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Editorial

Club drugs and clubbing youth of India: It's time to worry!

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Substance use and issues related to its use have been a cause of major concern globally. According to the United Nations Office on Drugs and Crime (UNODC) 2018 survey on drug use among the general population, the extent of drug use among youngsters remains higher than that of older people.[1]

India, a developing third world country with its large and growing population reported that about 14.6%, 2.8% and 2.06% of nation's population consume alcohol, cannabis and opioids respectively. Most studies have posited that early (12-14 years old) to late (15-17 years old) adolescence is a critical-risk period for the initiation of substance use and that substance use may peak among young people aged 18-25 years.[2] Adolescence is an important period of physical, cognitive and emotional development, with robust behavioral, morphological, hormonal, and neurochemical changes. It is that vulnerable period in life where an adolescent is transiting from childhood to an adult and is at risk of getting into trouble easily if precautions not taken.

Newer drugs namely the club drugs are more in vogue increasing the challenges and difficulties in this subset manifolds. These club drugs are so named because of their usually exclusive use in clubs and rave parties. Club drugs include Ketamine, methylenedioxymethamphetamine (MDMA/ecstasy), cocaine, gamma-hydroxybutyrate (GHB), methamphetamine, and d-lysergic acid diethylamide (LSD/acid). Club drugs are psychoactive drugs that are usually used in increasing the fun and pleasure of clubbing by the youth of today at bars, concerts, parties and nightclubs. Youth of today likes to party and consider it as equivalence to fun and in fashion but is ignorant and unaware at times in understanding the risk and consequences which can be a part of these.

As shown in the European School Survey Project on Alcohol and Other Drugs (ESPAD), the lifetime prevalence of illicit drug use was 17.0% among European students aged 15–16 in 2019, with 16.0%, 2.3%, 1.7% and 0.7% for cannabis, ecstasy, methamphetamine and gamma-hydroxybutyrate (GHB), respectively.[3] According to the results of the Global School-Based Student Health Survey (GSHS) from different regions around the world the prevalence of lifetime amphetamine use ranged from 1.0% to 14.5% among young people aged 13 to 17 years.[4] Cocaine (0.10%), Amphetamine type stimulants (0.18%) and hallucinogens (0.12%) are the categories with lowest prevalence of current use in India as per report submitted by NDDTC, AIIMS to Ministry of Social Justice and Empowerment in 2018.[2] Since users of club drugs do not generally need to seek treatment at healthcare facilities, the use is often concealed, and the consequences are under the surface. Population surveys generally are not able to reach the users of these substances effectively. Due to scanty literature available in India it is very difficult to understand the magnitude of the problem. A study by Kathiresan and Sarkar in 2021 gave a synthesis of newspaper articles on club drugs in India.[5] A total of 74 newspaper reports were included in this analysis. It was found that mostly urban cities especially like Mumbai (n = 30), Delhi (n =15), Goa (n = 5), Hyderabad, Ahmedabad and Kolkata (n = 3 each), and Kochi (n = 1) had reported any news related to club drugs. Of these, cocaine followed by lysergic acid diethyla-mide (LSD), mephedrone, 3,4-Methyl-enedioxy-methamphetamine (MDMA)/Ecstasy, methamphetamine, ketamine, methaqualone and lastly amphetamine, GHB, ephedrine was reported. The dark web was mainly the source of procurement. These findings

have graver implications overall. Already, club drug use has been associated with serious physical and psychiatric disorders, risky sexual behaviors, HIV infection, violence, and criminality. In a study by Martinotti et al, a total of 10,163 subjects required medical assistance inside discos, of which 223 required transfers to hospital emergency rooms. Of these, 110 required subsequent psychiatric hospitalization.[6] It is postulated that club drugs are going to have dangerous influence on our population and will pose serious challenges to the system in terms of health, legal and social parameters.

It is imperative that help - seeking behavior for those taking this substance should be encouraged. Peer influence has an important role and hence, peer education might be an excellent approach. Further, it is important to educate family members. Reduction of club drugs can also be achieved by education, correcting inaccurate beliefs and promotion of skills to say 'No'. Smoking, as a gateway behavior to club drug use, should be addressed ahead of, or synchronous with, club drug use prevention. Role of socio-demo-graphic factors like employment, gender, socio-economic status, peer influence needs to be carefully taken into account to chalk out effective intervention programs. Many users have shown short and long-term benefits when these factors were considered.[7]

World drug report implicated that India may soon be becoming a origin, transit and destination for these drugs, peddling and using of which have its harmful impact on country socioeconomically.[8] Club drugs also known as date rape drugs cause amnesia at times where a victim is unaware as well as does not have clear memory of the assault happened. Impairment of health of the younger population of a country who form the backbone and are future of country can have long lasting repercussions for a developing nation like India. In accordance with the spirit of the United Nations Conventions and the existing Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985, and NDPS Policy 2012, the Ministry has prepared a National Action Plan for Drug Demand Reduction (NAPDDR) which aims to focus on preventive education, awareness generation, identification, counseling, treatment and rehabilitation of drug dependent persons and training and capacity building of the service providers through collaborative efforts of the Central and State Governments and Non-Governmental Organizations.[2] Attention from mental health professionals and psychiatrists is also needed when patients with abuse of these substances seek treatment either for the addictive disorders or comorbid psychiatric disorders.

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Review Article

Impact of Covid-19 Pandemic on Patients with Preexisting Psychiatric Conditions: A Systematic Review

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Introduction

The coronavirus outbreak came to the forefront when the World Health Organization was informed by China that an abrupt increase in the number of pneumonia cases of an unknown cause in Wuhan City, China was noted. It subsequently spread to the entire world, hence in early 2020 the World Health Organization declared it a pandemic. The focal point of national governments and World Health organization (WHO) was to manage and palliate the effects of this pandemic by locating the infected people, testing and developing vaccines. Numerous methods such as nation-wide lockdown, social distancing and home confinement were adopted by the national governments in order to restrain the transmission of disease.[1]

Research evidence suggests that covid-19 pandemic has appalling psychological and social effects. A survey conducted by the Indian Psychiatric Society states that there is a twenty percent increase in the mental illnesses since the upsurge in the cases of covid-19 in India.[2] Some researchers are calling this pandemic an 'ongoing cardiac stress test'.[3] A spectacular amount of research studies has been conducted on the impact of covid-19 on mental health, all which indicate that covid-19 pandemic has effects on the mental health of the general population, frontline workers and psychiatric patients. Due to the uncertainty of the future and lack of treatment options for the virus, it has led to feelings of fear, panic and worry among people. Containment measures like quarantine and social distancing have further added to the stressors, affecting the daily routine and communication patterns. These measures are leading to increased feelings of loneliness, anxiety, insomnia, worry about loved ones and anger outbursts.[4] All these cases are rising due to factors such as lack of predictability, immobilization, social distancing, misinformation on social media sites and lastly unemployment. In addition to this, there have been time series studies indicating that the people with pre-existing neurotic conditions are more adversely affected by the pandemic. The sudden changes in the lifestyle of people with pre-existing psychiatric conditions could affect their mental health in addition to not being able to access the services provided by mental health professionals.[5] The psychiatric symptoms of the people diagnosed earlier have been reported to have worsened causing a profound impact on their mental health.

Materials and Methods

The purpose of the present study was to review the effect of COVID-19 Pandemic on mental health among patients with pre-existing psychiatric conditions. A computerized literature search of the databases such as Google Scholar, Research Gate, Science Direct and Pub Med was done using keywords such as COVID-19 and pre-existing psychiatric conditions, neurotic conditions, and pandemic and psychiatric disorders. A total number of twenty-one studies were included which met the inclusion criteria that involved abstracts/original or review articles published in journals and studies involving the impact of ongoing pandemic on patients with pre-existing psychiatric conditions. The abstracts, original articles, and review articles published in languages other than English and articles with incomplete data were excluded from the study.

Covid-19 and Pre-existing Affective and Anxiety Disorders

The outbreak of Covid-19 has impacted the mental well-being of patients with pre-existing psychiatric illnesses. A cross-sectional study was done by Vissink et al.[6] on 148 patients with a pre-existing psychiatric illness where they were asked to fill a 30 mins survey which consisted of some questionnaires such as Beck's Anxiety Inventory, Beck's Depression Inventory, 16-item Penn State worry questionnaire, checklist for post-traumatic stress disorder, Perceived stress scale, DeJong-Loneliness scale, WHO-ASSIST questionnaire and General Health Questionnaire. The results of the study indicated that the general health of the patients with affective disorders declined significantly than patients with psychotic disorders. As compared to other spectrum of disorders, patients with affective disorders suffered from severe depression while others fell into the category of mild-moderate depression. Anxiety symptoms were more prominent in patients with personality disorders rather than affective or psychotic subgroups. There was a sharp increase in the perceived social support in patients with psychotic disorders and loneliness was reported more in patients with affective disorders. Subsequently, the study revealed that COVID-19 pandemic and governmental measures have impacted people with pre-existing psychiatric conditions significantly.

People without any diagnosis prior to the outbreak had developed symptoms for generalized anxiety disorder and depression by 12% and 29% respectively whereas people who had a pre-existing diagnosis their symptoms worsened clinically significantly during the outbreak of the virus. Researchers reported symptoms worsening of anxiety, depression and suicidal ideation. Some of the factors that were associated with increased suicidal ideation are unhealthy coping skills, strained family relationships and male gender. Alcohol and cannabis use was increased to 15% and 19% respectively. Additionally, people who underwent their follow up during the time of pandemic showed decreasing rates in their symptoms while people who did not continue their follow up via telehealth or in person consultation experienced symptoms worsening.[7] In a study by Gobbi et al,[8] it was revealed that 50% patients with pre-existing psychiatric conditions reported worsening of the symptoms and developed new symptoms which can be ascertained from the addition of some medications or a change in their medication. Some of the risk factors identified were feeling powerless in the situation, not satisfied with the government's actions, less interaction with family members/friends. All these factors increased the worsening of the pre-existing psychiatric conditions whereas people who had optimistic thinking, used social media platforms like earlier and shared their stress with their family/friends reported less worsening of the symptoms.

The worsening of the symptoms could be linked to the negligence regarding social isolation and governmental guidelines which led to increase in the disturbances in sleep quality, PTSD symptoms, anxiety and depressive symptoms.[9] A study done by Rheenen et al.[10] explored the status of mental wellbeing of patients with a mood disorder during the covid-19 pandemic. The data was collected from 4,459 respondents through an online survey. The respondents with a self-reporting mood disorder were n = 1292 and respondents having a negative history of any mental disorder were n = 3167. The participants filled the questionnaires that were attached i.e. depression anxiety stress scale (DASS-21), Positive and Negative Affect Scale. There were also items which assessed the concerns related to COVID-19 pandemic and Covid-19 related changes in personal situation, perceptions and behavior. The key findings of the study include a) the symptoms of anxiety, stress and depression were more prevalent in people with the mood disorder as compared to people without mental disorder. b) the level of anxiety was more alarming in patients with bipolar disorder than in patients with depression. c) increased level of depression in men with bipolar disorder. d) Unemployment, instability and financial issues were the main concerns of participants with bipolar disorder.

