in the self-esteem of the subject of the experimental group than the control group. It may be inferred that

intervention had positive impact on as participant were allowed to select IEP goals by themselves. The provision of making own IEPs under SDIEP was found interesting. The goals selected for the intervention were significantly planned which were interesting and achievable for the participants. They actively

participated during the SDIEP class.

A similar study by Kelly et al<sup>7</sup> examined the outcome of the self-directed IEP. The results reveal that the SDIEP is enough productive in enhancing students' abilities to direct their own IEPs. The result of the present study is in line with the study carried out by Martin et al<sup>5</sup> found that the SDIEP has

powerful impact on teaching IEP meeting skills. This is the need of an hour to include students in their own IEP meetings for their constructive learning as a result, it will enhance their self-determination skills. The result of his research also indicates the usefulness of SDIEP for IID. The study carried out by Van Dycke<sup>8</sup> found that SDIEP has a greater advantage over the teacher-directed IEP in planning the independent living skills.

Study conducted by Ahmad and Thressiakutty<sup>9</sup> suggest that effective use audio visuals can improve self-determination skills of IID. The IID must be given opportunity to make choice and community participation. Ahmad and Thressiakutty<sup>10</sup> found that teachers training may contribute in developing self-determination among IID. Vashishta et al<sup>11</sup> suggest that there is a positive correlation between self-concept and quality of life of adults with intellectual disability. A person who has a greater self-concept is likely to be self-determined which contribute to a better quality of life. The study by Seong et al<sup>12</sup>

suggest that goals must be chosen based on the needs, interest and the choice of the students. Allowing students in active SDIEP helps choice making, decision making and leadership skills. As a whole it enhances the self-determination skills of the students.<sup>13</sup>

### Conclusion

The SDIEP helped students in their meaningful learning and active participation in making their own IEPs. The participants of the study were indirectly involved in their education and how to plan for their future. Curriculum and teaching learning process must be planned in such way that it helps in developing self-esteem of the students. The special education teacher may help in developing the self-esteem of IID by incorporating the SDIEP in practice. Based on the results, it may be suggested that the policy makers must understand the importance of SDIEP and plan curriculum for the students accordingly. The SDIEP can accelerate learning process of IID. The positive outcome of this research could be beneficial in generating awareness among teachers and parents. However, the small sample of the study raise difficulties when making broader generalization.

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## Original Article

# Pharmacoeconomic Analysis of Oral Sertraline Versus Mirtazapine in Treatment of Depressive Disorder in Tertiary Care Teaching Hospital, Jaipur

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### ABSTRACT

**Background:** Depression is associated mood disorders which may impair individual productivity affecting daily activities and general well-being. It may pose itself as numerous manifestations out of which persistently diminished mood along with fatigue are considered as the primary criteria for depression. Therapy for depressive disorder generally extends for longer period contributing to higher direct along with indirect medical costs. This calls for the need of a cost-effective therapy. **Aim:** The objective of our study is to analyse the cost-effectiveness of mirtazapine compared to sertraline in patients with depressive disorder. **Materials and methods:** A Prospective, observational, cross-sectional, single-centred study was conducted in OPD Psychiatry of tertiary care teaching hospital, Jaipur for a total duration of 6 months. The Study was carried out in 66 individuals. **Results:** At 2 weeks follow up, patients receiving mirtazapine showed statistically significant response ( $p < 0.05$ ) when compared to sertraline group as shown by reduction in HDRS scores. The same results were observed for mirtazapine treated group at the end of 4 week from baseline ( $p$  value  $< 0.05$ ) as mean HDRS scores reduced from 12.15 to 10.36. The ACER for sertraline group was found to be 48.99 while ACER for group being administered mirtazapine was 37.70. **Conclusion:** Mirtazapine was found to be statistically more cost effective than sertraline in early weeks of treatment. The Safety profile showed that Mirtazapine was substantially much more tolerable than Sertraline.

**Keywords:** Antidepressants, sertraline, mirtazapine, cost-effective, adverse effects

### Introduction

Major depressive disorder considered as one of the highly prevalent mental disorder associated with persistent decline in mood and emotional well-being.<sup>1</sup> It is contemplated as a burden some disease prevailing over 264 million people all over the world.<sup>2</sup>

Tricyclic antidepressants have been the mainstay of therapy and were the first ones to be used for pharmacological management of depression. However, burden of side effects on patients receiving it decreased the tolerability profile and its further

use declined.<sup>3</sup>

According to WHO, depressive disorders are the prominent cause of disability adjusted life years (DALY). A meta-analysis study involving 33572 subjects revealed prevalence of clinical depression to be 7.9-8.9 per thousand population with a greater predominance in population coming from urban areas.<sup>4</sup>

Depression is being considered the most important leading factor as a cause of mental illness in developing country like India. To be precise, it

accounts for 30% of all types of mental illness in India which remains highly prevalent in the working age group.<sup>5</sup>

Overlooking the total medical cost incurred to patients in the treatment of mental illnesses including depression, a study done in South India measured a total of at least 12% of per capita income of patients being spent on their therapy.<sup>6</sup>

Pharmacoeconomics studies are necessary to measure the value of pharmaceutical products, services or related equivalents where “value” in health system refers to health outcomes achieved relative to the total cost or money spent on therapy.<sup>7</sup>

Cost-effective analysis involves comparing the cost and consequences (outcome) within different programs or interventions. Considering 2 different interventions, ACER ratio is calculated comparing total cost along with the benefits of both the alternatives<sup>8,9</sup>

ACER = cost A- cost B “outcome A- outcome B

Our main objective is to compare cost-effectiveness of an SSRI, i.e., sertraline with mirtazapine for patients with depressive disorder along with their respective tolerability profile.

### Methodology

Our study was prospective, observational, randomized and single-centred carried out at Department of psychiatry in outpatient department of a tertiary care teaching hospital in Jaipur, Rajasthan after getting prior approval from institutional ethics committee.

### Study Design

Subjects: the study was commenced with a total of 66 patients fulfilling the diagnostic criterion considering all the inclusion and exclusion criteria from OPD of psychiatry department.

### Selection of participants

**Inclusion criteria** - patients aged within 18-65 years of age diagnosed with either mild or moderate depression as per ICD 10 criteria were included. Severity of depression was assessed based on Hamilton depression rating scale as follows: 8-13 (mild depression); 14-18 (moderate depression)

**Exclusion criteria** - Pregnant patients, patients with hepatic and renal impairment were not included

in the study. Patients showing psychotic features, patients taking concomitant medications including NSAID and anticoagulants were also excluded.

Patients having history of substance or alcohol abuse, suicidal tendencies were not allowed to participate in the study. Other exclusion criterion included previous diagnosis of any other psychiatric illness and previous use of similar medications.

### Procedure

The patients were enrolled in the study after obtaining prior informed consent. Socio-demographic details along with medication history was taken and baseline assessment of depression was done using Hamilton depression rating scale.

Patients were randomly assigned to receive either sertraline starting at dose 25 mg/day or mirtazapine starting at a dose of 7.5 mg/day with a maximum of 100mg/day for the former and 45 mg/day for the latter by primary care physician.

Follow-up was done after 2 weeks interval twice after initiation of treatment using Hamilton depression rating scale. Cost of therapy was calculated for total period of treatment provided to the patient and noted in case record form.

**Outcome measurement:** primary outcome to be evaluated were cost-effectiveness of both group of drugs taking into consideration the total cost of pharmacotherapy as well as HAM-d scores for effectiveness. Adverse events encountered by the patient during the period of therapy were duly noted as well as management strategies provided for such adverse effects were included in case record form.

### Search strategy for study selection

A systematic electronic literature search was performed using databases of PUBMED/MEDLINE, Google scholar, and the Cochrane library. Searches were performed using various terms pertaining to the topic of interest such as ‘antidepressant’, ‘mirtazapine’, ‘depression’, ‘onset of action’ and ‘mechanism of action’. The relevant studies were identified published within 1999-2020 and reviewed thoroughly. Additionally, the citations of selected literature reviews were also manually screened for possible inclusion in the study.

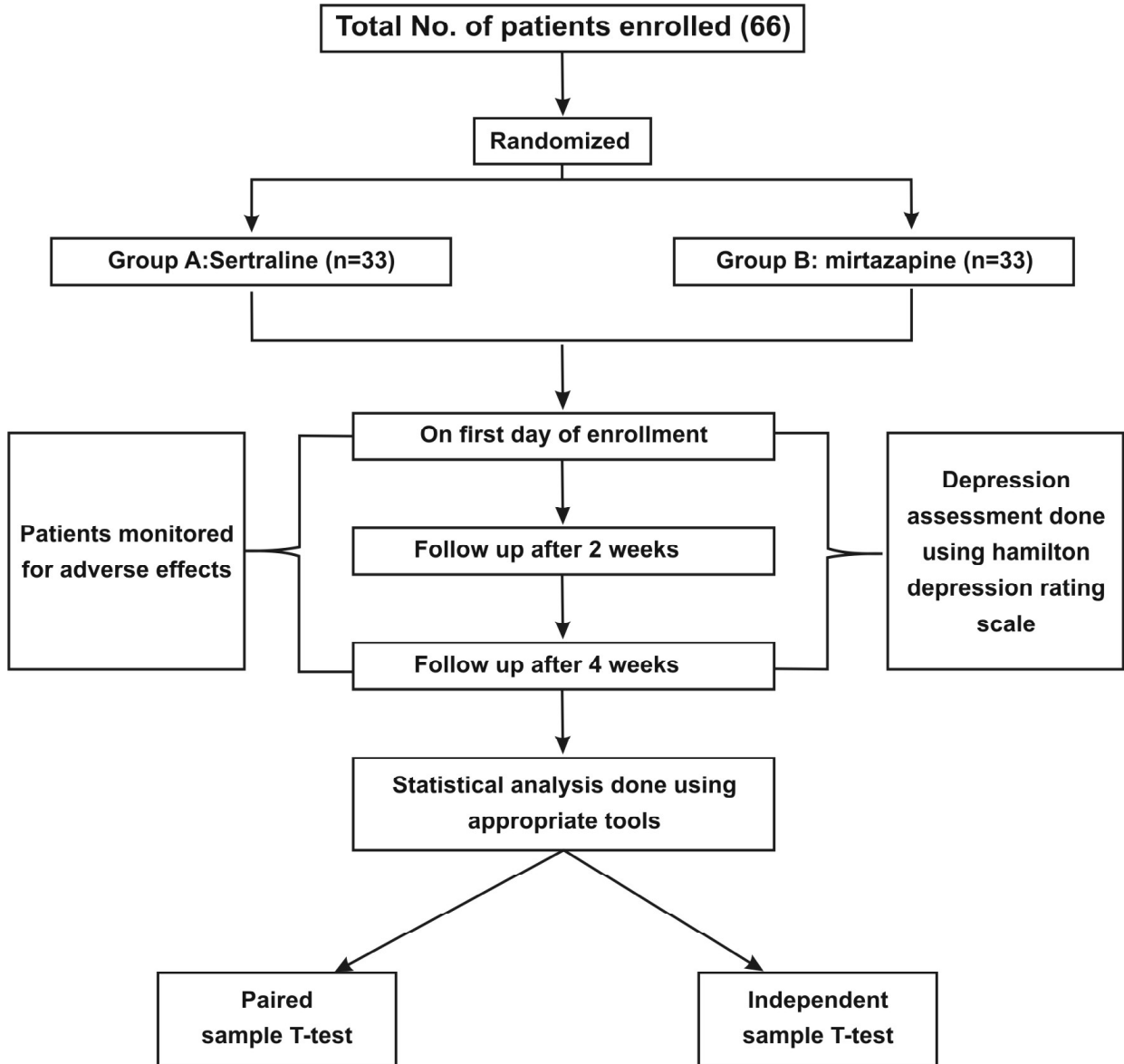
### Statistical analysis

Analysis was done using SPSS version 21.

Mean and standard deviation were measured wherever applicable. Independent sample t-test and paired sample t-test were applied.  $p \leq 0.05$  was considered statistically significant

Doses administered for both study drugs ranged as follows: sertraline (25-75 mg/day), mirtazapine (7.5-15 mg/day)

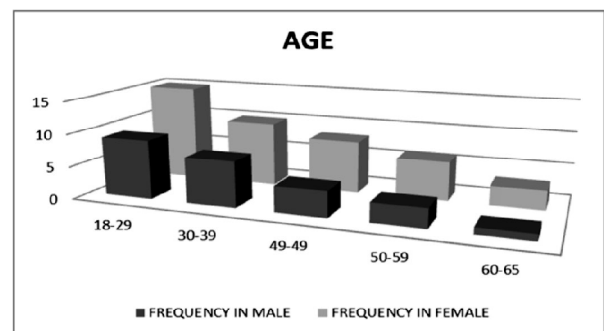
Medications belonging to similar brand were prescribed for the total treatment period.



**Results**

Both of the groups completed the therapy for duration of study. Table 1 outlines the demographic characteristic of patients selected for the study which shows predominance of age group 18-29.

Total No. of patients were divided into two groups based on the drug treatment and were assessed at baseline and then at a interval of 2 weeks and 4 weeks from baseline.





**Mean outcomes of study population**

HAM-D Mean (SD)	Sertraline Mean (SD)	Mirtazapine Mean (SD)
Baseline	14.36(2.369)	13.58(2.236)
2 weeks	13.24(2.195)	12.15(2.108)
4 weeks	11.55(2.181)	10.36(1.851)

observing and calculating no. of adverse events experienced by the patients under study during total duration of treatment.

No serious adverse effects were reported which resulted in zero dropouts of patients from both the study group. Hence, both the drugs were tolerable.

Item	Treatment	Unit cost (rupee) per tablet	
SSRI	Sertraline	Serta 25	5.026
		Serta 50	9.25
NasSA	Mirtazapine	Mirtaz 7.5	7.1
		Mirtaz 15	9.5
Adverse effect	Etizolam 0.5 mg	3.8	
	Esomeprazole 40 mg +		
	Domperidone 30 mg	12.4	

**Efficacy:**

HAM-D scores were used as an efficacy variable. The mean HAM-D score are mentioned in the above table along with standard deviation for each treatment group.

At 2 weeks follow up, patients being treated with mirtazapine demonstrated statistically significant response ( $p < 0.05$ ) in correlation to sertraline group of patients as displayed by reduction in HDRS scores over this time period.

The same results were found for mirtazapine treated group at the end of 4 week from baseline ( $p$  value  $< 0.05$ ) also.

**Adverse effects reported in patients during treatment in both groups**

Adverse effect	Sertraline	Mirtazapine
Fatigue	—	2 (6.06%)
Sedation	—	4 (12.12%)
Diarrhoea	1 (3.03%)	—
Constipation	2 (6.06%)	—
Palpitations	3 (9.09%)	—
Diminished libido	1 (3.03%)	—
Nausea/vomiting	16 (48.48%)	7 (21.21%)
Dry mouth	4 (12.12%)	—
Restlessness/agitation	4 (12.12%)	—
Weight gain	—	1 (3.03%)
Risk of falls	1 (3.03%)	1 (3.03%)
Tension	8 (24.24%)	—

However, certain adverse effects were reported among both the groups. Of which, nausea and vomiting were the most frequently encountered within sertraline (48.48%) and mirtazapine (21.21%).

Furthermore, mirtazapine group of patients experienced fatigue and sedation at a comparatively lower rate as compared to nausea/vomiting. Sertraline group, on the other hand depicted a much higher incidence of distinctive adverse effects including constipation, dry mouth, palpitations, tension, diarrhoea and reduced libido.

Sexual dysfunction was not reported in a single patient of mirtazapine group.

	Sertraline	Mirtazapine
ACER	48.99	37.70
Ratio		1.29

**Cost-Effectiveness**

With respect to cost effectiveness, ACER was calculated for each of the drug group as follows;

$$ACER = \text{cost of treatment} / \text{effect of treatment}$$

Where effect of treatment is represented by HDRS score taken as average of all the patients in the respective treatment group and cost of treatment is the direct medical cost (total cost of medication) incurred by the patient.

Direct medical cost comprises of cost of drug therapy administered OPD visits to healthcare professional and adverse effects treatment owing to drug therapy.

**Tolerability**

The tolerability for each drug was evaluated by

The ACER for sertraline group was found to be 48.99 while ACER for group being administered mirtazapine was 37.70.

### Discussion

The introduction of newer classes of antidepressants offering a rapid onset of action along with higher efficacy revolutionized the selection of drug therapy for depression. Such drugs include mirtazapine, a NaSSA antidepressant with an exclusive mechanism of action compared to older SSRI, efficacy of which is very well established in the treatment of depression.

In this study, both sertraline as well as mirtazapine showed improvements in the patients under study but mirtazapine was found to be slightly more efficacious in correlation to sertraline over 2 weeks and 4 weeks intervals. The results were in accordance with another study performed with similar drugs under consideration.<sup>10</sup>

This effect is attributed to mirtazapine direct action on serotonin as well as central  $\alpha_2$  adrenergic receptors increasing norepinephrine release which is in contrast with the sertraline responsible for its action on serotonin by blocking its reuptake.<sup>11</sup>

Comparison of tolerability of two antidepressants revealed that mirtazapine has a better tolerability profile in comparison to sertraline group of patients. Following the treatment groups revealed that mirtazapine diminished the need for additional sedatives or hypnotics owing to its sedative properties as a part of its potent anti-histaminic effect. Nausea/vomiting was observed in both the groups but at different rates, with more patients affected among group A (sertraline). Besides, dry mouth, constipation, palpitations and tension were also seen followed by diarrhoea and falls among group A. Sexual dysfunction occurred in 1 patient in group A and none in group B. This confirms that the incidence of anticholinergic effects prevails among sertraline group of patients.<sup>12</sup>

Mirtazapine selectively blocks the 5HT<sub>2A</sub> postsynaptic receptors which accounts for lower incidence for sexual dysfunction and insomnia that occurs much more frequently with sertraline as a result of stimulation of 5HT<sub>2A</sub> receptor.

Additionally, ACER ratio was calculated for both study groups that generated results in concordance with other established studies evidencing better

cost-effectiveness of mirtazapine in correlation with sertraline. The ratio was calculated using cost of both treatments along with effect of both treatments.

ACER for sertraline was found to be 1.26 times more than mirtazapine. Hence, mirtazapine is slightly more cost-effective than sertraline in early stages of treatment which corroborates with and extends several other findings.<sup>13-15</sup>

### Limitations

Despite the proposed faster onset of action of mirtazapine, our study cannot provide comments on long term effect of mirtazapine on patients treated for depressive disorder. Also, the sample size was relatively small along with a single-centred study.

### Conclusions

Following completion of study affirms the fact that mirtazapine is undoubtedly a faster acting drug providing early improvement in diseased state as compared to sertraline. Early response to treatment increases the adherence to medication and thus improves patient compliance to the antidepressant. The efficacy is very well established for both the drugs but mirtazapine was found to be statistically more cost-effective in early weeks of treatment with a much better tolerability profile.

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Nil

Conflicts of interest:

There are no conflicts of interest.

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## Original Article

# A study of Internet Addiction, Perceived Stress, and Coping Skills among School and College going students

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### ABSTRACT

**Background:** Use of internet among school and college going students in India is growing rapidly. Excessive use of internet, level of perceived stress due to academic pressure may increase the prevalence of Internet Addiction (IA) among the students. **Aim:** The purpose of the presents study was to assess and compare the level of perceived stress, the prevalence of IA and uses of coping skills among the school and college going students in Varanasi district. **Material & Methods:** The present study was based on cross-sectional comparative study design. A total of 100 school and college going students who fulfilled the inclusion and exclusion criteria were selected through purposive sampling method from the selected school and college in Varanasi district. All the selected respondents were interviewed using a semi-structured questionnaire consisting of socio-demographic proforma, Internet Addiction Test (IAT), Perceived Stress Scale (PSS-4) and coping skills questionnaire. **Result:** The prevalence of IA was found more (41%) among the respondents belong to age group  $\leq 20$  years than others. Male respondents were found more (71.1%) addicted with internet than females (50.9%). There was a significant association ( $p < 0.05$ ) found between socio-demographic variables such gender, and family income and IA. The perceived stress was found more among the respondents aged  $\leq 20$  years, female, and belongs to rural areas. There was a significant difference ( $p < 0.05$ ) found in the level of perceived stress between age groups, gender, and residence of the respondents. The respondents, who use more negative coping stress than positive skills to reduce their stress, were found more addicted with internet. **Conclusion:** The level of perceived stress and pattern of coping skills plays important role in the prevalence of IA among school and college going students.

**Keywords:** Internet, Coping, Stress, Adolescents, Students

### Introduction

The modern era is the age of technology. The role of the internet in this age has become more important in every field of human life. It is not being used only in the communication but in education, entertainment, research, social services, health sectors, governmental departments, call centers, and all other marketing sectors. Easy access to the

internet, social networking, and online gaming are the main factors responsible for behavioral problems such as internet addiction.<sup>1</sup> Internet Addiction (IA) is defined as poorly controlled and excessive intention, urge, or behavior related to the internet uses that lead to psychological impairments and distress.<sup>2</sup> The prevalence of IA is about 1.8% to 8.5% at the global level. This rate may be different in developing

countries such as India. According to some previous studies conducted in India, the prevalence of IA is ranged between 18.8% to 74.5 at a mild to moderate level especially among the students who belong to the adolescent and youth age group.<sup>3-5</sup>

With the increased rate of IA among students, there are several other types of psychological problems may occur such as social isolation, anxiety, depression, and stress.<sup>5</sup> Perceived stress has been reported by the previous studies as a more common problem among school and college going students. These problems are generally found associated with the coping strategy of the students. The student who face problem in coping with the stress, they face a high level of perceived stress.<sup>6</sup> IA and perceived stress are interdependent to each other, increase in the rate of one may affect the rate other. The pattern of coping skills and the level of coping strategy of an individual may play an important role in the management of these problems.<sup>7</sup> There are very few of the literature available related to IA, perceived stress, and pattern of coping skills among school and college-going students in the Indian context. Hence, the present study attempted to assess the prevalence of Internet Addiction, level of perceived stress, and common pattern of coping skills among the school and college going students in Varanasi district, Uttar Pradesh, in India.

### Material and Methods

The present study was based on cross-sectional study design. The study was conducted among the school and college-going students in Varanasi district, Uttar Pradesh. The duration of the present study was from September 2019 to February 2020. The ethical clearance was taken from the ethical committee of Institute of Medical Sciences, Banaras Hindu University, Varanasi.

#### Inclusion Criteria:

- Use Internet.
- Aged 14 to 24 years.
- Both male and female.
- School and college going students.
- Willing to participate in the present study.

#### Exclusion Criteria:

- Don't use internet.
- Having any chronic physical and mental illness.

- Not interested to participate in the study.

**Study Sample:** A total of 210 students were contacted from the selected school or college but only 123 students fulfilled the inclusion-exclusion criteria. Out of total 123 students, 15 left the interview and 7 filled the questionnaire incorrectly, and 101 complete the interview. Only 100 responses were analyzed in the present study.

### Study tools

**Socio-demographic Questionnaire:** A semi-structured socio-demographic questionnaire was prepared including age, gender, education, family type, family income, and residential area.

**Internet Addiction Test:** To assess the level of internet addiction among the respondents the Internet Addiction Test (IAT) was used. It was developed by Kimberley Young.<sup>8</sup> It is a 6-point Likert scale consisting of 20 items. A score of 0-30 indicates as a normal user, 31-49 as mild addiction, 50-79 as moderate addiction, and 80-100 as severe addiction.

**Perceived Stress Scale-4:** It was developed by Cohen et al., (1983).<sup>9</sup> The previous version of this scale consists of 14 items and 10 items. But a quick version of PSS-4 was used to assess the level of stress among the students. Its score ranged between 0-16. A score of 0-6 was taken as a low level of stress and a score of 7-16 as a moderate to severe level of stress.

**Coping Skills Questionnaire:** A semi-structured questionnaire was prepared by the researcher to know about the common coping skills among the respondents. This questionnaire consists of 18 items (including 11 positive and 7 negative common coping skills). These items were rated by the respondents as never, sometimes, and always; if they use it as coping skills to reduce their stress.

**Statistical Analysis:** The data were organized using MS Excel and then exported to the trial version of IBM SPSS 20. The descriptive statistics such as frequency, percentage, mean and standard deviation were used. Association between variables was tested using Pearson's Chi-square test. And the comparison between the variables was assessed using the Student's independent t-test.

**Procedure:** The data was collected by the researcher (an MSW student). First the researcher contacted to the teacher of selected school/college and took permission to conduct the study. The

respondents who fulfilled the inclusion and exclusion criteria were first informed about the importance of the present study and then interviewed by the researcher using the prepared semi-structured questionnaire. Each interview was conducted in at least 15-20 minutes. The respondents who left the interview before it finished, their responses were not used in the presents for analysis.

## Results

Table 1 described the socio-demographic profile of the respondents according to the internet addiction of the present study. The percentage of the respondent with Internet Addiction (IA) was found comparatively high among the respondent aged above 20 years. Male respondents (71.5%) were found more addicted to the internet than female respondents (50.9%). IA was found 5 times higher among male respondents as compared to females. The gender of the respondents was found significantly ( $P<0.05$ ) associated with IA. The percentage of the IA among the respondents was found high especially students of higher education groups (60.5%), belong to nuclear families (63.6). The majority of respondents belong to high-income groups (75.6) were found with IA as compared to the low-income groups (49.2%). The prevalence of IA was found 5 times higher among respondents belong to the high-income

groups. There was a significant association between the family income of the respondents and IA. The proportion of persons with IA was found comparatively high among the respondents belong to urban areas (64.7%).

Table 2 shows that in the assessment of the level of the stress among the respondents the result was found that most of the respondents 31 (79.5%) aged below and equal to 20 years were found with a moderate to high stress as compared to the respondents aged above 20 years. A moderate to a high level of stress was found comparatively high among the female respondent 40 (72.7%) than males 24 (53.3%). The respondents who study in class junior high school to intermediate were found with a proportionally high level of stress as compared to the graduate and post-graduate students. Most of the respondent who belongs to joint family and low family income were found with a moderate to high level of stress. The level of stress was found comparatively high among the respondents who belong to rural areas (77.1%) than the respondent from urban areas (56.1%). There was a significant ( $P<0.05$ ) association found between the level of stress and socio-demographic profile; such as age, gender and residence.

Table 3 described the prevalence of internet addiction among respondents. Out of the 100 respondents,

**Table-1: Distribution of socio-demographic profile and Internet Addiction among the respondents**

Socio-demographic variables	Internet Addiction		Total N=100F	OR (95% CI)	P Value
	Present F (%)	Absent F (%)			
<b>Age (in years)</b>					
≤ 20	23 (59.0)	16 (41.0)	39	0.473-2.433	0.867
> 20	37 (60.7)	24 (39.3)	61		
<b>Gender</b>					
Female	28 (50.9)	27 (49.1)	55	1.031-5.464	0.040
Male	32 (71.1)	13 (28.9)	45		
<b>Education</b>					
Up to Intermediate	13 (56.5)	10 (43.5)	23	0.459-3.032	0.732
Graduation & PG	46 (60.5)	30 (39.5)	76		
<b>Family Type</b>					
Nuclear	35 (63.6)	20 (36.4)	55	0.319-1.597	0.412
Joint	25 (55.6)	20 (44.4)	45		
<b>Family Income (in RS)</b>					
Below 25000	29 (49.2)	30 (50.8)	59	1.335-7.706	0.008
Above 25000	31 (75.6)	10 (24.4)	41		
<b>Residence</b>					
Urban	22 (64.7)	12 (35.3)	34	0.314-1.743	0.491
Rural	38 (57.8)	28 (42.4)	66		

**Table-2: Level of stress among the respondents**

Socio-demographic variables	Level of Perceived Stress		Total N=100 F	Chi-square value	P Value
	Low PSS-4 (Score 0-6) F (%)	Moderate to High PSS-4 (Score 7-16) F (%)			
Age (in years)					
≤ 20	8 (20.5)	31 (79.5)	39	6.656	0.010
>20	28 (45.9)	33 (54.1)	61		
Gender					
Female	15 (27.3)	40 (72.7)	55	4.040	0.044
Male	21 (46.7)	24 (53.3)	45		
Education					
Up to Intermediate	8 (34.8)	15 (65.2)	23	0.032	0.857
Graduation & PG	28 (36.8)	48 (63.2)	76		
Family Type					
Joint	20 (36.4)	35 (63.6)	55	0.007	0.933
Nuclear	16 (35.6)	29 (64.4)	45		
Family Income (in Rs)					
Below 25000	22 (36.7)	37 (63.3)	60	0.029	0.856
Above 25000	14 (35.0)	27 (65.0)	40		
Residence					
Rural	8 (22.9)	27 (77.1)	35	4.037	0.045
Urban	28 (43.1)	37 (56.1)	65		

there were only 18% of individual normal internet users. The majority of the respondents (59%) were found with a mild level of internet addiction and respectively: 14% with a moderate level and 9% with a severe level of internet addiction.

**Table-3: Prevalence of Internet Addiction among the respondents (N=100)**

IAT Score	Severity of Addiction	F (%)
0-20	Normal User	18 (18)
21-49	Mild	59 (59)
50-79	Moderate	14 (14)
80-100	Severe	9 (9)

Table 4 indicate that the common coping skills used by the respondents and its association with internet addiction. Most of the respondents (73.5%) who don't exercise and Yoga in their daily life were found with internet addiction. There was a significant difference (P<0.05) found in the prevalence of internet addiction between the respondents who do exercise and yoga for relaxation and who doesn't. Majority of the respondents (61.3%) with internet addiction usually get anger on others when they are stressed. The respondent who doesn't go for a walk

to reduce their stress, they were found highly addicted with internet addiction (65%) as compared to who go far a walk. Most of the respondents who don't listen music were found internet addiction. There was a significant difference (P<0.05) found in the prevalence of internet addiction between the respondents who use listening music to reduce stress and who doesn't use it. Majority of the respondent reported that they don't eat or drink for a long time when they feel stressed; such respondents (61.5%) were found more addicted with internet addiction. Reading book was found also as coping skill to reduce stress among the respondents, the respondents who don't use this technique, they were found more addicted with internet. Most of the respondents reported that they spent sometimes alone when they were stressed. These respondents (64.4%) were found more addicted with internet.

The respondents, who reported that they either smoke or drink to reduce their stress, were found more (71.1%) with internet addiction. There was a significant association (P<0.05) found between smoking, drinking and internet addiction. Getting involved in some interesting work is also important coping skills, the respondents who don't use skills

**Table-4: Use of Coping Skills and Internet Addiction among the respondents**

Coping Skills		Internet Addiction		Chi-square value	P Value
		Absent F (%)	Present F (%)		
Exercise & Yoga for relaxation	No	9 (26.5)	25 (73.5)	3.929	0.047
	Yes	31 (47.0)	35 (53.0)		
Get anger on others	No	11 (44.0)	14 (56.0)	0.222	0.637
	Yes	29 (38.7)	46 (61.3)		
Go for a walk	No	7 (35.0)	13 (65.0)	0.260	0.610
	Yes	33 (41.2)	47 (58.8)		
Listen Music	No	8 (25.0)	24 (75.0)	4.412	0.036
	Yes	32 (47.1)	36 (52.9)		
Don't eat or drink for a long time	No	15 (42.9)	20 (57.1)	0.183	0.669
	Yes	25 (38.5)	40 (61.5)		
Read a book	No	5 (35.7)	9 (64.4)	0.125	0.724
	Yes	35 (40.7)	51 (59.3)		
Spent some time alone	No	8 (47.1)	9 (52.9)	0.425	0.514
	Yes	32 (38.6)	51 (61.4)		
Smoking and drink alcohol	No	27 (50.0)	27 (50.0)	4.891	0.027
	Yes	13 (28.3)	33 (71.7)		
Get involve in some interesting work	No	5 (20.0)	20 (80.0)	5.556	0.018
	Yes	35 (46.7)	40 (53.3)		
Drink tea and coffee to much	No	14 (34.1)	27 (65.9)	0.992	0.319
	Yes	26 (41.1)	33 (55.9)		
Take help from friends and relatives	No	3 (25.0)	9 (75.0)	1.278	0.258
	Yes	37 (42.0)	51 (58.0)		
Get anger on oneself	No	23 (52.3)	21 (47.7)	4.931	0.026
	Yes	17 (30.4)	39 (69.6)		
Go to temple or religious place	No	4 (36.4)	7 (63.6)	0.068	0.794
	Yes	36 (40.4)	53 (59.6)		
Don't share own problems to anyone	No	9 (47.4)	10 (52.6)	0.531	0.466
	Yes	31 (38.3)	50 (61.7)		
Face the problem	No	1 (5.3)	18 (94.7)	11.793	0.001
	Yes	39 (48.1)	42 (51.9)		
Spent sometimes with family members	No	4 (20.0)	16 (80.0)	4.167	0.041
	Yes	36 (45.0)	44 (55.0)		
Take help from the specialist when it is sensory	No	16 (39.0)	25 (61.0)	0.028	0.868
	Yes	24 (40.7)	35 (59.3)		

they were found more (64.4%) addicted with internet than others. There was a significant association ( $P<0.05$ ) found between this skills and internet addiction. Similarly the respondents who drink coffee or tea too much and don't help from their family members and friend to solve their problems, they were found more addicted with internet. Majority of the respondents reported that they get anger on themselves when they feel stress. These respondents were found more (69.6) addicted with internet.

There was a significant association ( $P<0.05$ ) between getting anger on oneself and internet addiction. The respondents who don't go to temple or religious place and don't share their problems to anyone, they were found addicted with internet. The

respondent who doesn't face their problem, they were found more (94.7%) addicted with internet as compared to who generally face their problem in their day to day life. There was a significant association ( $P<0.05$ ) between this skill and internet addiction. Spending time with family members is also a way coping, the respondents who don't use this technique were found more (80%) addicted with internet than others. There was a significant association ( $P<0.05$ ) between this coping technique and internet addiction. Most of the respondents have reported that they don't take help from the specialist when they fee stressed, such respondents were found more (61%) addicted with internet.

Table 5 shows that the proportion of internet



addiction among the respondents having a moderate to high level of perceived stress was found comparatively higher than the respondents who have a low level of perceived stress.

compared to respondents aged above 20 years. There was a significant association between age and the level of stress among school and college going students. There was also a significant difference

**Table-5: Level of Perceived Stress and Internet Addiction among the respondents**

Perceived Stress	Internet Addiction	
	Absent F (%)	Present F (%)
Low Stress (PSS4 score 0-6)	18 (48.6)	19 (51.4)
Moderate to High Stress (PSS4 score 7-16)	22 (34.9)	41 (65.1)

### Discussion

The presents study was an attempt to assess the prevalence of Internet Addiction, level of perceived stress and use of common coping skills among the school and college going students in Varanasi district, in Uttar Pradesh, in India. A total of 100 respondents were interviewed by the researcher, the findings of the present study indicate that the prevalence of Internet Addiction (IA) was found comparatively high among the students who belong to age group 20 years and above. Some previous studies have also reported that the IA is more prevalent among the students who belong to young age groups.<sup>12,13</sup> The gender of the respondents was found significantly associated with the prevalence of internet addiction. It was found more prevalent among male respondents than the females. These finding are similar to the findings of some previous studies conducted in India and other countries.<sup>4,10-12</sup> The proportion of IA was found high among the respondents belong to higher class especially graduate and post graduate. The respondents belong to the nuclear families were found highly addicted with internet than respondents belong to joint families. The prevalence of IA was found high among the respondents belong to high family income groups. There significant association found between family income of the respondents and IA. This finding is similar to a previous conducted in North India.<sup>14</sup> The proportion of IA was high among the respondents belong to urban areas as compared to the respondents belong to rural area. In contrast the present finding, a study conducted in Malaysia had reported that the prevalence of internet addiction found more in rural area.<sup>15</sup>

In the presents study, the result indicate that the level of perceived stress was found high among the respondents aged below or equal to 20 years as

found in the level of stress between male and female respondents. Perceived stress was found comparatively high among female respondents than male respondents. The respondents belong to nuclear family and low socio-economic status were found more stressed than others. There was a significant difference found in the level of perceived stress between the respondents belong to rural and urban areas. The level of perceived stress was found more among the respondents belong to rural areas. These findings are similar to the findings of some previous studies conducted in the other region of India such as Mysore and Tamil Nadu.<sup>17,18</sup>

The results of the present study indicate that the majority of the respondents were found with mild level of Internet Addiction. Some previous studies conducted in Karnataka and Tamil Nadu had reported the similar findings in their studies.<sup>19,20</sup> The presents study indicates that the respondents who use negative coping skills to reduce their stress and avoid positive coping skills, they were more addicted with Internet as compared to others. There was significant association found between some coping skills (such as exercise and Yoga for relaxation, listening music, smoking and drinking alcohol, get involve in some interesting work, get anger on oneself, face the problem and spent sometimes with family members) and the prevalence of internet addiction. Some previous studies conducted in Maharashtra, India and Soudi Arebia had reported similar findings in their studies.<sup>21,22</sup> The presents study also indicate that the prevalence of Internet Addiction was found more among the respondents with moderate to high level of perceived stress as compared to the other. The study conducted in Maharashtra, India had reported that the prevalence of Internet Addiction and the perceived stress has a

strong association along with positive correlation.<sup>22</sup>

### Limitation

The present study was scientifically designed to avoid the biasness. But still there were some limitation of the presents study such as a small number of sample size, and use of purposive sampling method to select the study samples.

### Conclusion

The prevalence of Internet Addiction was found comparatively high among the respondents belong to young age especially adolescents. Male respondents were found more addicted with internet than females. Family income is a predictor of the prevalence of Internet addiction among school and college going students. The perceived stress was found significantly associated with socio-demographic variables such as age, gender, and residence area. The level of perceived stress was found comparatively high among the respondents belong to younger age, female and live in the rural areas. The students who use more negative coping skill as compared to positive skills to reduce their stress, they were found more addicted with internet than others. The prevalence of internet addiction was found high among the students having a moderate to high level of perceived stress.

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### Conflict of interest

There are no conflicts of interest.

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## Original Article

# Effect of Self-Guided Relaxation on Worry, Metacognition and Mindfulness in Anxiety Disorders

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### ABSTRACT

**Background:** Mindfulness based interventions are increasingly being used worldwide. However, these are well-structured programs requiring specialized training. In the Indian scenario, with limited number of professionals and difficulty in accessing mental health care, these are hard to deliver to a large population. Self-guided relaxation is an autogenic relaxation exercise developed to be delivered by non-professionals in a single session. **Objective:** The aim was to study and compare the effect of self-guided relaxation (SGR) on worry, metacognition and mindfulness in persons with Other anxiety disorders (OAD) and Obsessive-compulsive disorder (OCD). **Method:** The research uses a pre-post intervention matched group design. A total of 30 participants were recruited, 15 with OAD and 15 with OCD. Participants in both groups were delivered SGR. Beck Anxiety Inventory (BAI), Penn State Worry Questionnaire (PSWQ), Metacognitions Questionnaire-30 (MCQ-30) and Mindfulness Attention Awareness Scale (MAAS) were used for pre and post measures to study effectiveness of SGR. Paired *t*-test and independent *t*-test was used for within and between group analysis. Cohen's *d* was also computed to find the effect size. **Results:** SGR was found to have significant effect on anxiety, metacognition, worry and mindfulness. No significant difference was found between the groups, indicating that SGR had similar effect in both sample groups. **Conclusion:** SGR is effective in reducing anxiety. It proved effective in altering metacognition and increasing mindfulness. SGR is an easy to deliver, inexpensive intervention that alters mindfulness.