Reduced quality of life had been reported by anxiety patients which was attributed to social distancing, reduced social contact and lockdown. Qualitative analysis has revealed certain themes which are a) older adults were worried that they might get infected by the virus, b) older adults with MDD were resilient in response to the stress of social distancing as they had earlier learned the coping strategies to reduce stress. c) The patients reported

increased quality of time with their loved ones. d) The quality of life came out to be reduced. e) Participants were unhappy about the mishandling of the situation by the ruling government.[11]

Restrictive measures were found to have detrimental effects on the symptoms of anxiety as reported by 40% of the patients. Conditions which involved a 'trigger' such as obsessive-compulsive disorder were found to be more impacted by the covid-19 pandemic. However, the anxiety symptoms improved in such conditions and these improvements were attributed to their awareness of the mental health support, such patients knew from where they could get the required help.[12] A study conducted by Meaklim et al[13] investigated whether there existed a difference in the levels of stress, anxiety and depression in response to covid-19 between individuals having pre-existing insomnia, post covid-19 insomnia symptoms and no symptoms of insomnia at all. The results of the study indicated that a) as compared to group with no symptoms of insomnia, both the groups recorded increased levels of stress, anxiety and depression at the initial phase of pandemic. b) People with pre-existing and post pandemic insomnia symptoms had increased level of suicidal ideation. c) People with post-pandemic insomnia symptoms reported higher levels of stress, anxiety and depression as compared to people with pre-existing symptoms of insomnia in spite of having similar symptoms of insomnia. Buneviciene, et al[14] explored the correlation between people with pre-existing conditions and self-perceived health with the risk of mental health vulnerability in the times of covid-19 pandemic. It was found that 36% of the participants had a pre-existing diagnosis and 5% among them perceived their health to be bad or poor. The risk of developing depression, anxiety, PTSD symptoms and fear of covid-19 was positively correlated with having a pre-existing condition and poor self-perceived health. In a cross-sectional study conducted by MacKenzie, et al[15] explored the effect of pandemic on Health care workers with a pre-existing psychiatric diagnosis. 16 respondents with an age range from 27-52 had a pre-existing psychiatric diagnosis. All the respondents were asked to fill an online survey which included questions pertaining to socio-demographic details, history of previous psychiatric diagnosis, sources of stressors and scales like PHQ-8, PCL, PSS and GAD-7. The findings of the study are a) the symptoms of the HCW had exacerbated and pandemic affected their mental health b) their mental health was affected because of seeing death every day and getting less social support.

The analysis of the above studies depicted that people with pre-existing affective and anxiety disorders were greatly affected by the pandemic. Their symptoms deteriorated due to governmental measures such as social distancing and quarantine, fear of contracting the virus, and inaccessibility of mental health services.

Covid-19 and Pre-existing Obsessive Compulsive disorders

Marked changes have been noticed in the severity of OCD symptoms about 13.33% during the quarantine period. Some of the factors identified by the researchers with the worsening of the OCD symptoms are, participants who lived with their parents in the same house during the quarantine, unemployment/remote working and lastly who had fear of contamination as a prominent OCD symptom. Furthermore, catastrophic information provided by the media houses, TV/radio, social media platforms together with hygiene guidelines promoted have proven to be stressful for people and specifically for people with pre-existing contamination symptoms.[16]

A longitudinal study of three Dutch case-control cohorts conducted by Pan et al[17] was carried out in order to investigate the impact of COVID-19 on the mental health of people with a diagnosis of mental disorder and without and the extent to which people were positively able to cope. Another aim of the study was to see if there were any significant changes in the symptoms of depression, anxiety and OCD. A sample size of 1181 participants with a pre-existing diagnosis and 336 without any mental health disorder were included. The participants were required to complete an online questionnaire which had questions based on impact of COVID-19 on mental health, fear of COVID-19, Coping styles combined with questions from 4 validated scales which assessed symptoms of depression, anxiety, worry, loneliness. The results of the study indicated that people with severe mental illnesses had faced inimical impact on their mental health due to the spread of the virus and their coping was poor.

Though the pandemic has not led to increased symptom severity compared with pre-pandemic levels. On the other hand, people without any pre-existing diagnosis had a more negative impact on their mental health.

The psychopathological consequences of pandemic among patients with obsessive-compulsive disorder (OCD) were found to worsened as many started to experience new obsessions and compulsions and increased repetitive behaviors, internet checking, avoidance behaviors and lastly sleep disturbance. However, it was also evident that past obsessions were not present before the pandemic relapsed. The plausible explanation for old obsessions to relapse could be the increased idle time.[18] A case report by Sahoo, et al[19] the participant's condition before the pandemic was stable and he was doing well on medications as well. When the participant was repeatedly watching and listening to the news on the televisions and social media platforms pertaining to all the hygiene tips, covid-19 virus, how it spreads and precautions necessary to curb the virus, he started being more worried and restless. Within a span of a few days, his OCD symptoms started to worsen which led to impairments at the workplace.

Young people with mental disorders have a high rate of fear and worrying behavior related to pandemic i.e., 90.4%. Increased level of fears and worrying behavior can be suggestive of OCD symptoms. As per the findings reported by Khan, et al[20] symptoms of people with a pre-existing diagnosis of obsessive-compulsive disorder increased as they scored higher on Covid-19 inventory.

The above studies reveal that the symptoms of OCD worsened due to fear of contamination, misinformation and catastrophic news, unemployment, increased spare time and lastly excessive worry for oneself and loved ones.

COVID-19 and pre-existing Post-TraumaticStress Disorder

A study conducted by Ting, et al[21] investigated the symptoms of PTSD and Depression in response to Covid-19 in psychiatric patients. 193 participants above the age of 16 participated in the study. All the participants filled up a questionnaire which included questions pertaining to the demographic details, covid-19 outbreak response. The survey also included Patient Health Questionnaire (PHQ-2) and Impact of event-scale revised (IES-R). The analysis of the data reveals the following findings a) about 45% of the participants with a history of a psychiatric disorder had PTSD and depressive symptoms as a response to the pandemic b) Social isolation and cues of hypervigilance associated with the upsurge of covid-19 was found to be a predictor of PTSD symptoms and lastly c) variables like age, gender, exposure to catastrophic news and unemployment were not the predictors of the PTSD and depressive symptoms.

In a study done by Murphy et al[22] investigated the effects of covid-19 and restricting measures in veterans having a pre-existing mental health issue. 1092 respondents participated in the study who were asked to fill an online survey consisting of standardized scales such as CMDS, GHQ-12, PCL-5, DAR-5, AUDIT, perceived social support questionnaire and questions pertaining to social demographic details, alcohol use and mental Health. The findings of the study reveal that 69.3% of the symptoms of common mental disorders and 65% of the symptoms of PTSD worsened. Along with these, anger issues and alcohol intake increased. The factors identified for the worsening of the pre-existing symptoms were covid-19 stressors and lack of social support.

Psychological reactions of patients with Severe Mental Illnesses

There are some studies that suggest that people with severe mental illnesses were more affected by the pandemic as compared to other diagnoses as there was lack of social support and stressful environment. In a study done by Blanco et al,[23] the authors compared the psychological reactions of patients having severe mental illnesses with common mental disorders and healthy controls. The sample size of the three groups was SMI (n=125), CMD (n=250) and HC (n=250). Spanish versions of DASS-21 and Impact Event Scale were used in order to collect the data. Statistical analysis performed on the data revealed that people with severe mental illness were more anxious, stressed and depressed as compared to the other two groups. Another finding of the study was that people were more worried and stressful who had the symptoms of COVID-19 and were not married.

A study conducted by Muruganandam et al[24]

concluded that about 73% of the patients did not report having any anxiety or fear of transmission of the virus. This could be attributed to a lack of knowledge/information about the virus. And lastly, patients who lacked social support reported higher levels of distress.

COVID-19, Resilience and Adaptability

While there are studies revealing the negative impact of covid-19 pandemic on mental health in patients with pre-existing psychiatric conditions, some studies point out that this vulnerable population had been resilient in the face of pandemic. The plausible explanation that has been given for such resilience is that the habits of such patients came into alignment with the concept of quarantine. Secondly, the quarantine period might have helped them in forming a structured routine thereby giving them a preferable setting and a sense of safety. Some considered the quarantine period as a golden opportunity to spend quality time with family.

The findings of the study reveal that there were no significant changes in the severity of the symptoms in people with pre-existing psychiatric diagnosis. In fact, in the face of pandemic this vulnerable population has shown to be resilient. Improved well-being was noted particularly in females as their engagement in social activities increased. They had to spend less time alone in the pandemic which contributed to their overall well-being. There was also an increase in the substance use, but the examinations of the study could not reveal the factors associated with it.[25] The data of a study suggests that people who had a pre-existing diagnosis gave almost similar reactions as their friends/family members and coped with the stress of the pandemic well. Only a small percentage of the sample experienced more distress. In 5.4% of the sample, the stress of the pandemic made the symptoms worse or the patients went onto relapse. As compared to patients with Major depressive disorder, the symptoms of the patients with obsessive compulsive disorder had a higher rate of symptom worsening. The study concluded that patients with pre-existing psychiatric disorders gave psychological reactions and adapted in the similar ways as their friends and family members. Only a small group of the sample exhibited symptom worsening and relapse which shows that in the times of uncertainty and stress patients showed resilience.[26]

Studies on past epidemics such as SARS CoVA-1, Ebola and MERS as well suggest that there had been serious effects on mental health. The epidemics, pandemic and natural disasters are likely to have serious psychological effects on the general population, people with a pre-existing psychiatric diagnosis and health care workers. People with pre-existing psychiatric disorders have poor coping strategies and unhealthy thinking styles which apparently puts them in a more vulnerable position and are more likely affected than the general population. Factors such as fear and uncertainty have been identified to affect mental health both in the past and current studies.

Discussion

Covid-19 pandemic has the capacity to cause detrimental effects on mental health. Only a small proportion of studies have focused upon patients with a pre-existing diagnosis, a population considered most vulnerable and at increased risk. Higher levels of stress and prolonged anxiety during the pandemic can contribute to the onset of a mental disorder. Prolonged cortisol levels preceding sustained exposure to stress can lead to reduced negative feedback circuit which modulates the stress responses and changes in functional brain connectivity networks that are associated with the psychopathology of depression. Therefore, the stress of social isolation, financial issues and poor relationships can trigger the onset of depression.

The governmental measures have catastrophic outcomes such as separation from friends/family, loss of liberty and feelings of uncertainty.[27] Some research suggests that these measures have increased loneliness and reduced social support which are risk factors for people with pre-existing mental health conditions.[28] Along with the measures, many governments released guidelines regarding how to practice good hygiene, social media was flooded with information on maintaining good hygiene and popular celebrities prompted people to wash hands frequently. Such information might be effective in dealing with the virus but it may have also contributed to symptom worsening in psychiatric patients. During the quarantine period, news and information had been circulated via T.V., radio and different social media platforms focusing more on the mor-

tality rate due to the spread of the virus which contributed to a fear of being infected by the virus and fear of losing loved ones. Therefore, such fears contributed to the symptoms of depression, anxiety, stress, worry and overall well-being of the people around. Another factor adding on the pandemic stress could be physical inactivity/sedentary lifestyle which further escalated symptoms of depression and anxiety. As physical inactivity could lead to poor self-esteem, decreased quality of life and body image issues.

Expressed emotion refers to the attitude of the family members/caregivers towards the illness of the patient which is often observable in their remarks, comments and behavior towards the patient. Negative expressed emotions can be a great risk factor for patients who had to live with the caregiver having a negative attitude towards the illness. Another important factor that needs to be taken into account while talking about the effect of pandemic on mental health is that patients discontinued their follow-up sessions due to reduced mental health services, unavailability and a complete shift to telehealth/tele-psychiatry. Results of various researches have indicated that patients who took their follow-up sessions during the quarantine period were less affected by the stress of the pandemic.

Conclusion

Looking at the nature of covid-19 pandemic and its ramifications, a lot of mental health issues are moving up on scale. The services of mental health professionals are needed more than ever now therefore there should be a continuity in the mental health care services. Mental health professionals can take up a combined approach of tele-counselling and in-person consultations thereby, encouraging the patients to maintain a continuity in follow-up sessions.

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Review Article

Gendered impact of violence associated with COVID-19 pandemic and its mental health consequences

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Introduction

The novel coronavirus disease 2019 (COVID-19) pandemic has wreaked havoc across continents with unprecedented physical and mental health consequences. Globally the pandemic has posed a massive strain on the healthcare infrastructure of the developing as well as the developed nations, mainly because of the rapid upsurge of hospitalisations and death. But besides the increased health morbidity and mortality, the COVID-19 pandemic has also imposed unprecedented psychosocial strain on societies where it transformed this disease from a public health crisis to a worldwide humanitarian crisis. The nationwide lockdowns imposed to curb the spread of the disease and bolster health care responses systems, had the unintended adverse consequences of restricted mobility, isolation, sudden unemployment, lack of access to basic necessities, and financial crisis.[1] The overwhelming surge of information and COVID-19 related misinformation circulated through internet and social media, which has now been termed as an "infodemic"[2] has also triggered a wave of paranoia, fear of contagion and health anxiety which has further exacerbated the feeling of psychological and social unrest in communities across the world.[3] A culmination of the psychosocial stressors engendered by the COVID-19 pandemic has been an upsurge of incidents of violence, especially at interpersonal and familial dominance and specifically directed towards women.

Data from across the globe indicates that lockdowns imposed to curb the spread of COVID-19, have led to an unprecedented increase in women's experiences of domestic and intimate partner violence.[4] The rise in domestic violence, predominantly perpetrated against women and children has been termed a "Shadow pandemic" by the Executive Director of UN Women[5] to draw greater attention and focus on the issue.

Violence in varied forms whether interpersonal or societal is a pervasive phenomenon across cultures. Since violence at an interpersonal; as well as societal level, has been inextricably linked with existing socio-politico-cultural as well as economic variables, therefore violence related to the psychosocial crisis related to the COVID-19 pandemic requires analysis primarily from a psychosocial lens, to delineate the factors that lead to its emergence and perpetuation.

Furthermore, acts of violence have also been perpetrated in the context of growing social stigma and discriminatory behaviours against anyone perceived to have been in contact with the virus. Therefore, healthcare staff, patients, health care providers, even airline workers, and their family members have experienced attacks due to the wrongful belief that they have become vectors of contagion in the community. Since women constitute 70% of all workers in the health and social sectors and serve the frontlines of the COVID-19 response, the pandemic has placed them at greater threat for increased risks of infection as well as targets of violence directed against healthcare personnel.[6]

In this article, we have reviewed the socio-psychological aspects of violence during the COVID-19 pandemic and discussed its inequitable

gender-based impact and mental health consequences. Moreover, based on existing literature we have tried to highlight the gender-responsive measures which can be utilized to transform existing public health and economic models related to pandemic preparedness.

Pandemics and violence: Historical and sociological context

Outbreaks of new diseases have been shown to pose severe social strains on cultures and communities, testing its ability to assimilate novelty and providing a striking visual affirmation of "something gone terribly wrong in the wider social sphere".[7] The novelty and 'mysteriousness' of disease trigger extremes of insecurity and fear consequently leading to scapegoating and often violence directed to specific communities. During the plagues of the sixteenth and seventeenth centuries, a wide variety of insiders and outsiders from high-ranking officers and doctors to the lowest levels of health workers – plague cleaners, cartmen, and gravediggers were singled out as plague-spreaders and dealt with discrimination and violence.[8,9] Similarly, in Europe and America, cholera set off waves of social violence against doctors, hospital workers, and government officials in 1831–32, which continued to provoke hate and collective violence in the subsequent outbreaks.[10]

While history is replete with incidents of paranoia, discrimination, and "social violence" across cultures and nations, the differential effect of gender as a social variable is largely missing in these narratives. Overlapping the Great Influenza epidemic, on the eve of the First World War, accounts of the outbreaks of sexually transmitted diseases reported a gender-based pattern of discrimination. Young women in the United States were given the blame for a rise in venereal diseases that supposedly threatened the country's war-readiness and the vice squads rounded up girls for coerced medical surveillance that involved painful examinations.[11] Previous literature related to the role of gender as a social variable in studying disease outbreaks is available from the SARS, Ebola, and Zika outbreaks. It may also be noted that the incidents of intimate partner violence (IPV) and gender-based violence (GBV) were found to increase globally during the Ebola (2014) and the Zika (2016) outbreaks.[12] Evidence from the cholera epidemic in Haiti (2010) and the Ebola outbreak in West Africa (2016) demonstrated that such public health crises have a significant gendered impact and "place a three-fold caregiver burden on women and girls" by firstly exposing them to higher risks of infection, secondly with lower access to treatment services, and thirdly through higher degrees of physical, socioeconomic and emotional distress.[13]

COVID-19 and domestic/intimate partner violence

Since the imposition of lockdowns, nations across the globe have reported a pervasive and alarming increase in rates of domestic and intimate partner violence especially directed towards women.[14,15] The pandemic and the ensuing lockdowns manifested domestic violence as a vicious cycle for women irrespective of their caste and class and were recognized as a significant factor that served to further disempower and marginalize women. Chakraborty[16] has described how women are likely to suffer various forms of oppression during the COVID-19 pandemic due to their subordinate position to their male counterparts within the gender hierarchy and how during the pandemic, for women such forms of subordination was followed by socio-economic uncertainties resulting from the economic shutdown, loss of jobs, and labour oppressions.[16]

With the combination of increased tension, stress, and confinement in the household during times of crisis, women were locked down within the lockdown with absolutely no space to be able to complain to go to someone.[17,18] In the Indian context, a 2.5 rise since the lockdown in rates of intimate partner violence has been reported by the National Commission of Women.[19,20]

Some of the significant factors associated with IPV/GBV during the COVID-19 are presented below:

Factors associated with gender-based violence during COVID-19

Pre-existing vulnerability: The pre-existing vulnerability that subjects women and girls to sexual and gender-based violence was exacerbated during the pandemic. Consequently, the subjugation and marginalization which often is *normalized* by male

operated social and cultural constructs got further intensified owing to various psychosocial stress and culminating in violence directed towards women.[21]

Lack of physical space: Due to the COVID-19 lockdown, many women were working at home and also working from home. Trapped within the confines of the domestic space, women were at an increased risk of physical and mental abuse at the hands of their male partners, their virility emascu-lated by uncertainties post the lockdown, lack of social life, physical and social restrictions, and rising stress due to the impending economic crisis.[16]

Despite seen as a refuge from the contagion, the private sphere during the lockdown proved itself far from an abode, conveying "simple pleasures, familial togetherness, privacy and freedom, a sense of belonging, of security, a place to escape from but also to return to, a secure memory, an ideal".[22]

Lack of psychological catharsis: One of the significant adverse effects of self-quarantine was that many women were isolated at home with abusive spouses. In a study conducted by CARE, a non-profit international aid organization, the investigators found that while almost nobody was spared from the anxiety, worry, and overall emotional fatigue of the coronavirus pandemic, women were almost three times as likely as men to report suffering from significant mental health consequences (27% compared to 10%), including anxiety, loss of appetite, inability to sleep and trouble completing everyday tasks.[23]

Resource constraints: COVID-19 pandemic has overwhelmed the healthcare systems across the globe, which had a detrimental impact on the Sexual and Reproductive Healthcare (SRH) of women as most essential resources had to be diverted towards emergency responses. Also, large-scale disease outbreaks exacerbated the lack of reproductive and sexual health services in resource-constrained areas.[6]

Lack of social networks: Social support is an important coping mechanism during a crisis.[24] However, the attempts to minimize the spread of COVID-19 through social distancing during the pandemic created a negative perception of isolating oneself socially.[24] Such messages impacted women's ability to reach out amidst dwindling structures of support as they were 'locked down' with their partners. Confined in violent homes, women were placed in a scenario where it was difficult to seek any support from the outside world. Jarnecke and Flanagan[25] have highlighted how some perpetrators used the threat of COVID-19 exposure, as a method to coerce the women away from seeking medical or psychological treatment.

Economic hardships & unemployment: The International Labour Organisation (ILO) estimated a loss of 17% of working hours, equivalent to 495 million full-time jobs, in the second quarter of 2020. The data also suggests that the risk to women's employment was 19% more than that to men's.[26,27] According to an analysis by the Centre for Monitoring Indian Economy (CMIE)'s Consumer Pyramids Household Survey (CPHS), at least four out of ten women in India lost their jobs due to the coronavirus pandemic, and an estimated 17 million women were left jobless, in both the formal and informal sectors, between March and April 2020, owing to the nationwide lockdown to curb the spread of novel coronavirus.[17] Economic hardships accentuated women's dependence on their male counterparts which, in turn, heightened the power differentials and social hierarchies contributing to violence directed towards them.