**Keywords:** Self-guided relaxation, Anxiety disorder, Mindfulness, Metacognition, Worry.

### Introduction

The present study is aimed at comparing the effect of self-guided relaxation on worry, metacognition and mindfulness in persons with Other Anxiety Disorders (OAD) and Obsessive Compulsive Disorder (OCD). According to the WHO, the proportion of the global population with anxiety disorders in 2015 was estimated to be 3.6%.<sup>1</sup> In India, point prevalence of these disorders were 3.5%. Of these OAD, including Generalized anxiety disorder and Panic disorder, and OCD were chosen

as study sample with prevalence of OAD at 1.2% and OCD at 0.8% in the population.<sup>2</sup> Mindfulness is a heterogeneous concept involving attention training. Jon Kabat-Zinn defines it as learning to pay attention moment by moment, intentionally, and with curiosity and compassion. The object of attention may be an internal experience or external stimulus.<sup>3</sup> It is also a technique incorporated in a plethora of newer psychotherapies including Acceptance and Commitment Therapy (ACT), Metacognitive Therapy (MCT), Mindfulness-based

Stress Reduction Programs (MBSR) and Mindfulness-based Cognitive Therapy (MBCT).<sup>4</sup> As a component of these, and as a stand-alone technique, mindfulness has proven to be an effective intervention for a wide variety of psychological problems and physical illnesses; especially for anxiety, depression and stress.<sup>5</sup> However, mindfulness-based interventions are well-structured and require specialized training. In a country like India, with a scarcity of trained professionals and the treatment gap for neurosis more than 80%, mental health care is cost prohibitive. More than INR 1000 has to be spent monthly per person for care and treatment which is a significant amount in light of the relationship between poverty and mental illness.<sup>2</sup>

Self-Guided Relaxation (SGR) is a modified autogenic relaxation exercise which focuses on muscle groups without the physical tensing and relaxing present in progressive relaxation training. It produced significant reduction in anxiety of patients.<sup>6</sup> The effectiveness of SGR is comparable to Jacobson's Progressive Muscle Relaxation (unpublished observations) for anxiety in psychiatric disorders. It can be taught in a single session and delivered by non-specialists. Interventions such as JPMR or MBSR or autogenic training require regular sessions.<sup>7,8</sup> Which are difficult for service users to avail, especially those belonging to a rural background of lower socioeconomic strata as most mental health care centers cluster in urban areas. If SGR gives a similar effect then it might be a convenient substitute for mindfulness and other structured programs requiring specialized training.

## Methods

### Design and sample

It is a pre-post intervention study comparing the 2 groups. The patients, who were seeking mental health services in the out-patient department (OPD) of Psychiatry of the Hospital located in urban locality from January to May of 2019, and found to have a diagnosis of other anxiety disorders (OAD) and obsessive-compulsive disorder (OCD) as per ICD 10, were referred to the researcher by the psychiatrist(s). A total of 30 participants were recruited, 15 in OAD (group-A) and 15 in OCD (group-B) after obtaining the written informed consent.

### Inclusion and exclusion criteria

Those aged between 18-60 years of both sexes, having at least eight years of formal education, with illness duration more than six months and less than two years, being on consistent medication during last three months and having mobile phones with WhatsApp/Bluetooth were included. Whereas those with any psychiatric co-morbidity, clinical evidence of intellectual disability, terminal illness or unstable medical illness or neurological condition, or having undergone electroconvulsive therapy (ECT) in last three months were excluded. Also, those seeking any evidence-based psychotherapy currently or in the last six months; practicing yoga, mindfulness, meditation or art of living or any mind-body therapies currently or in the last six months were excluded.

### Data collection tools

Sociodemographic and clinical profile sheet was prepared by the researcher as per the inclusion/exclusion criteria. Mini International Neuropsychiatric Interview version 7.0.2 (MINI 7.0.2), a short, structured diagnostic interview<sup>9</sup> was used to objectively make a diagnoses of OAD and OCD as well as to rule out psychiatric co-morbidities. The outcome measures were anxiety, worry, metacognition and mindfulness. The following tools were used:

1. *Beck Anxiety Inventory (BAI)*: It is a 21 item self-report measure of anxiety and assesses its severity in individuals aged 17 through 80 years. The items are descriptive of somatic, or panic-related symptoms of anxiety and are scored on a Likert scale of 0 to 3.<sup>10</sup>
2. *Penn State Worry Questionnaire (PSWQ)*: It assess the trait of worry, particularly pathological worry. It consists of 16 items rated on a Likert scale of 1 to 5.<sup>11</sup>
3. *Metacognitions Questionnaire (MCQ-30)*: It is a shortened version of the 65 item MCQ with 30 items scored on a Likert scale from 1 to 4. It assesses several dimensions of metacognition thought to be relevant to psychopathology. It has five interrelated but distinct subscales: (1) positive beliefs about worry (POS), (2) negative beliefs about uncontrollability and danger of worry

(NEG), (3) cognitive confidence (CC), (4) need for control (NC), and (5) cognitive self-consciousness (CSC).<sup>12</sup>

4. Mindfulness Attention Awareness Scale (MAAS): It assesses a core characteristic of mindfulness, namely, a receptive state of mind in which attention, simply observes what is taking place in the present. It has 15 items rated on a Likert scale of 1 to 6 and is scored by finding the mean of the scores.<sup>13</sup>

**Procedure**

The principles enunciated in the Declaration of Helsinki<sup>14</sup> and by the Indian Council of Medical

Research<sup>15</sup> were followed and study was approved by the ethical review committee of the Hospital. The researcher underwent training from the faculty of Clinical Psychology in using the assessment tools and delivering intervention before commencing the study. A total of 130 patients were approached by the researcher for written informed consent, out of which 30 were recruited as per the inclusion/exclusion criteria as shown in Figure 1. Once recruited, baseline assessment of all the participants in OAD and OCD groups using BAI, PSWQ, MCQ-30 and MAAS was completed. It was followed by the delivery of single session intervention, self-guided relaxation (SGR), by the researcher. A standard set of instructions was used and session was conducted

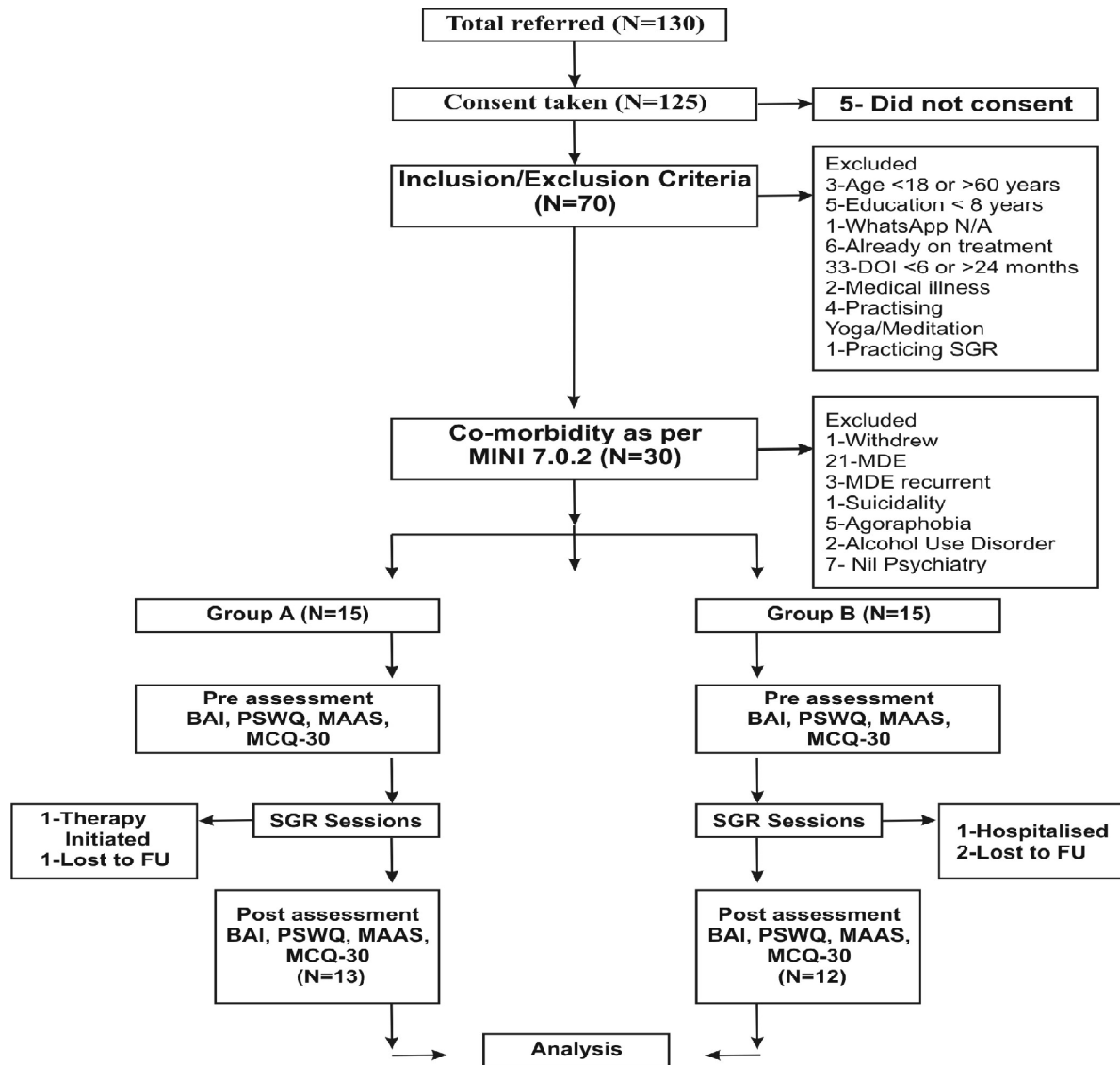


Fig. 1

in a quiet, comfortable room ensuring minimal external disturbance. To maintain uniformity in delivery of verbal instructions and paralinguistic properties of the intervention, an audio recording of SGR was used. The audio of SGR was transferred to the participant’s phone and the significance of practicing SGR once daily was emphasized. At the end of 4 weeks from the date of induction, during the follow-up in the OPD of Psychiatry, post-intervention assessment using the same tools was carried out. The study was terminated and participants continued treatment as usual in the OPD of Psychiatry. Total time taken for each participant was approximately 185 minutes (three hours), including assessment and single session of SGR.

**Statistical analysis**

The quantified data were analyzed using the Statistical Package for the Social Sciences-version 24.0 for Windows® (SPSS Inc., Chicago, IL, USA). The method of Last Observation Carried Forward

(LOCF) was used for statistical analysis of the missing data. Further parametric statistics was used as sample was less than 30.<sup>16</sup> The pre-post differences within groups were analyzed using paired t-test. Independent t-test was computed to find differences and significance between groups A and B. Cohen’s *d* was also computed to find the effect size of these changes.<sup>17</sup>

**Results**

The sociodemographic and clinical characteristics of the sample are described in Table 1.

The mean scores of the sample on the outcome measures namely; anxiety, worry, metacognition and mindfulness; before and after 4-weeks of intervention are stated in Table 2.

For OAD group a statistically significant change was seen on BAI (p <0.01), MCQ-30 (p <0.01), POS (p<0.05) and MAAS (p<0.05). Although not statistically significant, a change in other outcome measures is also seen as given in the Table 3. Cohen’s

**Table-1: Sociodemographic and clinical characteristics of participants in OAD (n=15) and OCD (n=15) groups**

Variable	OAD	OCD
Age (years), Mean ± SD	34.07 (11.11)	30.73 (9.99)
Sex, <i>f</i> (%)		
Males	60%	53.33%
Females	40%	46.67%
Education (years), Mean ± SD	13.40 (2.61)	12.93 (2.28)
DOI (months), Mean ± SD	13.20 (7.32)	20.80 (6.75)
No. of sessions, Mean ± SD	21.20 (9.41)	19.80 (10.56)

SD-Standard deviation; *f*-Frequency; %-Percentage; DOI-Duration of Illness

**Table-2: Descriptive statistics of scores on outcome measures of BAI, PSWQ, MCQ 30 and MAAS in OAD (n=15) and OCD groups (n=15)**

Measures	OAD Mean (SD)		OCD Mean (SD)	
	Pre intervention	Post intervention	Pre intervention	Post intervention
BAI	26.80 (11.30)	19.73 (8.69)	19.67 (13.45)	16.67 (12.13)
PSWQ	58.00 (9.89)	52.27 (7.92)	56.87 (12.01)	47.00 (10.55)
Total	73.33 (19.31)	63.53 (15.74)	72.33 (16.71)	65.33 (16.28)
POS	10.93 (5.23)	8.67 (2.74)	11.27 (4.37)	9.60 (4.00)
MCQ-30	18.80 (5.53)	16.60 (5.41)	18.20 (4.35)	16.60 (4.93)
CC	11.67 (4.12)	10.33 (4.64)	8.53 (4.17)	9.00 (4.78)
NC	15.27 (5.60)	13.07 (4.53)	16.93 (4.88)	15.47 (4.45)
CSC	16.60 (4.36)	15.00 (3.72)	17.40 (3.40)	14.73 (3.28)
MAAS	4.10 (0.77)	4.45 (0.73)	4.11 (0.95)	4.37 (0.86)

SD-Standard deviation; BAI-Beck Anxiety Inventory; PSWQ-Penn State Worry Questionnaire; MCQ-30-Metacognitions Questionnaire-30; POS-Positive beliefs about worry; NEG-Negative beliefs about uncontrollability and danger of worry; CC-Cognitive confidence; NC-Need for control; CSC-Cognitive self-consciousness; MAAS-Mindfulness Attention Awareness Scale

*d* was computed to find the effect size of these changes ranging from very small to large in size.<sup>17</sup> A statistically significant change was seen on measures of BAI (*p* <0.05), PSWQ (*p* <0.01) and CSC (*p* <0.05) in OCD group (Table 3).

Statistical analysis between OAD and OCD groups, as in Table 4, showed no significant differences, indicating that SGR was as effective in both groups in altering anxiety, worry, metacognition and mindfulness as depicted in pre-post analysis within the two groups. Therefore, a significant decrease in anxiety for OAD and OCD sample was seen after practice of the intervention, SGR.

In addition, SGR significantly affected overall metacognition, positive beliefs about worry and mindfulness for participants of OAD group. How-

ever, the effect of SGR was seen on worry and cognitive self-consciousness in OCD group.

**Discussion**

Mindfulness has been shown to reduce anxiety in a number of conditions including anxiety disorders.<sup>5,18</sup> Metacognition are the internal cognitive factors that control, monitor, and appraise thinking. Unhelpful metacognitions lead to an unhelpful thinking style called cognitive attentional syndrome (CAS). It is a perseverative thinking style than the content of these cognitions, leads to any disorder. This attentional component may be modified by mindfulness exercises and this can be tested by measuring the metacognitions of participants over the course of mindfulness training.<sup>19</sup> This could help

**Table-3: Pre-post analysis of outcome measures of participants in OAD and OCD groups using paired t-test**

Measures	Mean Difference		SD Difference		<i>p</i>		Cohen's <i>d</i>		
	OAD	OCD	OAD	OCD	OAD	OCD	OAD	OCD	
BAI	7.07	3.00	7.08	5.22	.002 <sup>†</sup>	.043 <sup>*</sup>	1.0	.57	
PSWQ	5.73	9.87	10.87	8.63	.060	.001 <sup>**</sup>	.53	1.14	
	Total	9.80	7.00	10.37	14.66	.003 <sup>**</sup>	.086	.95	.48
	POS	2.27	1.67	3.79	3.46	.036 <sup>*</sup>	.083	.60	.48
MCQ-30	NEG	2.20	1.60	5.98	6.06	.176	.324	.37	.26
	CC	1.33	-.47	2.99	4.72	.106	.707	.44	-.10
	NC	2.20	1.47	4.75	3.72	.095	.149	.46	.40
	CSC	1.60	2.67	3.54	3.77	.102	.016 <sup>*</sup>	.45	.71
MAAS	-3.51	-.26	6.30	0.57	.049 <sup>*</sup>	.097	-.56	-.46	

<sup>†</sup>*p* <0.05; <sup>\*\*</sup>*p* <0.01; Cohen's *d* 0.2=small effect, 0.5=medium effect, 0.8=large effect; SD-Standard deviation; BAI-Beck Anxiety Inventory; PSWQ-Penn State Worry Questionnaire; MCQ-30-Metacognitions Questionnaire-30; POS-Positive beliefs about worry; NEG-Negative beliefs about uncontrollability and danger of worry; CC-Cognitive confidence; NC-Need for control; CSC-Cognitive self-consciousness; MAAS-Mindfulness Attention Awareness Scale

**Table-4: Pre-post analysis of outcome measures of participants in OAD and OCD groups using independent t-test**

Measures	F	Mean Difference	SE Difference	<i>p</i>	Cohen's <i>d</i>	
BAI	1.074	10.86	6.26	.094	.63	
PSWQ	.000	-4.79	3.504	.182	.50	
	Total	1.773	1.703	3.199	.599	.19
	POS	.239	.363	5.597	.949	.02
MCQ-30	NEG	.072	.977	6.890	.888	.05
	CC	.094	8.957	6.432	.175	.51
	NC	4.174	2.258	5.411	.680	.15
	CSC	.057	-3.700	4.348	.402	.31
MAAS	.008	-.886	2.846	.758	.11	

Cohen's *d* 0.2=small effect, 0.5=medium effect, 0.8=large effect; SE-Standard error; BAI-Beck Anxiety Inventory; PSWQ-Penn State Worry Questionnaire; MCQ-30- Metacognitions Questionnaire-30; POS-Positive beliefs about worry; NEG-Negative beliefs about uncontrollability and danger of worry; CC-Cognitive confidence; NC-Need for control; CSC-Cognitive self-consciousness; MAAS-Mindfulness Attention Awareness Scale.



to determine if, in fact, a shift in metacognitive awareness is occurring. Worry has been found to play a role in well-being and functioning across a range of other disorders<sup>20</sup> and forms a part of the CAS. Hence, it was planned to study effectiveness of SGR by measuring worry and metacognition pre and post SGR intervention in a sample of OAD and OCD.

### **Anxiety**

The findings of the current study show that SGR intervention leads to a statistically significant decrease in anxiety in both OAD ( $p < 0.01$ ) and OCD ( $p < 0.05$ ) groups. The efficacy of relaxation exercises is well-established for OAD<sup>21</sup> and previous study has found reduction in anxiety in a variety of psychiatric disorders using SGR.<sup>6</sup> The decrease in anxiety for the OAD and OCD groups is as expected. With regards to the effect of relaxation exercises on the symptoms of OCD, research literature presents contradictory evidence.<sup>22,23</sup> The present study suggests relaxation can be effective in alleviation of anxiety in OCD, which can result in alleviation of compulsive acts arising out of anxiety.<sup>24</sup> Though ERP is based on the principle of adaptation and relaxation techniques are not considered to play a role in the treatment of OCD, recent research has proved mindfulness-based interventions to be effective in OCD.<sup>25</sup> In the current study SGR was found to enhance mindfulness, then SGR can be delivered as an integral part of psychotherapy or as an adjunct in OCD. This indicates that SGR and other efficacious relaxation exercises may also be advised for patients with OCD, not only OAD, for decreasing anxiety. Moreover, relaxation exercises affect overall subjective well-being or quality of life and are used as a preventive measure or to enhance wellness.<sup>26</sup>

The mean difference in anxiety scores pre to post intervention for OAD group was 7.07 (Cohen's  $d=1.0$ ) while for OCD group was 3.00 (Cohen's  $d=0.57$ ) (Table 3). This may be due to the increased chronicity of the illness in OCD group. It was also observed that patients with a shorter duration of illness in OCD group reported higher satisfaction with the exercise during follow ups. Perhaps a longer trial of relaxation exercises might benefit those with OCD as there is evidence that the effect of relaxation exercises does increase with longer periods of

practice.<sup>27</sup>

### **Worry**

In OCD group, a statistically significant decrease in worry ( $p < 0.01$ ) was seen after practice of SGR. Worry and obsessions are distinct but overlapping constructs which are the core features of two distinct disorders, GAD and OCD, respectively.<sup>28</sup> Worry is a dysfunctional strategy used by OCD patients to manage their obsessions and is correlated to symptom severity in OCD.<sup>29</sup> Structured interventions such as Cognitive Therapy (CT) and; Exposure and Response Prevention (ERP) produced significant decrease in worry post treatment.<sup>30</sup> This may indicate a similar change in the present study. The decrease in worry may also explain the decrease in anxiety for OCD group.

However, SGR did not show a statistically significant change in worry for OAD group although worry did decrease after intervention (Table 3). This may be due to the short intervention period as most efficacy studies of relaxation exercises in OAD lasted 12 to 15 weeks.<sup>31-33</sup> Similar research in OCD could not be found by the researchers of the present study to comment on this discrepancy. Another possibility which cannot be ruled out is that participants in the OCD group were not able to distinguish between obsessive thinking and worry. This would mean the decrease in worry reported on PSWQ could actually reflect a decrease in obsessional thinking.

### **Metacognition**

The intervention SGR significantly reduced the total scores on metacognition ( $p < 0.01$ ) in OAD group. The metacognitive component positive beliefs about worry ( $p < 0.05$ ) also decreased. Wells hypothesized that when a person with GAD experiences a negative thought, their positive beliefs about worry, that is, belief that worrying will help them cope are activated.<sup>33</sup> The decrease in POS means participants' dysfunctional belief that worrying helped them cope decreased. However, previous research has shown that Applied Relaxation produced no significant difference in positive beliefs about worry, as opposed to a more structured therapy (MCT) in GAD.<sup>34</sup> This seems to indicate SGR is superior to Applied Relaxation in altering this metacognitive belief although the decrease in worry

itself was not statistically significant, as previously discussed.

The results of OCD group indicate a significant decrease in cognitive self-consciousness ( $p < 0.05$ ) after practice of SGR. CSC is the tendency to be aware of and monitor thinking and is the component of metacognition most implicated in the psychopathology of OCD.<sup>35</sup> However, studies that have looked at the change in various components of metacognition post-intervention in OCD implicate different components. In patients who underwent ERP and group MCT, the components of need for control (NC) and positive beliefs about worry (POS) were implicated.<sup>36,37</sup> Perhaps SGR, as seen in studies of Applied Relaxation, was able to divert the attention invested by the participant in monitoring thoughts (CSC) through decentering.<sup>38</sup>

### Mindfulness

Mindfulness (MAAS) of OAD group participants increased significantly ( $p < 0.05$ ) after practicing SGR which complements previous research on a non-clinical community sample indicating that mindfulness skills are not superior to other relaxation exercises such as Progressive Muscle Relaxation (PMR) in affecting mind-fulness.<sup>39</sup> The mechanism of SGR may be similar to Applied Relaxation which works through decentering, acceptance and mindfulness itself.<sup>37</sup> Although there was an increase in mindfulness for OCD group (Table 3), it was not statistically significant. Perhaps the trait measured by MAAS requires a longer duration of practice for participants with a disorder of a longer and more chronic course like OCD. Meta-analysis of mindfulness-based therapies has shown that it is effective in decreasing anxiety for Generalized anxiety disorder and Panic disorder, that is, Other anxiety disorders (OAD).<sup>18</sup> It is less indicated in obsessive-compulsive disorder<sup>25</sup> but these studies used severity of OCD symptoms for measuring outcome rather than anxiety.

In the present study, decrease in anxiety was significant for both groups of participants with OAD and OCD. In addition, metacognitive component of cognitive self-consciousness and worry also decreased in OCD. Metacognition, its component of positive beliefs about worry and mindfulness itself changed post intervention in generalized anxiety and panic disorder (OAD).

To conclude, the present study gives indication for recommending SGR in Other anxiety disorders (OAD) as well as in Obsessive-compulsive disorder (OCD). In both, there has been a decrease in anxiety and alteration in mindfulness and metacognitions which impact the treatment outcome. SGR enhances the mindfulness being 'here and now' state and decreases focus on worrisome or obsessional thinking. This is an easy to deliver intervention unlike other mindfulness interventions which require specialized training. It might be a cheaper substitute of mindfulness intervention as SGR is based on principles of mind-body therapies that emphasize 'living in the present'.

The small sample size means the inevitable drop-outs made the research less robust and not generalizable. The groups were not matched on duration of illness and treatment. The subjective feedback from participants about their experience of SGR was omitted due to paucity of time. Future studies can address these limitations by using more homogeneous groups. The study of the effect of SGR in other psychiatric disorders, medical illnesses or non-clinical community population is also an avenue full of possibilities similar to the wide applicability of other relaxation exercises and mindfulness-based therapies.

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## Original Article

# Stress level, its determinants and impact on post-graduate medical trainees of a teaching hospital in Rajasthan

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### ABSTRACT

**Background:** The tenure of medical post-graduation is full of exertion, which can initiate stress among them. Existing literature suggests high level of stress among post-graduate medical trainees (PG Trainees). We often get news these days about resident doctors committing suicide following severe stress. With this background, current study was conducted to assess status of stress among PG trainees from south Rajasthan and to identify its determinants as well as its impact. **Methodology:** Cross-sectional study was conducted on 116 PG trainees of a teaching hospital in south Rajasthan. Along with socio-demographic proforma, PG trainees were asked to fill two scales; Perceived Stress Scale and Stress Indicator Questionnaire. Chi-square test and Fisher's Exact test was used to find out statistical significance. **Results:** Out of 116 PG Trainees included in the study, male and female trainees were almost equally distributed. No one was found without stress. When the stress level was compared for clinical and non-clinical departments, the difference was statistically significant. First year PG trainees had significantly high level of stress. Physical and behavioral domains were highly affected by severe stress. **Conclusion:** The present study concluded that a high level of stress is seen in PG trainees as compared to general population. First year of post-graduation and clinical branches are important determinants of stress among PG trainees.

**Keywords:** PG trainees, Stress Indicator Questionnaire, Perceived Stress Scale, Stress level

## Introduction

Stress is disturbed state of an organism due to the numerous demands of life situations that demand more adjustments from individual.<sup>1</sup> It is an external constraint which directly upsets the individual both physically and mentally.<sup>1</sup> Compared to others, medical education is evidenced by high prevalence of stress.<sup>2</sup> Chronic stress in medical professionals may have negative impact on learning, performance and decision-making abilities, and ultimately patient care.<sup>3</sup>

Post-graduate (PG) trainees in particular are

vulnerable to experience stress. A post-graduate medical student's life is subjected to different kind of stressors such as pressure of academics, heavy workload with long working hours, staying away from family and new ways of living.<sup>4</sup> An overview on stress in medical practice quotes that stress is inimical to the doctor's health and service delivery to patients.<sup>5</sup> An Indian study reported 24.24% prevalence of stress among resident doctors.<sup>6</sup> Considering the high prevalence of stress among PG trainees, current study was conducted in south Rajasthan to find out its determinants and impact as an elaboration on existing knowledge.

## Objectives

- 1) To determine the level of stress among post-graduate medical trainees
- 2) To identify probable determinants associated with stress
- 3) To find out the impact of stress on different domains of life like physical, sleep, behavioral, personal and emotional

## Material and Methods

An analytical cross-sectional study was carried out on study population of all Post-Graduate trainees (PG trainees) of a 576 bedded teaching hospital in south Rajasthan. Study period was two months after obtaining ethical approval in the year 2020. This teaching hospital has PG course for both clinical and non-clinical branches. At the time of study conduction, the medical college comprised of 42 PG trainees enrolled in the final/third year, 68 PG trainees in second year and 32 PG trainees in first year; making it a total of 142. Complete enumeration of study population was considered as study sample. After applying the exclusion criteria of willingness for participation and availability at the time of study conduction, final study sample size of 116 PG trainees was obtained. Post-graduate medical students undergoing treatment for psychiatric illness were also excluded to avoid confounding. Written informed consent was taken from all study participants. Before commencement of data collection, ethical approval was obtained from Institutional Ethics Committee.

A predesigned socio-demographic proforma was used to get the preliminary data of each PG medical trainee, which included history of medical illnesses as well. The PG trainees were asked to fill two scales provided to them; Perceived Stress Scale and Stress Indicator Questionnaire. Level of stress was assessed using Perceived Stress Scale (PSS). The 10 items in PSS ask about the thoughts in last month to be graded on Likert's scale. The score ranges from 0 to 40. PSS score of 0 to 26 indicates low to moderate stress, which was considered as 'mild' stress in the current study. Scores 27 to 40 indicate high stress which was considered as 'severe' stress in current study. Psychometric measures support the validity of PSS.<sup>7</sup>

Stress Indicator Questionnaire (SIQ) was used

to find out how stress affects different domains of life like Physical, Sleep, Behavioral, Emotional and Personal. In each indicator, a certain set of questions are to be answered as 'Almost always', 'Most of the time', 'Some of the time', 'Almost never' or 'Never' and is given a score of 5, 4, 3, 2 and 1 respectively. Total scores were calculated for each of the five indicators and based on the total score; it was categorized as 'Acceptable' or 'Danger' for each category. In SIQ cut-off scores for 'Acceptable' are 47, 11, 44, 45 and 24 for Physical, Sleep, Behavioral, Emotional and Personal domains respectively.<sup>8</sup>

Statistical analysis: Data analysis was done using Statistical Package for Social Sciences (SPSS version 20). 'p' value less than 0.05 was considered as significant. Pearson's chi-square test was applied to test the relationship of categorized independent and dependent variables. If expected number in the cell was below 5 in a table, Fisher's Exact Test was used.

## Results

A total of 116 PG trainees were included in the study, of which 64 were males and 52 were females. More respondents (53%) were of less than 30 years of age and 88 (76%) were from clinical branches. Forty each were first and second year PG trainees and 36 were third year PG trainees.

Mild stress was found among 81 participants and severe stress among 35 participants in the current study based on PSS. Thus, not a single PG trainee was found without stress. With regard to branch in post-graduation, 39.8% of participants in clinical branches belonged to have severe stress as compared to 0% in non-clinical branches. Similarly, many of the first year PG trainees were having severe stress as compared to second and third year PG trainees and the difference was statistically significant as shown in Table 1. Level of stress in male and female PG trainees was without any significant difference.

Table 2 shows how the level of stress affected various domains of life namely physical, sleep, emotional, personal and behavioral of study participants. Emotional domain was found to be in 'danger' among many PG trainees as compared to other domains. With relation to stress level, physical and behavioral domains were found to be significantly affected by severe stress.

**Table-1: Determinants of stress level among PG trainees**

Determinants		Stress level		Total	'p' Value
		Mild	Severe		
Gender	Male	44 (68.8)	20 (31.2)	64	0.779
	Female	37 (71.2)	15 (28.8)	52	
PG Year	First	12 (30.0)	28 (70.0)	40	<0.0001
	Second	39 (97.5)	1 (2.5)	40	
	Third	30 (83.3)	6 (16.7)	36	
Branch	Clinical	53 (60.2)	35 (39.8)	88	<0.0001*
	Non-clinical	28 (100)	0 (0)	28	

Note: Figures in parentheses indicate percentages. \* 'p' value by Fisher's Exact Test

**Table-2: Impact of stress on different domains of life**

PSS	Physical Domain		Sleep Domain		Emotional Domain		Personal Domain		Behavioral Domain	
	Accept	Danger	Accept	Danger	Accept	Danger	Accept	Danger	Accept	Danger
Mild Stress	81 (100)	0 (0)	72 (88.9)	9 (11.1)	47 (58.0)	34 (42.0)	74 (91.4)	7 (8.6)	81 (100)	0 (0)
Severe Stress	32 (91.4)	3 (8.6)	31 (88.6)	4 (11.4)	16 (45.7)	19 (54.3)	28 (80.0)	7 (20.0)	31 (88.5)	4 (11.4)
'p' Value	0.025*		0.786		0.308		0.158		0.007*	

Note: Accept = Acceptable; figures in parentheses indicate percentages.

\*'p' value by Fisher's Exact Test

**Discussion**

All PG trainees who participated in the current study were having stress. 30.2% PG trainees were having severe stress which is considerably high compared to general population. In general population, prevalence of stress is 3.5% in total.<sup>9</sup> This is the crude reality of medical fraternity in current era. It's because PG trainees are expected to master a huge amount of knowledge and skills for which they need to work hard. This in turn put them under continuous stress.

Among 116 study participants, distribution of determinants like gender, year of post-graduation and branch of post-graduation was comparable. This study revealed a significant difference in stress level between PG trainees of clinical and non-clinical branches, which is similar to other studies.<sup>4,10,11</sup> Higher occurrence of severe stress among clinical branches might be due to long duty hours, night shifts, desire to excel in clinical skills and dealing with emergencies and death.

First year PG trainees showed more stress as compared to other years which is comparable to one of the studies.<sup>12</sup> First year PG trainees go through a

hardship. This might be due to a new environment, staying away from family, maximum working hours and difficulties envisaged for integration into the system. Current study showed no statistical significant association for gender difference which was also observed by one of the Indian studies.<sup>10</sup> Gender as a factor does not influence the level of stress.<sup>13</sup>

Severe level of stress was seen to be affecting physical and behavioral domain of life significantly. One of the studies also showed similar finding.<sup>4</sup> Probable reason behind this could be constant physical exertion, staying away from families, lack of appropriate rest and sleep, improper eating habits, unhealthy coping strategies. Additionally, stress makes their body more vulnerable to various diseases due to changes in immunity level.<sup>14</sup>

Limitation of this study is that it was questionnaire-based study, so responses by PG trainees had to be relied upon. Another limitation of this study is small study population hence less scope for generalization of the results. Still this study gives the fact about minimally studied south zone of Rajasthan and throws light on burning issue faced by PG trainees in their lives.

## Conclusion

Very high level of severe stress has been found among PG trainees as compared to general population. First year of post-graduation and clinical branches are important determinants associated with severe stress. Severe stress level is significantly affecting physical and behavioral domains of life.

## Recommendations

There is a need to create awareness among PG trainees. The administrative authority can hold periodic counseling sessions emphasizing on stress management and coping methods. The authorities should look after even distribution of the workload among PG trainees and optimizing the duty hours to provide appropriate leisure time. Authorities may plan free days for each resident so that they may not suffer burnout due to work.

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## Original Article

# A retrospective chart review of substance use in North-western Rajasthan in last five years in patients admitted at tertiary care teaching hospital

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### ABSTRACT

**Introduction:** Substance use disorders remain highly prevalent disorders that exact a social burden as well as a personal burden on the individual. Few studies about pattern of substance use and associated comorbidities in admitted patients under general hospital psychiatric unit in our state were conducted. Hence this chart review was planned. **Material & Methods:** Study was conducted in patients admitted in general psychiatry unit in tertiary health care center of north western Rajasthan. Case files of patients admitted for substance use disorders between march 2013 to august 2018 were retrieved from the record room of the department. Data were recorded in predesigned semi-structured questionnaire for socio-demographic data, diagnosis and psychiatric comorbidity from all case files. **Results:** There were 1919 admissions in our hospital with primary diagnosis of substance abuse between March 2013 and August 2018. Most of admitted patients belongs to age group 25-50 years with mean age of  $38.18 \pm 10.18$  years. 99.5% were males. Patients from rural background i.e., 57.8% were higher. Maximum 75 (3.9%) patients had psychosis NOS followed by Bipolar Disorder (2.3%) and depression (1.7%). Opioid abuse has also increased but the cannabis abusers admitted to hospital have remained more or less same over the years. **Conclusion:** Our study shows increase in number of users and major shifts in patterns of substance abuse in clinic-attending in-patients over the years. There was decrease in the alcohol users and increase in the newer substance or polysubstance users with increasing comorbidities.

**Keywords:** Substance use, Age, Gender, Comorbidity, Pattern

### Introduction

Substance dependence syndrome is a cluster of physiological, behavioural and cognitive phenomenon in which the use of substance takes on much higher priority for a given individual than other behaviours that once had greater value. Substance use disorders remain highly prevalent disorders that exact a social burden as well as a personal burden on the individual.

Central descriptive characteristic is desire, often strong and overpowering craving to take psychoactive substance (e.g., alcohol, opium, tobacco etc.).

Substance induced mental disorders are potentially severe, usually temporary but sometimes persisting CNS syndromes that develop in context of the effects of substance of abuse and medications.

According to the World Drug Report of United Nations Office (UNODC)<sup>1</sup>, number of patients suffering from drug use disorders has increased disproportionately in recent years. One of the first studies on drug use in India was the National survey on Extent, Pattern and Trends of Drug abuse in India (2004), which concluded that most common substance used was alcohol (21%), followed by cannabis (3%), and opiates (0.7%). Polysubstance abusers

were also high in numbers. Onset of drug addiction is mostly early adulthood. Data in this study was collected only from males.<sup>2</sup>

The report of recent study conducted by NDDTC (AIIMS) 2019 in India establishes that a substantial number of people are psychoactive substance users and it exists in all the population groups. Alcohol is the most commonly used psychoactive substance by Indians 14.6% of population uses alcohol followed by Cannabis (2.8%) and Opioids (2.1%). This survey also indicates that a sizeable number of individuals use Sedative and inhalants (1.08% and 0.75%). Use of psychoactive substance is considerably higher among men as compared to women. The prevalence of alcohol use appears to be stable over the years. Comparing the figures for illicit drug use globally with India, while the prevalence of cannabis is lower than the global average, prevalence of opioids use is 3 times the global average and has an increasing pattern.<sup>3</sup>

However, prevalence of substance use varies from state to state and also in setting of study particularly in general hospital psychiatric unit. Few studies about pattern of substance use and associated comorbidities in admitted patients under general hospital psychiatric unit in our state were conducted. Hence this chart review was planned.

**Aim and Objectives**

To study the pattern of substance use, socio-demographic profile and associated comorbidities in patients admitted in general psychiatry unit in tertiary health care center of north western Rajasthan in the last five years.

**Material and Methods**

Study was conducted in patients admitted in general psychiatry unit in tertiary health care center of north western Rajasthan. Case files of patients admitted for substance use disorders between march 2013 to august 2018 were retrieved from the record room of the department after permission. Data were recorded in predesigned semi-structured questionnaire for socio-demographic data, diagnosis and psychiatric comorbidity from all case files. Data were analyzed by using SPSS version 21.

**Results**

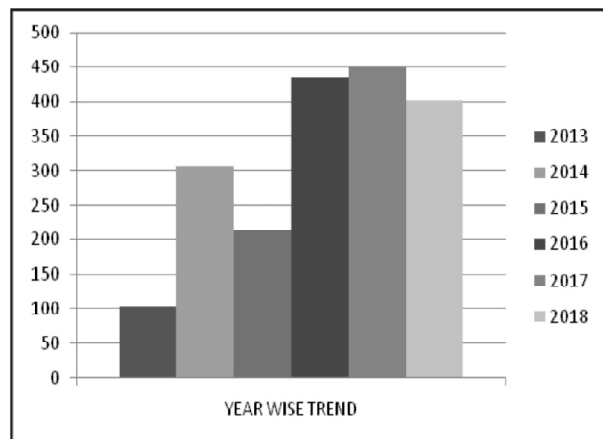
There were 1919 admissions in our hospital with primary diagnosis of substance abuse between

March 2013 and August 2018. Table 1 shows the Socio-demographic profile of the patients admitted in the hospital. Most of admitted patients belongs to age group 25-50 years with mean age of  $38.18 \pm 10.18$  years. Of 1919, 1910 (99.5%) were male and only 9 (0.5%) patients were female. Patients from rural background i.e., 57.8% (1110) were higher than that from urban background which were 42.2% (809).