Increased unpaid care duties & household chores: In patriarchal societies, gender roles attribute women to take care of the household responsibilities and engage in caregiving roles that go unremunerated. While women were already doing most of the world's unpaid care work before the onset of the COVID-19 pandemic, emerging research suggests that the crisis and its subsequent shutdown response resulted in a dramatic increase in this burden.[28] The United Nations[29] confirmed that as institutional and community childcare was not accessible for many families during the lockdown, unpaid childcare provision fell more heavily on women, which constrained their ability to work.

Dually disadvantaged population: Interaction of gender with other psychosocial vulnerabilities

Throughout history, pandemic-related health crises have been associated with the stigmatization and "othering" of people. Fear of contagion and misconceptions related to COVID-19, primarily fuelled by an epidemic of misinformation circulated and reinforced through social media and the internet has triggered a wave of paranoia and mistrust against

those suspected to be "spreaders" of this disease. Few population groups that were most impacted are described as follows:

(a) *Health care workers;* Amid growing mistrust, health care providers increasingly came to be seen as a risk to communities. The International Committee of the Red Cross (ICRC) reported 611 incidents of violence against health-care workers, patients, and medical infrastructure concerning the COVID-19 pandemic, between February 1 and July 31, 2020, out of which 67% of incidents were directed at health-care workers. Similar incidents in India resulted in the announcement by the Central government to make it a non-bailable offense punishable by seven years of imprisonment along with a fine of up to Rs 5 lakh.[30] It may be noted that women constitute 70% of all workers in the health and social sector serving in the frontlines of the COVID-19 response.[31] Within the context of the pandemic, female health workers were found to be exposed to multiple forms of violence at their work-place, on the street, and even in their homes due to stigmatization and unsympathetic reactions driven by the fear of becoming infected. A greater prevalence among women health workers, of episodes of work-place violence and harassment, especially from patients, clients were also observed in Argentina and also in Mexico, where since the start of the COVID-19 pandemic, violence was spread to hospitals with the public blaming the health workers, particularly nurses, for disseminating the disease.

(b) *Domestic/Informal sector workers*: Although more people staying at home increased the need for caregiving and housework services, lockdowns due to COVID-19 made it difficult to maintain the same working arrangements as before.[32] The anxieties of employers caused 72% of the domestic workers around the world to lose their jobs, 80% of whom were women.[5] A mini-ethnographic survey over seven to eight weeks, which explored how a pande-mic induced lockdown affected female domestic workers in India reported an increased incidence of abusive environments from the female domestic workers in their respective homes so much so that they were desperately looking to return to work despite the risk of getting infected or breaching the enforced lockdown restrictions.[33]

(c) *Migrant Workers*: Migrant workers, from marginalized ethnic groups, involved in household and personal care experienced serious ill-effects of the pandemic on their economic conditions and health. Migrant care centers, shelters, and immigration detention centres faced a shortage of essential supplies, a lack in health services, and presented overcrowded conditions thereby creating higher risks of infection. The general fear among the public related to the Coronavirus, along with xenophobia, specifically put at risk the safety of migrant women and increased the likelihood of social and sexual violence directed towards them and also restricted their access to justice resources and sexual and reproductive health services.[34]

(d) *Sex workers* - COVID-19 imposed greater degrees of social stigmatization on sex-workers (a majority of whom are women, transgenders), that build on prejudiced notions of sex workers as vectors of contagion, besides unemployment and financial insecurity like other daily wage earners. Since sex work continues to be both criminalized and highly stigmatized, sex workers faced severe difficulties in accessing financial support offered through the government social protection schemes. This made them further vulnerable to physical and sexual violence, harassment, and exploitation.[35]

(e) *Transgender community* - Countries such as Panama, Peru, and Colombia (though only in Bogota) had legislated policies to enforce physical distancing by restricting the mobility of its citizens based on binary understandings of gender and associated norms i.e., on alternating days women were allowed to access essential services and on

the other days, men. Such legislation was largely discriminatory for communities that existed outside of hegemonic understandings of binary gender identities. The implementation and policing of such laws also resulted in direct violence perpetrated against transgender communities as documented by videos, photos, and comments circulating on social media.[36]

(f) *Elderly population:* Another section of the population that was severely impacted by the COVID-19 pandemic is the elderly population. The pandemic not only impacted their daily routines, access to medical care but also their ability to stay socially connected. Elder abuse and neglect have been widely recognized as serious public health and humanitarian concern even before the COVID-19 pandemic worldwide, and while there is a lack of age-disaggregated data, the United Nations in one of their recent reports has recognized the need for policy measures to incorporate the rights of the elderly population, especially older women, whose physical and financial dependence on family members for their daily survival and care often make them vulnerable to abuse.[37]

(g) *Homeless population:* Tarique[38] noted the 'normalization of humiliation' for the urban poor, especially the homeless, who are considered as the most invisible inhabitants in urban spaces. While, there is a dearth of studies that has systematically investigated the gendered impact of COVID-19 in the homeless population, a recent study from Canada conducted by the Women's National Housing and Homelessness Network, has demonstrated that women experiencing homelessness are at greater risk of sexual violence and are more likely to fall through the gaps in support systems.[39]

Gendering the mental health consequences of violence

Avino[40] reported that during the lockdown, one-third of women experienced anxiety and depression, while in men, these symptoms accounted for about 17%. They observed that the impact of lockdown on the young population (18–35 years), and especially among women, was worse than on the older population. The survivor was likely to suffer from anxiety, trauma, and a range of health problems including chronic pain, gastrointestinal issues, sleeping disorders, mental health problems, and reproductive health consequences.[41] Anand[42] affirms manifestations of severe psychological shock, denial, withdrawal, confusion, signs of numbing and fear, symptoms of serious depression, suicide ideation, suicide attempts, chronic fatigue and tension, intense startle reactions, disturbed sleeping and eating patterns, nightmares, intrusive memories of abuse, avoidance of reminders of abuse and hyper arousals. Some women may also resort to substance abuse.

Among the health workers too, mental health consequences have been reported. During the COVID-19 pandemic, the high proportion of female health-care workers makes these women at occupational risk of poor mental health outcomes. A survey in frontline health care workers responding to COVID-19 found that the majority reported symptoms of depression (81.0%), anxiety (76.5%), poor sleep quality (84.7%), and insomnia (73.7%) with 58.9% suffering from nightmares. Logistic regression showed that being in contact with COVID-19 patients, age, gender and the consumption of sleep medication during the mandatory social isolation were relevant predictors for insomnia, anxiety, and depression. Clustering analysis classified healthcare workers into three groups with healthy/mild, moderate, and severe outcomes. The most vulnerable group was composed mainly of younger people, female, non-medical staff, or physicians in training.

Garnering gendered support: Few recommendations

Gender analysis conducted by CARE International and the International Rescue Committee showed that countries' COVID-19 responses generally fail to adequately account for the gender dimensions of risk, vulnerability, resources, and coping capabilities.[4] Therefore, the first step to tackle the issue of rising gender violence in the times of pandemic is to duly acknowledge issue which can enable better planning. Presented below are few

recommendations for policymakers with respect to dealing with gender-based violence during COVID-19.[2,44]

A) **Need for gender-disaggregated data on COVID-19**
- Gendered disaggregated data concerning collecting evidence to create more equitable solutions to the disproportionate impacts of COVID-19 and responses on women and girls and also sharing of good practices and lessons is crucial. In the long run, it can be used and mainstreamed into the outbreak and emergency response planning and preventive measures by the governments.
- In this regard, UNDP and UN Women's launched COVID-19 Global Gender Response Tracker in September 2020 that shows the social protection and jobs response to the pandemic has largely overlooked women's needs. It includes over 2,500 measures across 206 countries and territories, specifically analyses government measures with a gender lens that tackle violence against women and girls (VAWG), support unpaid care, and strengthen women's economic security.

B) **Ensuring women's access to information and participation**
- Ensuring women's equal representation, meaningful participation, and decision-making power in national COVID-19 response and recovery planning, implementation, monitoring and evaluation, and in governance and decision-making processes regarding public health and emergency responses moving forward.
- Identifying with communities representing the wide and diverse experiences of women and girls, the needs of the most marginalized, and ensure they are prioritized in COVID-19 response plans and budgeting.
- Expanding women's access to social assistance programs.

C) **Gender perspective in all policy responses**
- Incorporating a gender perspective in all policy responses to COVID-19, as social norms and cultural patterns can lead to a differentiated impact for men and women. Taking targeted action to avoid exacerbating existing inequalities. Specifically accounting for the circumstances of women and girls, including based on sex, sexual orientation, gender, gender identity, HIV status, race, age, caste, class, religion, disability, indigenous identity, and immigration status, in all COVID-19 responses.
- Launching gender-sensitive public campaigns and strengthening advocacy to prevent and contain the spread of the virus.
- Media can play a significant role in promoting gender-sensitive reporting and also report on women's stories and experiences of COVID-19. Van Gelder et al.[45] emphasize the role of media in raising awareness about the issue of gender violence during the pandemic as well as about the practices that can replace conventional in-person support. These may include offering supportive statements, promoting safety guidelines via advertisements, by stander approaches, and accessing help on behalf of the victim after obtaining consent.

D) **Adopting measures to prevent domestic violence**
- When making preparedness and response plans for the COVID-19 pandemic, inclusion of essential services for violence against women.
- Allocation of adequate resources for services for survivors and identifying ways to make them accessible – particularly in the context of measures to restrict people's movement.
- Exploring the use of telemedicine or digital health to enhance access to support and services for survivors, while ensuring this is safe for them.
- Exploring alternative shelters for women while also ensuring that lockdown measures do not penalize women for seeking support when experiencing violence.

- Ensuring ongoing access to critical health information and commodities such as antiretroviral medicines, condoms and lubricants, modern contraception (including emergency contraception), pre-and post-exposure prophylaxis, other post-rape care, and harm-reduction services such as needles and syringes, opioid substitution therapy, and overdose prevention.
- Strengthening community partnerships and spreading awareness about the importance of reporting incidents of abuse.
- To maintain safety and accessibility for all women and girls, states should provide differentiated services, including multi-month dispensing, community service delivery, and self-care interventions. They can anticipate and address supply chain disruptions, and ensure ongoing compliance with medical privacy regulations in all pandemic responses

Summary and Conclusion

As the COVID-19 pandemic exposes entrenched inequalities and gendered power dynamics, marginalized women and girls are experiencing the greatest health and human rights impacts. Their disparate experience is related not only to the virus but also to the existing discrimination and gender stereotyping; economic inequality; lack of equal access to food, clean water, housing, and health services; and stigma and discrimination based on sex, sexual orientation, gender, gender identity, race, age, caste, class, religion, HIV status, disability, indigenous identity and immigration status.[44]

The COVID-19 crisis provides an opportunity for countries to transform existing economic models towards a renewed social contract that prioritizes social justice and gender equality.[46] Taking a gender lens towards developing responses for the eradication, management, prevention of COVID- 19 can ensure that the voices of women and girls are included from a rights-based perspective.