**Table-1: Socio-demographic profile of patients**

Variable	Number	N = 1919
Mean Age (years)	38.18 ± 10.82	
<b>Gender</b>		
Male	1910	99.5%
Female	9	0.5%
<b>Locality</b>		
Rural	1110	57.8%
Urban	809	42.2%

Fig 1 shows the distribution of admissions by study year, 2013 (105) was lowest and increasing over years to 2016 (435) and 2017 (452) admissions, year 2018 had 403 admissions till the time of data collection.



**Fig. 1: The graph shows year wise trend of number of patients seeking treatment in deaddiction clinic.**

Table 2 shows the prevalence of psychiatric comorbidities in the substance abusers. Maximum 75 (3.9%) patients had psychosis NOS followed by Bipolar Disorder (2.3%) and depression (1.7%). Table 4 shows the trend of distribution of substance abused over the years with alcohol abuse slightly on decline and polysubstance abusers on a rise. Opioid abuse has also increased but the cannabis abusers admitted to hospital have remained more or

**Table-2: Psychiatric co-morbidities in substance abusers**

Comorbidity	Number	Percentage
Psychosis NOS	75	3.9%
Depression	32	1.7%
BPAD	44	2.3%
Others	11	0.6%
None	1757	91.5%

less same over the years. Figure 1 and 2 shows the substance abused by male and female patients respectively. Alcohol remains the primary substance of abuse in males, while most females had opioid dependence.

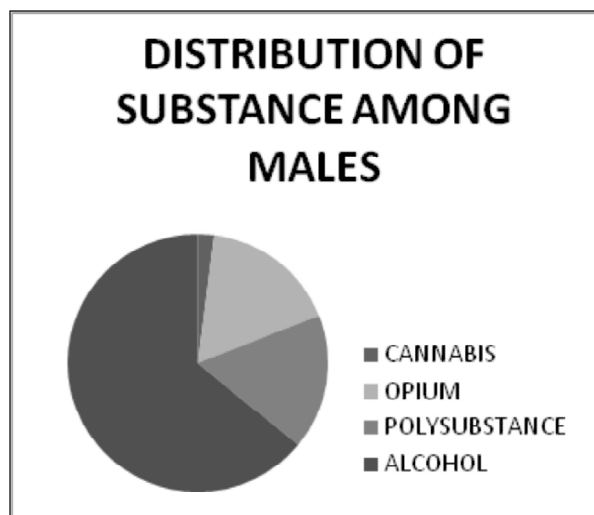


Fig. 2:

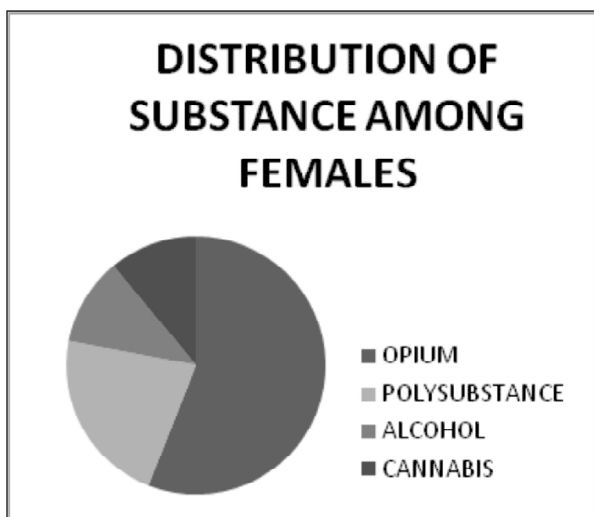


Fig. 3:

**Table-3: Age-wise distribution among substance abusers.**

Age- Group	Number	Percentage
Upto 25	226	11.8%
25-50	1430	74.6%
51-75	245	12.7%
More than 75	18	0.9%
Total	1919	100

**Table-4: Year-wise distribution of substance abuse**

Year	Alcohol	Opioids	Polysubstance	Cannabis
2013	70%	13%	16%	2%
2014	55%	26%	16%	3%
2015	73%	14%	11%	2%
2016	68%	16%	14%	2%
2017	66%	17%	15%	2%
2018	58%	17%	22%	3%

**Discussion**

This study article discusses about the current trends of the substance abuse in our region. In this study we took case notes of 1919 patients admitted for deaddiction. Number of patients seeking treatment had a steady rise over last 5 years, number of female patients has also increased similarly. In general, only a small minority of people affected by substance use disorders have access to treatment services. Only about one in thirty-eight people with alcohol dependence report getting any help with alcohol problems, and rates of in-patient treatment for drug problems are even lower. The treatment gap is much wider for female drug users.<sup>3</sup> Similar trend was observed by Basu et al.<sup>10</sup>

In our study we found that an overwhelming majority of treatment seekers were males (about 99%) and mean age of patients was 38.18 years (16-80 years) that is, maximum drug users were in middle-age group. This finding implies maximum patients were in their ‘working-age’ and drug abuse hampers their productivity. NDDTC 2019 data also found that majority of alcohol users are males (about 95%) and fall in the age bracket of 18-49 years (74%). And use of alcohol is considerably higher among men (prevalence 27.3%) as compared to women (1.6%). For every one woman who consumes alcohol, there are 17 alcohol using men.<sup>3</sup> Similar findings were reported from studies conducted by Ganguly et al.<sup>4</sup>

In an earlier study it was observed that substance

use was not very much affected by the residence of the drug seeker (DAMS2000).<sup>5</sup> In this study also we saw 58% patients were from rural background and 42% were from urban background, this difference could be reflected by increasing social acceptance of multiple substance use in urban culture and local residents may prefer to seek treatment on OPD basis. People who use alcohol appear to be evenly distributed across the socio-economic classes.<sup>3</sup>

Maximum patients admitted for deaddiction over the span of last five years are of alcohol dependence (65%), next being opium (17.1%) followed by poly substance (15.6%). This data is congruent to that collected by NHS and DAMS 2000. According to NDDTC survey (2019) also alcohol is the most common psychoactive substance used by Indians. Nationally, about 14.6% of the population (between 10 and 75 year of age) uses alcohol. In terms of absolute numbers, there are about 16 crore persons who consume alcohol in the country. Another trend observed was with the exception of an aberration for the year 2015 there has been steady decrease in the percentage of population consuming alcohol from 70% in 2013 to 58% in 2018. Similar trend was observed in another study by Basu et al,<sup>10</sup> this might be expected due to increasing tolerance of the family towards the alcohol use of a member.

Among females max. patients were opium abusers followed by polysubstance, which may be due to more socially acceptable culture of opium consumption in Rajasthan.<sup>6,7</sup> Other reasons can be due to inapparent effects of opium and its pain relieving and work capacity enhancing features, they also use opium to get rid of minor ailments and in due course become addicts.<sup>8</sup>

One of the most important trends observed was the percentage of patients admitted as polysubstance dependents showed a glaring rise from 2015 (11%) to 2018 (22%). This has been observed in other parts of India as well.<sup>11</sup> The percentage of poly drug users was found to be 22.3% in the National Survey on Extent Pattern and Trends of Drug Abuse in India.<sup>2</sup>

Over the years cannabis dependents remained more or less same around 2-3% in our study. Conversely, as per NDDTC-2019 data Cannabis (2.8%) and Opioids (2.1%) are the next commonly used substances in India. This is also contrasting to

the DAMS data (2004) which concluded cannabis to be second largest consumed drug with affected percentage of 11.6%.

Another finding of this study was the increasing trend of comorbidities associated with the substance abuse. Around 90% of patients had no associated comorbidities, if present, psychosis NOS (5%) was found to be present in majority followed by depression (3%). This is contrasting to that observed in another study which concluded depression and anxiety disorders to be most prevalent among drug abusers.<sup>13</sup>

### Conclusions

Our study shows increase in number of users and major shifts in patterns of substance abuse in clinic-attending in-patients over the years. There was decrease in the alcohol users and increase in the newer substance or polysubstance users with increasing comorbidities. These have important implications for all the stakeholders and policy makers involved in combating the situation.

### Limitations

Like any other study there are limitations to this study and caution should be exercised while drawing conclusions from it. It was a retrospective study, conducted at a tertiary level hospital which covers a population of specific area, so findings cannot be generalized to general population. This study took into consideration only hospital admitted patients, so these findings cannot be generalized.

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## Original Article

# Teachers on Wheels Amidst Covid-19 Pandemic

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### ABSTRACT

**Background:** With the spread of Corona virus, the educational process across the world got disrupted. In that context, the educational unit was reshaped dramatically giving rise to prodigious e-learning where teaching is initiated extrinsically on digital mode. With the result, almost all the teachers were worried about the way online pedagogy would be implemented because it was not simply shifting from traditional in-person teaching to online version but it involved reconstruction and redesigning of the teaching modules and methods to edge into the needs of e-learners. **Aim:** The present study was pursued to find out the benefits and limitations of online teaching in the backdrop of various challenging demands generated by the deadly pandemic of COVID-19. It also features the distinguishable methods of online/offline teaching in revamping the entire education process keeping the conventional method of teaching as a benchmark. **Method:** The current investigation was carried out by online survey using a google form shared among various teachers across the states of India. The google link was unbolting for a period of two months i.e., from 1st October to 30th November, 2020. **Results:** Three hundred seventy-eight responses were analyzed. The findings suggested that teachers no doubt started teaching through online mode but were still preferring traditional in-person teaching because of unsurmountable technical difficulties. Additionally, useful input is received regarding designing adaptive and functional strategies in teaching to make it more collaborative, meaningful and productive both for teachers and students. **Conclusion:** Keeping in view the unforeseen scenario emerging with COVID-19 pandemic it is clear that the current system of education needs to be strengthened. The paradigm shift to online component is the need of the hour. But it is technology dependent, requires regular updates and is quite demanding and many institutions would not be able to afford or keep pace with its demands. However, it brings many advantages and would definitely strengthen the traditional model of teaching and learning.

**Keywords:** COVID-19 pandemic, Teachers, Education setup, Online teaching, Offline teaching

### Introduction

In March 2020, the World Health Organization affirmed the COVID-19 outbreak to be a pandemic as the virus proliferated globally. Worldwide all the Governments levied many restrictions including lock-downs, quarantine and social distancing<sup>1-4</sup> to intercept the spread. Due to these undertakings the lives of people came to a halt derailing every aspect of their lives.<sup>5-8</sup> At that moment of time almost all the public and private educational institutions were forced to close globally due to this unprecedented pandemic leading to total disruption of learning and

teaching. The collapse in the educational system during this period disheartened the students, teachers and families,<sup>9</sup> dented the economy and had adverse impact on the society in multiple ways. The unanticipated transformation produced burden not only on students and their families but also on teachers who encountered daunting responsibility in learning and teaching. The educational authorities, administrators and especially teachers have spotted themselves in unexplored ventures. In response to that, education system started transforming dramatically giving rise to prodigious e-learning where teaching is initiated extrinsically and on digital platforms. With the result,

almost all the teachers were worried about the way online pedagogy needed to be implemented because it is not simply shifting from traditional face-to-face teaching to online version but needed reconstruction and redesigning the teaching modules and methods to fit into the needs of e-learners. Teachers further were bothered about the mandatory break which has enlarged the gap between learner and teacher. However, this evolving ubiquitous experiment of online teaching has both strengths and weaknesses.

Online learning or e-learning is one the technological developments which has become a saviour and which has made the education accessible at this time of crisis.<sup>10</sup> The terminologies used for this are “online learning, open learning, web-based learning, computer-mediated learning, blended learning, m-learning having in common the ability to use a computer connected to a network, that offers the possibility to learn from anywhere, anytime, in any rhythm, with any means”.<sup>11</sup> On the positive side, online teaching makes the learning-teaching process more student-oriented, revolutionary, ingenious and versatile. According to Goodyear et al.<sup>12</sup> online teaching is defined as the “teaching that takes place over a computer network of some kind and in which interaction between people is an important form of support for the learning process. It includes both synchronous and asynchronous forms of interaction as well as interaction through text, video, audio, and in shared virtual worlds”. With this transformation, teaching method can be explained in terms of “changing role of teachers from the *sage on the stage* to the *guide on the side*”. In digital teaching the teachers are involved in teaching any portion of curriculum, any proficiency, or any topic virtually. One should be judiciously digitally articulated and tech-savvy to proffer education. The teachers can use a collection of audios, videos, text messages, power point presentations, WhatsApp, mail or video calls to get in touch with their students and make it more customized. In addition to that, creating a class, sending the link for the class, designing and scheduling the lesson plan and disseminating pedagogical information through some e-resources to the learners like e-books, pre-recorded lectures with animated audio and visual aids, power point presentations, podcasts, word documents, other videos, audios and pdf files were the important components of the whole process. The teachers had the options to use different

platforms like Zoom, Microsoft team, Google Meet, Webex Meet, Power Director, etc. as these tools kept evolving and improving making a perfect substitute for conventional classes.<sup>13</sup>

By the virtue of online teaching methods, the teachers or instructors can impart education to a large number of students situated any where in the world at a given time. Online teaching material can be documented, preserved and disseminated in future. Teachers can constitute an appropriate and amicable tailor-made learning environment fit for learners’ needs. The teachers can also facilitate the students through online learning as they can strengthen and consolidate their learning skills by using these experiential and ingenious ways. The educators can cover number of topics by sharing an array of reading material and can resolve the doubts raised by students.<sup>14</sup> Besides, these strengths of online teaching there are certain weaknesses which made the e-learning more challenging and troublesome. These challenges are inadequate online teaching skills among teachers, insufficient planning and scheduling of lesson plans, no support from the technical staff and traffic jam across technical educational forums. Moreover, the inadequate ethics for quality, no control over quality in formulating e-resources and disseminating e-content are also some of the difficulties in online teaching.

### Objective

Keeping in view the advantages and limitations of the online set up, the present study was conducted with an objective to assess the challenges and the ways to improve the difficulties encountered in digital teaching and also compare it with traditional and face-to-face teaching.

### Method

The current investigation is a part of a larger project. With an intention of assessing the strengths and contradictions with the methods in refining online teaching and comparing it with conventional method of teaching, an online survey method was employed. The online survey was carried out by using a google form, the link was shared among various teachers teaching in different colleges, universities and institutes across different states of India using snowball technique. The google link was unbolted for a period of two months i.e., from 1<sup>st</sup>

October to 30<sup>th</sup> November, 2020. Besides snowball method the teachers were also contacted through mails or WhatsApp. The survey was designed bearing in mind the changing status of learning and teaching during outbreak of global pandemic COVID-19. The online survey was comprised of information related to socio-demographic variables and eleven statements regarding online teaching especially tailor-made for teachers. It was also assured that the teachers in the sample had some experience of online teaching and conducting classes.

**Results and Discussion**

Out of 385 responses received during the survey period, 7 responses were excluded because of lack of full details, hence 378 responses were left for the final analysis. The mean age of respondents was  $39.59 \pm 9.30$ . The female teachers preponderated the male teachers (226/ 59.79% v/s 152/ 40.21%). The teachers were from diverse states and streams. Majority of the teachers were teaching in government institutions (56.9%) followed by government aided (16.4%), autonomous (11.9%) and other institutions. A substantial number of responses were from Haryana (69.9%) followed by Chandigarh (12%), Delhi (9%), Himachal Pradesh (3%) and Punjab (2.4%). Other states like Odisha, Uttar Pradesh, Uttarakhand, Maharashtra, Rajasthan, Andhra Pradesh, West Bengal, Gujarat, Bihar and Jammu and Kashmir had trivial representation.

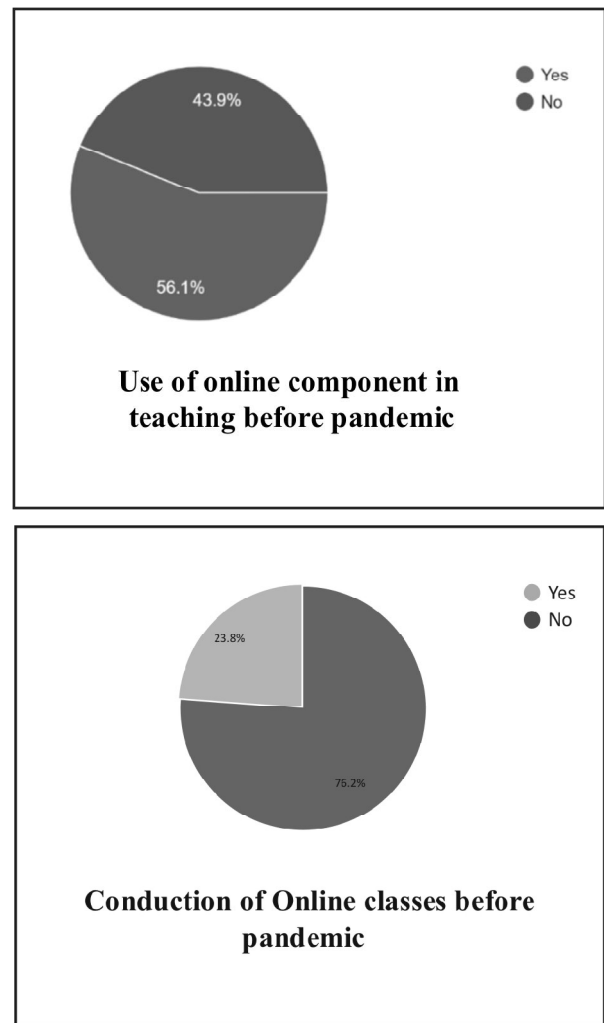
The results have been presented in the following sections.

*Awareness about online teaching*

A substantial number of teachers have been possibly using the online component in their teaching prior to the pandemic (Figure 1). Out of the total teachers about 56.1% were well aware about the online pedagogic material and have been disseminating the information from time to time to the students not as a part of their routine curriculum but as an added information. Most of these teachers who were using such material and disseminating the same to the students were convinced that the material they have searched from the internet was proper and relevant, hence majority (56.1%) had responded in ‘yes’. On the other hand, about 43.9% of them never used the online material as one of the components in their teaching. Regarding the conduction of online

classes before pandemic (Figure 1), a considerable number of teachers (76.2%) responded in ‘no’ except for a few teachers who have been indulged in coaching and tutoring classes (23.8%). The mode of their teaching might be in the form of uploading their videos, audios, power point presentations on digital platforms. With the start of journey of online learning in India in 2010 many EdTechs commercial enterprises were launched in the area of education like Byju’s, Meritnation, Unacademy, etc. These educational sites have been making every effort to think out of the box by delivering many free e-courses and e-learning resources to the students. The tutors engaged in these courses have already engaged in some digital platforms to impart education to the students.

*Online versus Offline mode of teaching*



**Fig. 1: Use and conduction of online teaching before pandemic**

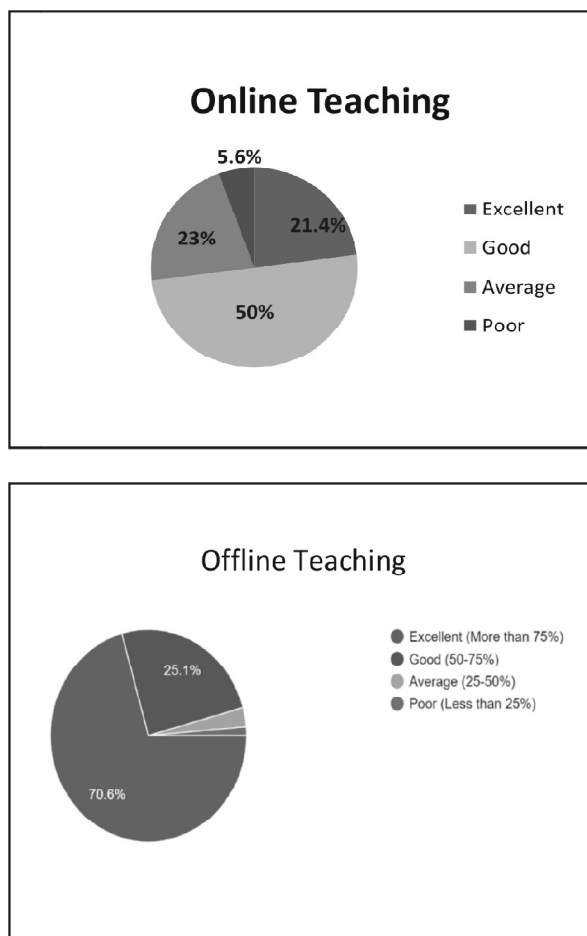


With respect to the comparative analysis of online versus offline mode of teaching (Table 1 & Figure 2) conducted by their institutions majority of teachers (70.6%) rated the quality of traditional mode of teaching as excellent followed by 25.1% as good whereas approximately one fourth of total teachers (23%) rated the quality of online mode of teaching as excellent followed by about half of teachers (50%) rated the quality of online mode of teaching as good. This can be attributed to the fact that most of the teachers think that by interacting face-to-face with the students they can maintain discipline and can execute a customary schedule to sustain the alertness of students both physically and mentally which is possibly lacking in online teaching. Moreover, the teachers think that their institutions are still struggling to search for varied possible alternatives of conducting online classes and are attempting to use technology more judiciously. Many of the institutions are still in the process of getting ready with full digitalization to tackle with the pressing need of the hour. In addition to that colleges and institutions affiliated to universities are not equipped with latest techno- infrastructure, learning aids and assets for e-learning. They are of the view that the such teaching resources should not only be implemented at the time of such unprecedented crisis but also initiated in advancing and refurbishing the excellence of virtual education imparted in such crises.<sup>15</sup> The findings are in line with the statement made by Verma<sup>16</sup> which mentions that online learning is a better replacement for traditional mode of learning only at the time of crisis but not the substitute for offline teaching. Moreover, traditional teaching remains and stands first at the victory podium in disseminating education and knowledge.

**Table-1: Quality of Online versus Offline teaching in institutions (N=378)**

	Online teaching N (%)	Offline teaching N (%)
Excellent	87 (23)	267 (70.6)
Good	189 (50)	95 (25.1)
Average	81 (21.4)	11 (2.9)
Poor	19 (5.6)	5 (1.4)

Taking note of overall preference or effectiveness of online versus offline teaching, it was observed (Table 2 & Figure 3) that only one fifth (19.8%) of



**Fig. 2: Quality of Online teaching versus Offline teaching in institutions**

teachers rated the effectiveness of online teaching as excellent followed by about half of the teachers (52.9%) rated it to be good. Majority of teachers (66.1%) rated the effectivity of offline teaching to be excellent i.e., above 75% followed by 28.8% rated it to be good i.e., between 50-75%.

**Table-2: Overall preference/effectiveness for Online versus Offline teaching (N=378)**

	Online teaching N (%)	Offline teaching N (%)
Excellent (more than 75%)	75 (19.8)	250 (66.1)
Good (50-75%)	200 (52.9)	109 (28.8)
Average (25-50%)	97 (25.7)	14 (3.7)
Poor (less than 25%)	6 (1.6)	5 (1.4)

In connection with the need for training for the conduction of online classes (Table 3 & Figure 4), majority of teachers (42.9%) felt the need for proper

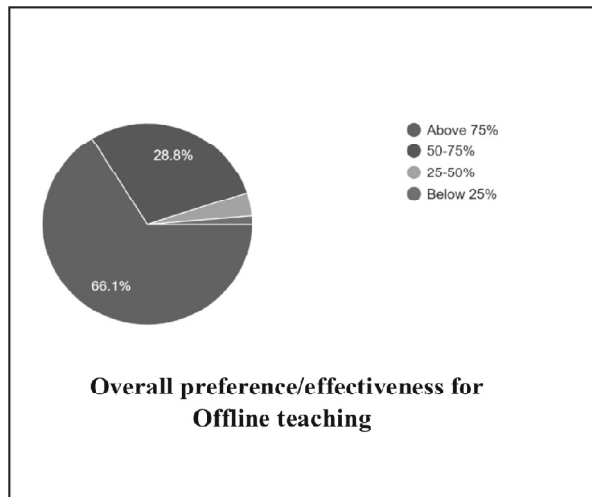
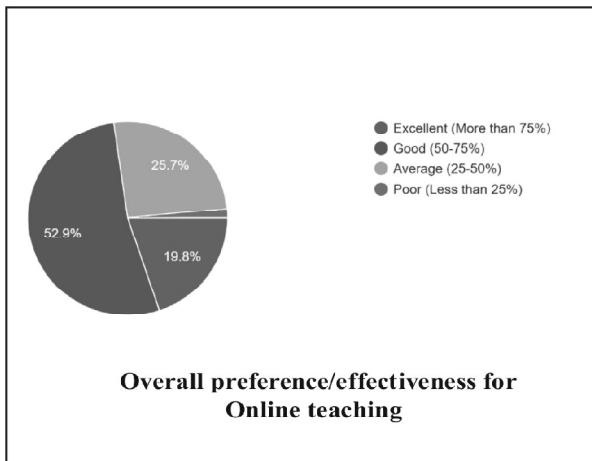


Fig. 3: Overall preference/effectiveness for online v/s offline teaching

Table-3: Challenges in teaching-learning process (N=378)

	Level of confidence N (%)	Need for training N (%)
Always	196 (51.9)	162 (42.9)
Frequently	117 (31)	102 (27)
Occasionally	58 (15.3)	94 (24.9)
Never	7 (1.8)	20 (5.2)

training before taking the online classes. About one fourth (27%) of respondents frequently sensed the need for proper training prior to indulge in e-learning with almost equal number of them (24.9%) occasionally felt the need before taking plunge in online teaching. Only about 5% perceived no need for training. Many teachers in many colleges, institutions and universities by no means ever had a chance to practice in using digital platform for e-learning. A substantial number of teachers are

satisfied with the conventional method of teaching. But with the outbreak of COVID-19 pandemic, it became a challenge for teachers to shift from traditional method of face-to-face teaching to online mode. With the result they have to be digitally literate and alter the content, style, method of delivery and teaching skills in order to make it more effective, innovative, interactive and collaborative. This was also pointed out by Partlow & Gibbs<sup>22</sup> that online teaching-learning programs should be tailored in that fashion that they are visionary, collaborative, instrumental, student-oriented and group-based in nature. But it is quite taxing and demanding to evolve and devise teaching program justifying the curriculum as well as captivating the attention of

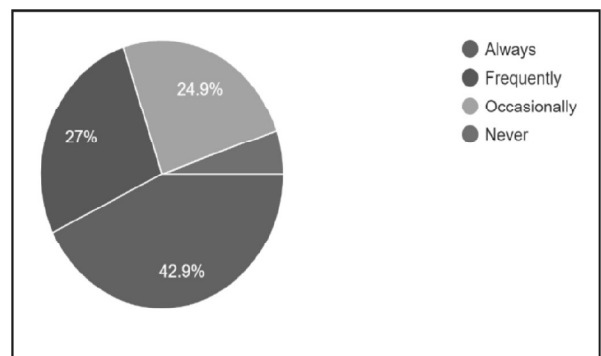
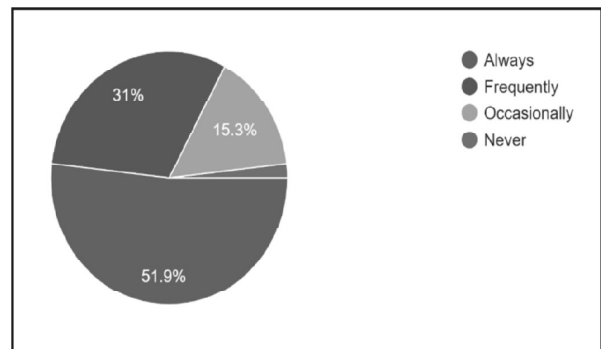


Fig. 4: Challenges in teaching-learning process

students.<sup>23</sup>

With respect to the difficulties faced by teachers in teaching online classes, the results clearly reflected that teachers counted a number of difficulties in teaching through online mode (Table 4).

A considerable number of respondents (87.30%) were concerned about the absence of face-to-face interaction with the students because prior to pandemic they indistinctively used only conventional offline mode of teaching and they were not used to such kind of drastic change in teaching. At the time

**Table-4: Difficulties in teaching online classes**

	Agree N (%)	Disagree N (%)	Can't Say N (%)
Lack of expertise	228 (60.32)	117 (30.95)	33 (8.73)
Lack of time	136 (35.98)	206 (54.50)	36 (9.52)
Less effective	285 (75.40)	66 (17.46)	27 (7.14)
Poor monitoring	301 (79.63)	62 (16.40)	15 (3.97)
Impair home environment	219 (57.94)	104 (27.51)	55 (14.55)
Lack of real interaction	330 (87.30)	43 (11.38)	5 (1.32)
Difficult to teach practical and hands-on training	316 (83.60)	44 (11.64)	18 (4.76)
Low network connectivity	305 (80.69)	58 (15.34)	15 (3.97)
Lacks social skill competence	261 (69.05)	83 (21.96)	34 (8.99)
Loses peer group competition	263 (69.58)	83 (21.96)	32 (8.46)
More tedious	212 (56.09)	115 (30.42)	51 (13.49)
Pressure of preparation of lesson plans beforehand	200 (59.91)	145 (38.36)	33 (8.73)
Attendance issues of students if they lose network connection	310 (82.01)	50 (13.23)	18 (4.76)
Keeping track of daily schedules	245 (64.82)	102 (26.98)	31 (8.20)
Lack of feedback	247 (65.34)	116 (30.69)	15 (3.97)
Lack of resources	241 (63.76)	114 (30.16)	23 (6.08)

of crisis, the need of hour was to endorse online education in an enormous manner globally rather than to think about quality education.<sup>24</sup> Moreover, some of the teachers also believed that through digital learning they were not able to engage students in imparting practical and hands-on knowledge which is possible only when they interact with students face-to-face (83.60%). Digital learning focuses more on theoretical knowledge but it often lacks practical or hands-on knowledge. In practical or hands-on tasks, the students themselves are involved and engaged in doing the tasks with their own hands but in e-learning it is restricted to what the teacher has conducted in the class and the students do not get the chance to conduct the practical by themselves. Majority of the respondents (82.01%) were worried that during the class, per chance if the students lose the internet connectivity the attendance chart would show his/her absence. In addition to this, low internet connectivity (80.69%), lack of monitoring of students (79.63%) whether they are attentive in the class or not are other important areas which raised concern of teachers. Some teachers still preferred traditional face-to-face teaching in comparison with online teaching and believed it to be less effective (75.40%). This can be attributed to the fact that these teachers were not acclimatized with online teaching and are still at the learning stage as it eventually became an instantaneous and swift change from conventional way of teaching to online teaching. They had to bridge the gap and were taken for

granted to stay in hand-to-hand with the drastic change. In addition to the typical difficulties some of the teachers (69.58%) were bothered about online classes for lacking in group activities, group discussions, etc. that were possible only in social face-to-face interaction among students (69.05%). The barriers in the way of online teaching can be lack of “collaborative learning tasks through group work, group presentations and group assessments among students”.<sup>17,25,26</sup>

Even though the teachers got involved in taking online classes they were worried about the feedback and acknowledgement from students which was reported to be lacking (65.34%). Hodge & Chenelle<sup>27</sup> pointed out that providing feedback can improve the quality of learning both of the students as well as of instructors as it is the rejection of the quality of both. Keeping track of the daily schedule including the lesson plan, the material to be shared with the students, the feedback and the attendance of students is a big hassle for many teachers (64.82%). Challenges in online teaching in the form of lack of resources and lack of expertise were well taken by some of teachers (63.76% and 60.32% respectively). They believed that many institutions and colleges still did not have the proper and adequate information communication and technology (ICT) infrastructure to deal with the present challenging scenario as they are still under the process of making proper contingency plans. Many reliable and appropriate ICT material, learning tools and other e-learning

resources are needed to deal with such crisis.<sup>28</sup> On the flip side, more than half of teachers disagree on the point of lack of time (54.50%). They believe it to be their moral duty to impart and disseminate education to their students, whatever difficulties or challenges they might have to encounter. Though it has become more tedious for them (56.09%) in initiating and creating a class, inviting students for the class, giving information to students about the class beforehand, sharing the link for the class daily, giving and receiving assignments, keeping track of daily schedule, making the lesson plan and sharing the e-books and e-material with the students yet they are ready for every challenge because they think that they have the appropriate opportunity to learn all these things and accept it to be fruitful for them as well as for students to fight with the crisis and not allow the process of teaching-learning stranded.

*Strengths of online teaching*

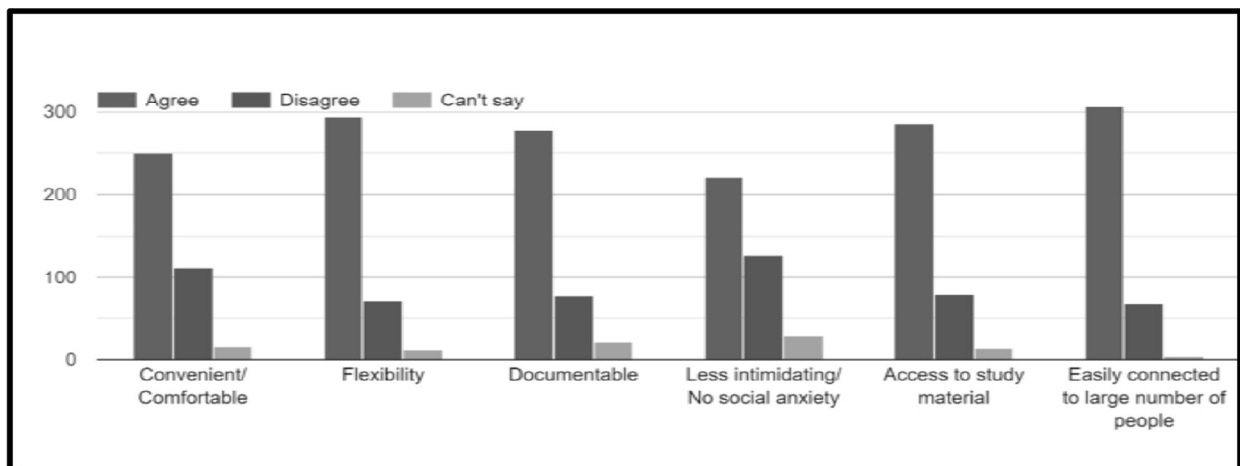
The online learning-teaching mode can contribute to a number of benefits not only for instructors but also for students.<sup>17,24</sup> The results clearly revealed that a substantial number of teachers responded in more favourable way (Table 5 & Figure 5). They

believed it to be more convenient/comfortable (66.14%), flexible (77.78%), documentable (73.54%), less intimidating (58.73%), easily accessible (75.40%) and it can preach a large number of students at one time (80.95%).

A good deal of benefits have been associated with online teaching which teachers have specifically mentioned. It is well documented that online teaching is the best medium which is quite comfortable and convenient at the time of crisis which makes it more suitable and reliable when there is no other alternative available. Besides this, flexibility is another strength of online teaching benefitting both teachers and students. The teachers can post and answer the queries raised by students anytime not necessarily during the class or after the class and moreover, the students who have social anxiety or who have not understood the material taught in the class can work through the material at their own pace and capability. It is also flexible in context with time and location. Everything the teachers teach in the class can be documentable namely the pdf files, ppt presentations, audio recordings, etc. The material provided through various means can be easily accessible by the students as it can reach the students at remote places

**Table-5: Strengths of teaching online classes**

	Agree N (%)	Disagree N (%)	Can't Say N (%)
Convenient/Comfortable	250 (66.14)	112 (29.63)	16 (4.23)
Flexibility	294 (77.78)	72 (19.05)	12 (3.17)
Documentable	278 (73.54)	78 (20.63)	22 (5.82)
Less intimidating/ No social anxiety	222 (58.73)	128 (33.86)	28 (7.41)
Accessibility	285 (75.40)	79 (20.90)	14 (3.70)
More connectivity	306 (80.95)	68 (17.99)	4 (1.06)



**Fig. 5: Strengths of teaching online classes**

as well. The students need not to come to the university from far off places to get education. Online teaching emerged as a panacea during this catastrophe.<sup>29</sup>

*Modifications/Improvements in online teaching*

Many suggestions and inputs from teachers have come into limelight with regard to modifications and

interactive the discussions should be in smaller groups otherwise the students who face social anxiety and the students who are mediocre would not be able to interact in a larger group. The teaching staff must spare a lot of input in designing adaptive and functional strategies so that an average student gets the benefit of online programs. This can be obtained through feedback from learners, providing

**Table-6: Modifications/Improvements in online teaching\***

Modifications/improvements needed in online teaching	N (%)
Technology should be safe and secure	280 (74.1)
Online teaching should be restricted to critical thinking & not for skill-based learning	174 (46)
Syllabi for online & online teaching should be clearly differentiated	214 (56.6)
Teaching module should have diverse formats like text, images, video & audio	242 (64)
Teaching material should be divided into micromodules rather than macro modules	163 (43.1)
Online teaching should include more interactive sessions in smaller groups	230 (60.8)
Each module should have an evaluation component at the end	213 (56.3)
Any other	23 (6.1)

\*Multiple choices were given

improvements required in online teaching (Table 6).

The results clearly specified the difficulties experienced and encountered by a large number of teachers during online classes and they communicated some modifications or improvements to be amalgamated during the digital classes. From the findings it has been observed that the respondents conveyed a number of diversified reactions where majority of modifications were related to the fear, security and safety using modern technology, the internet or the learning management system (LMS) portals where they are interacting with students because of surge in cases of cyber-crime and cyber-attacks (74.1%). They are worried not only about the safety and security of themselves but also the safety of students. Further, they believed that amalgamation of diversified dimensions of imparting education through online mode should be there (64%). The content or delivery of lectures should include “power point presentations, audio or video lecturing, case-reporting, discourses, declamations, group discussions, quizzes, pragmatic learning, brainstorming forums, mock sessions, games, coaching”, etc. to develop them as more collaborative, productive, beneficial and fruitful.<sup>30</sup> It has further been observed that many teachers (60.8%) believed that besides teaching-learning forums being

them a platform to share their difficulties and widening their horizon.<sup>31</sup> Definitely the *teachers are on wheels* as they have to make so much of modifications in preparing the lesson plans by incorporating more productive and purposeful materials, by making use of verbal inspirational tools and by scheduling additional activities for the pedagogy.

In addition to that majority of teachers (56.6%) opined that the content or delivery of pedagogical system should be blended with both traditional face-to-face mode as well as online mode but the content, nomenclature and classification should be well clarified and separated so that while preparing the teaching strategies like lesson plan, lectures, discussions, etc. should be well taken care of. Moreover, almost half of the teachers (56.3%) were of the perspective that there should be an assessment of students after the completion of each section or unit in order to get the feedback that the students were able to comprehend the material which has been taught in the class or they need extra effort to put in. Extending this in relation to the above observation a large number of the teachers (43.1%) gave their opinion regarding the bifurcation of teaching material into small modules rather than in large units. This may help not only the teachers to sort out the topics and sub topics to be covered in that module

but also would be effective for students to resolve the difficulties and organize their pedagogy. This would help them to develop and exercise their learning skills. These skills eminently would help them to subjugate the challenges coming in way of e-learning.

Apart from the modifications cited above some of the teachers feel that sometimes the lecture becomes monotonous and boring and it does not convey that whether the students are listening or attentive or not. Therefore, they believe that the content of teaching and the way of delivery should be absorbing and captivating so that the engrossment and attentiveness can be ascertained just as in the offline classes. Some of the teachers also raised the question of attendance because sometimes students are not able to connect on time because of low internet connectivity or other technical glitches and sometimes it also happens that the students are connected but due to internet breakdown they appear disconnected. It cannot be ascertained and guaranteed that the students themselves have partitioned or are disconnected due to some internet hindrances. In addition to that some of the teachers highlighted the point of the attentiveness of students that it is difficult to ensure the alertness and attentiveness of students because they are busy in taking the class whether the students are listening to them or not cannot be checked or confirmed. The introduction of setting time limits and in between reminders for students would be appropriate. Individualized consideration is required to make check on students from time to time. Over and above many teachers are in favour of traditional face-to-face teaching as they feel that they are well connected with their students. This can be attributed to the fact that without face-to-face interaction the teaching seems meaningless, unproductive and futile.

### Conclusion

The pandemic of COVID-19 has stimulated the use of e-learning. Everybody who is involved in education sector has got the opportunity to take full advantage to learn a lot from the current situation. This transforming position of teachers “*from the sage on the stage to the guide on the side*” demands “*teachers to be on wheels*” switching over from one mode to the other and making teaching and learning exercise fruitful and productive. This is an

exciting roller coaster ride for those involved in this field conveying a message that whatever the situation is, the teachers are ready to face it. They are in the process of evolving a new paradigm in terms of practicing technology, designing innovative e-content for students, collaborating delivery modes and fostering productive and efficacious teaching-learning approach.

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## Original Article

# Reasons for living and self-efficacy as Psychological Buffers against Suicidal behaviours in individuals with Depression

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### ABSTRACT

**Background:** Psychological buffers refer to a set of psychological resources that protect individuals from suicidality in the presence of risk factors. Understanding psychological buffers in individuals with depression helps in incorporating these factors in intervention. **Objectives:** To examine reasons for living and self-efficacy as psychological buffers against suicidal attempts in depression and to compare those with suicidal behaviours to those without on demographic and clinical variables. **Method:** Fifty adults between 18-45 years with the primary diagnosis of recurrent depressive disorder formed the sample. The tools used were Socio-demographic datasheet, MINI International Neuropsychiatric Interview, Beck depression inventory, Reasons for living scale (RFL), and General self-efficacy scale. **Results:** Forty percent of the patients had attempted suicide with a higher representation of males. The sample had moderate depression, lower reasons for living and moderate self-efficacy. Those with suicidal ideation and attempts had a significant family history of psychiatric illness. Across the 3 subgroups of lifetime suicidal behaviours - without suicidal behaviours, with ideation and attempts there was no significant difference in self-efficacy and RFL scores except for responsibility towards family. Attempters had higher responsibility towards family and ideators had severe depression. With respect to current suicidal behaviours – those with suicidal intent had lower RFL scores and higher BDI severity. Those with ideation had higher responsibility towards family, fear of suicide, and fear of social disapproval. **Conclusions:** The findings indicate the dynamic nature of reasons for living warranting further research in the cultural context. It has implications in planning intervention.

**Key words:** Psychological buffers, Reasons for living, Self-efficacy, Suicidal behaviours, Depression

### Introduction

Psychological buffers under the purview of resilience to suicidality refer to the ability, perception or set of beliefs which protect individuals from the development of suicidality in the presence of risk factors.<sup>1</sup> Some of the psychological buffers for suicides in depression are: problem-focused coping strategies,<sup>2</sup> high reasons for living,<sup>3</sup> hopefulness, self-efficacy beliefs,<sup>4</sup> and optimism and future orienta-

tion.<sup>5</sup> In addition, socio demographic characteristics such as having children and being married,<sup>6,7</sup> employed<sup>8</sup> and access to treatment<sup>9</sup> are found to be protective factors.

Reasons for Living (RFL) are positive psychological factors suggesting reasons for staying alive when people get thoughts of suicide.<sup>10</sup> There is an inverse association between the number of reasons for living endorsed and intensity of suicidal behaviour.<sup>11,12</sup> Depressed patients who had not attempted



suicide reported more feelings of responsibility toward family, fear of social disapproval, moral objections to suicide, greater survival and coping skills, and fear of suicide compared to depressed patients who had attempted suicide.<sup>3</sup> Also, individuals with suicidal thoughts and attempts experienced higher level of depression and had fewer RFL than those without.<sup>13</sup> Further, association between hopelessness and past-year suicide attempt and depression and suicide attempt was mediated by reasons for living.<sup>14</sup> In contrast, greater level of responsibility to family was reported in those with higher hopelessness and suicidal ideation.<sup>15</sup> With respect to predictors of suicidal probability, those who were young, male, with lower education, fewer reasons for living, higher hopelessness and living alone emerged as predictors.<sup>16</sup>

Self-efficacy is a belief in “one’s ability to manage or control external and internal threats, exert a primary influence on human emotion, cognition, and behavior”.<sup>17</sup> Positive self-efficacy beliefs appear to protect individuals from suicidal behavior in the face of stress.<sup>3,18</sup> Negative association was found between Self-efficacy and suicidal ideation and attempts.<sup>19</sup>

We have chosen to examine RFL and Self-Efficacy as protective factors for suicidal behaviours in depression. The examination of the selected clinical constructs is relevant in the background of the lack of research especially in the cultural context. We also aim to compare demo-graphic and clinical variables among those with suicidal behaviours and those without. Suicidal behaviours in the current study refers to having suicidal thoughts/plans, and engaging in self-injurious behaviour in which there is at least some intent to die.<sup>20</sup> The findings from the study can be valuable for mental health care providers in formulating psychotherapeutic interventions addressing reasons for living and self-efficacy.

## Material and Method

The sample comprised of 50 adults between 18-45 years with the primary diagnosis of recurrent depressive disorder (comorbid with Dysthymia/Anxiety) with or without a past history of suicide attempts as assessed with M.I.N.I. International Neuropsychiatric Interview (M.I.N.I. 6.0). The study used a cross sectional exploratory design with

purposive sampling method to select the sample from inpatient and outpatient departments of psychiatry and psychology. Those with ability to read and understand questionnaires in English and Tamil were chosen for the study. Those with a diagnosis of severe depression with or without psychotic symptoms, Cluster B personality disorder, history suggestive of intellectual disability, major neurological illness or organic psychiatric disorders, substance dependence with active use in the last three months or more and those who are not amenable for assessment using questionnaires were not included in the study.

A total of 60 participants were identified based on file diagnosis, of which 6 did not meet the criteria, 4 did not give consent, and hence the final sample comprised of 50 participants (21 females and 29 males).

## Tools

A socio-demographic data sheet was used to obtain demographic and family details. Semi-structured interview was used to obtain clinical history. The interview explored onset/course of illness, precipitating factors, history of presenting illness, history of suicidal behaviours, information regarding medication/psychotherapy and family history of psychiatric illness. History of suicidal behavior asked the life time ideations, plans and attempts.

The M.I.N.I. (MINI International Neuropsychiatric Interview),<sup>21</sup> was used to confirm the clinical diagnosis of the participants. Beck’s Depression Inventory-II<sup>22</sup> a 21-question multiple-choice, self-report questionnaire was used for measuring the severity of depression. Reasons for Living Inventory<sup>12</sup> a is self-report instrument which measures beliefs that may contribute to the inhibition of suicidal behaviour. The RFLI is deemed valid, with subscales differentiating individuals with and without suicidal ideation, and attempts. Higher total scores indicate stronger reasons for living and higher domain scores indicate higher importance of a particular reason for living. General Self-Efficacy Scale<sup>23</sup> is a 10 item self-report measure. The items are rated using 4-point Likert scale with a higher score indicating higher self-efficacy.

## Procedure

The study obtained ethical clearance from the

institute review board. The participants were oriented to the study and a written consent was obtained. The tools for data collection were administered on a one-to-one basis in a single session which took up to 1-1.5 hours. The interviewer remained sensitive to verbal and non- verbal cues of emotional distress and addressed issues that were brought up in the interview. Any report of current suicidality was brought to the immediate attention of the treating team.

### Analyses of data

IBM Statistical Package for Social Sciences for Windows, Version 22.0. was used for analysis of data. Descriptive statistics were used to describe the data. Independent sample t-test was used to compare GSS scores for attempters and non-attempters. Kruskal Wallis test was used to compare across the suicidal behavior groups on RFL and. Pearson chi square and Fisher's Exact test was used to examine the association between categorical variables. Pearson correlation and Spearman's correlation coefficient were used to examine the relationship between two continuous variables. Multivariate logistic regression was used to examine the predictors of suicidal behaviours.

### Results

The mean age of participants was  $30.8 \pm 8.3$  years. The illness duration ranged 1-10 years with average duration of 8.86 years (SD = 6.63). The sample comprised largely of individuals who are educated, employed, single, belonging to middle socioeconomic status and living in nuclear families (Table 1).

About 98% were receiving pharmacotherapy. There was no significant difference between those without any life time suicidal behaviours, and with ideation and attempts on any of the socio- demographic and clinical variables except for family history of psychiatric illness. Family history of psychiatric illness was present in 70% of the attempters and 56% of those with ideas compared to those without (36%) ( $S_{\chi^2} = 10.39$ ,  $p = .03$ ). Family history of suicides was present in 30% of the attempters, 25% of ideators and 14% among those without any suicidal behaviours. However, higher number of males reported lifetime ideation and attempts compared to females (75% and 55%;

**Table-1: Socio-demographic and clinical characteristics of patients diagnosed with depression (n=50)**

Socio-demographic and clinical characteristics	n (%)
<b>Education</b>	
Middle school	3 (6)
High school	14 (28)
Graduate	24 (48)
PG or above	9 (18)
<b>Employment</b>	
Employed	29 (58)
Unemployed	12 (24)
Studying	9 (18)
<b>Family</b>	
Nuclear	42 (84)
Joint	5 (10)
Living alone	3 (6)
<b>Marital Status</b>	
Single	30 (60)
Married	16 (32)
Separated/divorced	4 (8)
<b>Diagnosis</b>	
Dysthymia + RDD	25 (50)
RDD	23 (46)
RDD + Anxiety disorder	2 (4)
<b>Course</b>	
Episodic	30 (60)
Continuous	20(40)
<b>Suicidal behavior (life time)</b>	
Nil	14 (28)
Death wishes, ideas and plans	16(32)
Attempts	20 (40)
<b>Suicidal Behaviours (current, based on BDI item)</b>	
No intent	19 (38)
Thoughts	18(36)
Plans to attempt	13(26)
<b>Therapy</b>	
Have received psychotherapy	23 (46)
Have not received psychotherapy	27 (54)
<b>Family history of psychiatric illness</b>	
Absent	22 (44)
Present in first degree relative	23 (46)
Present in second degree relative	5 (10)
<b>Family history of suicide</b>	
Absent	38 (76)
Present in first degree relative	10 (20)
Present in second degree relative	2 (4)

n=no. of cases, %= percentage

25% and 45% of males and females respectively).

The sample had moderate depression. The average item score on RFL is lower compared to the non-clinical sample ( $M = 4.34 \pm 0.58$ ) as reported by Linehan et al (1983).<sup>15</sup> The general self-efficacy score for the sample indicate moderate self-efficacy.

**Table-2: Mean scores across variables for the three groups categorized according to current suicidal status on Beck Depression Inventory (Kruskal Wallis test)**

	Total sample (n=50)	Nil (n=19)	Thoughts (n=18)	Intent to die (n=13)	P value
	Mean (SD) (Min -Max)	Mean (SD) (Min -Max)	Mean (SD) Median (Range)	Mean (SD) Median (Range)	
Total mean score	180.22 (39.48) 63-243	182.58 (32.49) 191 (106-228)	192.72 (38.72) 197 (94-243)	159.46 (44.91) 172 (63-225)	.051
Average Item score	3.85 (.78) (1.31-5.06)	4.05 (.46)@ 4.1 (3.25-4.77)	4.03 (.8) 4.23 (1.95-5.06)	3.33 (.95)@ 3.58 (1.31-4.68)	.033
Survival and coping beliefs	4.17 (1.17) 1-5.75	4.6 (.84) 4.91 (2.58-5.75)	4.22 (1.18) 4.31 (1.25-5.75)	3.51 (1.36) 3.83 (1-5.29)	.056
Responsibility toward family	4.22 (1.2) 1-6	3.84 (1.33)@ 4 (1-5.85)	4.81 (.74) @ 4.31 (3.14-6)	3.96 (1.29) 3.83 (1-5.57)	.020
Fear of Suicide	2.74 (1.06) 1-5	2.12 (.82)@ 2.14 (1-3.42)	3.38 (.97)@ 3.57 (1.57-5)	2.80 (1.0) 2.16 (1-4.28)	.002
Moral Objections	3.2 (1.14) 1-6	3.3 (1.29) 3.5 (1-6)	3.22 (1.0) 3.25(1-5)	3.02 (1.17) 3.25 (1-5.25)	.732
Child-related concerns	3.6 (1.96) 1-6	4.04 (2) 4.5 (1-6)	3.87 (1.93) 4.66 (1-6)	2.47 (1.66) 2.16 (1-5)	.086
Fear of social disapproval	3.2 (1.46) (1-6)	2.68 (1.33) 2.66 (1-4.66)	3.79 (1.55) 4.17 (1-6)	3.15 (1.31) 3.33 (1-5.66)	.052
*Generalself efficacy scale	27.14 (5.66) 15-38	27.68 (6.23) 29 (16-36)	27.78 (5.3) 27.5 (19-38)	25.46 (5.39) 26 (15-35)	.437
BDI Total	25.5 (12.71) 0-53	15.53 (9.79)@ 16 (0-39)	29.33 (9.37)@ 28.5 (8-46)	34.77 (10.94)@ 35 (15-53)	.001

RFL=Reasons for living inventory, \*p<0.05; a=mean, SD and t values are computed for GSS scale  
@significant difference was seen between these two groups

The sample was categorized according to the life time/past suicidal behaviours (based on a question on clinical data sheet) and current suicidal behaviors (based on item No. 9 related to suicidal ideation on BDI) and compared on the study variables.

There was no significant difference across the 3 groups (without suicidal behaviours, with ideas and attempts in the past) on the GSS, RFL total as well as subscales except for responsibility towards family. Those without any suicidal behaviours [median =4(1-5.85)] differed significantly ( $p = .036$ ) with lower scores than those who attempted suicide in the past [4.71(2-6)]. Those with suicidal ideation in the past (mean = 31.5 ± 10.7) had significantly ( $p = .025$ ) higher scores on depression compared to without (mean = 19.5 ± 11.55)

With respect to current suicidal behaviours there was significant difference across a few subscales of the RFL and the total item score (Table 3) and on BDI severity. Post hoc analysis indicated that there was significant difference in the BDI scores between those with suicidal thoughts and without ( $p = .001$ )

and those with thoughts and intent ( $p = .001$ ). Responsibility towards family beliefs were higher among those with thoughts compared to those without ( $p = .023$ ). Fear of suicide was higher in those with suicidal thoughts compared to without ( $p = .001$ ).

Comparison of the subgroups according current suicidal intent across demographic data (Post hoc test) showed that mean duration of illness for those with suicidal intent was lower (6.54 ± 2.99) compared to that of those with thoughts (9.06 ± 6.05) and without any thoughts or intent (15.53 ± 9.79). Mean age of those with intent was lower (27.38 ± 7.04) compared to those without any suicidal behaviours (37.37 ± 11.41) ( $p = .029$ ); and those with thoughts (29 ± 9.35) were younger to those without any suicidal behaviors ( $p = .03$ ).

Significant negative correlation was found between BDI and GSS ( $\rho = -.040$ ;  $p = .003$ ) and positive correlation between RFL and GSS ( $\rho = .273$ ;  $p = .05$ ). Low negative correlation was found between BDI and RFL ( $\rho = -.0273$ ;  $p = .15$ ). With regard to predictors of life time suicidal behaviours

**Table-3: Predictors of suicidal behaviors: life time and current suicidal intent**

Variables		Odds ratio (95% CI)	p – value	Pseudo R <sup>2</sup>
<b>Life time suicidal behaviors (Nil –Reference)</b>				
Ideas	BDI total	1.089 (1.010 – 1.174)	0.026	Cox and Snell = 0.373 Nagelkerke = 0.421
	Responsibility towards family	2.047 (0.907 – 4.619)	0.084	
	Family History (Absent)	0.215 (0.028 – 1.659)	0.140	
Attempters	BDI total	1.028 (0.956 – 1.105)	0.456	
	Responsibility towards family	4.044 (1.604 – 10.198)	0.003	
	Family History	0.056 (0.007 – 0.464)	0.007	
<b>Current suicidal behaviours (Nil –Reference)</b>				
Thoughts	BDI total	1.312 (1.065 – 1.616)	0.011	Cox and Snell = = 0.648 Nagelkerke 0.731
	Responsibility towards family	14.689 (1.972 – 19.405)	0.009	
	Age	0.883 (0.773 – 1.008)	0.066	
	Total item score	0.102 ( 0.008 – 1.331)	0.082	
Intent to die	BDI total	1.422 (1.131 – 1.787)	0.003	
	Responsibility towards family	4.913 (0.698 – 34.585)	0.110	
	Age	0.847 (0.722 – 0.993)	0.041	
	Total item score	0.062 (0.005 – 0.764)	0.030	

higher BDI total score, responsibility toward family and presence of family history of mental illness together contributed to 37% of the variance (Table 4). For the current suicidal behaviours, higher BDI total score and responsibility towards family, younger age, and lower RFL together contributed to 65% variance.

### Discussion

In the sample, representation of males was higher compared to females which might be because of the education criteria used in the study. Higher education level, employment rate and middle socio economic strata in the sample is contrary to the other studies done in India which show that depression is more common in individuals with low educational level, unemployed and belonging to the low socioeconomic strata.<sup>24</sup> This may be explained by the requirement for the participant to read English or Tamil thereby necessitating a higher level of education, increasing his/her opportunity to be employed and belonging to the middle socioeconomic strata. Majority of participants belonged to the urban area and lived in nuclear families, which might be due to the accessibility of the hospital (located in the urban area), knowledge of treatment and higher prevalence of depression among individuals in the urban area.<sup>25</sup> Most participants were single, which might be because of the gender representation, and the younger average age of the sample. One of the Indian studies found that young, unmarried men with

depression as more likely to attempt suicide.<sup>26</sup>

Majority had chronic course with persistent depression and RDD (Table 1). The percentage reporting attempted suicide in the past is similar to another study by Ramdurg et al (2011).<sup>27</sup> The number of participants receiving pharmacotherapy and psychotherapeutic intervention reflects on the trends in the treatment of depression in the Indian context as well as patient's preference, and lack of awareness and/or financial barriers.<sup>28</sup> Prevalence of the family history and suicidality indicates the genetic loading in the sample. Higher family history in those with suicidal behaviours may be explained by familial clustering of suicidal behaviours and psychiatric disorders in suicide completers and attempters.<sup>29</sup> Similarly, family history of suicide predicted suicide attempts in young males.<sup>30</sup>

The severity of depression in the sample is reflective of the severity seen in clinical population necessitating hospital visits (Table 2). The average scores on reasons for living was lower indicating lesser number of reasons for living in our sample with depression. The average item score on subscales such as survival and coping, fear of suicide, child-related concerns were similar to the norms reported for suicidal individuals whereas scores on subscales of responsibility toward family, moral objections and fear of social disapproval, fear of suicide were higher than that of the norms for non-suicidal individuals/ similar to general population.<sup>10,31</sup> It indicates the possible cultural influences on the reasons for living,

given that India being a collectivist society that emphasizes family integrity and loyalty which is reflected as responsibility towards family as a reason to live. Suicide is believed as a sin and the stigma associated with it makes them fear the disapproval of the society of themselves and significant others.<sup>32</sup> A study done in India by Vanghia et al<sup>33</sup> showed that fear of suicide and survival and coping beliefs seemed to protect against higher lethality of suicidal acts among the suicide attempters. Those with suicidal attempts in the past reported higher scores on Responsibility towards family subscale though this appears contrary to the literature.<sup>3</sup> It is possible that post the attempt the individuals would have realized/reflected upon the reasons for living possibly through intervention of family and professionals.

The moderate self-efficacy in our sample might be because most of them were on medication and about half of them were on therapy. Also, since the severity of depression was similar across the attempters and non attempters no difference in self-efficacy was found. Those with suicidal ideation in the past continued have higher scores on BDI (severe) indicating the association between severity and suicidal risk.

Contrary to the literature, those who endorsed current suicidal ideation (Table 3) had more reasons for living, higher responsibility towards family, fear of suicide and disapproval from society compared to without.<sup>11,12</sup> The possible reasons may be that the suicidal thoughts also make them think of their responsibilities and fear the thoughts and the social consequences. It may also prevent them from attempts. The findings seem to indicate that as the suicidal intent increases the reasons living diminishes. However, this needs further exploration.

Significant negative correlation between BDI and GSS and positive correlation between RFL and GSS is understandable that people with depression have low self-efficacy belief and having more reasons for living is associated with high self-efficacy.<sup>19</sup> However, low correlation between RFL and BDI indicates that all individuals with depression need not feel suicidal thus RFL may be relevant only for those who are suicidal.

With respect to predictors of life time suicidal behaviours, BDI severity and family history of psychiatric illness is an established factor.<sup>13,26,29</sup> However, more research is needed with respect to

reasons for living in the Indian context, in the background of the family structures and functions. Similarly, for current suicidal behaviours, younger age and fewer reasons for living has been established as a few predictors of suicidal behaviours (intent).<sup>3,12,16</sup>

The study has few limitations such as the sample not being representative of patients diagnosed with depression as the method of data collection involved self-report measures, limiting the sample only to those who could read and write. The intentionality, lethality, number of attempts and the period between the study and the last attempt was not understood in the current study. The RFL inventory is not validated in the Indian context, which could possibly exclude factors that are distinct to the Indian context. However, the study is one of the first to examine psychological buffers against suicidal behaviours among people with depression in the Indian context. The diagnosis was established using M.I.N.I, case file details and corroborated through an informant. The findings have clinical applications in terms of understanding the potential psychological buffers for suicidal behaviour in the cultural context and formulating treatment strategies addressing reasons for living by individually tailored components. It is recommended that clinicians should explore what each RFL means for a patient rather than assume that they are protective.

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## Original Article

# Psychological Well-Being and Life Satisfaction in Patients with Multiple Psychoactive Substance Use

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### ABSTRACT

**Background:** Substance abuse is a major social issue, associated with many physical and mental health conditions. This study aimed to explore psychological well-being and life-satisfaction in patients with multiple psychoactive substance use. **Methodology:** The study was conducted among 30 patients fulfilling ICD-10 criteria for mental and behavioral disorders due to multiple drug use. Data was collected with the help of P.G.I. General Well Being Scale to measure the positive mental health and Life satisfaction scale. 30 patients were contacted for the study. They were explained regarding the objectives of the study and written informed consent was taken. After clinical interview responses of the participants were recorded on the aforementioned two scales. **Results:** The study revealed that 73.3% patients of multiple substance users have low level of psychological wellbeing. 63.3% patients of multiple substance users have low level of life satisfaction. Positive correlation ( $r=.421$ ) was observed between psychological wellbeing and life satisfaction. **Conclusion:** Policies which influence the levels and patterns of substance use and related harm can significantly reduce attributable public health problems, and interventions at the health care system level can work towards restoration of health in affected individuals.

**Keywords:** Psychological well-being, Life-satisfaction, Psychoactive substance use

### Introduction

Substance abuse is a major social issue, associated with a range of mental health problems.<sup>1</sup> It refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs, leading to dependence syndrome. Substance abuse and psychological wellbeing are closely linked, although one doesn't necessarily directly cause the other. Abusing substances such as marijuana or methamphetamine can cause prolonged psychotic reactions, while alcohol can make depression and anxiety symptoms worse and consequently affects the life satisfaction. People have been using various

kinds of psychoactive substances not only as a means of coping with various problems of life but also to derive pleasure out of it. It leads to addiction and has been associated with wide range of psychosocial problems. World Health Organization estimates, the global burden of disease attributable to alcohol and illicit drug use is 5.4%.<sup>2</sup>

### Psychological Wellbeing and Multiple Psychoactive Substance Abuses

Psychological health is defined as a "state of being in which a student is balanced both emotionally and intellectually".<sup>3</sup> Psychological well-being



appears to be a relatively broad concept. For many years now, the term has been used interchangeably with the term “mental health”. The multiple substance abuse has been found significantly associated with reduced life satisfaction.<sup>4</sup>

### **Life Satisfaction and Multiple Psychoactive Substance Abuses**

Abuse of psychoactive substances, not only affects quality of life but also life satisfaction.<sup>4</sup> Life satisfaction is defined as the cognitive evaluation that people make about the overall quality of their lives or the quality of specific domains within their lives (e.g. family, friends, school<sup>5</sup> and the cognitive component of subjective well-being.<sup>6</sup>

India has braced itself to face the menace of drug trafficking both at the national and international levels. The findings of the current study can be used in future preventative and rehabilitative efforts targeting groups of individuals who may be at heightened risk for experiencing reduced psychological wellbeing and life satisfaction in the face of substance use. Although there has been extensive research in understanding the relationship between psychological wellbeing and life satisfaction and among multiple substance users, but there is dearth of comparative studies in Indian setting. Hence the following with the following objectives the present study was conducted.

### **Objectives**

- To assess the psychological wellbeing of patients with multiple psychoactive substance use
- To assess the life satisfaction in patients with multiple psychoactive substance use
- To study the relationship between psychological wellbeing and life-satisfaction in patients with multiple substance use

### **Materials and Methods**

**Study Sample:** A total sample of 30 patients fulfilling the ICD-10 criteria for mental and behavioral disorders due to multiple drug use attending the Drug Dependence Treatment Centre, Institute of Mental Health, Rohtak was taken.

### **Inclusion criteria:**

- Fulfilling the ICD-10 diagnostic criteria for mental and behavioral disorders due to

multiple drug use and use of other psychoactive substances

- Either gender
- 18 years of age and above

### **Exclusion criteria:**

- Patients who were not willing to get involved in the study and did not give informed consent.
- Presence of any other major medical, organic or neurological illness or psychiatric disorder.

### **Measures Used**

- **Performa for socio demographic details and clinical profile**

A semi-structured Performa would be used to gather the basic information about Socio-Demographic and Clinical variables data of the participants

- **P.G.I General Well-Being Scale**

This scale was developed by S. K. Verma and Amita Verma. This scale measures positive mental health of Indian subjects. The scale consists of 20 items and the subjects are required to tick the items applicable to them. Scoring of the test includes counting the number of ticks with scores ranging from 0 to 20. The test is reliable at .98 (<.01)<sup>7</sup>.

- **Life Satisfaction Scale<sup>8</sup>**

The life satisfaction scale comprises of sixty items related to six areas of life viz. Health Satisfaction, Personal Satisfaction, Economic Satisfaction, Marital Satisfaction and Job Satisfaction. Every items is to be responded either in Yes or No. Every “Yes” response is assigned one mark and the sum of marks is obtained for the entire scale. Test-retest reliability was computed after a lapse of 6 weeks. The obtained quotient was .84 and validity of the scale was obtained by correlating it with Saxena’s Adjustment Inventory and Srivastava Adjustment Inventory. The validity quotient obtained was .74 and .84 respectively.

### **Procedure**

After getting the approval from the ethical committee of the institute, 30 patients were contacted for the study. They were explained regarding the

objectives of the study and written informed consent was taken. First of all, the patients were administered to a semi-structured interview to gather information about their socio demographic profiles and substance intake characteristics followed by the assessment of their Psychological wellbeing by using PGI-Well being scale and life satisfaction among them using life satisfaction scale.

**Statistical Analysis**

The statistical package for social sciences (SPSS version16.0) was used for statistical analysis and statistics was used for analysis of the data.

**Results**

The results are described in the tables given below:

**Table-1: Showing Socio demographic details of the participants**

Variables		M±SD	
Age		25.93±5.64	
		Frequency	Percent
Gender	Male	30	100
	Female	0	0
Residence	Urban	18	60
	Rural	12	40
Marital Status	Married	6	20
	Unmarried	23	76.7
	Separated	1	3.3
Religion	Hindu	29	96.7
	Sikh	1	3.3
Education	10 <sup>th</sup>	14	46.7
	12 <sup>th</sup>	10	33.3
	Graduate	4	13.3
	Post Graduate	2	6.7
Occupation	Agriculture	4	13.3
	Self Business	5	16.7
	Job	11	36.7
	Unemployed	10	33.3

Table 1 show that all the participants were males and the mean age of the participants was 25.93 ± 5.64 years. 60 percent were from rural background and 40 percent were from urban areas. Majority of the participants were unmarried i.e. 76.7 percent. 96.7 percent of the participants were Hindus and 3.3 were Sikhs. 46.7 percent were 10<sup>th</sup> pass 33.3 were 12<sup>th</sup> pass, 13.3 percent and 6.7 were graduate and post graduate respectively. In the occupation areas majority of the participants were in job i.e. 36.7 percent and 33.3 percent were unemployed

whereas 13.3 percent and 16.7 percent were in Agriculture and doing own business respectively.

**Table-2: Showing frequencies and percentage of level of psychological well-being in the sample**

Level of Psychological Wellbeing	Frequency (F)	Percent (%)
High	8	26.7
Low	22	73.3

Table 2 is shows that only 8 people scored high on the level of psychological well-being i.e. 26.7 percent of the whole sample while 22 people i.e. 73.3 percent among the sample have scored low on level of psychological well-being which shows that maximum number subjects in the sample scored low level of psychological wellbeing.

**Table-3: Showing frequencies and percentage of level of life satisfaction among the sample**

Level of Life Satisfaction	Frequency (F)	Percent (%)
Average	11	36.7
Low	19	63.3

Table 3 is shows that only 11 people have scored average on the level of life satisfaction while 19 people among the sample have scored low on level of life satisfaction which shows that 63.3 % people have low life satisfaction while 36.7% of them have average level of life satisfaction. Results therefore show that those individuals who use drugs report a lower level of life satisfaction.

Table 4 is showing co-relation between various variables in the study. There is positive co-relation between the psychological well-being and life satisfaction indicating higher the psychological well-being higher will be the life satisfaction or vice versa.

**Discussion**

Substance abuse is an old problem of the present era. Existing body of research suggests that substance use is associated with reduced life satisfaction and psychological well-being in both adolescence and adulthood. As the literature

**Table-4: Showing the co-relation between various variables among the sample**

	Age	Residence	Marital status	Occupation	Education	LS	PWB
Age	1	-.002	-.110	-.037	-.161	.201	-.281
Residence		1	.150	.081	-.419*	.176	.017
Marital status			1	.109	-.081	-.146	-.008
Occupation				1	-.058	-.198	.032
Education					1	.463**	.482**
LS						1	.421*
PWB							1

highlights, people involved with any form of substance use are more likely to be involved in other risky behaviors.

In the present study there were no female subjects in the selected group. 100% of the sample consisted of male subjects.

Out of total sample 60% are from urban background residents while 40% of rural background residents. Similar findings were reported in another Indian study in which 38.3% of the rural population in Uttar Pradesh was found to be habitual substance users.<sup>9</sup> In a study conducted in rural community in Bihar prevalence of alcohol/drug use was found to be 28.8% of the study population.<sup>10</sup>

In the whole sample 20% was married while 76.7% were unmarried and 33.3% was separated. Similarly a study found that individuals with greater education and those married are less likely to smoke, drink heavily, and use illicit drugs.<sup>11</sup>

In the current sample, maximum patients were of Hindu religion i.e. 96.7% while only 33.3% were of Sikh religion. In a study done by Glendinning, Shucksmith, and Hendry, it was found that culture has been shown to affect levels of substance use and that the different cultural groups yielded significantly different patterns of drinking and binge drinking behavior.<sup>12</sup>

The results therefore suggest that those, who have lower levels of psychological well-being, use drugs to a greater extent than those who report higher levels of psychological well-being. On the other hand; some researchers have found that substance use leads to the deterioration of psychological well-being. For example, Blum found in his study that the effect of smoking cessation tended to lead to better psychological well-being, cognitive functioning, and energy levels and sleep adequacy.<sup>13</sup> Also one needs to bear in mind that although having a negative psychological wellbeing puts one at greater

risk for substance abuse.

In the current study the level of life satisfaction among multiple substance users indicated that those individuals who use drugs report a lower level of life satisfaction. Results suggest low level of life satisfaction among the majority of the subjects surveyed i.e. 63.3% while 36.7% of them have average level of life satisfaction. Similarly in study done by Kuntsche and Gmel indicated that adolescents who drank alcohol regularly increased their odds of being dissatisfied with their lives by .88 times.<sup>14</sup>

The current study also explored the influence of substance use on life satisfaction when multiple types of substances (specifically, alcohol, cigarettes and marijuana) were considered simultaneously. The effect of specific types of substances and life satisfaction is consistent with prior research that found that low life satisfaction was linked to smoking, while high life satisfaction, academic achievement, future orientation and social comparison was related to lower rates of smoking.<sup>15</sup>

On a whole it appears that reduced life satisfaction is significantly correlated with substance abuse and poor psychological well being. There is positive co-relation between the psychological well-being and life satisfaction indicating higher the psychological well-being higher will be the life satisfaction or vice versa.

## Conclusion

It was concluded the participants who had lower scores on the Psychological Well-Being Scale, experience a lower sense of psychological well-being and were found to be more likely to abuse drugs. Similarly, the participants who had low scores on the Life Satisfaction Scale or who had lower sense of life satisfaction were also found to be more likely to abuse drugs.

### Limitations

Sample size of the study was small; All the participants were males; and Single center study.

### Implications

Policies which influence the levels and patterns of substance use and related harm can significantly reduce attributable public health problems, and interventions at the health care system level can work towards restoration of health in affected individuals.

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## Original Article

# A Study of Profile of patients referred to Psychiatry department from medical/surgical departments in a tertiary care Medical College & Hospital in Rajasthan

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### ABSTRACT

**Introduction:** Consultation-liaison (C-L) psychiatry is defined as the area of clinical psychiatry that encompasses clinical, teaching, and research activities of psychiatrists and allied mental health professionals in the non-psychiatric divisions of a general hospital. It includes consultation in which a medical specialist provides information of diagnosis and treatment of medical illness, and a psychiatrist assesses and manages the current psychiatric symptoms. References to the psychiatry department from the medical and surgical departments of general hospital or from Medical College and hospital setup are also important area of consultation liaison psychiatry.

**Aim and objectives:** The aim is to study the Profile of patients referred to Psychiatry department in a Medical College & Hospital in Rajasthan. **Material and methods:** A study of 320 subsequent patients was conducted in psychiatry department of medical college & hospital, Diagnosis was made by psychiatrists based on ICD-10 guidelines. Data was analyzed using appropriate statistical techniques. **Results:** 320 patients were referred to psychiatry department. Majority of them were Males (59.9%) lying in age group of 18-30 years that is 44%. General Medicine department made the highest number of references 45.6%. Depression was the most common diagnosis followed by mixed anxiety and Depression. **Conclusion:** Psychiatric co-morbidity may present in acute and chronic physical illness. The C-L psychiatry would play a major role in the management of psychiatric co-morbidity. The General medicine was the main department for referring patients. However, referral from other specialties was comparatively lower, this could be due to lack of awareness of specialist for psychiatric symptoms or underreporting of psychiatric symptoms by patients due to attached stigma and sometimes specialist would consider these symptoms as part of physical illness. Therefore, it may be necessary to conduct a short training session for recognition of psychiatric symptoms in physically ill patients among specialists. This may improve referral rates.

**Keywords:** Psychiatry references, Medical and surgical departments, Consultation Liaison Psychiatry

### Introduction

Consultation-liaison (C-L) psychiatry is defined as the area of clinical psychiatry that encompasses clinical, teaching, and research activities of psychiatrists and allied mental health professionals in the

non-psychiatric divisions of a general hospital.<sup>1</sup> C-L psychiatry encompasses a broad spectrum of activities. It includes consultation in which a medical specialist provides information of diagnosis and treatment of medical illness, and a psychiatrist assesses and manages the current psychiatric

symptoms. Liaison interaction, whereby the psychiatrist becomes an integral part of a medical-surgical team, helps in the recognition of psychological morbidity at an early stage and in the comprehensive management of the patients on the site.<sup>2</sup> Over the years Consultation-Liaison (C-L) psychiatry has contributed significantly to the growth of the psychiatry and has brought psychiatry very close to the advances in the medicine. It has also led to changes in the medical education and in the providing comprehensive management to the physically ill.<sup>3</sup> C-L psychiatrists treat mainly four types of patients: co-morbid psychiatric-medical illnesses; psychiatric disorders directly resulting from a primary medical condition or its treatment, such as delirium; complex illness behavior such as somatoform and functional disorders; and acute psychopathology admitted to medical-surgical units, such as attempted suicides.<sup>3</sup> Currently, the C-L services in India follow the consultation model, wherein a psychiatrist evaluates and manages the patient referred from a physician/surgeon. C-L psychiatry referral rates from other specialties in India are very low (0.06%–3.6%)<sup>[1]</sup>. The Mental health awareness has led to psychiatric referrals of patients presenting in various departments. The rate of referral depends on a lot of factors such as physicians and families approach towards the mental illness, treating doctor's willingness to involve a psychiatrist, social taboo associated with seeking advice from a psychiatrist etc.<sup>4</sup>

### Aim and Objectives

The aim is to study the Profile of patients referred to Psychiatry department in a Medical College & Hospital In Rajasthan.

### Materials and Methods

This cross-sectional study was conducted in the department of Psychiatry in National institute of Medical sciences & Research, Jaipur. 320 cases were taken which were referred from various specialties to the psychiatry department were evaluated and diagnosed as per the ICD-10<sup>5</sup> guidelines by the consultant psychiatrists. The details of the cases referred were compiled which included the socio-demographic details, psychiatric diagnosis, the referring department. The data collected were analyzed by appropriate statistical techniques.

## Results

**Table-1: Socio-demographic variables (n=320)**

Gender	Number (320)	Percentage (100%)
Male	189	59.9%
Female	131	40.1%
<b>Locality</b>		
Rural	276	86.25%
Urban	44	13.75%
<b>Age group</b>		
18-30	141	44%
31-40	67	21%
41-50	67	21%
51-60	45	14%
<b>Education</b>		
Illiterate	74	23.2%
Primary	3	0.9%
Secondary	122	38.1%
Senior secondary	26	8.2%
Graduate and above	95	29.6%
<b>Marital status</b>		
Single	62	19.2%
Married	250	78.1%
Others	9	2.7%
<b>Religion</b>		
Hindu	285	89%
Sikh	7	2.2%
Muslim	28	8.8%
<b>Opd/ipd</b>		
Ipd	194	61%
Opd	126	39%

**Table-2: Psychiatric references from Medical and surgical departments (n=320)**

Department	Number (320)	Percentage (100%)
General medicine	146	45.6%
ENT	37	11.5%
General surgery	34	10.6%
Casualty	38	11.8%
Dermatology	18	5.6%
Gastroenterology	9	2.8%
Gynae obs	5	1.6%
Respiratory medicine	7	2.2%
Neurology	6	1.8%
Nephrology	3	0.9%
Endocrinology	2	0.7%
Orthopedics	2	0.7%
Urology	1	0.4%
Cardiology	1	0.4%
Neurosurgery	11	3.4%

### Sociodemographic Profile

A total of 320 patients were referred to the psychiatry department from medical and surgical departments in which 60.6% were referred from IPD

**Table-3: Psychiatric diagnosis – ICD 10  
(n=320)**

Diagnosis	Number (320)	Percentage (100%)
Mixed anxiety & depression	57	17.9%
Depressive disorder	73	22.9%
Dissociative disorder	24	7.5%
Alcohol dependence	16	5%
Opium dependence	5	1.5%
Cannabis dependence	9	2.8%
Nicotine dependence	12	3.8%
Polysubstance dependence	16	5%
Other anxiety disorder	39	12.2%
Psychosexual disorder	8	2.5%
Somatoform disorder	12	3.8%
Acute stress reaction	15	4.6%
Delirium	12	3.8%
Schizophrenia	3	0.9%
ATPD	5	1.5%
Organic psychosis	7	2.1%
No psychiatric diagnosis	7	2.2%

and 39.4% were from OPD. A majority of patients were from age group of 18-30 years (44%) followed by 31-40 years (21%). 59.9% were males and 40.1% were females. 86.25% patients were from rural areas remaining 13.75% were residing in urban area. 38.1% of patients were educated upto secondary followed by 23.2% were illiterate. 78.1% of them were married followed by 19.2% were single. 89% were hindu by religion followed by 8.8% were muslim and 2% were sikh.