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Original Article

A Comparative Study of type of Aggression among the Patients of Schizophrenia, Bipolar Disorder Manic phase and Acute Transient Psychotic Disorder

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ABSTRACT

Background: *There is a modest but consistent association between Aggressive behaviour and psychiatric illness. Aggression is defined as threats or harmful actions directed toward another individual and can include threat displays, lunging, growling, snarling, snapping and hiting. Aggression is a behaviour or a disposition that is forceful, hostile or attacking. Research suggests that there is a relationship between mental illness and violent behaviour. The purpose of this study is to compare the type and severity of aggression among the patients of schizophrenia, bipolar affective disorder (manic phase) and acute and transient psychotic disorder and to predict of the risk of violence towards health staff working in psychiatric facilities. Assaultive behaviour of psychiatric patients contributes to significantly to the stigma associated with mental illness.* ***Aim and Objectives:*** *Comparison of type of aggression among the patients of acute and transient psychotic disorder, schizophrenia and bipolar affective disorder (manic phase).****Materials and Methods:*** *This cross-sectional observational study was conducted in Department of psychiatry, on 190 patients and the diagnosis was made according to ICD 10 criteria during.* ***Results:*** *(52.63%) participants were not found to have past history of violence. Mean score of auto aggression were found more in ATPD (6.69) followed by in BPAD mania (3.04) and in schizophrenia (2.80). The difference was statistically significant ($p < 0.05$). Mean score of physical aggression were found to be more in schizophrenia (15.66), followed by in BPAD mania (15.18) and in ATPD (9.69). The difference was statistically significant ($p < 0.001$).* ***Conclusions:*** *The risk of aggression by psychiatric patients must be identified earliest and management of aggression needs to be ensure. Pharmacological and non-pharmacological approaches should be used to treat violent behavior.*

Keywords: *Schizophrenia, Bipolar affective disorder, Aggression, Transient Psychotic Disorder.*

Introduction

There are various terminology of Aggression and Violence: Aggression—A willingness to cause harm, regardless of whether it is exhibited behaviorally and physical harm is sustained. Physical aggression—Motor behaviours that manifest themselves physically in motor action in order to harm others. It must be done with purposeful aim and not by chance. Verbal aggression - Verbal abuse or threats. Violence—Use of physical force with the intent of injuring or harming another person. Dangerousness—Physical aggression is a high-risk situation. Anger - Internally negative feeling state linked to cognitive and perceptual abnormalities. Hostility - Anger and resentment toward people in a variety of situations.[1]

Verbal aggression includes insults, obscene or profane language, or sexual advances; physical

aggression includes hitting, kicking, scratching, pushing, biting, punching, grabbing, pinching, cutting, and stabbing; and verbal aggression includes insults, obscene or profane language, or sexual advances.[2]

Aggression against objects includes slamming doors, scattering clothing, throwing objects, kicking or destroying objects, shattering windows, and lighting fires. Self-aggression includes picking or scratching the skin, pulling hair, pounding the head or objects, minor cuts or bruises, minor burns, mutilating oneself, major cuts, and serious harm such as a suicidal attempt.[3]

Aggressive behavior has been classified into various subgroups:

Impulsive or Premeditated aggression: Impulsive aggression is characterised by a loss of behavioural control and is a hair-trigger aggressive response to environmental provocation. Premeditated aggression, on the other hand, is defined as a planned aggressive attack with no spontaneity or behavioural agitation.[4]

Sanctioned versus Non sanctioned Aggression: Defines on the basis of social acceptance. Rough and tumble play, hunting, spanking, contact sports, police or intelligence service actions, capital punishment, or war are examples of socially sanctioned aggression, depending on culture. Criminal assault, rape, homicide, fratricide, paranticide, infanticide, child abuse, domestic violence, torture, civil unrest, and terrorism are all examples of socially prohibited aggression in most cultures.[5]

Proactive versus Reactive : The actor can be proactive, in the sense that he or she initiates aggression against a target without being provoked, or reactive, in the sense that the actor is reacting to a threat. Instrumental planned, premeditated, cold-blooded, or predatory aggression are all synonyms for proactive aggression. Hostile, affective, defensive, hot-blooded, or impulsive aggression are examples of reactive aggression.[6]

Aggressive behaviour toward oneself and others is a common symptom of schizophrenia. Furthermore, research suggests that self-directed violence and suicidality are common complications in patients with schizophrenia.[7]

Acute and transient psychotic disorders (ATPD) are clinically distinct from schizophrenia; however, there has been very little research on this disorder in low-income countries, where the prevalence is ten times that of more-developed countries.[8]

ATPDs are usually brief and recurrent, whereas schizophrenia is usually chronic and recurrent. When they present acutely for the first time, however, their clinical features are frequently indistinguishable.[9]

Patients with bipolar disorder are more likely to engage in aggressive behavior.[10] Aggression was linked to paranoia and irritability in bipolar disorder, according to a factor analysis.[11]

Aggression was linked to irritability, uncooperativeness, impatience, and a lack of insight in a more detailed study. Following cluster analysis of this data set, four subtypes of mania were discovered, one of which was labelled "aggressive".[12] Aggression was seen with equal frequency in patients with bipolar disorder, whether manic or mixed, in a study.[13] Aggression is thus a feature of bipolar disorder's manic and mixed episodes, develops in the context of irritability, and may be a long-term individual trait.

Psychiatric patients' assaults contribute significantly to the stigma associated with mental illness.[14] These studies show that aggressive behaviour is common in psychiatric practise. There is a clear and consistent link between schizophrenia, psychosis, anti-social personality disorder, and substance abuse and violence, according to research.[15]

Aim and Objectives

A comparison of type of aggression among the patients of acute and transient psychotic disorder, schizophrenia and bipolar affective disorder (manic phase).

Objectives

1. To assess the type of Aggression in the patients of schizophrenia.
2. To assess the type of aggression in the patients of bipolar affective disorder (manic phase).
3. To assess the type of aggression in the patients of acute and transient psychotic disorder.
4. A comparison of type of aggression among the patients of acute and transient psychotic disorder, schizophrenia and bipolar affective disorder (manic phase).

Materials and Methods

This cross-sectional observational study was conducted in Department of psychiatry, on 190

patients admitted inpsychiatry department after taking proper consent and the diagnosis was made according to ICD 10 criteria during period of one year (July 2019 to June 2020).

Inclusion criteria

- All patients of age 15-60 years admitted in Psychiatry ward
- Who fulfilled the ICD -10 criteria for schizophrenia bipolar disorder manic phase,
- Acute and transient psychotic disorder.

Exclusion Criteria

- Patient / close attendant who did not give informed consent.
- Patients suffering from any other neurological disorders or significant physical comorbidity as per detailed clinical history, examination and routine investigation.
- Known case of mental retardation or in pregnancy
- Patients with history of significant schizoaffective disorder, substance abuse or dependence except tobacco.

Instruments of Study

Screening Performa: This includes basic questions regarding the Patient's complains, history details (past, family, personal), history of questions related to the eligibility for determining the inclusion and exclusion criteria.

Modified Kuppuswamy scale: For sociodemographic profile.

ICD-10 (diagnostic criteria): Used for diagnosis of Schizophrenia, bipolar disorder, acute and transient psychotic disorders.

Modified Overt Aggression Scale (MOAS). MOAS is the modified version of the Overt Aggression Scale (OAS), used to characterize observed aggressive behavior. The MOAS has four subscales of aggression (verbal aggression, aggression against property, auto-aggression, and physical aggression against other people). For each subscale, one can score 0, 1, 2, 3, or 4. These scores correspond to no aggression, mild aggression, moderate aggression, severe aggression, and profound aggression for any particular subscale. Furthermore, weights are attached to each subscale. The verbal aggression subscale has a weight of x1; hence, any score on this subscale should be multiplied by 1. Similarly, the subscale against property has a weight of x2, auto-aggression subscale has x3, while the physical aggression subscale has weight x4 attached.

Brief PsychoticRatingScale (BPRSE) A 24-item version of the BPRS has been introduced (BPRS-E). The BPRS-E is a general pathology rating scale consisting of 24 items rated on a 7-point Likert-type scale (1 = not present to 7 = extremely severe). Each item is rated after a semi structured clinical interview, and scores are based on behavioral anchors developed specifically for each point of each item.

The Young Mania Rating Scale (YMRS) is one of the most frequently utilized rating scales to assess manic symptoms.

All consecutive patients admitted in department of psychiatry suffering from schizophrenia, bipolar disorder, acute and transient psychotic disorders (ICD-10) was screened according to inclusion and exclusion criteria and after that, were included in the study. A total 230 patients were screened out of which 190 patients selected in this study after applying inclusion and exclusion criteria. A semi structured pro-forma was used to assess the clinical characteristics through history-sheet and socio-demographic details through modified Kuppuswamy scale.

Statistical Analysis: Data was entered in Microsoft excel have been used to generate graphs, tables etc. and results were analyzed using ANOVA and Statistical software namely, SSPS 23.

Results

Majority of participants were found to be male in schizophrenia (51.56%) and BPAD mania (61.97%) whereas females were found to be majority in ATPD (63.64%). Overall, male (51.05%) were found to be in majority.

Majority of participants were found to be married (58.42%) in total as well as in each group.

Majority of participants in schizophrenia (73.44%) and ATPD (67.27%) do not have family history of psychiatric illness. Whereas in BPAD mania there were equal No. of participants to be found (50.70%), (49.30%).

Majority of participants have past history of violence in schizophrenia (67.19%) and in BPAD mania (64.79%) Whereas in ATPD participants do

not have past history of violence were in majority (80.00%). Overall participants do not have past history of violence were in majority (52.63%).

In present study mean score of verbal aggression were found to be in ATPD (6.76), BPAD mania (6.66) and schizophrenia (5.39). Which was comparatively more in ATPD (6.76). The difference was statistically significant (p value < 0.05).

Mean score of auto aggression were found to be in ATPD (6.69), BPAD mania (3.04), schizophrenia (2.80), Which was comparatively more in ATPD (6.69). The difference was statistically significant (p < 0.05).