#### Sources of Referral

45.6% of patients were referred from General Medicine followed by Ent 11.5%, General Surgery 10.6%, casualty 11.8%, Dermatology 5.6%, gastroenterology 3%. Gynae & Obs, Respiratory medicine, Neurology referrals were 3% each.

#### Nephrology Psychiatric Diagnosis

26% of patients were diagnosed as Mixed anxiety & depression followed by depressive disorder 21%. Panic disorder and dissociative disorder accounts 12% each. 9% were diagnosed as substance use disorder. Somatoform disorder and acute stress reaction adds 5% each. 6% diagnosed as psychosexual disorder followed by nil psychiatric diagnosis 2%, schizophrenia and organic psychosis/delirium 1% each.

#### Discussion

A total of 320 patients were referred to the psychiatry department from medical and surgical departments in which 65% were referred from IPD and 35% were from OPD where as the total number of patients referred from outpatient department (OPD) was 13% and the remaining 87% was referred from inpatient department (IPD) in Goyal et al.<sup>1</sup> which shows that references are mainly from the IPD setup.

A majority of patients were from age group of 18-30 years (36%) followed by 31-40 years (28%) which was similar to Goyal et al.<sup>1</sup> Another study conducted by huysse et al<sup>6</sup> which had most patients in age group 60-80 years. This can be attributed to better awareness and timely intervention of geriatric health issues in western world than in our country.<sup>4</sup>

61% were males and 39% were females in our study which was different from Detha and Bhaskar,<sup>4</sup> and Goyal et al<sup>1</sup> where Females were more in number than males which might reflect the rural psychology where females are not much free to communicate their emotional and psychological problems.

Majority of the patients were married (70%) which was similar to Goyal et al<sup>1</sup> where 68.1% were married.

In our study 42% were educated upto secondary followed by 36% were illiterate and 26% were graduate and above where there were 10.6% illiterate 29.4% were graduate in a study of Goyal et al.<sup>1</sup>

Maximum references were referred from General Medicine 54%, followed by ENT 12%, General Surgery 8%, Casualty 7%, Dermatology 7%, and Gastroenterology 3%. Gynae & Obs, Respiratory Medicine, Neurology referrals were 3% each. Nephrology, Neurosurgery and Orthopedics referrals were 1% each which was different from Detha and Bhaskar<sup>4</sup> and goyal et al where neurology, nephrology and oncology references were on higher sides.

On analyzing the final diagnosis made by the psychiatrist, it was found in our study that 26% of patients were diagnosed as mixed anxiety and depression followed by depressive disorder 21%. Panic disorder and dissociative disorder accounts 12% each. 9% were diagnosed as substance use disorder. Somatoform disorder and acute stress

reaction adds 5% each. 6% diagnosed as psychosexual disorder followed by nil psychiatric diagnosis 2%, schizophrenia and organic psychosis/delirium 1% each, which was different from Goyal et al<sup>1</sup> and Detha and Bhaskar.<sup>4</sup> where nil psychiatric diagnosis was on higher percentage after the anxiety and depression.

### Limitations & Suggestions

#### Limitations

1. Hospital based study
2. Small sample size
3. Did not include pediatric and geriatric population
4. More of a rural study as maximum patients were from rural area

#### Suggestions

1. We should involve rural pediatric and geriatric group also
2. This kind of study should be done at community level and corporate level also.
3. Sample size should be more in order to get better conclusive results.
4. This kind of study should be done in hospital located in urban area also.

#### Conclusion

Medically unexplained somatic complaints was the most common reasons for referral and neurotic, stress related and somatoform disorders was the most common psychiatric diagnosis. Further studies need to focus on effects of interventions, like sensitizing other specialists, especially physicians; regarding psychiatric problems and their varied clinical presentations<sup>2</sup> C-L Psychiatry has a rich tradition knowledge base. The relationship of psychiatry with other medical illnesses has progressed from the phases of psychodynamic understanding of medical symptoms, subsyndromal symptoms of various primary psychiatric disorders to diagnosing syndromal psychiatric disorders.<sup>3</sup> The internal medicine was the main department for referring patients. However, referral from other specialties was comparatively lower, this could be due to lack

of awareness of specialist for psychiatric symptoms or underreporting of psychiatric symptoms by patients due to attached stigma and sometimes specialist would consider these symptoms as part of physical illness. Therefore, it may be necessary to conduct a short training session for recognition of psychiatric symptoms in physically ill patients among specialists. This may improve referral rates.<sup>1</sup> In a medical college and hospital/tertiary care hospital there should be comprehensive team based approach for treating the patient for complete remission of the illness.<sup>4</sup> C-L services are the integral part of general hospital psychiatry unit. Every physical disorder has psychological and social component according to biopsychosocial theory. This collaborative approach would not only reduce hospital stay but also improve the quality of life of patient and reduces the burden of physical illness.<sup>1</sup>

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*Original Article*

# Stress, depression and coping strategies among healthcare workers facing COVID-19 pandemic — A cross sectional study

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## ABSTRACT

**Background:** COVID-19 is a noxious disease caused by a virus discovered in December 2019 in Wuhan, China. It is very contagious and has quickly spread around the world. The world is being profoundly affected by the global virus pandemic. In addition to the threat to public physical and psychological health, the economic and social disruption threatens the long-term livelihoods and wellbeing of billions. Meanwhile our healthcare workers, who are on the frontline in fighting with the disease, are at more risk of being affected physically as well as psychologically. **Objective:** This study assessed perceived stress, depression and coping strategies among healthcare workers facing the COVID-19 pandemic. **Materials & Method:** This was an online study where a Google form was prepared including socio demographic and occupational data as well as questionnaires to assess perceived stress, depression and coping strategy used. The form was distributed online to all social media groups including healthcare workers all across the country, and responses were collected. The total responses received were 93 which were further selected for evaluation. **Results:** 81.72% of participants have low level of stress while 18.27% showed moderate level of stress. About 22.58% participants showed mild level of depression, while 7.52% have moderate depression and 2.15% showed severe level of depression. About 86.02% of HCWs who participated in the study used approach style of coping, while the remaining 13.97% have avoidant style of coping. **Conclusion:** This pandemic has affected the psychological wellbeing of our health care workers and therefore it is necessary for organizations to protect their healthcare force by early screenings to identify those at risk of psychological problem and also provide timely intervention by providing psychological support.

**Keywords:** Perceived stress, Depression, Coping strategy, Healthcare workers, COVID 19

## Introduction

The first outbreak of corona virus occurred in WUHAN, CHINA, in December 2019<sup>1</sup> and spread throughout the world.<sup>2</sup> In early 2020, after a December 2019 outbreak in China, the World Health Organization identified COVID 19 as a new type of coronavirus. Corona virus are a family of viruses that can cause illnesses such as the common cold, severe acute respiratory syndrome (SARS) and

Middle East respiratory syndrome (MERS). It affects both human and animals and it weakens the immune system.<sup>3</sup> The clinical manifestation of corona virus is between mild to severe illness, like in case of mild severity patients of Covid-19 are showing cold, cough, fever, breathing problem and in case of severe illness, acute respiratory syndrome is found and sometime death is also reported in previous literatures.<sup>2,3</sup> WHO provided standard

recommen-dations to prevent the circulation of corona virus.

These included guidelines to maintain social distancing (1.5 metre), wearing mask, washing hand properly with soap and water and using sanitizer frequently to minimize the risk of coronavirus infection.<sup>3</sup> This boundless transmission has affected billions of people and millions of people have lost their lives due to this pandemic because of unavailability of drugs, life saving equipment and proper knowledge about this virus.<sup>4</sup>

A range of psychological issues have emerged during the pandemic like stress, anxiety, fear, depression, prejudice and stigmatization of the disease, which is prevalent in people from all over the world despite the age, gender, occupation etc. Health care workers are the ones at more risk during the tough time. Healthcare workers (HCWs) working in Isolation units and hospitals could sense anxiety, fear and mass hysteria due to mass quarantine.<sup>5</sup> The Healthcare professionals who are directly involved in treatment and are exposed to suspected or confirmed cases of Covid 19 are being referred to as Frontline HCWs.

These frontline HCWs are at more risk of mental health problems, work overload and are at higher risk of infection.<sup>6</sup> Psychological problems including anxiety, fear, disturbances in sleep, depression, helplessness, isolation from family members, avoidance of contact, post traumatic stress disorder, psychological stress, panic attacks, lack of social support, worriedness about family members getting the infection<sup>7</sup> and stigma was the results of coronavirus pandemic on HCWs. Most of the HCWs do not seek help or receive mental health care for their mental health issues and psychosocial issues on a regular basis, which are very common mental health problems among HCWs. Cognitive functioning, Attention, decision-making can be negatively affected by poor mental health of HCWs and may lead to increase in the chances of medical errors, therefore putting patients at risk.<sup>8,9</sup> Studies have confirmed that the acute stress in disasters can have a long-term effect on overall wellbeing of individuals.<sup>10</sup> Therefore there is need to be concerned about the mental health problems faced by the HCWs. Previously, studies on 2003 SARS outbreak have reported adverse psychological outcome among HCWs.<sup>11</sup> Fear of contagion, spreading infection to

family, friends and colleagues, uncertainty, stigmatization, feeling of reluctance to work, looking for possibility of resignation. In addition to high levels of stress, anxiety and Depressive symptoms were reported, which could have psychological implications in long term.<sup>12,13</sup> Online psychological support services including, telephonic, applications, internet based interventions have been initiated by local and national level institutions during COVID-19 pandemic.

Thus, it is important to address the mental health problems of HCWs as prevention as well as control. The current study aims to study mental health outcome of HCWs during COVID – 19 pandemic.

### Objectives

1. To assess perceived stress among HCWs facing the COVID-19 pandemic.
2. To assess depression among HCWs facing the COVID-19 pandemic.
3. To find out coping strategy used by HCWs during COVID-19 pandemic.
4. To find out the socio demographic risk factors for depression, among HCWs facing the COVID-19 pandemic.

### Materials and Method

#### Participants & procedure

A web-based cross-sectional study was conducted to assess perceived stress, depression and coping strategies among HCWs during the COVID-19 pandemic. The Google form was created and the link included informed consent about the study and the authors involved at the beginning of the form and participants had choice to agree or disagree to consent before proceeding with the questionnaires. The link to the Google form was sent to many social media and email groups including HCWs starting from May 2020. 93 complete responses were received representing various healthcare categories that dealt with COVID patients or were giving their services during the COVID-19 pandemic.

#### Materials

Socio-demographic factors assessed were age, gender, marital status, whether working in government or private sector, whether worked in an Isolation/quarantine facility and also occupational data like specialization.

**Perceived Stress Scale (PSS-4):** Consists of 4 questions about feelings and thoughts during the last month. Participants were asked to mark how often they thought or felt about things in certain way.

Answers are marked on five-point rating scale: (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often). The PSS is also available in a 10 and 14 item self-report instrument with the same five-point scale. Scores ranging from 0 to 13 are considered having low stress. Scores 14–26 are considered with moderate stress and scores between 27 and 40 are considered highly-perceived stress.<sup>14</sup>

**Patient Health Questionnaire 9 (PHQ-9):** Is a Depression module, consisting nine statements about how the participants felt in the past 2 weeks. Answers are rated on a 4-point scale, ranging from not at all to nearly every day. Every answer is scored then the total score is calculated. A score of 1–4 indicates presence of minimal depression. A score of 5–9 indicates mild level of depression. A score of 10–14 indicates moderate level of depression. A score of 15–19 indicates moderately severe depression. A score of 20–27 indicates severe level of depression.<sup>15</sup>

**The Brief COPE** is a 28-item multidimensional measure of strategies used for coping or regulating cognitions in response to stressors. This shortened inventory (which is based on the complete 60-item COPE Inventory) constitutes of of items that assess the frequency with which a person uses different coping strategies (e.g., “I’ve been turning to work or other activities to take my mind off things,” “I’ve been making fun of the situation,” “I’ve been criticizing myself”) rated on a scale from 1, I haven’t been doing this at all, to 4, I’ve been doing this a lot.<sup>16</sup>

All questionnaires were presented in one link on the Google form, starting with informed consent which was written at the beginning of the form, and shared among HCWs.

The data analysis was performed using SPSS (Statistical package for the social sciences) version 21.0 software and Microsoft Excel 2010. Descriptive statistics was used to summarize the quantitative characteristics and percentage.

**Results**

This study assessed Stress, Depression and Coping strategies used by HCWs during COVID

19 pandemic. The demographic details of participants are shown in Table 1. Mean age of HCWs who participated in study came to be 29.91, from which 41.93% were male while 58.06% participants were female. About 31.18% of participants were married and 68.81% were unmarried. In the study about 53.76 % of HCWs were working in government sector while 46.23% were in private sector, from among which 33.33% HCWs had worked in isolation/quarantine facilities.

Figure 1-2 shows the prevalence of Stress and Depression among healthcare workers. As shown in figure1, 81.72% of participants have low level of stress while 18.27% showed moderate level of stress. Figure 2 shows prevalence of depression, 22.58% participants showed mild level of depression, while 7.52% have moderate depression and 2.15% showed severe level of depression. Figure 3 shows coping strategy used by the participants. About 86.02% of HCWs who participated in the study used approach style of coping, while the remaining 13.97% have avoidant style of coping.

**Table-1: Socio-Demographic Characteristics**

Gender	Percentage
Male	41.93
Female	58.06
Marital Status	Percentage
Unmarried	68.81
Married	31.18
Working Sector	Percentage
Private	46.23
Government	53.76
Isolation Facilities	Percentage
Posted at Isolation Facility	33.33
Not Posted at Isolation facility	66.66

**Table-2: Prevalence of Depression, Stress and percentage distribution of coping strategies used**

Prevalence of Depression	Prevalence
Mild	22.58
Moderate	7.52
Severe	2.15
Total	32.25
Prevalence of Stress	Prevalence
Low Stress	83.51
Moderate Stress	18.27
Coping Strategies	Percentage
Approach	13.97
Avoided	86.02



Fig. 1: Prevalence of Perceived Stress

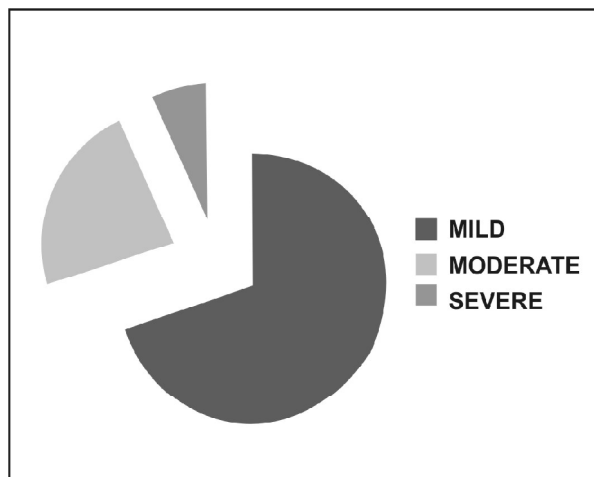


Fig. 2: Prevalence of Depression among HCWs

Table-3: Prevalence of Depression in different socio- demographic and occupational factors

<b>Gender</b>	<b>Prevalence</b>
Male	35.89
Female	27.77
<b>Marital Status</b>	<b>Prevalence</b>
Married	31.03
Unmarried	32.81
<b>Working Sectors</b>	<b>Prevalence</b>
Private Sector	27.90
Government Sector	34
<b>Isolation Facilities</b>	<b>Prevalence</b>
Isolated	38.709
Not Isolated	29.03

**Discussion**

This web based online study received 93 responses. It aimed to investigate the psychological impact of COVID-19 on HCWs during the COVID-

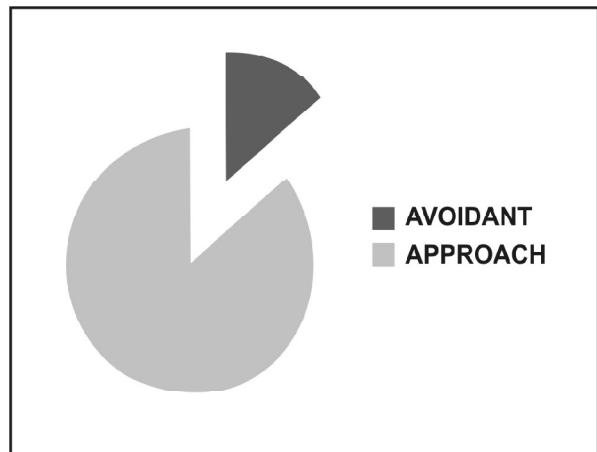


Fig. 3: Percentage distribution of coping strategies used by HCWs.

19 pandemic. The present study shows prevalence of mental health problems of stress and depression and the way of coping used to deal with it.

In this study 81.72% of participants were found to have low level of stress while 18.27% showed moderate level of stress, prevalence of depression is about 32.25%, from which 22.58% participants have mild level of depression, while 7.52% have moderate depression and 2.15% showed severe level of depression (Table 2). As shown in Table 1 mean age of HCWs who participated in study came to be 29.91, from which 41.93% were male while 58.06% participants were female and about 31.18% were married and 68.81% were unmarried. In the study about 53.76 % of HCWs were working in government sector while 46.23% were in private sector, from among which 33.33% HCWs had worked in isolation/quarantine facilities. The study participants included physicians, cardiologist, surgeons, psychiatrists, clinical psychologists, social workers, nurses, dentist, rehab psychologists and counselor.

The prevalence of depression among the HCWs was compared in regard to different socio-demographic characteristics such as gender, working sector and with postings at isolation or quarantine facilities (Table 3). In regard to gender differences, 27.77% of female and 35.89% of male HCWs showed depression. About 27.90% of participants working in private healthcare facility reported having depression while 34% of participants working in government sector reported depression. In this study it was also found that 38.70% of participants who were posted at isolation or quarantine centers showed depression.

These findings were consistent with another studies conducted on HCWs.

In a study it was found that anxiety was present in 55.65%, 48.54%, 52.34%, and 56%, and depression reported was from 32.1%, 53.72%, 42.7%, and 35% of physicians, nursing professionals, technicians, and non-healthcare population, respectively. The study also reported insomnia in 47%, 38.2%, 39.4%, and 43% of doctors, nurses, technical staff, and non-healthcare people, whereas mental health issues affected 43.51%, 41.9%, 28.3%, and 45% of the physicians, nurses, technical persons, and non-healthcare general population.<sup>17</sup>

Another study found that 47.9% (67/140) of the HCWs had from insomnia. The mean score of insomnia among doctors, ward staff, nurses and non-clinical staff were  $8.7 \pm 6.5$ ,  $8.1 \pm 5.8$ ,  $8.9 \pm 2.4$ , and  $10.3 \pm 5.9$ , respectively. Moderate to severe stress level was found among 79.3% of HCWs.<sup>18</sup> A Study found that Depression, insomnia, and anxiety between the healthcare professional and non-healthcare professional, has significant P values of 0.05, 0.03, and 0.02, respectively.<sup>17</sup>

Another study found that around 55% of medical officers were having moderate levels of depression. 52% reported severe anxiety whereas 24% had moderate levels of anxiety. Female doctors reported 68% and 48% of moderate and severe anxiety, respectively. 30% and 44% of male doctors reported mild and moderate levels of stress, respectively, whereas 70% and 56% of females had mild and moderate levels of stress, respectively. Insomnia was found to be high among female doctors (65%), whereas male doctors had sub-threshold insomnia (52%).<sup>19</sup>

Other studies conducted in different countries also reported a higher prevalence of mental health problems among HCWs as compared to the general population because of their close contact with patients, working longer hours than usual and continuous working in frightening, stressful conditions and being in constant fear of infection.<sup>6,7,20,21</sup>

This study showed high prevalence of about 81.72% of low level of stress among HCWs, though the prevalence of depression is relatively lower than that of perceived stress, which can be described by the fact that about 86.02% of HCWs used approach style of coping to deal with the stressor, while only 13.97% have reported using avoidant style of coping.

Approach coping strategy could have worked as a protective factor that potentially reduced the chances of depression.

### Limitations of the study

The sample size of 93 is relatively small for generalization of results to larger community. Representation from all occupational categories of HCWs was lacking. This study was performed via an online mode using Google form, so it might have not reached as many as healthcare workers.

### Conclusion

This study has shown the burden of mental health issues among the healthcare workers during the COVID-19 pandemic.

This pandemic has affected the psychological wellbeing of our health care workers and therefore it is necessary for organizations to protect their health care force by doing early screening to identify those are at risk of psychological problems and also provide timely intervention by providing psychological support.

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Original Article

# Sociodemographic and Clinical Profile of the patients seeking help from Telemedicine services in tertiary care teaching hospital during Covid-19 pandemic

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## ABSTRACT

**Background:** The application of telemedicine in pandemic time is not new. In psychiatry it started around 1959 and since then it becomes important in the time of crisis. Now-a-days Tele-psychiatry is playing significant role to provide care or support to the psychiatric patients at urban as well as remote area. Telemedicine services prove to be beneficial during Covid-19 and it becomes blessings for the patients who are in intense need of intervention. It reduced the spread of any kind of infectious diseases and increases medication adherence. In current pandemic situation, the condition is grave for everyone. Due to lockdown they are facing traumatic situation (death of nears n dears, financial issues, loneliness, monotonous lifestyle, depression, anxiety etc.). Covid-19 pandemic and lockdown directly or indirectly affect mental health of the people. **Objective:** Present study was planned to know the socio-demographic and clinical profile of the patients who were taken services through virtual modality. **Materials and Methods:** Patients' detailed socio-demographic and clinical profile were filled. Services were given according to the government guideline for telemedicine. In present study, sample of 410 patients were contacted through telemedicine during August 2020 to November 2020 in the department of psychiatry, J.N. Medical College, AMU. **Results:** According to their socio-demographic and clinical profile results show that maximum number of people who had consulted for telemedicine services belong to urban area (83.9%) and 30.24% were educated up to graduation. Very less number of patients contacted from rural area (5.366%). **Conclusion:** Tele-psychiatry is proved one of the effective methods to treat patients amid covid 19 pandemic. It was also concluded that educated patients and living in urban area using telemedicine services mostly. Whereas very less patients were took advantage from the rural area. It indicates that due to poor facilities and lack of smart phone reduced the use of telemedicine services in rural area.

**Key words:** Telemedicine, Lockdown, Covid 19, Psychiatric patients.

## Introduction

Telemedicine is a broader term that encompasses any medical activity involving an element of distance. In its commonly understood sense, telecommunication involves doctor-patient interaction.<sup>1</sup> In the last decade of 20<sup>th</sup> century, it was started with the purpose to overcome with the infrastructural cost and to reach

to the patients who are far away but want to seek the consultation from a practitioner. As the technology was getting advanced it was switched from voice-communication to video conferencing. It was found to be very useful and successful in case studies in electronic patient record, emergency telemedicine, teleradiology, and home monitoring. It is anticipated

that the progress carried out in these efforts and the potential benefits of emerging mobile technologies will trigger the development of more applications, thus enabling the offering of a better service to the every citizen.<sup>2</sup> Telemedicine is not new to use. During Covid-19 pandemic it provides sufficient help to people who are in need. During pandemic to keep us safe government has issued certain guidelines like social distancing, wearing mask, and washing hands. Only emergency services were permitted by government during lockdown.

In this condition telemedicine has become the effective strategy for reaching and targeting patients and increased the follow up of the patients. This pandemic increases the mental health problem (fear, panic, OCD, anxiety, depression, etc) gravely. Marco Passavanti et al<sup>2</sup> found that the levels of stress, depression and anxiety, as well as the risks of PTSD, are higher than average in over half of the considered sample. Further, in their study the severity of these disorders significantly depends on gender, type of outdoor activities, characteristics of their homes, eventual presence of infected acquaintances, time dedicated to looking for related information (in the news and social networks), type of source information and, in part, to the level of education and income. People who had history of psychiatric illness they were relapsed during this period. COVID-19 pandemic is associated with highly significant levels of psychological distress that, in many cases, would meet the threshold for clinical relevance.<sup>3</sup>

Above findings indicate that the situation was very grave and people were facing number of issues. The government has started Telemedicine services for the welfare of the citizens. Not only adults were facing these issues children and adolescents were also showing behavioural problems. There behaviour alternations were seen in sleep, mood, anxiety, increased screen-time, reduced physical activity, and more sleep hours/night.<sup>4</sup> Even some were unable to understand why their children are showing these kinds of behaviour. So, during this period of emergency Telemedicine has played significant role to reach out to problems of people under the issued guidelines of the government.

**Materials and Methods**

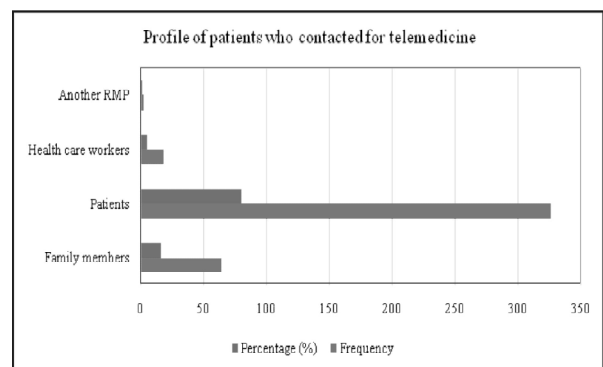
**Study sample:** Total 410 people were contacted through telephone consultation as per the guidelines

of government. For telemedicine services department of Psychiatry of J.N. Medical College, AMU, Aligarh, UP displayed contact number and it was widely advertised in local newspaper, notice boards of the departments so that every needed person can make contact as per their problem. The data was collected between August 2020 to November 2020 and maximum number of patients who contacted belongs from U.P. (west).

**Socio-demographic and clinical data sheet:** Semi structured Performa was prepared to collect the details of the client. This Performa includes details about patients name, age, gender, type of family, religion, education, area of residing, profession, and clinical profile included present illness, history of past psychiatric illness, and family history of psychiatric illness.

**Procedure:** Tele-psychiatry services were given from the department of psychiatry, JNMC, AMU. As per guideline of telemedicine services we planned to provide care and support to the sufferer every day. Patients contacted us through text message, telephone or video. Tele-psychiatry and e-consultations are proved as a potential solution to this challenging time. Patients who are contacted were asked to inform detail socio-demographic and clinical profile. Descriptive statistic (percentage) was used to find the results.

**Results**



**Graph-1: Showing the Profile of clients who are contacted for telemedicine**

Graph 1 indicates that majority of the patients 79.51% (n=326) were contacted on their own to telemedicine services, 15.16% (n=64) were patients’ family member contacted whereas 4.31% (n=18) were health care workers and 0.48% (n=2) were RMP who seeks telemedicine services.



**Table-1: Showing Socio-demographic Profile of the patients**

	Variable	Frequency	Percentage %
Gender	Male	234	57.07
	Female	176	42.926
Education	Illiterate	10	2.44
	Primary or Literate	42	10.24
	Middle School certificate	44	10.73
	High school Certificate	60	14.634
	Intermediate/Post High school diploma	22	5.366
	Graduate/Post Graduate	124	30.244
	Professional or Honours	108	26.34
Age	Less than 20	44	10.73
	20-30 years	160	39.024
	30-40 years	62	15.122
	40-50 years	78	19.03
	50-60 years	28	6.83
	More than 60 years	38	9.268
Religion	Hindu	202	49.27
	Muslim	180	43.90
	Christian	12	2.93
	Other	16	3.90
Family Type	Nuclear	314	76.585
	Joint	62	15.122
	Extended	34	8.29
Area of Residing	Urban	344	83.90
	Sub-urban	44	10.73
	Rural	22	5.366

Table 1 show the sociodemographic profile of the patients who consulted for telemedicine. There are 57.07% male and 42.93% female in present study. Socioeconomic Status Scale of Kupuswamy (1976) was used for classification of education, 30.244% were graduate/Post Graduate, 26.24%, were professional/Honours and 14.63% were high school certificate, 10.73% were middle school certificate, 10.24% were educated up to primary level or literate, and only 2.44% were illiterate.

39.024% patients who contacted were between age range 20-30 years, 19.03% were between 40-50 years, 15.122% were between 30-40 years, 10.73% were less than 20, 9.268% more than 60 years, and 6.83% were between 50-60 years. 49.27% belongs to Hindu religion who contacted for telemedicine services, 43.90% belongs to Muslim, 2.93% were Christian and 3.90% belongs to other religion. 76.585% were living in nuclear family, 15.122% in Joint family and 8.29% were living in extended family. Majority of them were residing in urban areas 83.90%, followed by 10.73% from sub-urban and 5.366% were from rural areas.

Table 2 shows the clinical Profile of the patients. Different psychiatric disorders' patients contacted through telemedicine in which maximum number of patients diagnosed with depression and related disorders (27.317%), 10.7% anxiety disorder, 8.29% with Schizophrenia & related disorders, 6.343% with Mixed Anxiety and Depression, 6.341% with OCD and related disorders, 5.854% with headache, 5.366% with seizure disorder, 1.464% with Insomnia, and 1.463% with substance abuse. 52.2% people do not have past history of psychiatric illness, 44.39% patients have history of past illness and 3.415% were unable to recall. 55.61% have no family history of Psychiatric illness, 25.85% have family history of psychiatric illness and 18.54% were unable to recall.

### Discussion

During the time of pandemic everyone was facing psychological problem, many of them were suffering from sleep problem, headache, decreased interest in daily activities, anxiousness, etc. On the other hand, patients who were diagnosed with any

**Table-2: Showing Clinical Profile of Patients**

	<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Diagnosis</b>	Depression and related disorders	112	27.317
	Anxiety disorder	44	10.73
	Mixed Anxiety and Depression	26	6.343
	Schizophrenia & related disorders	34	8.29
	Bipolar mood disorders & related disorders	10	2.439
	OCD and related disorders	26	6.341
	Substance abuse	6	1.463
	Insomnia	6	1.464
	Dementia	8	1.95
	headache	24	5.854
	Seizure disorders	22	5.366
	<b>Past history of Psychiatric Illness</b>	Present	182
Absent		214	52.2
<b>Family history of Psychiatric Illness</b>	Present	106	25.85
	Absent	228	55.61
	Not known/Unable to recall	76	18.54

psychiatric illness found difficulty to continue follow-up due to lockdown. When tele-psychiatry was started with the guidelines of government, it proves to be effective strategy for the welfare of every patient. In the light of our results Table 1 shows the socio-demographic of the patient who contacted us for telemedicine services were mostly residing in urban areas. High percentage was found to take tele-psychiatry facilities in patients living in urban areas where access to smart phones and better internet facilities are present. In our study patients living in rural area also took services from telemedicine. In this pandemic time telemedicine is proved that it is very efficacious for patients as well as health workers because of extra travelling and free from contagious diseases. Study done by Vaughan et al<sup>5</sup> found that the advantage of telemedicine from patients' perspective is reduced travel and convenience charged which make them more comfortable to seek medication from their home.

In India, where majority of people lives in rural areas do not have facilities of internet, smartphone, internet access or digital divide is stark due to which people residing in rural areas are unable to get proper telemedicine services. As, with the help of smartphones and internet facilities, it is easy for physician to convey medicines through picture sharing, video conferencing, etc. The reason behind not seeking telepsychiatry health might be due to the stigma associated with mental health has been shown to act

as a barrier to seek help for mental health.<sup>6,7</sup> But few of them seek help through telepsychiatry in our studies, and they share it as their positive experience to consult to physician by sitting their home without any wastage of time and travel charges. In our result only 5.36% people who are residing in rural areas contacted for Tele-psychiatry.

In our present study most of the patients were between 20-30 years (39.07%) age group and literate who took help from telemedicine services, whereas 50-60 years patient took less telepsychiatry services. May be the reason behind this, in previous age group patients may have good knowledge and able to handle android phone easily but 50-60 years patients not able to handle smart phone so that this age group patients did not take much benefit from tele-psychiatry.

Surprisingly in our study patients belong to nuclear family contacted through telepsychiatry whereas joint family patients less took benefit from telepsychiatry. It can be assumed that in joint and extended family people are more concerned about each other and shows support to each other while in nuclear family they are more dependent on their own so that is the reason they seek treatment in higher number. Other reason would be that the people living in nuclear family feel more loneliness and people in joint and extended family seek support from each other.

Tele-psychiatry can be comparable with face-

to-face services in terms of reliability of the assessment and clinical outcome<sup>8</sup> as in Psychiatry there is higher need of establishing rapport with the patients, so that clinician can easily resolve their conflicts. Through telemedicine,<sup>9</sup> we can bring patients and clinicians together without any contamination in the era of covid-19.

Telepsychiatry has proved to be effective in delivering psychotherapy for anxiety disorders, particularly generalized anxiety disorder,<sup>10</sup> posttraumatic stress disorder<sup>11</sup> and depression and these are the majority who seek help through telepsychiatry.<sup>12</sup> Our result also shows (Table 2) that maximum number of patients who seek help through tele-psychiatry have depression and anxiety related disorders.

Awareness is the need of this time so that we can save people live, and that would lead a good quality of life. Whereas studies conducted in other countries on their rural population have reported benefit of telehealth or telemedicine.<sup>13,14</sup> So, there is need of communicating people about their mental health and during the time of covid-19 this can be done through the service of telemedicine.

### Conclusion

People who are educated and residing in urban areas are concerned about their physical as well as mental health. Highly motivated and concerned family members were more benefited from telemedicine. It was also concluded from the present study that Tele-psychiatry is bridging the treatment gap even in patients living in rural area.

### Limitations and relevance

Tele-psychiatry services are new for psychiatrists at the time of covid 19 pandemic. Detailed history and MSE could not be done properly which is essential for psychiatric patients. Follow up is also important in psychiatry but it was not done properly in online services. People live in rural area are illiterate or less literacy rate, or they are not used to for android mobile, for them it is important to teach them how to handle android phone at the time of crisis. One more limitation of our study was that it could not be advertised widely for many days. Follow-up study should be conducted to assess the improvement of the patients.

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## Original Article

# A Comparative Study of Mental Health Issues among Private and Public Sector Employees in Delhi NCR

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### ABSTRACT

**Background and Objectives:** Mental health is a reflection of as to how we think, feel and behave. It is not the permanent state of mind as it keeps changing with the change in the environment of a given individual. Anxiety, stress and depression are the most common mental health issues among workers in the private and public sector. The demanding nature of the occupation exposes employees to a higher risk of developing negative mental states such as depression, anxiety, and stress. Hence, the current study aimed to assess the prevalence of mental health issues (anxiety, stress and depression) among private and public sector employees in Delhi NCR. **Materials and Methods:** In the current study, 60 employees working in the private sector (n=30) and public sector (n=30) were selected as the participants. The level of anxiety, stress and depression was assessed using Depression, Anxiety and Stress Scale 42 (DASS-42) questionnaire. A Demographic Information Sheet was used to collect various demographic information about the participants including age, gender, type of family, marital status, duration of service, salary, type of employment, educational qualification etc. The data was analyzed using statistical software SPSS (version 20.0). **Results:** The participants had a mean age of 42.32 years (SD=10.95) and about 33.3% participants (n=20) were female and 66.7% participants (n=40) were male. 88.3%, 6.7%, 1.7%, and 3.3% of the participants had normal, mild, moderate and severe level of depression respectively. 80%, 10%, 3.3%, 5%, and 1.7% of the participants had normal, mild, moderate, severe and very severe level of anxiety respectively. Likewise, 85%, 5%, 6.7%, and 3.3% of the participants had normal, mild, moderate and severe level of stress respectively. The result also shows significant association between depression and anxiety level ( $p < 0.001$ ), depression and stress level ( $p < 0.001$ ), anxiety and stress level ( $p < 0.001$ ), sector of employment and depression level ( $p=0.04$ ), sector of employment and stress level ( $p=0.05$ ), years of experience in the profession and depression level ( $p=0.003$ ), years of experience in the profession and anxiety level ( $p=0.006$ ), marital status and stress level are ( $p=0.002$ ) and age and depression level ( $p=0.03$ ). **Conclusions:** The idea of undertaking this study was to evolve a module for training purpose to help optimize anxiety, stress and depression among private and public sector employees help enhance the performance as well as bring a positive personality trait leading to better adjustment and quality life.

**Keywords:** Anxiety, Stress, Depression, Employees, Public Sector, Private Sector

### Introduction

Mental health is not the permanent state of mind, it is a reflection of as to how we think, feel and

behave. It keeps changing with the change in the environment of a given individual including working environments. Anxiety, stress and depression are the

most common mental health issues among workers in the private and public sector. The key differences between anxiety, stress and depression are their cause(s) and the way(s) they are treated. Anxiety and depression can be experienced without experiencing stress. According to a study, half of people with either anxiety or depression have the other condition.<sup>1</sup> It has been reported that the private sector in India is suffering from workplace depression due to lack of support systems at both the workplace and in personal circles.<sup>2</sup> Worldwide, approximately 450 million people suffer from mental disorders. Of these, approximately 264 million are affected with depression. A recent WHO-led study estimates that depression and anxiety disorders cost the global economy US\$ 1 trillion each year in lost productivity.

Depression, anxiety, and stress have an impact on productivity, motivation to work, sleep behavior of the individual, and outcome of different chronic diseases. As many as 22% respondents to the 'India Employee Survey' by HR tech startup Hush felt that their productivity is low due to overwork and stress, and more than half of the respondents said they suffered from some kind of workplace depression.<sup>2</sup> Increasingly unrealistic demands and pressures are triggering anxiety and depression at the workplace. Anxiety due to personal or professional reasons leads to stress, which in turn causes depression.<sup>3</sup>

In a national survey on anxiety in the workplace by Anxiety Disorders Association of America,<sup>4</sup> it was revealed that people with anxiety disorders commonly cited these as difficult situations: setting and meeting deadlines, dealing with problems, maintaining personal relationships, participating in meetings, managing staff, and making presentations. Most people can identify with being stressed or having felt anxious at some point based on certain life events like moving to a new state, a new job or giving a big presentation.<sup>5</sup> Some factors that cause increased stress at workplace include workload (both excessive and insufficient work), lack of participation and control in the workplace, monotonous or unpleasant tasks, lack of recognition at work, inequity, poor interpersonal relationships, poor working conditions, poor leadership and communication and conflicting home and work demands.<sup>6</sup> It has been reported that work, money and family are the most common sources of stress, besides this there are other factors which may also cause stress such

as: parenting, pregnancy, change, caregiving and social isolation.<sup>3</sup>

It is noted that 42.5 percent of employees in India suffer from depression because of demanding schedules, high-stress levels, and performance-linked perquisites in private sectors, nearly same percent of employees in private sectors are afflicted with depression or general anxiety disorder, compared to government employees with lesser levels of psychological demand at work.<sup>7</sup>

Delhi ranks first in terms of number of corporate employees suffering from depression or general anxiety disorder, followed by Bangalore, Mumbai, Ahmedabad, Chandigarh, Hyderabad and Pune. Corporate employees have to survive the stiff global competitive environment to save their jobs, adding pressure on their health, leading to silent diseases.<sup>8</sup>

Depression contributes to *presenteeism*, or employees at work but not engaged and *absenteeism*, or employees missing days of work. It may also badly impact multiple areas of employee's performance, including focus and decision making, time management, completing physical tasks, social interactions, and communication. The demanding nature of the occupation exposes employees to a higher risk of developing negative mental states such as depression, anxiety, and stress. Like most of the other health conditions, early detection and effective treatment lessen the severity and impact of the condition. Hence, the current study aimed to assess the prevalence of mental health issues (i.e., anxiety, stress and depression) among private and public sector employees in Delhi NCR.