The mean score of Aggression against property were found to be in BPAD (M) (9.42), and in ATPD and schizophrenia (7.67) (7.62) respectively. Which was comparatively more in BPAD mania (9.42). The difference was not statistically significant (p > 0.05).

Mean score of physical aggression were found to be in schizophrenia (15.66), in BPAD mania (15.18) and in ATPD (9.69). The mean score of physical aggression in ATPD was less than schizophrenia and BPAD mania. The difference was statistically significant (p < 0.001).

The mean score of physical aggression was found to be more in male patient's schizophrenia (21.33) compared to BPAD mania and ATPD (17.02, 10.65). The difference was statistically significant (p value < 0.05). The mean score of all type of aggression had significant difference in female patients in all three groups. The difference was statistically significant (p value < 0.05).

Discussion

A total of 190 patients were recruited in the study out of which 37.36% (n = 71) were in bipolar affective disorder (mania), 33.68% (n = 64) were in schizophrenia and 28.94% (n = 55) were in acute and transient psychotic disorder.

Sociodemographic characteristics – Overall, males (51.05%) were found to be in majority in our study, which might be attributed to the prevailing gender bias in Indian society (Table 1). Where the illness of a male member is taken more seriously than that of female patient. This finding in the present study also supports the fact that psychiatric hospital services are utilized more by male patients than by female patients. In this study, similar to the studies of Susser E et al[16] and Malhotra S et al,[17] ATPD is reported to be occurring more commonly among females. Majority of participants were married (58.42%) in total as well as in each group. (Table 1). This can be due to strong marriage concept in Indian society with most of them believing that marriage can cure mental illness. Majority of participants in schizophrenia (73.44%) and ATPD (67.27%) were having negative family history of psychiatric illness. However in BPAD (Mania) there were almost half of participants had positive family history (50.70%) (Table 1). Majority of participants were from nuclear family type (73.68%) in total as well as in each group. This could be explained by rapid urbanization of the society which leads to fragmentation of family structure (Fig. 1). Majority of participants were Hindu (96.32%) in each group as well as in total. This is because Hinduism is the most practiced religion in our country therefore they are over represented in the study sample too.

Majority of participants had past history of violence in Schizophrenia (67.19%) and BPAD (Mania) (64.79%) groups. Overall, participants who did not have past history of violence were in majority (52.63%) (Fig. 2). This finding is similar to the study of Tesfalem Araya et al[18] for Schizophrenic patients who had a previous history of aggression were about six times more likely to be aggressive when compared to patients who had no history of aggression. Majority of Schizophrenic participants were from 15 – 30 (48.42%) age group followed by 31- 45 (39.06%), in ATPD majority of participants were from 15-30 (67.27%) age group and in BPAD (Mania) there were no difference between all three age groups. The possible reason for most of the subject in this Study were in 15 - 30 age group could be due to the fact that this age group is the economically productive age group, hence the chances of being exposed to the risk factors are highest at this age group. Majority of participants were from Rural area (79.47 %) in total as well as in each group. This finding in the present study assumes significance where a large proportion of the population live in rural areas. This finding is similar to earlier study by Malhotra et al.[17] Majority of participants were unemployed in schizophrenia (79.69%) and ATPD (52.73%) group whereas in BPAD (Mania) almost half of participants were employed (49.30%). Overall, Majority were unemployed (55.26%). Majority of participants showed distribution in upper

Table – 1 : Distribution of Patients According to Socio-demographics and Diagnosis

		Schizophrenia (n=64)		BPAD mania (n=71)		ATPD (n=55)		Total (n=190)	
		No.	%	No.	%	No.	%	No.	%
Sex	Male	33	51.56%	44	61.97%	20	36.36%	97	51.05%
	Female	31	48.44%	27	38.03%	35	63.64%	93	48.95%
Marital Status	Unmarried	13	20.31%	14	19.72%	21	38.18%	48	25.26%
	Married	29	45.31%	49	69.01%	33	60.00%	111	58.42%
	Separated	22	34.38%	8	11.27%	1	1.82%	31	16.32%
Family history	Present	17	26.56%	36	50.70%	18	32.73%	71	37.37%

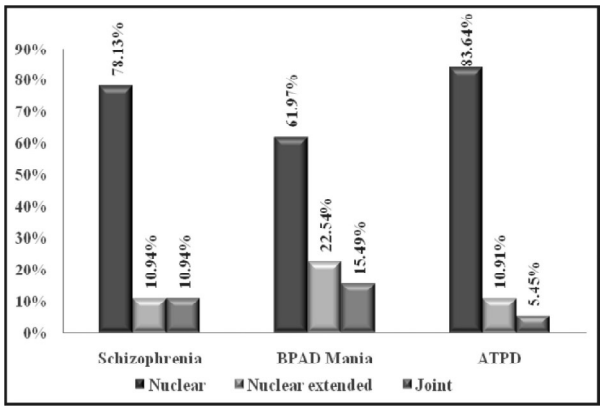

Fig. 1 : Distribution of Patients According to Family Type and Diagnosis Majority of participants were from Nuclear family type (73.68%) in total as well as each group.

Table – 2: Comparison of Aggression Verbal Aggression

	Verbal Aggression (VA)	
	Mean	SD
Schizophrenia	5.39	3.32
BPAD mania	6.66	2.80
ATPD	6.76	2.95
Total	6.26	3.07
P value	<0.05	

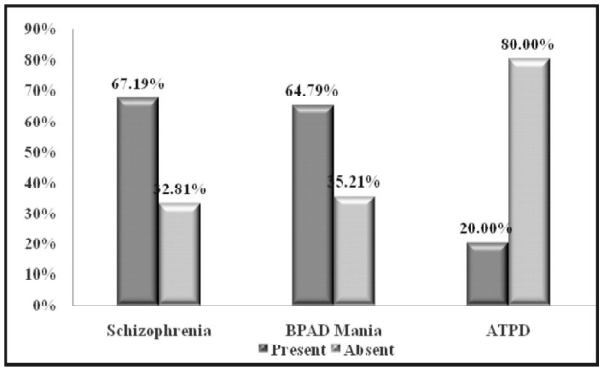

Fig. 2: Distribution of Patients According to Past History of Violence and Diagnosis

lower (60.53%) followed by lower middle (30.53%) Socioeconomic status. Generally, the patients belonging to families from the, literate, and higher socio-economic status, preferred to take treatment from private practitioners or general hospital psychiatric setups. This could the reason that most of the participants of our study belonged to lower Socio-economic status.

In present study mean score of verbal aggression were found to be 6.76 in ATPD, 6.66 in BPAD mania and 5.39 schizophrenia. The difference among the groups was found to be statistically significant ($p < 0.05$) i.e verbal aggression was significantly more in ATPD (Table 2). This finding in schizophrenia for verbal aggression is contrary to the study of Hodgins et al[19] in which verbal aggression was present maximum in schizophrenia compared to other aggression.

In present study mean score of auto aggression were found to be 6.69 in ATPD, 3.04 in BPAD (Mania) and 2.80 in schizophrenia. The difference among the groups was statistically significant ($p < 0.05$) i.e. auto aggression was significant in ATPD patients (Fig. 3). In our study, auto aggression in schizophrenia was found to be least when compared with other two diagnostic categories which is contrary to the finding of Tillman Steinert et al[20] study that auto aggression was a frequent symptom of schizophrenia.

The mean score of physical aggression were found to be 15.66 in schizophrenia, 15.18 in BPAD (Mania) and 9.69 in ATPD. The mean score of physical aggression in ATPD was significantly ($p < 0.05$) less than schizophrenia and BPAD (Mania) groups (Fig. 4). The mean score of physical aggression in schizophrenia was more than other two groups which is similar to the finding of Steinert et al[20] study. Physical aggression in the form of makes

Table – 3: Comparison of Aggression Against Property

	Against Property (AP)	
	Mean	SD
Schizophrenia	7.62	6.313
BPAD mania	9.42	5.891
ATPD	7.67	5.481
Total	8.31	5.955
P value	0.14	

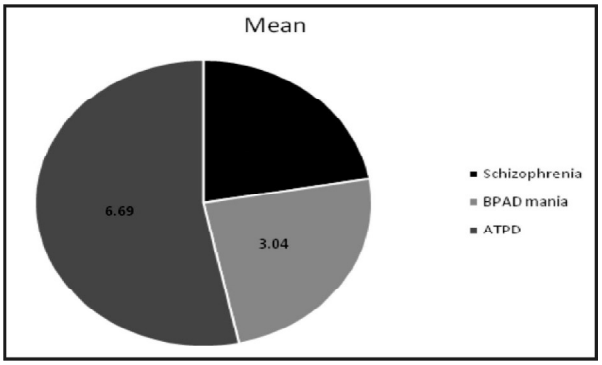

Fig. 3: Comparison of Aggression Auto Aggression

menacing gestures, swings at people, grabs at clothing, strikes, pushes, scratches, pulls hair of others, attacks others, causing mild injury (bruises, strain, welts etc.), causing serious injury. The mean score of physical aggression was found to be more in male patients of schizophrenia (21.33) as compared to BPAD (Mania) (17.02) and ATPD (10.65).

measure the frequency or severity of the psychotic symptoms that elicited aggressive behaviour. The scale used in our study measured aggressive behaviour only in last seven days. We did not measured number of aggressive episodes in past. We measured only presence and absence of aggressive episodes.