## Methods

### Sample

The sample was selected to represent the population which we wanted to study. Since it was difficult to study the entire population, sample selection process was based on the objectives and the nature of the sample. In this, the purposive sampling had been used. Those individuals whose age lie in-between 20 to 70 years were taken as inclusion criteria. The data was collected from the participants using online form due to the COVID-19 pandemic.

Total 60 subjects working in the private sector (n=30) and public sector (n=30) participated in this study. The participants of this study had a mean age

of 42.32 years (SD=10.95) and about 33.3% participants (n=20) were female. Under marital status, 73.3% (n=44) participants were married, 18.3% (n=11) were unmarried and 8.3% (n=5) were divorced. Further, 28.3% (n=17) were graduates, 55% (n=33) were post-graduates and 16.7% (n=10) had doctorate level education. Permanent employees were 76.7%, 16.7% were employed on direct contractual basis, 1.7% were employed on contractual basis through employment agency and 5% were on probation (Table 1).

**Table-1: Sociodemographic characteristics of participants**

Sociodemographic characteristics	n	%
<b>Gender</b>		
Female	20	33.3
Male	40	66.7
<b>Marital status</b>		
Single	11	18.3
Married	44	73.3
Divorced	5	8.3
<b>Educational qualification</b>		
Doctorate	10	16.7
Graduate	17	28.3
Post Graduate	33	55
<b>Employment type</b>		
Permanent	46	76.7
Contractual (Direct)	10	16.7
Contractual (through employment agency)	1	1.7
Probation	3	5

**Note.** Participants were on average 42.32 (SD = 10.95) years old.

### Research Design

In the present study, an attempt has been made to find out the relationship between anxiety, stress and depression among public and private sector employees in Delhi NCR, thus following a correlational research design.

### Tests/tools

The following tools have been used to assess the mental health issues (anxiety, stress and depression):

### Depression, Anxiety and Stress Scale 42 (DASS-42)<sup>9</sup>

The DASS is a most acceptable 42 item self-report inventory that yields 3 factors: Depression; Anxiety; and Stress. This measure proposes that

physical anxiety (fear symptomatology) and mental stress (nervous tension and nervous energy) factor-out as two distinct domains. This screening and outcome measure reflects the past 7 days. Gamma coefficients that represent the loading of each scale on the overall factor (total score) are 0.71 for depression, 0.86 for anxiety, and 0.88 for stress. One would expect anxiety and stress to load higher than depression on the common factor as they are more highly correlated and, therefore, dominate the definition of this common factor.<sup>9</sup> Reliability of the three scales is considered adequate and test-retest reliability is likewise considered adequate with 0.71 for depression, 0.79 for anxiety and 0.81 for stress<sup>10</sup>. Exploratory and confirmatory factor analyses have sustained the proposition of the three factors ( $p < .05$ ).<sup>10</sup> The DASS anxiety scale correlates 0.81 with the Beck Anxiety Inventory (BAI), and the DASS Depression scale correlates 0.74 with the Beck Depression Scale (BDI).

### Demographic and Other Information Sheet

Demographic information sheet has been used to collect various demographic information about the sample including age, gender, type of family, qualification, and marital status. Apart from that, information of other variables like no. of children, no. of female children, family type, earning members in the family, monthly family income, sector of employment, salary, type of company, employment type, years of experience, duration of employment, any illness, working mode during covid and area of living were also collected.

### Data analysis techniques

The data was analyzed using statistical software SPSS (version 20.0). Continuous variables were presented in the form of mean ( $\pm$  sd)/ median (range) and categorical variables were presented as number (%). To find the association between categorical variables, Chi-Square test or Fisher's Exact test was used. Pearson correlation or Spearman rank correlation was used to find the correlation between continuous variables according to distribution of the data. To compare the continuous variable between two groups, t-test/ Wilcoxon test was used and for more than two groups ANOVA was used. A p value less than 0.05 was considered as statistically significant.

**Results and Discussion**

According to DASS scores, 88.3% participants scored normal level of depression, 6.7% scored mild level, 1.7% moderate level, and 3.3% scored severe level of depression (Table 2). In case of anxiety, 80% participants scored normal level of anxiety, 10% scored mild level, 3.3% moderate level, 5% severe and 1.7% scored very severe level of anxiety (Table 2). Stress level was also observed in the same pattern and 85% participants scored normal level of stress, 5% scored mild level, 6.7% moderate level, and 3.3% scored severe level of stress (Table 2).

**Table-2: Level of depression, anxiety and stress among participants**

	Level	n	%
Depression	Mild	4	6.7
	Moderate	1	1.7
	Normal	53	88.3
	Severe	2	3.3
Anxiety	Mild	6	10
	Moderate	2	3.3
	Normal	48	80
	Severe	3	5
	Very Severe	1	1.7
Stress	Mild	3	5
	Moderate	4	6.7
	Normal	51	85
	Severe	2	3.3

Table 3 shows the cross tabulation of depression and anxiety level and significant association was observed between depression level and anxiety level ( $p < 0.001$ ). 88.3% of the participants had *normal level* of depression, of which 86.8% of participants had normal level of anxiety, 9.4% had mild level of anxiety, 1.9% had moderate level of anxiety and 1.9% had severe level of anxiety. 6.7% of participants had mild level of depression, of which 25% had normal level of anxiety, 25% had mild level of anxiety and 50% severe level of anxiety. 1.7% of the participants had moderate level of depression, of which 100% had moderate level of anxiety. Higher level of anxiety was observed among the participants who had severe level of depression i.e. 3.3% of the participants had severe level of depression, of which 50% had normal level of anxiety and 50% had very severe level of anxiety (Table 3).

Table 4 shows the cross tabulation of depression and stress level and it was observed that depression is significantly associated with stress level with  $p$  value  $< 0.001$ . 88.3% of the participants had normal level of depression, of which 90.6% of participants had normal level of stress, 3.8% had mild level of stress and 5.7% had moderate level of stress. 6.7% of participants had mild level of depression, of which 50% had normal level of stress, 25% had mild level of stress and 25% moderate level of stress. Higher level of stress was observed among the participants who had moderate level of depression i.e. 1.7% of

**Table-3: Cross tabulation for depression and anxiety level**

		Anxiety Level					Total	
		Normal	Mild	Moderate	Severe	Very Severe		
Depression Level	Normal	Count	46	5	1	1	0	53
		% within Depression Level	86.8%	9.4%	1.9%	1.9%	0.0%	100.0%
		% within Anxiety Level	95.8%	83.3%	50.0%	33.3%	0.0%	88.3%
	Mild	Count	1	1	0	2	0	4
		% within Depression Level	25.0%	25.0%	0.0%	50.0%	0.0%	100.0%
		% within Anxiety Level	2.1%	16.7%	0.0%	66.7%	0.0%	6.7%
	Moderate	Count	0	0	1	0	0	1
		% within Depression Level	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
		% within Anxiety Level	0.0%	0.0%	50.0%	0.0%	0.0%	1.7%
Severe	Count	1	0	0	0	1	2	
	% within Depression Level	50.0%	0.0%	0.0%	0.0%	50.0%	100.0%	
	% within Anxiety Level	2.1%	0.0%	0.0%	0.0%	100.0%	3.3%	
Total	Count	48	6	2	3	1	60	
	% within Depression Level	80.0%	10.0%	3.3%	5.0%	1.7%	100.0%	
	% within Anxiety Level	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	



the participants had moderate level of depression, of which 100% had severe level of stress. 3.3% of the participants had severe level of depression, of which 50% had normal level of stress and 50% had severe level of stress (Table 4).

level of stress, 2.1% had mild level of stress and 4.2% had moderate level of stress. 10% of participants had mild level of anxiety, of which 66.7% had normal level of stress, 16.7% had mild level of stress and 16.7% moderate level of stress.

**Table-4: Cross tabulation for depression and stress level**

			Stress Level				Total
			Normal	Mild	Moderate	Severe	
Depression Level	Normal	Count	48	2	3	0	53
		% within Depression Level	90.6%	3.8%	5.7%	0.0%	100.0%
		% within Stress Level	94.1%	66.7%	75.0%	0.0%	88.3%
	Mild	Count	2	1	1	0	4
		% within Depression Level	50.0%	25.0%	25.0%	0.0%	100.0%
		% within Stress Level	3.9%	33.3%	25.0%	0.0%	6.7%
	Moderate	Count	0	0	0	1	1
		% within Depression Level	0.0%	0.0%	0.0%	100.0%	100.0%
		% within Stress Level	0.0%	0.0%	0.0%	50.0%	1.7%
	Severe	Count	1	0	0	1	2
		% within Depression Level	50.0%	0.0%	0.0%	50.0%	100.0%
		% within Stress Level	2.0%	0.0%	0.0%	50.0%	3.3%
Total	Count	51	3	4	2	60	
	% within Depression Level	85.0%	5.0%	6.7%	3.3%	100.0%	
	% within Stress Level	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 5 shows the cross tabulation of Anxiety level and Stress level and are also significantly associated (p <0.001).

3.3% of the participants had moderate level of anxiety, of which 50% had normal level of stress and 50% had severe level of stress. 5% of the participants had severe level of anxiety, of which 33.3% had normal level of stress, 33.3% had mild

80% of the participants had normal level of anxiety, of which 93.8% of participants had normal

**Table-5: Cross tabulation for anxiety and stress level**

			Stress Level				Total
			Normal	Mild	Moderate	Severe	
Anxiety Level	Normal	Count	45	1	2	0	48
		% within Anxiety Level	93.8%	2.1%	4.2%	0.0%	100.0%
		% within Stress Level	88.2%	33.3%	50.0%	0.0%	80.0%
	Mild	Count	4	1	1	0	6
		% within Anxiety Level	66.7%	16.7%	16.7%	0.0%	100.0%
		% within Stress Level	7.8%	33.3%	25.0%	0.0%	10.0%
	Moderate	Count	1	0	0	1	2
		% within Anxiety Level	50.0%	0.0%	0.0%	50.0%	100.0%
		% within Stress Level	2.0%	0.0%	0.0%	50.0%	3.3%
	Severe	Count	1	1	1	0	3
		% within Anxiety Level	33.3%	33.3%	33.3%	0.0%	100.0%
		% within Stress Level	2.0%	33.3%	25.0%	0.0%	5.0%
	Very Severe	Count	0	0	0	1	1
		% within Anxiety Level	0.0%	0.0%	0.0%	100.0%	100.0%
		% within Stress Level	0.0%	0.0%	0.0%	50.0%	1.7%
	Total	Count	51	3	4	2	60
		% within Anxiety Level	85.0%	5.0%	6.7%	3.3%	100.0%
		% within Stress Level	100.0%	100.0%	100.0%	100.0%	100.0%

level of stress and 33.3% had moderate level of stress. Higher level of stress was observed among the participants who had very severe level of anxiety i.e. 1.7% had very severe level of anxiety, of which 100% had severe level of stress (Table 5).

The association of the sector of employment with depression, anxiety and stress was also calculated and presented in Table 6. It was observed that Sector of employment and Depression level are significantly associated ( $p=0.040$ ) (Table 6).

80% of the private sector employees and 96.7% of the public sector employees had normal level of depression, 10% of the private sector employees and 3.3% of the public sector employees had mild level of depression, 3.3% and 6.7% of the private sector employees had moderate and severe level of depression respectively, but none of the public sector employees had either moderate or severe level of depression. Private sector employees were more depressed than public sector employees (Table 6).

Further, Sector of employment and Stress level are also significantly associated ( $p=0.05$ ) and private sector employees were more stressed than public sector employees (Table 6). 80% of the private sector employees and 90% of the public sector employees had normal level of stress, 0% of the private sector employees and 10% of the public sector employees had mild level of stress, 13.3% and 6.7% of the private sector employees had moderate and severe level of stress respectively, but none of the public sector employees had either moderate or severe level of stress.

Again, years of experience in the profession and depression level are significantly associated ( $p = 0.003$ ) (Table 7). It was observed that employees having less years of experience had high level of depression (Table 7). The anxiety level was also significantly associated with years of experience ( $p = 0.006$ ) and employees having less years of experience had a high level of anxiety (Table 7).

**Table-6: Sector of Employment**

		Private Sector (%)	Public Sector (%)	P value
Depression Level	Normal	80.0	96.7	0.040
	Mild	10.0	3.3	
	Moderate	3.3	0.0	
	Severe	6.7	0.0	
Stress Level	Normal	80.0	90.0	0.050
	Mild	0.0	10.0	
	Moderate	13.3	0.0	
	Severe	6.7	0.0	
Anxiety Level	Normal	73.3	86.7	0.117
	Mild	10.0	10.0	
	Moderate	6.7	0.0	
	Severe	6.7	3.3	
	Very Severe	3.3	0.0	

**Table-7: Years of experience**

		0-5 (%)	5-10 (%)	10-20 (%)	20+(%)	P value
Depression Level	Normal	69.2	77.8	100.0	95.2	0.003
	Mild	7.7	22.2	0.0	4.8	
	Moderate	7.7	0.0	0.0	0.0	
	Severe	15.4	0.0	0.0	0.0	
Stress Level	Normal	76.9	77.8	94.1	85.7	0.127
	Mild	7.7	0.0	0.0	9.5	
	Moderate	0.0	22.2	5.9	4.8	
	Severe	15.4	0.0	0.0	0.0	
Anxiety Level	Normal	69.2	44.4	94.1	90.5	0.006
	Mild	7.7	33.3	0.0	9.5	
	Moderate	7.7	0.0	5.9	0.0	
	Severe	7.7	22.2	0.0	0.0	

The association between marital status and stress level was found significant with  $p = 0.002$  (Table 8). All the participants who were unmarried had normal level of stress, but 86.4%, 6.8%, 4.5%, 2.3% of married participants had normal, mild, moderate and severe level of stress respectively, and 40%, 40%, 20% of divorced participants had normal, moderate and severe level of stress respectively (Table 8).

$<0.001$ ), depression and stress level ( $p <0.001$ ), anxiety and stress level ( $p <0.001$ ).

Further, sector of employment and depression level ( $p=0.04$ ), sector of employment and stress level ( $p=0.05$ ) were significantly associated and significantly higher level of stress and depression were observed in private sector employees than public sector employees in Delhi NCR.

**Table-8: Marital status**

		Single	Married	Divorced	P value
Depression Level	Normal	81.8	93.2	60.0	0.937
	Mild	9.1	4.5	20.0	
	Moderate	0.0	0.0	20.0	
	Severe	9.1	2.3	0.0	
Stress Level	Normal	100	86.4	40.0	0.002
	Mild	0.0	6.8	0.0	
	Moderate	0.0	4.5	40.0	
	Severe	0.0	2.3	20.0	
Anxiety Level	Normal	81.8	81.8	60.0	0.135
	Mild	18.2	9.1	0.0	
	Moderate	0.0	2.3	20.0	
	Severe	0.0	4.5	20.0	
	Very Severe	0.0	2.3	0.0	

Age and depression level are significantly associated ( $p=0.03$ ).

71.4%, 81%, 95%, 100%, and 100% of the participants whose age lies between 20-30, 31-40, 41-50, 51-60, and 61-70 years respectively had normal level of depression. 14.3%, 9.5%, 5%, 0% and 0% of the participants whose age lies between 20-30, 31-40, 41-50, 51-60, and 61-70 years respectively had mild level of depression. 0%, 4.8%, 0%, 0% and 0% of the participants whose age lies between 20-30, 31-40, 41-50, 51-60, and 61-70 years respectively had moderate level of depression. 14.3%, 4.8%, 0%, 0% and 0% of the participants whose age lies between 20-30, 31-40, 41-50, 51-60, and 61-70 years respectively had severe level of depression (Table 9).

The results of this study show significant association between depression and anxiety level ( $p$

In addition, years of experience in the profession and depression level ( $p=0.003$ ), years of experience in the profession and anxiety level ( $p=0.006$ ), marital status and stress level ( $p=0.002$ ), and age and depression level ( $p=0.03$ ) were also significantly associated. However, anxiety, stress and depression were not significantly associated with type of company, employment type, duration of employment, gender, no. of children, no. of female child, family type, earning members in the family, monthly income, working mode during COVID-19 and qualification.

A WHO report<sup>11</sup> shows that a negative working environment can lead to physical and mental health problems. There are many risk factors for mental health that may be present in the working environment.<sup>12-19</sup> Most risks relate to interactions between type of work, the organizational and

**Table-9: Age**

		20-30	31-40	41-50	51-60	61-70	P value
Depression Level	Normal	71.4	81.0	95.0	100.0	100.0	0.030
	Mild	14.3	9.5	5.0	0.0	0.0	
	Moderate	0.0	4.8	0.0	0.0	0.0	
	Severe	14.3	4.8	0.0	0.0	0.0	

managerial environment, the skills and competencies of employees, and the support available for employees to carry out their work. This report further states that risks to mental health include low levels of support for employees, inflexible working hours and unclear tasks or organizational objectives. Higher level of stress and depression among private sector employees may also be because of demanding schedules, high-stress levels, and performance-linked perquisites in private sectors. A research done by Assocham<sup>7</sup> also shows that nearly 42.5 percent of employees in private sectors are afflicted with depression or general anxiety disorder, compared to government employees with lesser levels of psychological demand at work. IssacMohan<sup>12</sup> reported that depression is a global phenomenon and is often accompanied by anxiety. Another study done by Rawat<sup>8</sup> shows that Delhi ranks first in terms of number of corporate employees suffering from depression or general anxiety disorder, followed by Bangalore, Mumbai, Ahmedabad, Chandigarh, Hyderabad and Pune. Corporate employees have to survive the stiff global competitive environment to save their jobs, adding pressure on their health, leading to silent diseases.

Higher level of depression and anxiety were observed in employees who had less years of experience in the profession.

This finding clearly indicates that professional experience of an employee has impact on anxiety and depression level of the employee. Employees having more experience will less likely suffer from depression and anxiety disorder as experience will also enhance the skills and competencies of employees.

Higher level of stress was observed in divorced subjects. Some common causes of high level of stress among divorced employees can include: money problems, work-related stress, relationships or other family problems, moving home or starting a new job.<sup>13-19</sup>

Higher level of depression was observed in participants whose age lie in-between 20-40 years. WHO also says that, globally around 350 million people of all ages suffer from depression and it is the leading cause of suicide among the age group between 15 to 29 years old. Stress related to the uncertainty, job type, and salary may be the factor for higher level of depression in employees of age

group 20-40 years as Issac Mohan<sup>12</sup> had already reported that depression is a global phenomenon and is often accompanied by anxiety.

### **Implications**

Higher level of stress and depression among private sector employees can have costs for employers in terms of reduced productivity and increased staff turnover. They can also have a negative impact on family and social interactions<sup>11</sup>.

### **Delimitations, Limitations and Future Suggestions**

#### **Delimitations**

There are few studies based on Indian context which have been conducted to assess the prevalence of mental health issues such as anxiety, stress and depression among employees at the workplace. Moreover, there were no specific studies which have compared the private and public sector in respect to the prevalence of mental health issues like anxiety, stress and depression among employees leading to performance enhancement and personality trait. In view of the review of literature on anxiety, stress and depression, the present study was proposed to look into the mental health issues with special reference to anxiety, stress and depression and to the employees of private and public sector undertaking in the Delhi NCR.

#### **Limitations**

The sample size for this study was restricted to only 60 (30 from private sector and 30 from public sector) to represent the population in Delhi NCR and the data collection was done online due to the COVID-19 pandemic situation which might affect certain factors in the outcome of the research as the responses were recorded under uncontrolled environment.

No incentive was offered to the participants to motivate their participation and true response. Some participants might have responded in socially desirable ways or misrepresented their identity or their true feelings about the content of the questionnaire.

#### **Suggestions for further research**

The idea of undertaking this study was to evolve a module for training purpose to help optimize

anxiety, stress and depression among private and public sector employees help enhance the performance as well as bring a positive personality trait leading to better adjustment and quality life. The results of this study motivate that the same kind of study should be done on large sample size for further strong evidence.

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## Original Article

# Quality of Sleep among Doctors

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### ABSTRACT

**Background:** Quality of sleep is an integral part of health and often compromised in doctors due to the nature of their job. **Methodology:** This is a cross-sectional descriptive study conducted with aim to assess the quality of sleep among doctors. The data was purposely collected with participation of 100 doctors by using Pittsburgh Sleep Quality Index (PSQI) and SPSS 20 is used for statistical analysis. **Results:** The mean age was 28 comprised of both male and female participants (N=75 and N=25 respectively). On the Global PSQI (the overall score on Quality of Sleep) the mean is 3.21 suggesting that the Average number of Doctors are very good sleepers. The Surgeons and Psychiatrists are found to be having better Sleep Quality than the other specialties.

### Introduction

Sleep is a basic human need which is important to both our physical and mental health but only 56.9% of health care workers are good sleepers.<sup>1</sup> Medical professionals may have sleep issues due to their tough program, time and effort-requiring nature of work. Sleep loss due to working long on-call shifts decreases their day time alertness and negatively affects the mood state.<sup>2</sup> Baldwin Jr<sup>3</sup> suggests that work hours and sleep hours are significantly correlated. Although the total average sleep hours varied across and within specialties but over 20% of all residents reported sleeping an average of 5 hours or less per night, with 66% averaging 6 hours or less per night. Residents averaging 5 or fewer hours of sleep per night were more likely to report serious accidents or injuries, conflict with other professional staff, use of alcohol, use of medications to stay awake, noticeable weight change, working in an “impaired condition,” and having made significant medical errors. Similarly, physician’s overall performance is compromised if there is sleep loss of less than 30 h<sup>4</sup> therefore it becomes crucial to understand and explore the Quality of sleep among doctors.

Aliyu et al<sup>5</sup> all respondents were found to be poor sleepers and majority sleep for <7 h in the night. The house officers and medical offers had more tendencies for daytime sleepiness. Another study by Surani et al<sup>6</sup> done among junior physicians showed that sleep quality is significantly poor with a prevalence rate of about 37% and it was associated with female gender, excessive daytime sleepiness, lower total sleep time, increased sleep onset latency and increased frequency of self-reported sleep disturbances. Of the 84 residents who participated, 44 were from the clinical faculties—departments of general medicine, general surgery, obstetrics-gynaecology, psychiatry, orthopaedics, and paediatrics (i.e. those with direct patient contact during work period), and 40 were from the Para-clinical faculties—departments of biochemistry, physiology, pathology, and microbiology (i.e. those with minimal to no direct patient contact during work period). 63.6% of the clinical group were poor sleepers. Their subjective sleep quality and sleep duration were most affected and Abnormal daytime sleepiness was found in the clinical faculties only—20.45% (n = 9) of the sample of 44. 66.7% healthcare providers were poor sleepers.<sup>7</sup>

**Methodology**

The study aims to assess the sleep quality of doctors. This was a cross-sectional descriptive study consisting of 100 doctors working in govt and private hospitals. The Pittsburgh Sleep Quality Index (PSQI) developed by Buysse, Reynolds, Monk, Berman, & Kupfer, 1989<sup>8</sup> was used. It measures sleep quality consisting of seven factors (Subjective Sleep Quality, Sleep Latency, Sleep Duration, Sleep Efficiency, Sleep Disturbances, Sleep Medication and Daytime Dysfunction) and a global Quality of Sleep indicating good sleeper or poor. SPSS .20 versions is used for statistical analysis.

**Results**

The mean age was 28 comprised of both Male and Female participants (*N*=75 and *N*=25 respectively), 37% were married and 63% were unmarried, 85% are working in a Government Sector and 15% in a Private Sector. The study is comprised of maximum participation by Surgeons (24%) followed by Psychiatrist and Others.

**Discussion**

On the various domains of Sleep Quality (Table 1), 35% of the doctors were having very good subjective sleep quality and fairly good sleep latency, 55% were having very good sleep duration, and 66%

**Table-1: Frequency on all domains of Sleep quality**

Measures	Subjective Sleep Quality		Sleep Latency		Sleep Duration		Habitual Sleep Efficiency		Sleep Disturbances		Use of Sleep Medication		Day time Dysfunction	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
Very good	53	35.8	42	28.4	81	54.7	98	66.2	18	12.2	74	50.0	52	35.1
Fairly good	38	25.7	51	34.5	18	12.2	2	1.4	74	50.0	21	14.2	41	27.7
Fairly bad	6	4.1	6	4.1	1	.7	0	0	6	4.1	3	2.0	7	4.7
Very bad	3	2.0	1	.7	0	0	0	0	2	1.4	2	1.4	0	0

**Table-2: Mean of various Specialities on Global Sleep Quality**

Groups			
1. Physician ( Medicine, Pulmonary meds, Neurology)			
2. Surgeon (Gen Sur, Ortho, Ophth, OBGY)			
3. Com. Medicine			
4. Psychiatrist			
5. Others (MBBS, Skin, Radio, IHBT, Micro, Anaesthesia)			
1	N	Valid	17
	Mean		3.53
	Std. Deviation		2.294
2	N	Valid	24
	Mean		2.92
	Std. Deviation		1.742
3	N	Valid	15
	Mean		3.13
	Std. Deviation		1.846
4	N	Valid	22
	Mean		2.91
	Std. Deviation		1.601
5	N	Valid	22
	Mean		3.64
	Std. Deviation		3.017

**Table-3: Between Group differences among various Specialities on Global Sleep Quality Index**

	Sum of Squares	df	Mean Square	F	Sig.
G-PSQI	Between Groups 9.879	4	2.47	0.525	0.717

had very good habitual sleep efficiency. It is found that only once a week 50% of the doctors had trouble sleeping and 14% have used prescribed or over the counter medication to help sleep and 5% had day time dysfunction once or twice a week. Global PSQI (the overall score on Quality of Sleep) the mean was 3.2 indicating that the Average no. of Doctors are very good sleepers, it could be possibly because the participants were mostly young unmarried males. Whereas Buscemi et al<sup>9</sup> studied that health care workers have healthy sleep patterns but on a contrary have poor sleep quality. The Groups were also compared based on Speciality to find if there is any significant difference between the groups. All specialities were categories under five broad Groups which are Community Medicine, Psychiatry, Surgeon (General Surgeon, Ortho, Ophthalmologists, OBGY), Physician (includes Medicine, Pulmonary Medicine, and Neurologist) and others. It was found that Surgeon and Psychiatrist are having better Sleep Quality (2.92 and 2.91) then the rest (Table 2). Çalyþkan Tür et al<sup>10</sup> showed no significant difference in the average PSQI values between the group of emergency and internal medicine physicians and surgeons similar to the present study as No significant difference was found for between group comparisons (Table 3) on Global Sleep Quality Index.

### Conclusion

The average numbers of doctors are having very good quality of sleep with Surgeons and psychiatrist having better sleep than the rest. Further studies can be suggested to understand possibility of association between age, gender and marital status of the doctors with their quality of sleep.

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## *Psychomicrobiology*

# Covid-induced Depression - Molecular basis

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### Introduction

SARS-CoV-2 invades various cells through their angiotensin-converting enzyme (ACE)-2 receptors. The viral S (spike) protein binds to ACE2 of host cells. In lungs ACE2 expression is seen in type II pneumocytes. ACE2 receptors present in the neurons confers the virus ability to spread trans-neuronally to other areas.<sup>1,2</sup>

### Brain Involvement

SARS-CoV-2 has potential to cause encephalitis like many other viral infections.<sup>3-6</sup> This is associated with presence of anti-NMDA auto antibodies that target NMDA (N-methyl-D-aspartate) receptors in brain.<sup>7-9</sup> A pediatric covid case with anti-NMDAR encephalitis has been confirmed by viral PCR.<sup>10</sup>

The resultant psychiatric sequelae of covid infection may also be due to associated hypoxia, hyper immune response and vascular complications associated with D-dimer.

### Role of Inflammatory Biomarkers

Various inflammatory biomarkers like Interleukins (IL), C-reactive protein (CRP), ferritin, fibrinogen, D-dimer are associated with Covid-19 progression.<sup>11,12</sup>

D-dimer is an important biomarker which is of diagnostic importance in thrombosis. Any pathologic or non-pathologic process that increases fibrin production or breakdown increases plasma D-dimer levels. A study from Wuhan, China in 2020 suggested there is a significant correlation between D-dimer levels and disease severity stratified by the area of lungs involvement on chest CT, oxygenation index, as well as clinical staging.<sup>13,14</sup> Zhou et al reported that D-dimer levels > 1 µg/ml is risk for mortality in cases with covid infection.<sup>15</sup>

SARS-CoV-2 can induce excessive cytokine

storm that might produce pain, depression, delirium associated with psychiatric morbidities. Some of the clinical characteristics observed in severe cases of Covid-19 are similar to those seen in hemophagocytic lympho-histiocytosis (HLH) like in other viral infections. HLH is life-threatening syndrome which arises when the immune response is triggered by infection. It is associated with uncontrolled cellular proliferation and intense cytokine release. This is due to inappropriate immune stimulation caused by failure of normal cytolytic functions of natural killer (NK) cells and Cytotoxic T lymphocytes. The genetic basis of HLH is increasingly well recognized.<sup>16,17</sup>

IL-6 is used as prognostic marker to assess severity of Covid -19.<sup>18</sup> Its over-expression in cytokine storm might lead to lung injury and ARDS. This is supported by the finding that IL-6 inhibition improves the prognosis of the disease.<sup>19,20</sup> That's why corticosteroids and IL-6 inhibitor tocilizumab came into play as game changer in Covid treatment.<sup>21-23</sup> This would guide formulation of immunomodulatory treatment strategies.

Levels of another non-specific inflammatory serum marker C-reactive protein (CRP) has been linked to the severity and mortality in patients with Covid -19.<sup>24</sup> Elevated levels of CRP might be related to over production of inflammatory cytokines.<sup>25</sup> Emerging evidence suggest that in addition to its primary production in liver CRP is also produced in endothelial cells of micro vessels that form blood-brain-barrier.<sup>26-28</sup> Now recent studies have documented the presence of CRP in cortical and sub cortical tissue in various neuro-degenerative disorders.<sup>29,30</sup>

In blood, the normal concentration of CRP is less than 10 mg/L; however, it rises rapidly within 6 to 8 hours and gives the highest peak in 48 hours from the disease onset. It binds to phosphocholine

expressed on the surface of damaged cells to activate the classical complement pathway of the immune system to clear microbes and damaged cells.

Potential role of ferritin during inflammation is evident though its level is not associated with the disease outcome. The exact mechanisms need to be fully elucidated. The over abundance of free iron detected during severe disease conditions can deteriorate the inflammatory reaction through ROS-induced oxidative damage. It leads to hyper coagulation through non-enzymatic conversion of fibrinogen to fibrin. Hyperferritinemia might also promote production of pro-inflammatory (IL-1 $\beta$ ) and anti-inflammatory cytokines (IL-10). Hyperferritinemia is associated with multiorgan involvement and coagulopathy seen in COVID-19.<sup>31</sup> Hyperferritinemia may be occur because virus destroys hemoglobin resulting in the release of iron from porphyrins. In order to compensate for the high iron level, ferritin production is boosted. The raised serum ferritin levels can cause death of hepatic cells triggering the release of ferritin. Released serum ferritin loses part of the inner iron content, producing extremely high levels of free iron. The overabundance of free iron can exacerbate inflammatory conditions and ferroptosis, which in turn, promotes a series of reactions that result in multiple organ failure, pulmonary injury, and reduced lung capacity. The relatively lower risk for COVID-19 observed recently in individuals with blood group O compared to other blood groups may be due to lower serum iron status observed in these individuals.<sup>32</sup> Therefore exogenously administered iron chelators, may be beneficial in all forms of excessive inflammation.<sup>31,33</sup>

Assessment of Covid -19 survivors and further research on inflammatory biomarkers, in order to diagnose and treat emergent psychiatric conditions is recommended.

### **Biomarkers and Depression**

The exact causal relationship between markers of inflammation and depression has not been fully delineated yet. This might be related to massive increase of pro-inflammatory molecules in the brain.<sup>34-37</sup> Several recent studies have indicated that inflammation plays a pathophysiological role in the etiology of depression.<sup>34,38</sup> The overweight of the pro-inflammatory cytokines is associated with increased activity of the enzyme indoleamine 2,3-dioxygenase (IDO).<sup>39,40</sup>

Pro-inflammatory molecules act on tight junction proteins to disrupt blood-brain barrier and cross it. In the brain cells high concentration of interleukins lead to altered tryptophan metabolism via the kynurenine pathway (KP), to generate nicotinamide adenine dinucleotide and subsequently kynurenine and quinolinic acid. Kynurenine is metabolized by IDO. The resultant metabolites formed in brain produce impairment of cognitive function and long-term mental illness like depression.<sup>41</sup>

An important symptom in post covid patients is sleep deprivation which later leads to depression. These may be associated to neurodegeneration related to increased cytokines. A study on military personnel with complaint of insomnia and who underwent cognitive behavioral therapy showed that individuals with improved sleep response showed reduced inflammatory cytokines IL-1 $\beta$ , IL-6, IL-8 and IL-13. These changes were also associated with a reduction in depression symptoms.<sup>42, 43</sup>

The pandemic took us unprepared leading to many negative emotions. Many social factors like isolation, the psychological fear due to potentially fatal illness, concerns about infecting others, stigma, uncertainties about food and other routine supplies, loss of academic activities for students and economic factors are cause of concern at global level. Now, to add to miseries terror of mutilating fungal infection has occurred. These morbidities do not even spare those involved with health care facilities.

### **Conclusion**

The emergence of mental health problems in terms of depression, stress, anxiety especially in vulnerable individuals has been a great cause of concern. The current insight on inflammation in psychiatry recommends assessment of psychopathology of Covid -19 survivors and further research on identification of reliable inflammatory biomarkers, in order to diagnose and treat emergent psychiatric conditions.

To add to the miseries caused by fearless virus, there is upcoming of further illnesses like fungal infections and many more to come. As time progresses, with the increase in global burden of SARS-CoV-2 infection, many more forthcoming studies on the psychiatric consequences of this pandemic are expected to enlighten further.

**Abbreviations used:** SARS-CoV-2 - Severe Acute Respiratory Syndrome Corona Virus -2; ARDS -Acute Respiratory Distress Syndrome; ROS - Reactive Oxygen Species; PTSD - Post Traumatic Stress Disorder.

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*Psychophysiotherapy*

# Psychological Impact of Covid 19 on Healthcare Workers (HCWs) and its Psychophysiotherapeutic Management

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## Introduction

The novel Coronavirus-19 (COVID-19) which started from Wuhan in mainland China has already affected almost all the nations and continents because of its rapid spread. This disease was declared a public health related emergency situation by the World Health Organization followed by declaration of a pandemic status in March, 2020. The very thought of getting infected with COVID-19, an illness which has no clearly defined treatment protocols and uncertain outcomes has created a psychological impact on the mind of people. COVID-19 pandemic has heavily burdened and overwhelmed healthcare systems including healthcare workers, it has affected every individual but the most commonly affected are the frontline workers especially the healthcare workers (HCWs).<sup>1</sup>

These frontline healthcare workers are at risk of physical as well as mental consequences directly as the result of providing care to patients with COVID-19.<sup>2</sup> They suffer from severe psychological side effects which may be attributed to extremely long working hours, heavy work load and inadequate supply of personal protective equipments (PPE) supplies, over-reporting by audiovisual and social media, and various news channels and high rate of infection among the handling staff.<sup>3</sup>

Que et al also concluded that when compared to the general public, workers in the healthcare field who are at constant risk of COVID-19 infection are particularly stressed because of their relatively direct exposure, inadequate protective facilities, excessive

work, perceived opinions in form of stigmatization, necessary quarantine, and sometimes inadequate support of the family.<sup>4</sup> Furthermore, prolonged PPE usage led to skin damage, with the nasal bridge being the most common site. Battling COVID-19 on the frontline makes HCWs vulnerable to psychological distress. Findings shows high levels of depression, stress, anxiety, distress, anger, fear, insomnia, and post-traumatic stress disorder in the HCWs.<sup>2</sup> If such stressors are not effectively recognized and treated, they can transform into more persistent illness, even leading to suicidal thoughts. Such psychological impact can lead to reduced competency at work affecting their efficiency and decision making and the stress faced at work can worsen mental distress. The indicators of mental health difficulties at work place can include absenteeism, reduced job performance and productivity, changes in communication with co-workers, rapid changes in mood, anger outbursts, crying spells etc, reporting to work intoxicated (alcohol/drugs), poor memory, restlessness/irritability, drowsiness and impaired physical capability and daily functioning.<sup>5</sup>

## Presentations of Mental Health Issues among frontline workers

Burn-out is the commonest where there is emotional exhaustion along with loss of one's caring, empathy and compassion, Distress & Anxiety related to COVID-19 with excessive worry about contacting the disease and its consequences, feeling sad, nervous, anxious, restless, irritable and not being

able to stop or control worrying, lack of sleep, decreased appetite and suicidal thoughts, Sleep disturbances with difficulty in initiating sleep, frequent awakening or excessive sleep, Substance use disorder which is stress related and results in change in pattern of existing substance use i.e. change in frequency or quantity, use of sleeping pills or antianxiety drugs without valid medical prescription, Pre-existing Mental Health Issues may relapse or may worsen.<sup>5</sup>

Pappa et al identified thirteen studies and reported that more than one of every five healthcare workers suffered from anxiety and/or depression; nearly two in five reported insomnia.<sup>6</sup> Similarly, Vindegaard and Benros in a review identified twenty studies of healthcare workers and concluded that healthcare workers generally reported more anxiety, depression, and sleep problems compared with the general population.<sup>7</sup>

Huang et al studied the mental health impact on HCWs and found out of 230 healthcare workers who responded to the mental health assessment scales, 53 (23.04%) had psychosocial problems. The psychological impact on healthcare workers included the following conditions: overall anxiety (23–44%), severe anxiety (2.17%), moderate anxiety (4.78%), mild anxiety (16.09%), stress disorder (27.4–71%), depression (50.4%), and insomnia (34.0%). Anxiety in females was higher than in males (25.67% vs. 11.63%), nurses higher than doctors (26.88% vs. 14.29%).<sup>8</sup>

### Treatment

The management strategies primarily need to focus on mitigating the psychosocial stressors to the extent possible. Duan and Zhu highlight specialized psychological intervention for COVID-19 should be dynamic and flexible enough to adapt quickly to the different phases of the pandemic.<sup>9</sup> Inchausti also concluded that any intervention should be based on a thorough assessment of possible risk factors that may maintain the problem, the patient's prior state of mental health, the history of bereavement, the presence of a history of self-harm or suicidal behaviours in both the patient and his/her family, the history of previous traumas, and the socio-economic context of the patient.<sup>10</sup> Maryam concluded that policymakers and managers should adopt the supportive, encouragement and motiva-

tional, protective, and training and educational interventions, especially through information and communication platform.<sup>11</sup>

### Patient Education

Accurate, authoritative and specific information can be very powerful against fears and anxieties. Implementation strategies like adequate provision and training on the use of personal protective equipment, strict infection control practices, shorter shift length and provision of mental health and support services may help reduce the burden of health consequences.<sup>2</sup>

Training and support should be given to health professionals who are at high exposure risk to identify and manage their emotional reactions, that may hinder their clinical work in frontline health delivery. This includes managing anxiety, fear of contagion, episodes of acute stress or promoting self-care/reducing burnout. The main objective of this approach is to maximise psychological resilience in as many professionals as possible who have frontline duties during a pandemic.<sup>12</sup>

The interventions(H) required by HCW include supportive interventions which can be provided by family members, the government, society/community, organizations, and colleagues and supervisors; providing a peer support system; assigning professional psychotherapy teams. This can be done via an array of input and feedback channels; provision of the support for emotional and psychological needs; providing online psychological services, as well as face-to-face psychological crisis intervention, Encouragement and motivation interventions, Protective interventions providing adequate and effective protective equipment and addressing HCWs physical needs.<sup>13</sup>

### Interventions for Covid

Using the platform of technology and online services: In these critical situations in which face to face contacts increases the risk of infection transmission and considering quarantine in many areas, information technology and online services have been widely adopted.<sup>15</sup> Technological development in mental health foreshadows future trends that include smart mobile devices, cloud computing, virtual worlds, virtual reality and electronic games in addition to the various psychotherapy tools.<sup>16</sup> This

technology can be applied for reducing unnecessary visits, decreasing the risk of HCWs infection, reducing HCWs workload, and optimizing their time to caring for patients with acute conditions.<sup>17</sup>

**Cognitive Behavioral therapy :** Health authorities could consider providing online or smartphone-based psychoeducation and psychological interventions (CBT) to reduce risk of virus transmission by face-to-face therapy.<sup>18</sup> CBT needs to be modified to suit the needs of the general population during the epidemic. Cognitive therapy can challenge cognitive bias when recipients over estimate the risk of contracting and dying from COVID-19. Behavior therapy could focus on relaxation exercises to counteract anxiety and activity scheduling (e.g., home-based exercise and entertainment) to counteract depression in the home environment.<sup>19</sup>

According to the guidelines laid by MOHFW, Karnataka in document *Caring for Health Care Warriors Mental Health Support During Covid-19*, Organisational leadership has a crucial role to play in ensuring good work-life balance, incentivising healthy behaviours and providing an atmosphere of discussing mental health issues without stigma. Both psychiatric and counselling services need to be made available and administrators/supervisors should promote awareness about Mental Health and Stress by organising awareness classes, stress management workshops etc.

All personnel should be made aware Self-care which includes activities to promote emotional, physical, relational and spiritual/religious wellness which include ensuring breaks and adequate sleep, social support, interests and hobbies unrelated to work, regular exercise and healthy diet, relaxation exercises like yoga. A buddy system is an arrangement in which two individuals are paired at the work place.<sup>5</sup>

### **Relaxation**

Relaxation is usually used in conjunction with other treatment modalities and can take on a number of forms such as spiritual or non-spiritual meditation, progressive relaxation or muscular contraction and relaxation, even imagery. It helps to reduce the effect of stress on the body restoring normal equilibrium within the body systems. Deep breathing exercises, Diaphragmatic breathing, Jacobsons relaxation techniques, Meditation etc can also be done for

relaxation.<sup>20</sup> For Covid-19 patients, relaxation techniques and breathing exercises were recommended as one of the interventions to improve acute anxiety, although more evidence is needed.<sup>21</sup>

### **Exercise**

The literature supporting the effects of physical fitness on mental and emotional health is extensive. Many researches have proved that physical activity and exercise can be an effective treatment strategy for symptoms of both depression and anxiety. Exercise improves mental health by reducing anxiety, depression, and negative mood and by improving self-esteem and cognitive function.<sup>22</sup> Exercise can also serve as a source of distraction from daily worries and depressing thoughts. The level of physical fitness is correlated negatively with depression, anxiety and self centeredness and correlated positively with self satisfaction and social adjustments.

While structured group programs can be effective for individuals with serious mental illness, lifestyle changes that focus on the accumulation and increase of moderate-intensity activity throughout the day may be the most appropriate for most patients.<sup>23</sup> The health benefits of regular exercise include improved sleep, better endurance, stress relief, improvement in mood and increased mental alertness along with psychological effects like improvement in self esteem and confidence, better mood and wellbeing, increased motivation, better body awareness and positive body image.

The common types of physical exercise include aerobic exercise and resistance exercise. Aerobic exercise presents higher consume of oxygen and predominantly recruits type I fibers which are fibers of slow contraction. Conversely, resistance training is characterized by performing exercises against external resistance recruiting type II fibers which are fibers of rapid contraction. Aerobic exercise has a range of benefits including reduction in severity of depressive symptoms. A systematic review by Rethorstetal reported that aerobic exercise at a dose of at least 30 minutes of moderate intensity physical activity on most, preferably all, days of the week is an effective monotherapy for symptoms of depression.<sup>24,25</sup>

### **Mechanism of Action**

Tucker et al concluded that Exercise as an

intervention for anxiety and depression which has been demonstrated in both of the animal studies and human clinical trials. The underlying mechanism including the regulation on the production of brain-derived neurotrophic factor (BDNF), D- $\beta$ -hydroxybutyrate, synaptic transmission, hypothalamic pituitary adrenal (HPA) axis, tryptophan hydroxylase, GSK3 $\beta$ / $\beta$ -catenin pathway, neuroinflammation, oxidative stress and PGC-1 $\alpha$ 1-PPAR axis.<sup>26</sup> Exercise also stimulates the production of GH (growth hormone) and IGF-1 (insulin-like growth hormone). GH and IGF-1 are responsible for the regulation of sleep, cognitive function, and mood.<sup>27</sup>

Doyle et al utilized a multiple baseline design to evaluate the effectiveness of interval training in alleviating symptoms of depression. The participants exercised on a cycle ergometer 4 times per week, 30 minutes per session, for 6 weeks. This treatment was compared with an attention-placebo control condition in which subjects listened to audiotapes of “white noise” that they were told was subliminal assertiveness training. Results indicated that the aerobic training program was associated with a clear reduction in depression compared with the control condition, and the improvements in depression were maintained at 3 months post intervention (BDI mean reduction of 14.4 points from baseline,  $p < .05$ ).<sup>28</sup> (In another study, just 30 minutes of treadmill walking for 10 consecutive days was sufficient to produce a clinically relevant and statistically significant reduction in depression (reduction of 6.5 points from baseline on the Hamilton Rating Scale for Depression [HAM-D],  $p < .01$ ).<sup>29</sup>

Recently, a study reported that, as people were rarely able to get access to exercise facilities during the Covid-19 pandemic, exergames based on the combination of exercise with appealing digital games was a potential method to cope with anxiety.<sup>30</sup>

Although outdoor physical exercise is advisable during the outbreak of Covid-19, indoor exercise is recommended in view of the positive effect of exercise on boosting immune system and alleviating anxiety and depression.

Progressive Muscle Relaxation (PMR) therapy involves sequential tensing and relaxation of major skeletal muscle groups and aims to reduce feelings of tension, to lower perceived stress, and to induce relaxation. It is purported to decrease the arousal of the autonomic and central nervous system and to

increase parasympathetic activity.

According to the information from American College of Sports Medicine (ACSM),<sup>31</sup> World Health Organization,<sup>32</sup> the following exercise strategies were summarized: (1) 150 min moderate-intensity or 75 min vigorous-intensity exercise per week, or perform both of them (or modify according to personal or individual specifications). (2) Home-based exercises including knee-to-elbows, plank, back extensions, squats, side knee lifts, “superman,” “Bridge,” chair dips, chest opener, seated meditation, legs up the wall were recommended. (3) For the outdoor activities allowed by the local government, be active in a local park and keep at least 6 feet distance between you and others. (4) The multi-faceted exercise program is recommended, including aerobic, balance, resistance, coordination and activity training are recommended. (5) Do not use public exercise equipment to avoid virus transmission. Notably, these exercise strategies are recommended for healthy individuals in self-quarantine and cannot replace medical guidance.

## Conclusion

COVID-19 affects both physical and mental health. Regular physical activity is necessary to alleviate anxiety and depression and to improve overall mental and physical health. The mental health of HCWs confronts serious challenges and more support is required to safeguard their morale and health to deliver successful healthcare services.

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## Commentary

# Pollution and Mental Health

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### **Introduction**

As Mental health professionals, we pride ourselves on managing a plethora of mental disorders. Attempts are focused at reducing the disability associated with it while meting out treatment in the hope of reducing relapses that are a common occurrence in the context of mental illnesses. Mental illnesses can seriously limit the rudimentary human functioning, affecting day to day activities and compromising one's role in the society, ultimately leaving the person dependant on others for a greater part of life. It is not uncommon for patients suffering from mental illnesses to have other co-existing comorbidities, which if present, further worsen the prognosis and the quality of life. Attempts to find factors implicated in the causation of mental illnesses have been ongoing since decades. We are aware that exposure to certain toxins can alter the integrity of the nervous system and modulate its functioning, affecting neurodevelopment, cognitive processes in previously optimally functioning individuals and expediting neurodegenerative processes. 'Social toxins' such as domestic violence, poverty, and other factors can generate psychosocial stress.

But why is it that other common environmental toxins we get exposed to daily are so easily forgotten? In the Biopsychosocial model by George Engel,<sup>1</sup> the interplay among three factors: Biological, Sociological and Environmental factors was implicated and said to be crucial in the onset and progression of diseases. We tend to throw less light on factors that are lurking around in the corner, or worse, are staring us in the face every day, bringing about slow yet deleterious changes in our mental and physical health. One such factor that simply steals the spotlight is pollution, an ever-rising problem primarily due to urbanisation, which is now known

to cause mental illnesses or worsen pre-existing mental illnesses.

### **Studies Showing Implication of Pollution in Mental Health Problems**

In a study done by Bolten et al,<sup>2</sup> mouse dams were intermittently exposed via oropharyngeal aspiration to Diesel Exhaust Particles (DEP-novel model for pollution) combined with Nest Material Restriction (NR-a novel model for maternal stress) during the last third of gestation. The cognitive processes were found to be impaired in the male offspring. Furthermore, within the brains of adult males born to dams exposed to DEP alone, an increase was noted in the proinflammatory Interleukin 1-beta levels. A decrease in anti-inflammatory IL-10 in the brains of male offspring of dams exposed to DEP as well as NR was observed, along with increased expression of innate immune system including toll like receptor gene TLR-4 and caspase 1. This finding highlights that pollution with or without maternal stress can set up a neuroinflammatory process, eventually compromising the neurodevelopmental processes. In an exploratory E-risk Longitudinal twin study by Roberts et al,<sup>3</sup> high resolution air pollution exposure estimates and prospectively collected phenotypic data were combined to explore concurrent and longitudinal associations between air pollutants of major concern in urban areas and mental health problems in childhood and in adolescence. Although no associations were found between age 12 pollution exposure and concurrent mental health problems, age 12 pollution estimates were significantly associated with increased odds of major depressive disorder at age 18, even after controlling common risk factors.

Several studies<sup>4,5</sup> done have pointed out that

highly polluted environments are responsible for increased risk of cognitive decline and stroke.<sup>6</sup> Different air pollutants and particular particulate matter levels and nitric oxides, sulphur oxides, carbon monoxide, benzene and ozone have been associated with poor mental health. Long exposure to PM<sub>2.5</sub> has been associated with risk of new onset of depressive symptoms (Cohen's effect size  $d:0.05-0.81$ ), increased concentration of nitric oxide in summer was associated with worsening of existing depressive symptoms.<sup>7</sup> PM<sub>2.5</sub> significantly increased the risk of depression in subjects without a previous history of depression especially those with a chronic medical illness like DM and other chronic mental illnesses.<sup>8</sup> A European study that integrated the results of different cohorts (Germany, Norway, Netherlands and Finland) found a positive association between increased concentration of nitrogen dioxide and PM<sub>10</sub> and the risk of depressed mood, in case of exclusion of the smallest Finnish sample.<sup>9</sup> A Spanish study<sup>10</sup> confirmed that higher exposure to different air pollutants (particularly PM<sub>10</sub>) was associated with higher frequency of depression.

As a whole, increased concentrations of PM<sub>2.5</sub> especially for prolonged time may be associated with new onset of depressive symptoms<sup>8,10,11</sup> or a worsening of existing depressive symptoms.<sup>12</sup>

Studies also showed a higher risk of psychotic disorders in urban population across different countries when compared to rural ones,<sup>13-15</sup> which could be attributed to higher social fragmentation in urban when compared to rural areas.<sup>14</sup> A study reported that a 10 micrograms/m<sup>3</sup> increase in air PM was significantly associated with hospitalizations for schizophrenia in female subjects living in Beijing, China.<sup>16</sup> Sulphur dioxide air concentrations were linked with increased number of psychiatry hospitalisations especially in the warm season.<sup>17</sup> Further, exposure to benzene and CO was linked to increased risk of developing schizophrenia in an observational research and short-term exposure to different air pollutants like nitrogen dioxide, PM<sub>10</sub>, SO<sub>2</sub> and ozone has been associated with higher risk of self-harm.<sup>18,19</sup>

There was a significant association between previous higher exposure to PM<sub>2.5</sub> (particularly in the last year) and severity of anxiety symptoms.<sup>20</sup>

In an Indian study conducted on a sample of 1819 school children in the age group between 9-17

years found an association between mean annual exposure to PM<sub>10</sub> and risk of developing ADHD.<sup>21</sup> A large sample Korean study showed a significant association between PM<sub>10</sub> and nitrogen dioxide and risk of developing ADHD.<sup>22</sup> Additionally, a first study reported that higher exposure to ozone and PM<sub>2.5</sub> during pregnancy was significantly associated with more frequent diagnosis of autism in offspring.<sup>23</sup> Increased exposure to nitrogen dioxide in early life was also associated with increased risk of ASD. It was reported that long-term air pollution exposure can not only lead to physical changes in the brain, but may also cause functional impairment in the domains of learning and memory as shown by studies.<sup>24-26</sup>

Results of the geographic analyses indicate that countries with lower air pollution (PM<sub>2.5</sub>), higher community resilience (social, economic, infrastructure, and institutional resilience), and higher sunlight exposure had significantly lower average number of MUDs (Mentally unhealthy days) reported in the past 30 days in a study.<sup>27</sup> An extra standard deviation in the pollution index raised the probability of clinical depression measured 10 years past exposure by almost 1%. Women in particular, seem to be more affected, but some effects were noted for men too.<sup>28</sup> Pollution exposure increased the likelihood of clinical depression for women and also the severity of depressive symptoms for both sexes. Education, perceived economic status, and marriage were noted to be the best mitigators for these negative effects. In another study, a robustness test was used to estimate negative impact of air pollution on mental health. The concentration of PM<sub>2.5</sub> in the air was found to cause noticeable nervousness, depression, feelings of helplessness and agitation.<sup>29</sup> After eliminating the endogenous problem, the impact of air pollution on the level of the mental illnesses was still significant and negative especially in the women of rural and urban population, and middle- and low-income groups.

Child self-reported mental health was significantly linked to ambient noise only in children with a history of early biological risk (low birth weight and preterm birth) in a study,<sup>30</sup> and exposure to ambient noise was associated with small decrements in children's mental health and poorer classroom behaviour. The correlation between mental health and ambient noise was found to be

larger in children with early biological risk.

Significant cumulative 7-day associations between O<sub>3</sub> and all mental health [0.64%, 95% confidence interval (CI): 0.21, 1.07], depression [1.87%, 95% CI: 0.62, 3.15], self-harm/suicide [1.43%, 95% CI: 0.35, 2.51], and bipolar [2.83%, 95% CI: 1.53, 4.15] and observed 30-day lag associations between O<sub>3</sub> and neurotic disorder [1.22%, 95% CI: 0.48, 1.97] and homicide/inflicted injury [2.01%, 95% CI: 1.00, 3.02] were noticed in a study. Same day mean PM<sub>2.5</sub> was associated with a 0.42% [95% CI: 0.14, 0.70] increase in all mental health, 1.15% [95% CI: 0.62, 1.69] increase in homicide/inflicted injury, and a 0.57% [95% CI: 0.22, 0.92] increase in neurotic disorders per 10 µg/m<sup>3</sup> increase.<sup>31</sup>

### How Does Pollution Indirectly Affect Mental Health?

In a study by Graff Zivin et al,<sup>32</sup> air pollution was seen to significantly effect labor productivity, which in turn causes reduction of the worker's income, an principle indicator of mental health.<sup>33</sup> Work stress and unemployment as a result of this will further give rise to mental health problems.<sup>34-37</sup> To avoid air pollution, individuals might tend to stay indoors for longer durations and spend less time engaging in physical activities, which will further alleviate mental stress.<sup>38-40</sup> Pollution indirectly is linked to precipitating natural calamities by disrupting the natural balance. A link between post-traumatic stress disorder (PTSD) and rapid onset of disasters such as floods, forest fires, heatwaves, and tropical cyclones was documented.<sup>41-43</sup> High rates of mental illness were found among New Orleans residents 1 year after Hurricane Katrina.<sup>44</sup>

### Mechanism of Action

Some brain areas like the hippocampus in animals exposed to air pollution showed neuro-inflammation due to air particulate matter which was thought to be mediated by epigenetic regulations of genes which have a role in oxidative responses (decreased methylation of inducible nitric oxide synthase gene).<sup>45</sup> An animal study showed that chronic exposure to sulphur oxides is associated with repression of glutamate receptor gene expression and consequently impairment in neuron function.<sup>46</sup>

Inflammatory and hormonal factors may change

in short term, which can probably explain the reason for worsening of mental status in case of rapid increase in air pollution. Mechanisms such as methylation of some genes such as clock genes may trigger the onset or play a role in the exacerbation of psychiatric symptoms. Clock genes have been demonstrated to be implicated in the etiology of mood disorders and single nucleotide polymorphism rs2287161 of Cryptochrome circadian regulator 1 (CRY1) gene seems to increase susceptibility for unipolar depression.<sup>47</sup>

Additionally, dysregulation in cytokine signalling could lead to occurrence of depression, anxiety and cognitive dysfunction.<sup>48</sup> Airway diseases such as asthma, COPD and congestive heart failure caused by pollution are linked to increase in anxiety and other mental illnesses.<sup>49-52</sup> Dysfunctional breathing and heart function may also lead to mental illness through a purely physiological reaction to oxygenation changes. Environmental compounds such as pesticides, lipopolysaccharides may have a long-lasting impact on the microglial function and neuroinflammation<sup>53</sup>. In particular, among various air pollutants, PM 2.5 (particulate matter, particulates with size of 2.5 micro meter in diameter or smaller) has been shown to be closely associated with neuropsychological functions. This could be attributed to increased ease with which such minute particles can reach the brain.<sup>54,55</sup>

### Limitations, Gaps in Knowledge and Future Directions

There are several gaps in the knowledge in this domain-how long should the pollutant be present in the environment before the changes in mental health are reflected? Confounding factors like gender, advanced age or medical comorbidities were not taken into consideration by most of these studies. Changes in pollution and its effect on mental health was taken into consideration without taking into consideration factors like season, wind, hours of light, other baseline population conditions. Studies about association of between self-harm and mental health do not report the distribution of mental disorders in those committed suicide. It cannot be extrapolated the effect of pollution in contributing to self-harm or of mental disorders. While these among several other questions are yet to be answered, the findings of these studies denote that pollution in

fact has a definite role to play in one's mental health. Studies avoiding such confounding bias are few but necessary to understand the link between pollutants in the environment and onset and exacerbation of mental health problems. Tackling this ever-increasing pollution with the help of effective interventions is a must in order to reduce the incidence and progression of mental illnesses, and the burden associated with it.

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## *View Point*

# Development of Clinical Psychology Profession: Education, Training and Practice in India

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### ABSTRACT

*The profession and role of clinical psychology are increasingly gaining widespread acknowledgment in not only the mental health domain but also in other areas of health and disability concerns. In India, clinical psychology is a regulated disability rehabilitation and mental health profession. This article first highlights the development of the clinical psychology profession in the Indian context. This article then discusses the gap in the existing literature regarding the conceptual understanding of clinical psychology practice, particularly acknowledging the multitude of the roles which clinical psychologists may have within their working environment in the Indian context. We close the article by offering suggestions for possible changes in registration/licensure procedure, expanding roles, and more responsibilities and accountabilities of clinical psychologists in India.*

**Keywords:** Clinical Psychology, Mental Health, Disability Rehabilitation, Education

### Introduction

The field of Clinical Psychology offers diverse range of human services to help people overcome or cope with wide variety of challenges. Clinical psychologists deal with personal, private and sensitive matters of an individual. The roles, activities and contributions of Clinical Psychology are very appealing to many who are fascinated by the non-pharmacological management of mental health problems. Furthermore, the extremely sensitive knowledge places a clinical psychologist in a position of utmost responsibility and trust. Clinical psychology is a sub-discipline or speciality of psychology and may be defined as the application of the principles and procedures of psychology to health care.

As a profession, Clinical Psychology strives to recognize the importance of research, teaching, advocacy and services with the applications of psychological principles, methods, and procedures for understanding, predicting, and alleviating a wide variety of clinical or disability conditions.<sup>1-3</sup> Generally, the alleviation of suffering with the goal

of positive change in human life lies at the core of clinical psychology profession which requires rigorous supervised training. In order to track smoothly the developmental milestones of this profession in India with respect to the education and training, the present article has been divided into three sections: (a) Brief History of profession (b) Origin of regulated education and training in clinical psychology (c) Registration and licensure to practice.

### Brief history of profession in India

Clinical psychology appears unusual among similar other professions in that it grew out of an academic, scientific discipline rather than a tradition of practice in community. Psychology in general and clinical psychology in particular has a long past but a short history all over the world. Clinical psychology emerged as a profession in 1896 and Lightner Witmer was the first to use the term 'Clinical' in relation to the field of psychology. He created the world's first 'Psychological Clinic' at the University of Pennsylvania (USA), though he was a university professor throughout his career rather than a

professional practitioner.<sup>4</sup> In India, Psychology emerged independently in 1916 at Calcutta University first time. However, the genesis of clinical psychology conceived its emergence in year 1956 at National Institute for Mental Health and Neuroscience (NIMHANS), Bangaluru (Karnataka) previously known as All India Institute of Mental Health. The degree awarded to those who successfully completed the course of two years duration was titled as Diploma in Medical & Social Psychology (DM & SP). Subsequently in 1962, similar course was started at the Central Institute of Psychiatry (CIP), Ranchi (Jharkhand). In the year 1996, its title was changed and replaced by Master of Philosophy (M.Phil.) in Clinical Psychology by Rehabilitation Council of India (RCI). Subsequently, in 1997 the RCI set the guidelines/criteria and started monitoring this two-year regular full-time program that was to be pursued after obtaining minimum qualification of two years M.A. or M.Sc. degree in Psychology from a UGC recognized university with a minimum of 55% marks for general and 50% for SC/ST Category in aggregate. Admission procedure for entry in this program was done by holding an entrance examination which usually consists of a written test and interview. Subsequently, Clinical Psychologists began to provide independently psychological assessment and psychotherapeutic services.

### **Origin of Regulated Education and training in Clinical psychology**

The origin of the initial guidelines for the education and training of clinical psychologists in India as we know it today has its traces in a training conference first held at Boulder, Colorado in 1949.<sup>5</sup>

The purpose of the conference was to arrive at a consensus on the content of training of clinical psychologist and at the end of the conference the scientist-practitioner model also known as Boulder model for the training of clinical psychologist was adopted. This model put emphasis on both science and practice in training and specific recommendations were also made including rigorous education as a researcher along with training as a clinician.

Thus, the Boulder conference set forth the unique model of training for clinical psychologist and from that time the educational experiences of clinical psychologists included training in both

research methods and clinical applications worldwide. Subsequently, following the limitations in Boulder model, several other models of training have been proposed such as Vail professional or practitioner scholar model which was held in Chicago conference in the year 1973 and clinical scientist model of training.<sup>6</sup> The emergence of Psy. D. degree is the outcome of Vail model emphasizing the fact that education and training for clinical practice differs from research-oriented work.<sup>7</sup>

In India, RCI adopted most of the criteria from these preceding western models and developed the standardized core curriculums/syllabi for Master of Philosophy (M.Phil.), Doctor of Psychology (Psy.D.) and Professional Diploma in Clinical Psychology (PDCP) degrees in clinical psychology in the year 1997, 2011 and 2011 respectively in which first two degrees seems to follow the optimal integration of all the aspects of these models such as pass out, practicum, internship/apprenticeship experiences and dissertation. This also seems to promote the concepts of practice as applied science, reciprocity of science and profession, and practice as disciplined inquiry to the education of clinical Psychology.<sup>8</sup> Training is generally more relevant to various bio-psycho-social underpinnings of mental illness and various neuro-developmental disabilities.

In Indian Context, Manickam<sup>9</sup> identified four different training programs or models of Clinical Psychology training which can be said to have perfect blend of Boulder and Veil Models. According to him, the first and the oldest model is 'Mental Hospital Model' in which the trainees especially get supervised training in the mental hospital, De-Addiction Centre and the Neurology Departments. Second is the 'Super Specialty Model' based on the guidelines of RCI in which Clinical Psychology Department works in liaison with other departments of Medical College and Hospital. Third model is 'Rehabilitation Institute Model' in which Non-Governmental Organizations (NGOs) or Rehabilitation centres working in the area of Mental Health and Disability can run the Clinical Psychology course. Fourth is 'University Department Model' based on providing training in community at large through clinics established within the University campus along with posting in different rehabilitation centres and medical specialities including Psychiatry.<sup>10</sup>

Over the years since its inception, RCI has continued to regulate training programmes in Clinical Psychology. It periodically fosters the development of clinical psychology by specifying training requirements and by identifying or recognizing the institutes which can provide an appropriate level or quality of training. With the creation of the M.Phil., Psy. D. and PDCP degrees, the RCI confirms that all the three courses are the credentials which certify attainment of the knowledge and skill required to practice clinical psychology and to establish it as a profession. Since these are fulltime clinical training courses, the intake capacity of the number of candidates at the institute depend on number of qualified fulltime faculty members i.e., student–faculty ratio. However, according to RCI guidelines (2011), one-year PDCP degree holders are limited to clinical practice only and are not allowed to involve in independent responsibilities of academic activities such as teaching, training, guiding and supervising students of clinical psychology at the academic departments. The M.Phil. degree is of two years of duration after post-graduation in Psychology which has gained increasing popularity in India. Subsequently, the Psy.D. degree was started in 2011 to place more focus on expertise professional practice which requires either four years of duration after post-graduation in Psychology degree or two years of duration with a lateral entry after RCI recognized M.Phil. degree. Moreover, growing concern about the inadequacy of clinical training for the trainees led to periodical review of clinical psychology training programme and changes were made from time to time especially with M.Phil. degree. Hence the current revised M. Phil. Syllabus (2017) accommodates the incorporation of new and emerging Clinical Psychology practice needs in India into the content. However, with the purpose of reflecting the current international trend in training and practice of clinical psychology, no phenomenal rise in popularity of Psy.D. has yet been seen as compared to M.Phil. degree in India. Furthermore, there is also a considerable debate over the pursuance of these three RCI recognized degrees of Clinical Psychology where the older M.Phil. degree has been given as an only credential to practice as a Clinical Psychologist by another recently enacted Indian Act

i.e., Mental Health Care Act, 2017.<sup>11</sup>

The core and functional competencies of clinical psychologists in India are basically related to conducting the assessment, intervention/prevention, rehabilitation, research, providing expert testimony in the court of law, supervision, teaching, consultation, disability certification, promotion and administration related to mental health area. However, In India for the last few years a transformation is being observed for training in clinical psychology to be shifted from traditional mental hospital-based programs to programs operated by medical colleges, UGC recognized universities and NGOs. Currently in India almost thirty-eight RCI recognized institutes are providing clinical psychology education / training and which are very limited in number (RCI, 2020), hence Clinical psychology training has to take a big leap in India.<sup>12</sup>

### **Registration and Licensure to Practice**

RCI maintains a Central Rehabilitation Register (CRR) of all qualified clinical psychologists and provide license to practice as a clinical psychologist in India. Successful candidates after completion of any one of these three degrees (PDCP, M.Phil or Psy.D) in clinical psychology are eligible for RCI licensure/registration in India. Furthermore, with respect to the renewal of registration/licence, the RCI also facilitates the process by conducting Continuing Rehabilitation Education (CRE) for rehabilitation professionals.

However, renewal requires a certain number of Continuing Rehabilitation Education (CRE) credits i.e., 100 points through various means, such as attending RCI approved workshops, research work and publications in disability areas in throughout five years instead of per year in order to renew a license or registration.

According to MHCA Act, 2017<sup>11</sup> clinical psychologists are also entitled to register as a mental health professional across various state mental health authorities to practice as a mental health professional. Although both the Indian Acts i.e., RCI and MHCA Acts are somewhat different in terms of conceptualization of clinical psychology degree and practice, there is a common element of registration in both RCI and subsequent registration in state mental health authorities which shows unity in diversity when compared to most western countries

like USA and Canada, where credentials or requirements vary a lot with regional accrediting agencies. For instance, to practice in USA, each state has territorial association, regulatory body and particular standardized licensure requirements that include academic degrees, accredited supervised clinical training programs at different levels and continuing educational training programs.

In India, standards of professional conduct, etiquette and code of ethics in the practice of clinical psychology have also been prescribed by RCI<sup>12</sup> in general for rehabilitation professionals and in particular by Indian Association of Clinical Psychologist<sup>13</sup> (IACP, 1995) for clinical psychologists. Still, there is a need to revise the RCI and IACP's codes of ethics or conduct by including more comprehensive domains considering the ever-changing climate in practice.

Guidelines of MHCA Act and national policies such as National Mental Health Programme (NMHP) funded by Government of India are also laying more emphasis on the profession and role of clinical psychologist in the area of mental health.

Recently there has been an increase in demand for establishment of a separate independent statutory council for clinical psychologist in India because currently there is no clear-cut distinction between clinical psychologist and rehabilitation psychologist in terms of their overlapping role and functioning as per categories of RCI and this cause's identity confusion between these two separate professions.

### Conclusion

The clinical psychology training and practice in India has come a long way since its inception, moving from the total absence of standards or guidelines to the current status characterized by a perfect blend of several training models, increasingly clear training or education guidelines and professional practicing requirements of RCI registration/licensure. In order to achieve this specialization, one has to pursue the RCI recognized clinical psychology degrees. The most popular and commonly recognized clinical psychology degree is M.Phil. among various clinical psychology degrees which is now available in number of RCI recognized institutions.

There is still a long way to go as the number of clinical psychologists and training centres available

in the country is far less. Notwithstanding the value of growing importance of clinical psychologists in disability rehabilitation, mental health and wellbeing domains, there are a number of lingering issues in India. Firstly, at present to the best of our knowledge there are approximately thirty-eight RCI recognized institutes for the purpose of education and training in clinical psychology in the whole country implying a gross deficiency in the number of training institutes. Secondly, there is a considerable dilemma over the overlapping roles or practice of other rehabilitation professionals especially between rehabilitation psychologist and clinical psychologist. Thirdly in India clinical psychologist are considered by licensing statutory body RCI as rehabilitation professionals instead of mental health professionals as defined by MHCA Act, which is causing grave confusion regarding the roles and responsibilities. Lastly but not the least, there is a considerable confusion over RCI recognized three clinical psychology degrees in which only M.Phil. degree has gained the popularity and has been considered the only mandatory credential to practice as a clinical psychologist by MHCA Act.

Hence, in order to deal with preceding professional dilemma and monitoring aspects either a new independent statutory body for clinical psychology or a section within RCI with regional chapters should be established. The unity in diversity approach in clinical psychology training and practice model across India will further guide the developmental milestones of this profession.

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## Drug Review

# Cannabidiol: Therapeutic Potential

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### Introduction

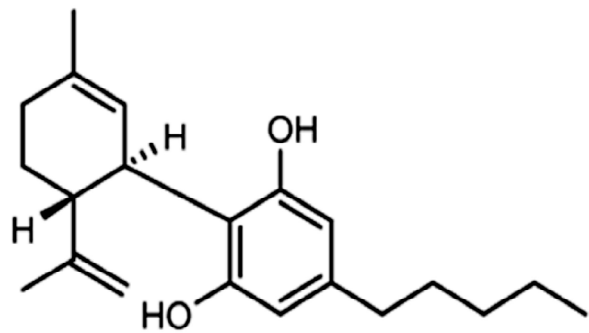
Cannabidiol is the second most abundant phyto-cannabinoid in *Cannabis* plant after the psychoactive tetrahydrocannabinol ( $\Delta^9$ -THC).<sup>1</sup> It acts on endocannabinoid system and is a non-psychoactive agent. The endocannabinoid system regulates many physiological responses of the body including pain, memory, appetite, and mood. In recent years cannabidiol has shown promise as a therapeutic and pharmaceutical drug target and the research to explore its medical implications is going on. In particular, cannabidiol has shown its potential as an analgesic, anticonvulsant, muscle relaxant, anxiolytic and antipsychotic.<sup>2,3</sup> Various studies have also shown neuroprotective, anti-inflammatory and antioxidant activity of cannabidiol.<sup>4,5</sup> Epidiolex/ Epidyolex is the first prescription formulation of plant-derived cannabidiol for oral administration for the treatment of refractory epileptic syndromes, approved by regulatory bodies in the US and Europe. In the European Union, cannabidiol (Epidyolex) is indicated for use as adjunctive therapy of seizures associated with Lennox Gastaut syndrome or Dravet syndrome, in conjunction with clobazam, for people two years of age and older. In 2020, the label for Epidiolex was expanded to include seizures associated with tuberous sclerosis complex in patients one year of age and older; in addition to its use in Lennox-Gastaut syndrome and Dravet syndrome.<sup>6</sup>

Lennox-Gastaut syndrome begins in childhood. People with Lennox-Gastaut syndrome have frequent seizures in early childhood, usually between ages 3 and 5. More than three-quarters of affected individuals have tonic seizures. Children with Lennox-Gastaut syndrome develop learning problems and intellectual disability; along with

delayed development of motor skills.

Dravet syndrome is a rare genetic condition that occurs during the first year of life with frequent febrile seizures. Later, other types of seizures arise, including myoclonic seizures. Status epilepticus, a potentially life-threatening state of continuous seizure activity may also occur. Children with Dravet syndrome typically experience poor development of language, motor skills and hyperactivity.

Tuberous Sclerosis Complex is a rare (1 in 6,000) genetic disease. It usually affects the central nervous system and can result in multiple symptoms including seizures, developmental delay, and behavioral problems.



Chemical Structure of Cannabidiol

### Mechanism of Action

The exact mechanism of action of cannabidiol is not currently fully understood. Wide variety of effects caused by cannabidiol are likely due to its complex pharmacological mechanisms. It is known that cannabidiol acts on cannabinoid (CB) receptors of the endocannabinoid system, which are found in numerous areas of the body. CB receptors (G-protein coupled receptor family) are highly prevalent in the human nervous system. There are two main CB receptors, CB1 which is primarily located in the

central nervous system with some expression in peripheral tissues and CB2 receptors, which can be found in the periphery on cells with immune function and in the gastrointestinal tract and at low densities in the central nervous system.<sup>7</sup>

However, cannabidiol has a relatively small affinity to bind CB1 and CB2 receptors and may inhibit THC binding at CB1 receptors.<sup>8</sup> Cannabidiol is a structurally novel antiepileptic drug and binds with other noncannabinoid receptors. Several antiepileptic mechanisms to reduce neuronal excitability and neuronal transmission have been postulated such as  $\gamma$ -aminobutyric acid-mediated inhibition; modulation of intracellular calcium by various transient receptor potential (TRP) channels such as TRPM8, TRPA1, TRPV1, and TRPV2; orphan G-protein-coupled receptor GPR55; or voltage-dependent anion channel 1. The antiseizure effect due to anti-inflammatory action of cannabidiol was also postulated by modulation of TNF- $\alpha$  release or inhibition of adenosine reuptake.<sup>9</sup> However, further investigations are needed to find evidence of interaction between these targets and cannabidiol and to confirm the mechanism of the anticonvulsant effects.

Cannabidiol has been shown to act as a negative allosteric modulator of the cannabinoid CB1 receptor.<sup>10</sup> Allosteric regulation is achieved through the modulation of receptor activity on a functionally distinct site from the agonist or antagonist binding site which is clinically significant, as direct agonists (such as THC) are limited by their psychomimetic effects.

CB1 receptors have been found within the pain pathways of the brain and spinal cord where they may affect cannabidiol-induced analgesia and anxiolysis, and CB2 receptors have an effect on immune cells, where they may affect cannabidiol-induced anti-inflammatory processes.<sup>11</sup> Non-endo-cannabinoid signaling systems affected by cannabidiol include:<sup>12</sup>

- Inhibition of adenosine uptake, possibly resulting in indirect agonist activity at adenosine receptors.
- Enhanced activity at the 5-HT<sub>1a</sub> receptor.
- Enhanced activity at glycine receptor subtypes.
- Blockade of the orphan G-protein-coupled receptor GPR55.

It is not clear which, if any, of these mechanisms

are responsible for any of cannabidiol's potential clinical or other effects.

### Pharmacokinetics

The absorption rate of cannabidiol is variable. Absorption appears highest upon inhalation, whether by smoking or other forms of vaporization. Cannabidiol is highly lipophilic and has poor oral bioavailability. In animal studies, the oral bioavailability of cannabidiol has been shown to be very low (13-19%).<sup>13</sup>

The distribution of cannabidiol is governed by its high lipophilicity, and a high volume of distribution (~32 L/kg) has been estimated, with rapid distribution in the brain, adipose tissue, and other organs. Cannabidiol is also highly protein bound, and ~10% is bound to circulating red blood cells. It undergoes extensive first pass metabolism in the liver by a number of cytochrome P450 isoenzymes, including CYP2C9, CYP2C19, CYP2D6 and CYP3A4. The main primary metabolite of cannabidiol is 7-hydroxy-cannabidiol. The half-life of elimination ( $t_{1/2}$ ) of cannabidiol is variable and depends especially on its route of administration. Generally,  $t_{1/2}$  is about 2 h after oral administration via oil, oromucosal spray, or nebulizer/aerosol. Administration via iv, smoking, or chronic oral administration leads to a significantly longer  $t_{1/2}$  of 24 h, 31 h, 86 or 2-5 days, respectively.<sup>14,15</sup>

### Dosage in Epilepsy Syndromes<sup>6,16</sup>

Under the brand name Epidiolex®, it is prepared as a liquid solution at a concentration of 100 mg/mL cannabidiol for oral intake.

#### *Lennox-Gastaut syndrome or Dravet Syndrome*

The recommended starting dose of cannabidiol is 2.5 mg/kg taken twice daily (5 mg/kg/day) for one week. After one week, the dose should be increased to a maintenance dose of 5 mg/kg twice daily (10 mg/kg/day). Based on individual clinical response and tolerability, each dose can be further increased in weekly increments of 2.5 mg/kg administered twice daily (5 mg/kg/day) up to a maximum recommended dose of 10 mg/kg twice daily (20 mg/kg/day). Any dose increases above 10 mg/kg/day, up to the maximum recommended dose of 20 mg/kg/day, should be made considering individual benefit and risk and with adherence to the full

monitoring schedule.