Table – 4: Comparison of Patients According to Sex and Type of Aggression Among Groups

	Male			ANOVA	Female			ANOVA
	Schizophrenia	BPAD mania	ATPD	P value	Schizophrenia	BPAD mania	ATPD	P value
Mean	6.48	7.00	7.25		4.23	6.11	6.49	
VA				>0.05				<0.05
SD	3.44	2.61	3.34		2.79	3.07	2.72	
Mean	10.48	10.09	10.15		4.58	8.33	6.26	
AP				>0.05				<0.05
SD	6.12	5.96	5.57		5.01	5.72	4.97	
Mean	2.42	2.75	7.65		3.19	3.52	6.14	
Auto A				>0.05				<0.05
SD	4.74	4.59	5.71		6.79	5.18	6.26	
Mean	21.33	17.02	10.65		9.61	12.19	9.14	
PA				<0.05				<0.05
SD	43.26	12.35	7.23		10.98	11.87	7.39	

The mean score of all type of aggression had significant difference in female patients among three groups (Table 4). These findings were contrary to study of Arango et al[21] in which verbal aggression were present maximum in male and female patients of schizophrenia. The auto aggression was present least in male and female patients of schizophrenia. These findings were similar to the study of Arango et al.[21]

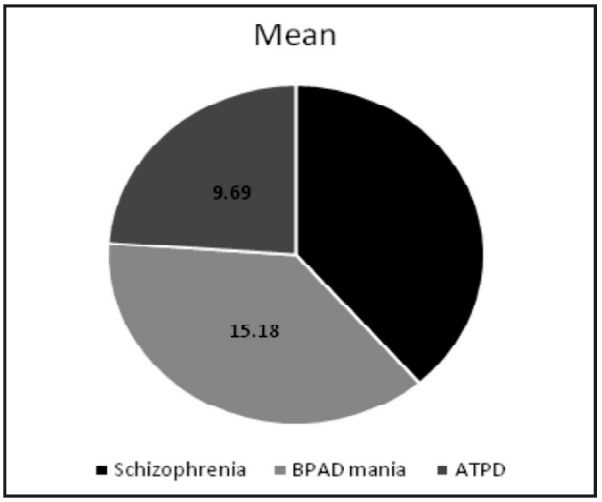

Fig. 4: Comparison of Aggression Physical Aggression

Limitations

It was a cross-sectional study design. In this study temporal cause-effect association between all sociodemographic factors except gender and aggressive behaviour were not studied. We did not

Conclusions

These results have important implications for predicting and thereby reducing inpatient aggression. The risk of aggression by psychiatric patients must be identified earliest and management of aggression needs to be ensure. Pharmacological and non-pharmacological approaches should be used to treat violent behavior. Treatment adherence is very important for successful management of violent behavior.

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Original Article

A study of socio-demographic profile and psychiatric morbidity among children and adolescents attending psychiatry outpatient department (OPD)/child guidance clinic (CGC)

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ABSTRACT

Background: *There are 472 million children under the age of 18 years, representing 39% of the India's total population. Hence, in such a large population of children mental health is an essential component of overall health and its burden is to be recognized.* ***Aims and Objectives:*** *To study the socio-demographic profile and assess psychiatric morbidity among children and adolescents attending psychiatry Outpatient Department (OPD) / Child Guidance Clinic (CGC).* ***Materials and Methods****: Eighty children of age 10-16 years attending psychiatry OPD / CGC were assessed. Socio-demographic details were recorded by using a specially designed semi structured proforma to capture socio-demographic data. Further all the participants were screened by using Paediatric symptom checklist-35 and diagnoses were made as per International Classification of Diseases 10th edition criteria.* ***Result:*** *Out of 80 participants, majority (n=44, 55%) were boys. Maximum children and adolescents belonged to nuclear type families (n=52 ,65%), were residing in rural areas (n =45, 56.25%) and going to school (n = 70, 87.5%). Family history of psychiatric illness was present in 17.5% case. Depression (n = 25, 31.25%) and anxiety disorder (n = 18, 22.5%) were the most common diagnosis found in our study. Among girls, the most common diagnosis was conversion disorder (n = 10, 22%) whereas among boys depression (n = 15, 42%) was the most common diagnosis.* ***Conclusion****: The maximum number of the children and adolescents in our study presenting to psychiatric OPD/ CGC were boys, belong to rural background, and were going to school. The most common psychiatric morbidity observed among the participants was depression followed by anxiety disorder.*

Keywords*: Child and Adolescents, Psychiatric Disorders, Sociodemographic, Child Guidance Clinic*

Introduction

There are 472 million children under the age of 18 years, representing 39% of the India's total population.[1] According to literature, approximately 10-20% children and adolescents are affected by psychiatric problems annually for those aged 5 years and above and psychiatric morbidity accounts for 5 of the 10 leading causes of disability in this age-group.[2]

Mental health in young people is an essential component of overall health and its importance is being recognized. A large number of children and adolescents are getting disabled from various mental illnesses worldwide, seen in many studies.[3]

Mental health of a child may be affected by several factors such as environmental factors, life events like adverse family conditions, maternal separation or deprivation, sibling birth, divorce of

parents, bereavement, physical handicap, urbanism and maternal depression etc. Additionally, psychiatric morbidity profile of children and adolescents may show different needs and priorities.[4]

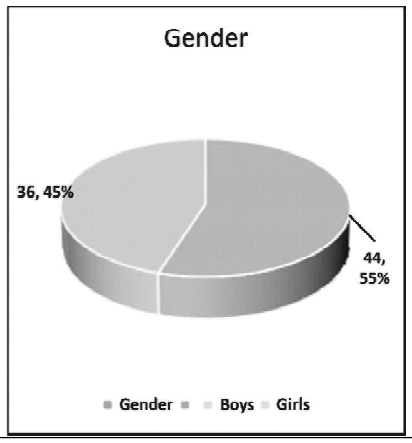
Currently there is a scarcity of studies related to prevalence of psychiatric morbidity among child and adolescent age group specially from the Rajasthan area. This study was planned to fill the current gap in literature. The finding of this study may help in increasing the awareness about psychiatric problems in the community.

Materials and Methods

The Study was conducted in psychiatry outpatient department (OPD)/child guidance clinic (CGC) of medical college and hospital. The study was conducted after permission from Scientific and Institutional Ethics Committee.

It is a cross – sectional study which included sample of 80 children and adolescents, either male or female, in the age group of 10-16 years attending psychiatry OPD/CGC. A voluntary written informed consent was taken for participation from all the subject's parents or guardians after explaining the purpose and design of the study. Subjects having any significant medical and surgical co-morbidity, with seizure disorders, head injury, and organic brain syndrome were excluded from the study.

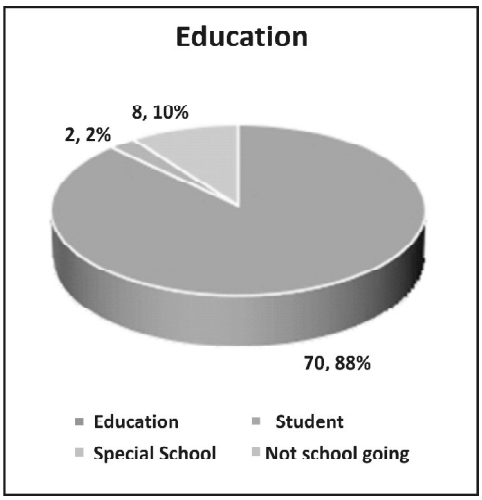
Socio-demographic details of the participants were recorded by using a specially designed semi structured proforma to capture socio-demographic data. Afterwards, all the participants were screened by using Paediatric symptom checklist-35.[5] Additionally, both the subjects and their parents/ guardians were interviewed and psychiatric diagnoses were made as per International Classification of Diseases 10th edition criteria.[6]

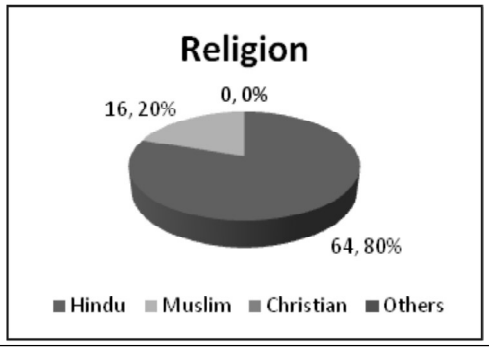


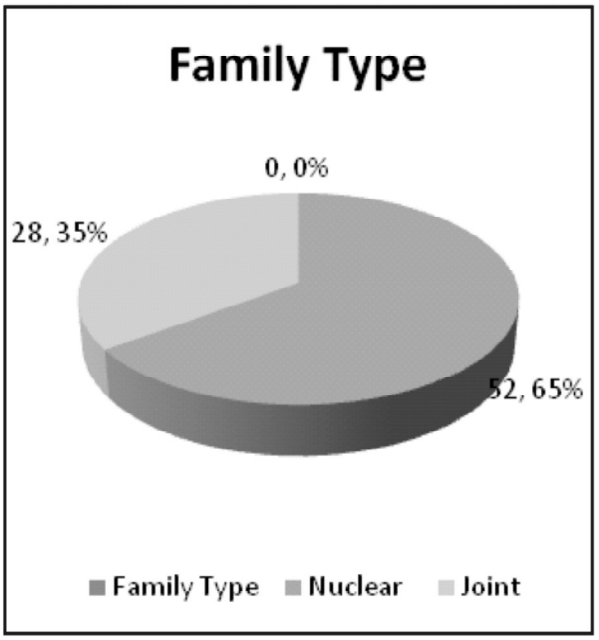
Results

Table-1: Socio-demographic details of the sample

Variables	No of children and adolescents (n=80)	n%
Gender		
Boys	44	55%
Girls	36	45%
Religion		
Hindu	64	80%
Muslim	16	20%
Christian	0	0%
Others	0	0%
Education		
Student	70	87.5%
Special School	2	2.5%
Not school going	8	10%
Domicile		
Urban	35	43.75%
Rural	45	56.25%
Family Type		
Nuclear	52	65%
Joint	28	35%
Family History of Psychiatric illness		
Absent	66	82.5%
Present	14	17.5%







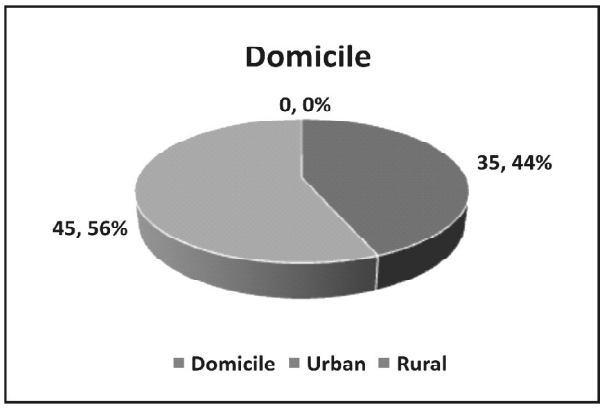


Table-2: Psychiatric Diagnosis

Psychiatric Diagnosis (ICD-10)	Children and adolescents (n=80, f%)
Depression	25 (31.25%)
Anxiety Disorder	18 (22.5%)
Conversion Disorder	12 (15%)
Acute Stress Reaction	9 (11.25%)
Mental Retardation	4 (5%)
Psychosis NOS	4 (5%)
Hyperkinetic Disorder	2 (2.5%)
Bipolar Affective Disorder	2 (2.5%)
Substance Use Disorder	1 (1.25%)
Conduct Disorder	1 (1.25%)
Trichotillomania	1 (1.25%)
Specific Developmental Disorders of scholastic skills	1 (1.25%)
Total	80