### *Tuberous Sclerosis Complex*

The recommended starting dosage is 2.5 mg/kg by mouth twice daily (5 mg/kg/day). Increase the dose weekly by 2.5 mg/kg twice daily (5 mg/kg/day), as tolerated, to a recommended maintenance dosage of 12.5 mg/kg twice daily (25 mg/kg/day)

### **Adverse events**<sup>17</sup>

The common adverse reactions (those reported by  $\geq 10\%$  of users) include somnolence, diarrhea, fatigue, decreased appetite and elevated transaminases. Due to potential hepatotoxicity, it is recommended to monitor transaminase levels and consider reducing doses of Epidiolex® in patients on other agents associated with hepatocellular injury.

The safety and efficacy of cannabidiol in patients  $\geq 65$  years of age have not been established. Cannabidiol can be administered to patients with mild, moderate, or severe renal impairment without dose adjustment. There is no experience in patients with end-stage renal disease. A lower starting dose is recommended in patients with moderate or severe hepatic impairment.

### *Hepatotoxicity*<sup>17</sup>

In early clinical studies, serum aminotransferase elevations arose during cannabidiol therapy in 34% to 47% of patients compared to 18% of controls who were receiving other anticonvulsant medications. Elevations above 3 times upper-limit of normal occurred in 13% of cannabidiol treated compared to 1% on placebo. ALT and AST elevations were more frequent with higher doses and were particularly common (and sometimes delayed) in patients who were receiving valproate and clobazam. The aminotransferase elevations typically arose within the first two months of treatment and were transient, mild-to-moderate in severity, and not associated with symptoms or jaundice. There have been no convincing reports of clinically apparent liver injury with jaundice attributable to cannabidiol, but it has had very limited general use.

### **Drug interactions**<sup>6,16</sup>

Cannabidiol is a potent inhibitor of CYP2C19, CYP2D6, and CYP2C9, and serum levels of several antiepileptics such as clobazam, N-desmethylclobazam, topiramate, eslicarbazepine, zonisamide,

and rufinamide increase with exposure to cannabidiol. The combination cannabidiol-clobazam has been shown to increase clobazam levels by an average of 60% (range  $\pm 80\%$ ) after 4 weeks of initiation. An even higher increase occurs in N-desmethylclobazam (upto 500%), an active metabolite. This may increase both the effectiveness and the risk of adverse events for this combination of drugs.<sup>18</sup> Elevated liver function result can occur with concomitant use of valproate and cannabidiol without significant changes in the valproate levels.

### **Efficacy and safety of cannabidiol in Clinical trials in epilepsy**

#### *Open-label trials*

One open-label trial investigated patients with tuberous sclerosis complex-induced refractory epilepsy and explored the potentiation of clobazam's effect when used concurrently with cannabidiol. After an initial baseline period of 1 month, the 18 patients began treatment with cannabidiol. The initial dose of 5 mg/kg/day was increased by 5 mg/kg/day every week up to a maximum dose of 50 mg/kg/day, if tolerated. Cannabidiol reduced the median weekly seizure frequency during the baseline period (22.0; interquartile range [IQR], 14.8–57.4), which decreased to 13.3 (IQR, 5.1–22.1) after 3 months of treatment with cannabidiol. The median percent change in total weekly seizure frequency was 48.8% (IQR, 69.1%–11.1%) after 3 months of treatment. The responder rates over the course of the study were 50%, 50%, 38.9%, 50%, and 50% after 2, 3, 6, 9, and 12 months of treatment with cannabidiol, respectively. In patients taking clobazam concurrently with cannabidiol (n = 12), the responder rate after 3 months of treatment was 58.3%, compared to 33.3% in patients not taking clobazam (n = 6).<sup>19</sup>

Another open-label trial enrolled patients (n = 214; age range, 1–30 years) with severe, intractable, childhood-onset, treatment-resistant epilepsy, although approximately 40% had either Dravet syndrome or Lennox-Gastaut syndrome. Patients (age range, 1–30 years) receiving stable doses of antiepileptic drugs before study entry were enrolled in an expanded-access program at 11 epilepsy centers. Patients were given oral cannabidiol at 2 to 5 mg/kg/day, up-titrated until intolerance or to a maximum dose of 25 mg/kg or 50 mg/kg per day



(depending on study site). Of the 214 enrolled patients, 64% of patients had a long enough followup period to be included in the efficacy analysis. The median monthly frequency of motor seizures was 30.0 (IQR, 11.0–96.0) at baseline and 15.8 (5.6–57.6) over the 12-week treatment period. The median reduction in monthly motor seizures was 36.5% (IQR, 0–64.7).<sup>20</sup>

#### *Double-blind, placebo-controlled and dose comparison trials*

Devinsky et al. reported the findings of a double-blind, placebo-controlled trial that studied the effectiveness of cannabidiol solution (dose-20mg/kg) as an add-on agent compared with placebo in 120 children and young adults with treatment-resistant seizures and Dravet syndrome. This study showed a statistically significant reduction in the frequency of convulsive seizures in the cannabidiol group after a 14-week treatment period, in contrast to the placebo. Adverse events that occurred more frequently in the cannabidiol group than in the placebo group included diarrhea, vomiting, fatigue, pyrexia, somnolence, and abnormal results on liver-function tests. There was no significant reduction in nonconvulsive seizures.<sup>21</sup>

Another randomized, double-blind, placebo-controlled phase 3 multicenter trial investigated the efficacy of cannabidiol (20 mg/kg/day) as an add-on therapy for drop seizures in 171 patients (aged two to 55 years) with treatment-resistant Lennox-Gastaut Syndrome. The results confirmed the efficacy of cannabidiol with a median percentage reduction in monthly drop seizure frequency from a baseline of 43.9% in patients treated with 20 mg/kg of cannabidiol compared to 21.8% in the placebo group. Other secondary outcomes were positive, including a greater proportion of patients experiencing a reduction of  $\geq 75\%$  seizures during the treatment period (20% cannabidiol vs. 8% on placebo). Significant reduction in the monthly number of drop seizures in the cannabidiol group was observed compared with the placebo group.<sup>22</sup>

Another randomized, double-blind, placebo-controlled evaluated patients with Lennox-Gastaut syndrome who used cannabidiol (n=225). Patients' age range was 2 to 55 years with a mean age of 16 years. The patients had two or more drop seizures per week. This study compared two doses (20 mg/

kg/day and 10 mg/kg/day) of the cannabidiol. Patients received cannabidiol oral solution at a dose of either 20 mg per kilogram of body weight (20-mg cannabidiol group) or 10 mg per kilogram (10-mg cannabidiol group) or matching placebo, administered in two equally divided doses daily for 14 weeks. The primary outcome was the percentage change from baseline in the frequency of drop seizures (average per 28 days) during the treatment period. Favorable outcomes were found in the 10 and 20 mg/kg cannabidiol groups during the treatment period with a median percentage reduction from baseline in the frequency of drop seizures of 37.2 and 41.9% in the 10 and 20 mg/kg cannabidiol groups, respectively. Secondary outcomes were also significant. Thirty-six percent and 39% of patients had at least a 50% reduction from their baseline in drop-seizure frequency in the cannabidiol groups compared with 14% in the placebo group. Furthermore, compared with the placebo group, a greater percentage of patients had at least a 75% reduction from baseline in drop-seizure frequency (11 and 25% in the cannabidiol groups, 3% with placebo). Some patients became free from drop seizures during the entire maintenance phase in the cannabidiol groups (4% and 7%, 1% in the placebo group). The estimated median difference in reduction from baseline in the frequency of all seizures was 19.5 ( $p = 0.002$ ) and 18.8 ( $p = 0.009$ ) percentage points in the 10 and 20 mg cannabidiol groups, respectively. Additionally, an improvement from baseline in overall condition according to the Patient or Caregiver Global Impression of Change at the last visit was reported in 66 and 57% of 10 and 20 mg cannabidiol-treated patients, respectively, compared to 44% in the placebo group with an odds ratio of 2.57 ( $p = 0.002$ ) for the 10-mg cannabidiol group vs. the placebo group and 1.83 ( $p = 0.04$ ) for the 20 mg cannabidiol group. The most common adverse events among the patients in the cannabidiol groups were somnolence, decreased appetite, and diarrhea; these events occurred more frequently in the higher-dose group. Six patients in the 20-mg cannabidiol group and 1 patient in the 10-mg cannabidiol group discontinued the trial medication because of adverse events and were withdrawn from the trial. Fourteen patients who received cannabidiol (9%) had elevated liver aminotransferase concentrations.<sup>23</sup>

### Tuberous sclerosis complex (TSC)

Recently, a double-blind, placebo-controlled randomized multicentre clinical trial conducted at 46 sites (GWPCARE6) is published. In this trial 224 eligible patients (aged 1-65 years) were those with a clinical diagnosis of TSC and medication-resistant epilepsy who had had at least 8 TSC-associated seizures during the 4-week baseline period, with last 1 seizure occurring in at least 3 of the 4 weeks, and were currently taking at least 1 antiepileptic medication. Patients received oral cannabidiol at 25 mg/kg/day (cannabidiol 25) or 50 mg/kg/day (cannabidiol 50) or a matched placebo for 16 weeks.

The percentage reduction from baseline in the type of seizures, considered the primary endpoint, was 48.6% (95% CI, 40.4%-55.8%) for the cannabidiol 25 group, 47.5% (95% CI, 39.0%-54.8%) for the cannabidiol 50 group, and 26.5% (95% CI, 14.9%-36.5%) for the placebo group; the percentage reduction from placebo was 30.1% (95% CI, 13.9%-43.3%;  $P < 0.001$ ) for the cannabidiol 25 group and 28.5% (95% CI, 11.9%-42.0%; nominal  $P = 0.002$ ) for the cannabidiol 50 group. The most common adverse events were diarrhea (placebo group, 19 [25%]; cannabidiol 25 group, 23 [31%]; cannabidiol 50 group, 41 [56%]) and somnolence (placebo group, 7 [9%]; cannabidiol 25 group, 10 [13%]; cannabidiol 50 group, 19 [26%]), which occurred more frequently with cannabidiol than placebo. Eight patients in cannabidiol 25 group, 10 in cannabidiol 50 group, and 2 in the placebo group discontinued treatment because of adverse events. Twenty-eight patients taking cannabidiol (18.9%) had elevated liver transaminase levels vs none taking placebo. Authors concluded that cannabidiol significantly reduced TSC-associated seizures compared with placebo. The 25-mg/kg/day dosage had a better safety profile than the 50-mg/kg/day dosage.<sup>24</sup>

### Other Disorders

A variety of studies have found that cannabidiol may be a useful treatment for a number of other medical conditions. However, the evidence of research in these conditions is considerably less than the evidence for treatment of epilepsy. For most indications, there is only pre-clinical evidence, or limited clinical evidence.

### Cannabidiol in Anxiety disorders

Prophylaxis with cannabidiol a couple of hours before public speaking (the anxiety stressor) might relieve anxiety during or shortly after the speech. In subjects with or without chronic anxiety, the acute use of cannabidiol before undergoing stressful or anxiety-provoking situations was assessed in multiple trials with inconsistent results.

In patients with generalised social anxiety disorder (SAD), cannabidiol may exert an acute anxiolytic effect when administered in a single high dose.

The anxiolytic properties of cannabidiol have been investigated by two clinical studies in patients diagnosed with generalised social anxiety disorder (SAD). Interestingly, the authors showed that a single dose of cannabidiol not only significantly decreased subjective anxiety symptoms,<sup>25</sup> but also reduced cognitive impairment, speech performance discomfort and alert in anticipatory speech during a Simulation Public Speaking Test,<sup>26</sup> in comparison to the placebo group. In this regard, the anxiolytic effect exerted by cannabidiol has been mainly related to its agonist activity towards serotonin type 1A (5HT1A) receptors.

### Cannabidiol in Schizophrenia

Cannabidiol is extensively studied for its anti-psychotic effects in schizophrenia. In 3 randomized trials the impact of moderate-length cannabidiol therapy on patients with schizophrenia was assessed.

In a double-blind, randomized trial, cannabidiol was directly compared to the atypical antipsychotic amisulpride given for 28 days in patients ( $n = 39$ ) with acute schizophrenia. The Positive and Negative Syndrome Scale (PANSS) total, general, positive, and negative scores as well as the Brief Psychiatric Rating Scale scores significantly improved in both groups vs baseline at 14 and 28 days, but there were no significant differences between the 2 groups at any time point. The authors showed that both cannabidiol and amisulpride groups had a significant reduction of psychotic symptoms and no difference in clinical efficacy was detected between the two different treatments and cannabidiol had a better side effect profile. Cannabidiol therapy,<sup>27</sup> but not amisulpride therapy, significantly increased the serum concentrations of anandamide on days 14 and 28.

In another double-blind trial, patients with

schizophrenia were randomized to receive cannabidiol 1000 mg/day or placebo along side their existing antipsychotic medication. At the end of the trial, the cannabidiol group showed a greater reduction in PANSS positive scores from baseline ( $-3.2 \pm 2.6$  vs  $-1.7 \pm 2.8$ ;  $P = 0.019$ ). Further, 78.6% of cannabidiol-treated patients were rated by their clinician as “improved” on the Clinical Global Impression–Improvement scale compared to 54.6% of placebo-treated patients ( $P = 0.018$ ).<sup>28</sup>

In another 6-week double-blind trial, patients ( $n = 36$ ) with chronic schizophrenia were randomized to oral cannabidiol (600 mg/day or placebo). There was a significant decrease in PANSS total scores over time in cannabidiol treated patients.<sup>29</sup>

### **Cannabidiol in Addiction Disorders**

Some preliminary data suggest that it may be beneficial in cannabis and tobacco addiction in humans. However, considerably more research is required to evaluate cannabidiol as a potential treatment in drug addiction.

Solowij et al. described a 10-week study of daily 200 mg cannabidiol in cannabis dependence to improve psychological symptoms and cognition.<sup>30</sup> Cannabidiol was well tolerated with no serious adverse events, promising therapeutic effects for improving psychological symptoms and cognition in regular cannabis users, and suggested that cannabidiol may be a useful adjunct treatment for cannabis dependence. Moreover, cannabidiol was shown to have low abuse liability<sup>31,32</sup> and to be effective in decreasing cannabis addiction.<sup>33,34</sup>

Cannabidiol in the treatment of tobacco use disorder has been suggested by the only one double-blind randomised controlled clinical trial. It showed that the cannabidiol group significantly decreased the number of cigarettes smoked without, though, exhibiting any specific beneficial effects on craving symptoms, compared with the placebo group.<sup>35</sup>

Evidences suggest that acute administration of cannabidiol may reduce withdrawal symptoms of cannabis dependence,<sup>33</sup> but the treatment needs to be prolonged over time in order to help quitting cannabis<sup>34</sup> or tobacco use.<sup>35</sup>

### **Cannabidiol formulation Nabiximols in Multiple Sclerosis and neuropathic chronic pain**

Cannabidiol is available as formulation

Nabiximols (Sativex®) an oromucosal cannabinoid spray, which is approved in Canada and many European countries for use as add-on therapy to reduce spasticity in adult patients with multiple sclerosis (MS). It contains a 1:1 ratio of THC: cannabidiol; the THC component acts as a partial agonist of the CB1 and CB2 receptors, while the cannabidiol component acts as an antagonist of these receptors. This addition of cannabidiol to THC has been shown to potentiate the beneficial effects of THC while attenuating some of its adverse effects, and the risk of dependence. Each spray delivers a dose of 2.7 mg of THC and 2.5 mg of cannabidiol and is to be administered to the buccal mucosa. Patients with MS use a median of eight sprays per day, and it is recommended that the daily dose not exceed 12 sprays. It has been shown that nabiximols is effective at reducing patient-reported multiple sclerosis-related spasticity and that it can provide other beneficial effects, such as sleep improvement and reduced urinary incontinence.<sup>36</sup> The most commonly reported drug-related adverse effects include dizziness, confusion, dry mouth, headache and fatigue.

Nabiximols might show promise as adjunctive therapy for the symptomatic relief of neuropathic pain in adult patients with multiple sclerosis and as adjunctive analgesic treatment for moderate to severe pain in adult patients with advanced cancer or chronic pain refractory to other methods of pain management.

### **Conclusion**

Currently, there is a great interest in the potential medical use of cannabidiol, which is a non-intoxicating cannabinoid. Cannabidiol is an effective new option for the adjunctive treatment of refractory seizures in Dravet syndrome and Lennox-Gastaut syndrome and holds promise in the treatment of Tuberous Sclerosis Complex, but more data are needed to determine its role. Additionally, cannabidiol is promising but not proven for anxiety-inducing events such as public speaking and the chronic treatment of patients with schizophrenia. Cannabidiol has not been assessed for the chronic treatment of anxiety. Cannabidiol is not risk free, as it has both drug interaction and adverse event potential. Somnolence and fatigue coupled with gastrointestinal disturbances are not uncommon, and

rarer but serious events such as elevated liver function tests have been observed. The impact of cannabidiol on suicidal ideation needs to be explored, as this is a serious but rare adverse event associated with other anticonvulsant drugs. The complexity of cannabidiol pharmacology offers tremendous therapeutic potential but also the potential for adverse events and drug-drug interactions.

Nonetheless, all together, such preliminary evidences suggest that cannabidiol may have an effective therapeutic role in the treatment of psychiatric disorders. However, further and larger randomized placebo-controlled clinical trials studies should be performed considering not only the clinical outcomes of cannabidiol administration, but also its effect on biological parameters. Longer-term safety data are needed to understand cannabidiol's balance of benefit to harm. This approach may help to clarify the wide spectrum of action of this new molecule in neurological and psychiatric disorders.

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## Case Report

# Cerebroprotein Hydrolysate, Citicoline and Piracetam in Aphasia caused by Traumatic Brain Injury

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### Introduction

Traumatic Brain injuries are major cause of morbidity, mortality and decreased functional outcomes due to residual neurodeficits particularly in younger age groups. There are studies attesting to improved functional and cognitive outcome for the patients of traumatic brain injury (TBI) using Cerebroprotein.<sup>1</sup> The safety of their use in TBI patients has been studied and they have proven to be an important intervention to limit the functional disability in TBI.<sup>2,3</sup> Numerous studies prove it to be useful in neurodegenerative diseases, post stroke neurodeficits and other forms of brain injuries.<sup>4,5</sup> Cerebroprotein hydrolysate (CH) is a unique neurotrophic peptidergic mixture produced by standardised enzymatic breakdown of lipid-free porcine brain proteins.<sup>4</sup> It has neuro-immunotropic, neuro-modulatory actions enhancing neuronal plasticity. It by reducing the brain permeability changes reduces oedema and mitigates functional deficits.<sup>6</sup>

Similarly use of Citicoline and Piracetam in a fixed dose combination have some positive results in improving cognition.<sup>7-9</sup> Main mechanisms of action known are improving cerebral blood flow and blocking ischemic pathophysiological cascade at earlier steps.<sup>10</sup> These molecules have been proving to be useful in otherwise therapeutic nihilism in pharmacology of residual neurodeficits. This case report illustrates use of Cerebroprotein hydrolysate, Citicoline and Piracetam in a patient presenting with post head injury aphasia and memory disturbances.

### Case Report

A 45-year-old male patient was referred to our OPD for post head injury persistent aphasia despite of improvement in neuroimaging and inadequate improvement on continuing speech therapy for 2 months.

Patient was unable to speak in comprehensible words, although he was able to follow commands and understand spoken language when sentences were kept short and simple.

We applied Progressive Aphasia Severity Scale (PASS)<sup>11</sup> when the patient came to us, and the score was 5 with moderate impairment in fluency = 2, moderate impairment in syntax and grammar = 2 and mild impairment in single word comprehension = 1.

We started him on tablet Citicoline (400 mg) and Piracetam (800 mg), two times a day. Patient continued this for 10 days with minimal improvement. At this point, when we decided to add Cerebroprotein Hydrolysate 90 mg twice a day. With this he continued for next 20 days and showed up to OPD with remarkable improvement in comprehension and fluency with PASS score of 3 now having occasional runs of short fluent speeches and can carry out short meaningful conversations. We continued the same course for one more month and the PASS score at the time of reporting case was 2 with very mild impairment in fluency = 0.5, mild impairment in syntax and grammar = 1 and very mild impairment in single word comprehension = 0.5. He is currently

maintained on the same combination and plan of action is to maintain it for 12 more weeks and observe the course.

### Discussion

We present this case to report utility of these agents in otherwise therapeutic nihilism of residual neurodeficits. Early diagnosis and prompt management of neurodeficits post head injury or stroke or any form of brain injury can significantly reduce morbidity associated with what otherwise traditionally is looked at as non-salvageable ailments.<sup>12</sup> It is important for general physicians, neurologists and psychiatrists to be aware of all the options that can be offered to person suffering from any form of neurodeficit. And above medications usually have no side effects and are well tolerated.

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## Case Report

# Management of Anticipatory Anxiety during Covid-19 pandemic - A Case Study

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### Introduction

The worldwide spread of corona virus has led to various negative consequences on the mental health of various individuals. Along with depression and sleep disturbances, anxiety has been a major clinical outcome in response to the virus.<sup>1</sup> The threat to health posed by the spread of corona virus has contributed to the concerns as well as stress about its impact on oneself and one's friends and family.<sup>2</sup> Virus outbreaks are often accompanied with intense episodes of stress and anxiety. The covid-19 virus has played a significant role in health anxiety, hypochondria, and maladaptive coping styles.<sup>3</sup> The virus has played a significant role in the emergence of fear of uncertain outcomes and fear of death in the population. The anxiety, stress, and fearfulness has led to maladaptive coping styles amidst the pandemic.<sup>4</sup> According to the cognitive behavioural approach, situational events, cognitions, and adverse behaviours have played a significant role in the development and maintenance of health anxiety.<sup>1</sup>

### Case History

Mr B, presented to the adult clinical psychiatry unit of IHBAS hospital with a four year history of experiencing intense, frequent, and persistent feelings of anxiety and fear in situations of hearing or watching anything related to death or ill health. He also experienced unpleasant physiological symptoms such as headache, burning sensations, increased heartbeat and breathing difficulty in such situations. His physiological symptoms often triggered health related worrisome thoughts and reinforced avoidance behaviours such as watching news, going to funerals, going out of the house or sleeping alone in dark room.

The symptoms of the client began 4 years ago when a young boy in his village died unexpectedly when he left for some work from his home. Since then, the client started to question the immortal and unpredictable nature of life. He felt fearful that he or his loved ones could also die unexpectedly and life has no meaning. For one month, his symptoms have been exacerbated followed by the emergence of covid-19 infection in India. His symptoms have become intense and he constantly worries about being infected with the virus and experiencing its health consequences. He often indulges in various safety behaviours such as switching on all the lights at nights, avoids watching news, staying inside the house as much as often. He experiences significant interference in his socio-occupational functioning.

### Past History

There is no history suggestive of any significant physical or psychiatric illness experienced by the client in the past

### Family History

Client belongs to a middle socio-economic status rural nuclear family. He has an identical twin brother who is working in Delhi. Family relationships are suggestive of cooperation and support, with absence of any significant interpersonal conflicts. There is no history suggestive of any physical illness, psychiatric illness, mental retardation, epilepsy, suicide or drug abuse in the family.

### Pre-morbid Personality

As reported by the family members and the patient, he was a well-adjusted individual. No impairment in social, personal or occupational



functioning was reported premorbidly. There has been no history suggestive of substance addiction or dependence.

**Psychological Intervention**

Therapy was carried out on out-patient basis, spanning across 21 sessions (each lasting for around

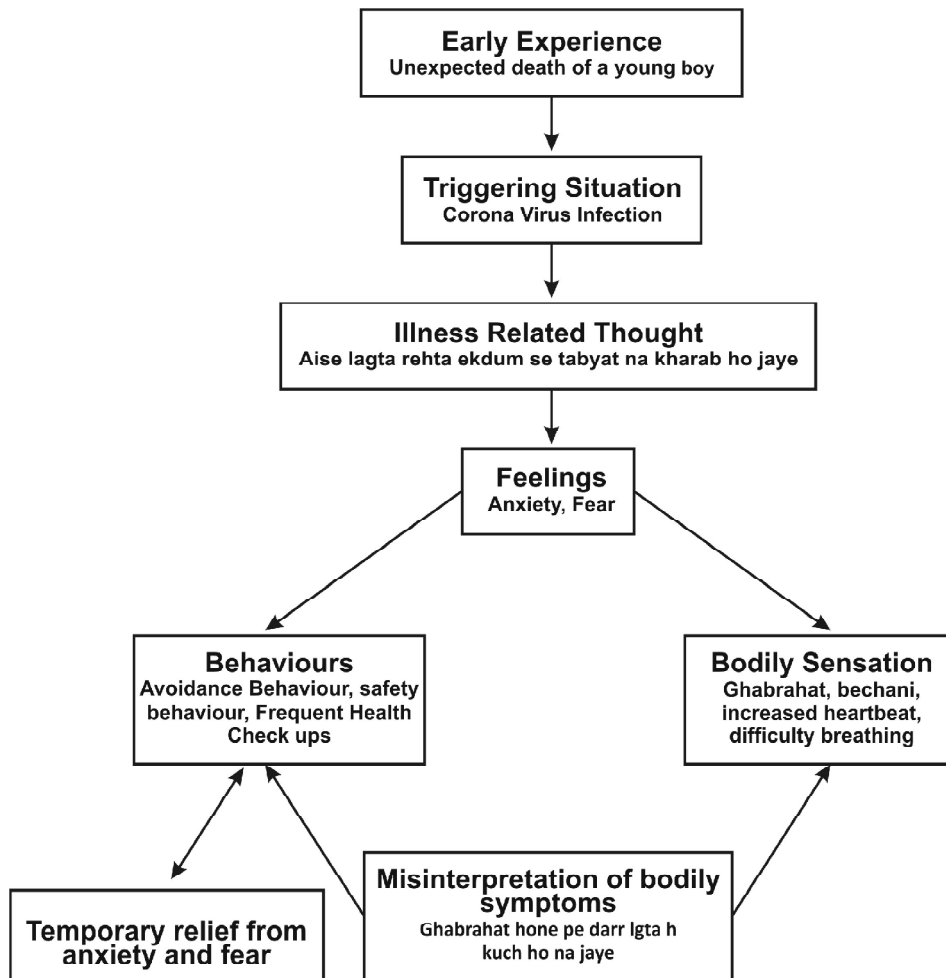


Fig. : Psychological Formulation

The conceptualization of health anxiety was made from the cognitive behavioural perspective. The connection between his thoughts, bodily symptoms, behaviour and feelings were highlighted. Client’s health anxiety is characterised by intense fear of experiencing adverse health outcomes. It is currently precipitated by the advent of novel corona virus pandemic. These feelings of anxiety are accompanied with various bodily symptoms such as ghabrahat, bechani, increased heart beat and breathlessness. These in turn reinforces feelings of anxiety which contributes to misinterpretation of bodily symptoms as signs of serious illness contributing to avoidance and safety behaviours.

50-60 minutes) client at the frequency of two sessions in a week.

**Initial Phase**

Initial phase with the client involved psychological assessment and establishing therapeutic relationship. Detailed clinical history was obtained through clinical interview and rapport was established. The distress of the client was addressed and emotional ventilation was facilitated. Assessment was done with the help of Beck anxiety rating scale. The total score obtained on the instrument was 33 indicating severe severity of illness contributing to distress and interference in socio-occupational

functioning. Functional behavioural assessment was done in order to identify the triggering situations and the associated thoughts and feelings. Avoidance behaviours, safety behaviours, misinterpretation of bodily symptoms were explored. The session was used for developing a psychological formulation as well as conceptualising the case of the client. The client was psychoeducated about the nature of his illness and Hewas oriented towards the cognitive-behavioural framework for understanding his symptoms, management plan and the rationale of the treatment. The psychological conceptualization was explained in detail to the client.

### **Middle Phase**

The objective and principle of systematic desensitization was explained to the client. The principle of systematic desensitization is reciprocal inhibition which states that the state of relaxation and anxiety are contradictory and cannot co-exist (Wolpe, 1958).<sup>5</sup> Hence, the client will be induced in a relaxed state before exposure to trigger situations so that the exposure situations do not contribute to increased fear and arousal reactions. The construction of hierarchy or the various cues or triggers was undertaken in collaboration with the client. Client was asked to monitor his health-related thoughts, feelings of discomfort and distress, avoidance and safety behaviours.

The concepts related to death were discussed in detail to address the overwhelming emotions and anxiety related to falling ill and dying. Concepts of mortality, immortality, unpredictability of life, existential crisis, meaninglessness in life were discussed for the purpose of addressing his overwhelming emotional reactions related to ill-health, normalising his health-related thoughts and anxiety and for realistic appraisal of the situation. The client was also educated about the covid-19 virus as well as the necessary precautionary measures that need to be adopted in order to promote one's safety and well-being.

The client was given relaxation training as a part of the intervention. Jacobson Progressive Muscular Relaxation was taught and demonstrated to the client. Multi-modal hierarchy was developed and subjective unit of distress were rated on a visual analogue scale (VAS) from 0 to 10 in collaboration with the client. During the phase of systematic

desensitization, the client was induced in a relaxed state through JPMR followed by imaginal exposure to trigger situations in a graded manner. Simultaneously in the sessions various strategies for cognitive restructuring were done with the client. These were aimed at managing his health-related thoughts and their misinterpretation of the health-related thoughts contributing to anxiety. A realistic appraisal of his bodily symptoms was emphasised and explained to the client. His coping skills and problem-solving skills were strengthened and encouraged. Some necessary precautionary measures were recommended to the client that can protect him from being infected with the virus. Homework assignments were also given, which focussed on continuing the exposure exercises encouraging the patient's ability for self-mastery and facilitated generalization.

### **Termination phase**

The final sessions focused upon relapse prevention and maintenance of improvement. Future obstacles and expected triggers to illness were discussed in order to formulate a plan to manage them. Preparation of coping with future difficulties was discussed. Self-monitoring and managing one's maladaptive thoughts were encouraged. Effective functioning in socio-occupational areas was emphasised upon. The coping skills and problem-solving skills of the client was strengthened. Necessary precautionary measures to protect oneself from the corona virus were encouraged rather than focusing on worrying about the pandemic which he cannot control. An adaptive level of anxiety was encouraged facilitating realistic appraisal of the situation contributing to effective coping skills.

### **Outcome**

Over the sessions, the patient's frequency, intensity, and duration of symptoms reduced to a great extent that was previously distressing. Additionally, he also felt that he could manage his symptoms effectively and the feeling of distress had reduced to some extent. The interference in functioning reduced to a great extent. The avoidance behaviours and safety behaviours were managed well. He reported being able to manage his thoughts, behaviours and feelings in an effective manner. His coping skills to deal with corona virus pandemic were strengthened.

In the final sessions, Mr. B reported around 80% improvement in her condition and effective management of his symptoms. He could now concentrate on his studies and his distress over his symptoms was addressed. His YBOCS score reduced from 33 to 8 indicating shift from severe to mild level of illness. However, he was prepared and encouraged to adopt the necessary safety and precautionary measures in order to cope well in the covid-19 pandemic.

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## Case Report

# Self-strangulation: Atypical Presentation of Childhood Obsessive Compulsive Disorder

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### **Introduction**

The obsessive-compulsive disorder (OCD) is a fairly common disorder which usually presents with the preoccupation with contamination, doubts, fear of harm befalling on self or others, religious and sexual thoughts as common themes of obsession; whereas excessive washing and cleaning, checking, counting, need for reassurance and orderliness are some of the commonly reported compulsive behavior.<sup>1</sup> It was once considered rare in childhood, but recent advances in diagnosis and treatment have led to the fact that the disorder is a common cause of distress among children and adolescents.<sup>2</sup> Data suggest that the prevalence of obsessive-compulsive disorder among children and adolescents ranges from 1% to 3%.<sup>3</sup> The overall clinical presentation of OCD in children is similar to adults, but at times, it may present with atypical symptoms, particularly in children and adolescents making the diagnosis difficult. Unusual themes and presentations of OCD have been reported in the literature. Some of these presentations are obsessions of sexual orientation,<sup>4</sup> musical obsessions,<sup>5</sup> starvation compulsions,<sup>6</sup> and rapid illegible hand writing.<sup>7</sup> Here, we report a case of OCD in a 10-year-old child with self-strangulation occurring as a compulsive act, which as per our best knowledge is first of its kind in literature.

### **Case Report**

Master U, a 10 year-old boy from middle socio-economic status, Hindu, nuclear family, studying in fifth standard, doing well in academics, without any past medical and psychiatric illness, no family history of any psychiatric illness, and slow to warm up premorbid temperament; presented with 6-month

history of insidious onset and progressively deteriorating course of symptoms characterized by repeated self-strangulation. For the initial two months of being symptomatic, he used to strangle himself with the collar of his shirt, once or twice in a day. Following this, he started doing it once in every 5-10 minutes with his hands. This behavior would persist across all situations, including home, school and even during leisure time. This act would result in bruises around his neck. On two occasions following strangulation, his face became cyanosed followed by a period of unconsciousness of around 30 seconds. As per the child, thoughts of strangulating himself came repeatedly in his mind, which he considered as his own, irrational thoughts. These thoughts caused anxiety, thus he tried to distract himself by watching television or reading books but these would continue to disturb him. There was temporary relief of anxiety following strangulating, but the thoughts would reappear after 10-15 minutes compelling him to repeat the act. He did not enjoy the act of strangulation. There was no history of any other repetitive thoughts or actions. There was no change in his sleep pattern or appetite; no history suggestive of depression, psychosis or any other organic condition, which could account for this presentation. He was started with Fluvoxamine 25 mg/day and cognitive behavioral therapy (CBT). Fluvoxamine was gradually titrated up to 75 mg/day in four week time. As there was no significant improvement in his condition, Aripiprazole 1 mg/day was added as an augmenting agent. On Fluvoxamine 75 mg and Aripiprazole 1 mg combination, he showed a gradual and steady improvement in his next follow-up visits and is now maintaining well.

### Discussion

OCD may present with a wide range of symptoms, especially in children and adolescents. In our case, the child presented with repeated urge to strangle himself. His behavior cannot be considered as features of psychosis as the acts were performed to relieve his anxiety, which arose as a result of repeated thoughts, and he had full insight into his behavior. There was no history suggestive of depressive episode or any organic cause. He responded well to combination of Fluvoxamine and low dose Aripiprazole along with CBT. As per the best of our knowledge and literature search, this is the first case where repeated self-strangulation is the only presentation of the obsessive-compulsive psychopathology. High degree of suspicion for the diagnosis of OCD may help in timely and adequate management of such cases.

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## Case Report

# Use of Vortioxetine as add on Medication for Severe Melancholic Depression

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### Introduction

Melancholia is a distinct psychopathological entity with characteristic clinical features distinguishing it from major depressive disorder in spite of it being not clearly defined in DSM 5.<sup>1,2</sup> In terms of treatment these patients are known to better respond to more traditional modalities such as tricyclic antidepressants and ECTs than SSRIs or psychotherapies.<sup>3</sup> The US Food and Drug Administration (FDA) approved vortioxetine for the treatment of MDD in adults in 2013 and next the European Medicines Agency (EMA) approved it in the same year. It is available for oral administration and in strengths of 5 mg, 10 mg and 20 mg tablets.<sup>4</sup> It has a novel mechanism of action by inhibiting the serotonin transporter (SERT) and antagonizes several serotonin receptors (5-HT<sub>3</sub>, 5-HT<sub>7</sub> and 5-HT<sub>1D</sub>).<sup>5</sup> It also acts as a partial agonist on 5-HT<sub>1B</sub> receptors and as a full agonist on 5-HT<sub>1A</sub> receptors. It is this action that may also explain its effects on anxiety in addition to mood and depression.<sup>6</sup> The molecule has been introduced in India in October 2018 and has been used in the management of MDD. There are some reports on its efficacy in improving cognition in MDD, and its utility in generalized anxiety disorder and obsessive-compulsive disorder.<sup>7-9</sup> Some studies also support its use in elderly population.<sup>10</sup> This case study illustrates use of vortioxetine as an add on treatment in a 72-year-old patient suffering from melancholic depression and was resistant to various available treatments.

### Case Report

A 72 years old patient presented to our OPD with late onset depression with non reactive mood, easy fatigability, subjective restlessness and

nihilistic delusions of having an illness that can't be treated and his body having been turned into a stone and hence no intervention is possible. He refused eating food stating that he is dead and have turned into a stone. Patient was also having predominant ideas of hopelessness and guilt. He was diagnosed as Severe Depression with Melancholic features and mood congruent psychotic features. Patient was admitted in our ward and was started on Amitriptyline 25 mg and Escitalopram 10 mg and was up titrated to 75 mg of Amitriptyline and 20 mg of Escitalopram in one month with no improvement. Olanzapine was added at 5 mg of dose and increased to 15 mg during the same time with no improvement in patient's condition. As there was no improvement in his condition even after 4 weeks, Electroconvulsive Therapy was started and he started showing improvement in depressive mood and decreased self-care by 5<sup>th</sup> ECT. Full course of 12 ECTs were given with up to 50 percent improvement in symptoms of depressed mood, anergia and restlessness but his delusional ideas of nihilism were still refractory even after addition of clozapine up to 100 mg. We stopped at this dose for clozapine due to constipation and postural hypotension. Venlafaxine substituted escitalopram gradually titrated upto 300 mg. Even addition of tablet Mirtazapine upto 45 mg failed to bring further improvement. He was followed up in OPD while being on Venlafaxine 300 mg, Mirtazapine 45 mg, Clozapine 100 mg and after 12 ECTs with persistent residual symptoms. At this point it was decided to add Vortioxetine at 5 mg daily which was increased to 10 mg after 10 days. There was improvement in nihilistic ideas and flatness of mood, patient gradually started interacting with family members. We gradually reduced and stopped

clozapine and maintained patient on Vortioxetine 10 mg a day with Venlafaxine 300 mg in divided dosage. Patient was well maintained on the same until last follow up.

### Discussion

We present this case to report utility of Vortioxetine in severe Melancholic depression which is resistant to traditional treatment modalities such as TCAs, SSRIs and ECTs. This relatively newer antidepressant through its novel mechanism of action may shed light on pathophysiology of this endogenous form of depression. More studies are needed for determining clinical utility of Vortioxetine in phenomenologically and biologically heterogeneous forms of Major Depressive Disorders.<sup>11</sup>

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## *Interesting Articles*

- Elias A, et al. Electroconvulsive Therapy in Mania: A Review of 80 Years of Clinical Experience. *Am J Psychiatry* 2021; 178 : 229-239.
- Dean KOH, et al. Omega-3 and polyunsaturated fat for prevention of depression and anxiety symptoms: systematic review and meta-analysis of randomised trials. *Br J Psychiatry* 2021; 218(3) : 135-142
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**According to our previous work,<sup>1,3-8,19</sup>  
The Patient's were studied as follows.<sup>3,4</sup>**

### Sample References

#### • Articles

1. Roest AM, Zuidersma M, de Jonge P. Myocardial infarction and generalised anxiety disorder : 10-year follow up. Br J Psychiatry 2012; 200 : 324–329.
2. Bremner JD, Shearer KD, McCaffery PJ. Retinoic acid and affective disorders: The

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