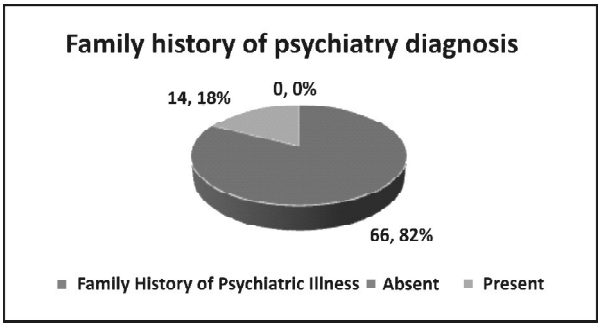


Table-3:

	Gender		Domicile	
Psychiaty Diagnosis (ICD-10)	Boys	Girls	Urban	Rural
Depression	16 (38.09%)	9 (23.68%)	15 (42.85%)	10 (22.22%)
Anxiety Disorder	10 (23.80%)	8 (21.05%)	8 (22.85%)	12 (26.66%)
Conversion Disorder	2 (4.76%)	10 (26.31%)	2 (5.71%)	10 (22.22%)
Acute Stress Reaction	2 (4.76%)	7 (18.42%)	4 (11.42%)	3 (6.66%)
Mental Retardation	3 (7.14%)	1 (2.63%)	0	4 (8.88%)
Psychosis NOS	3 (7.14%)	1 (2.63%)	1 (2.85%)	3 (6.66%)
Hyperkinetic Disorder	1 (2.38%)	1 (2.63%)	2 (5.71%)	0
Bipolar Affective Disorder	2 (4.76%)	0	0	2 (4.44%)
Substance Use Disorder	1 (2.38%)	0	1 (2.85%)	0
Conduct Disorder	1 (2.38%)	0	1 (2.85%)	0
Trichotillomania	0	1 (2.63%)	0	1 (2.22%)
Specific Developmental Disorders of scholastic skills	1 (2.38%)	0	1 (2.85%)	0
Total	42	38	35	45

Table 1 shows the sociodemographic distribution of participants. Maximum number of the patients (n = 44, 55%) were boys. Most of them belonged to Hindu religion (n = 64, 80%), nuclear families (n = 52, 65%), were residing in rural areas (n = 45, 56.25%) and going to school (n = 70, 87.5%). Family history for psychiatric illness was present in (n = 14, 17.5%) case.

Table 2 shows the pattern of psychiatric disorder among the participants. Most common psychiatric diagnosis in this study was depression (n = 25, 31.25%), followed by anxiety Disorder (n = 18, 22.5%), conversion disorder (n = 12, 15%), acute stress reaction (n = 9, 11.25%), mental retardation (n = 4, 5%) and psychosis NOS (n = 4, 5%).

Other disorders which are found in low frequencies were hyperkinetic disorder (n = 2, 2.5%) bipolar affective disorder (n = 2, 2.5%), substance use disorder (n = 1, 1.25%), specific developmental disorders of scholastic skills (n = 1, 1.25%), trichotillomania (n = 1, 1.25%), and conduct Disorder (n = 1, 1.25%)

Table 3 shows that majority of girls had a diagnosis of conversion disorder (n = 10, 26.31%), followed by depression (n = 9, 23.68%), anxiety disorder (n = 8, 21.05%) and acute stress reaction (n = 7, 18.42%), whereas among boys most common diagnosis was depression (n = 16, 38.09 %) followed by anxiety disorder (n = 10, 23.80%), mental retardation (n = 3, 7.14 %), psychosis NOS (n = 3, 7.14%) and bipolar affective disorder (n = 2, 4.76%).

Among rural participants in our study most of them showed anxiety disorder (n = 12, 26.66%), followed by equally distributed conversion disorder and depression (n = 10, 22.27%), mental retardation (n = 4, 8.88%) and psychosis NOS (n = 3, 6.66%), whereas participants belonging to urban settings were suffering from depression (n = 15, 42.85%) followed by anxiety disorder (n = 8, 22.85), acute stress reaction (n = 4, 11.42%) and also seen exclusively were hyperkinetic disorder (n = 2, 5.71%), substance use disorder (n = 1, 2.85%) and conduct disorder (n = 1, 2.85%).

Discussion

In our study, the maximum number of patients (55%) were boys and our findings were in resonance with the findings of Solanki et al.[4] who studied the clinical profile of child and adolescent patients, attending a mental hospital OPD. In contrast, Prabhuswamy et. al.[7] reported a preponderance of girls in their study.

Majority of the children in our study belonged to Hindu Religion (87%) and (20%) were Muslims. This significantly high percentage found among Hindus may be because of majority of people inhabiting being Hindus in nearby area, similar to study done by Maan et al.[2]

In our study, maximum number of children and adolescents were school going students (87.5%), which was expected as our study sample consisted of children belonging to 10-16 age group.

Forty-five participants (56.25%) were of rural area which could be because the institution where this study was conducted mainly caters to the rural population. Our findings were in resonance with the findings of Bhat et al[8] but were in contrast with that of Shakya DR[9] who found that patients from urban areas were more prone to psychiatric illness. According to the author, this may be due to less frustration tolerance and more stressful life in urban areas.

Positive history of psychiatric illness in the family was present in 17 % of patients in our study and our findings were in accordance with the findings of a study done by Sahu et al[1] who studied socio-demographic profile of psychiatric disorders among children in a tertiary care hospital.

Most common psychiatric diagnosis in our study was depression (31.25%), followed by anxiety Disorder (22.5%) and conversion disorder (15%) and our findings were somewhat similar to the findings of a study by Kumar et al[3] who studied pattern of psychiatric disorders in child and adolescents attending psychiatry OPD.

In our study majority of girls had a diagnosis of conversion disorder (n = 10, 26.31%) which is in resonance with the study done by Maan et al.[2], according to the author it may be a possible way to express psychological distress in form of physical symptoms rather than direct expression of emotional distress in Indian culture.

Conclusion

Majority of the participants in our study attending psychiatric OPD/ CGC were boys, mostly school going, belonging to Hindu religion with rural

background and living in a nuclear family. Depression, anxiety disorder and conversion disorder were the most common diagnosis found in our study.

Limitations

- Small sample size, convenience sampling method.
- Study is confined to a tertiary hospital, consisting of children & adolescents attending psychiatry OPD/CGC, therefore findings may not necessarily represent the general population of the country.

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Original Article

Gender Differences and Correlates of Aggression and Internet Addiction among Adolescents in COVID 19 Pandemic

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ABSTRACT

***Background**: During COVID – 19 pandemics, the children experienced worry, helplessness and fear. Negative impact of pandemic on adolescents lifestyle was observed. **Aims and Objectives:** The present study was an endeavor to explore the gender differences among adolescents in aggression and internet addiction and to find if there is any relation between internet addiction and aggression or not. **Material and Method:** For the realization of objectives of research, data was collected from 3373 adolescents from government and private schools of different zones of Chandigarh from June to September 2020. Out of these total participants 1225 were boys and 2148 were girls. The participants were administered with BPAQ short form and Internet addiction test. Collected data was arranged in SPSS and after calculating descriptive statistics, t test was applied to find the differences between males and females on aggression and internet addiction. Pearson's correlation coefficient was calculated to see the relationship between different variables used in study. **Results:** Findings showed a high correlation between different subscales of internet addiction and aggression i.e. Lack of control, time management problem, social withdrawal or emotional conflict, physical aggression, verbal aggression, anger and hostility. **Conclusion**: The current findings indicate that adolescents who are high on internet addiction appear to be more disposed to aggression or vice versa.*

***Keywords:** Adolescents, Aggression, Internet Addiction, Pearson correlation.*

Introduction

On 11th march 2020, COVID 19 was declared as a worldwide pandemic (WHO, 2020). It has presented families across the globe with uncommon challenges. On 22nd of March, 2020 the Indian government declared lockdown and long established routines were altered over-night, resources were abstained, outdoor activities were refrained.

As is evident from literature, children experienced worry (68.59%), helplessness (66.11%) and fear (61.98%) during COVID-19.[1] Negative impact of pandemic on adolescents' lifestyle was observed,[2-4] They may have vented their stress through verbal or physical means. In another study from China, behavioral problems like clinging, irritability and fear in children of 3-18 years of age; and inattention and endless quarrels by those of 6-18 years of age were observed among children.[5]

The exacerbation of pre-existing psychological issues can be especially prominent in particular children: those in low educated and less affluent households, who tend to have lower socio-emotional

skills already[6] for boys, who are more likely to experience behavioral issues than girls[7] and for both boys and girls during adolescence, a stage when the probability of psychological disorders increases.[8] Positive interactions between parents and children – particularly during a stressful period – can attenuate these psychological disorders in children.[9]

Many children have nothing to do at home and are indulging in playing video games or spending too much time on their phones. The social isolation related to COVID-19 pandemic is a significant risk factor for depression, suicidal thoughts, alcohol, and drug use. An increasing number of children without any history of behavioral disorders are showing signs of irritability, boredom, anxiety, depression, stress, fear, worry, and various other negative feelings. Conflict, stress and spending more time with same persons can cause arguments. And it can be difficult to keep children shielded from adult arguments when everyone is together most of the day. When children see us communicating well and staying calm, it can help them cope with big emotions. Thus, in view of the above facts, following aims are planned the present study:

Objective

To study gender differences in aggression among adolescents.

To study gender differences in internet addiction among adolescents.

To study relationship between aggression and internet addiction among adolescents.

Hypothesis

There will be differences between girls and boys on aggression.

There will be differences between girls and boys on internet addiction.

There will be relationship between aggression and internet addiction in adolescents.

Material and Methods

Measures

Demographic Sheet: The demographic page was used to collect the sampled individuals' basic details, which aided in evaluating whether they qualified the inclusive criteria or not. It contained sections for their name, age, gender, residence, occupation, and the socio economic status of their family.

BPAQ-SF. The Buss-Perry Aggression Questionnaire (BPAQ-SF)[10] is a 12-item scale derived from the 29-item BPAQ onwhich participants rate statements along a 5-point continuum from 1 = " extremely uncharacteristic of me" to 5 =" extremely characteristic of me." The questionnaire yields scores for four dimensions of aggression: physical aggression (e.g., "If I have to resort to violence to protect my rights, I will"), verbal aggression (e.g., "I tell my friends openly when I disagree with them"), anger (e.g., "Some of my friends think I am a hothead"), and hostility (e.g., "When people are especially nice to me, I wonder what they want").[29] The Cronbach's alpha coefficient in the current sample was 0.94.

Young's Internet Addiction Test: The 20-item Young's Internet Addiction Test (Y-IAT) was developed by Young et al.[11] Total scores were calculated according to Young's method, with possible scores for all 20 items ranging from 20 to 100. Those who scored 20–39 were classified as "average users," those who scored 40–69 were classified as "experiencing frequent problems," and those who scored 70–100 were classified as suffering from "significant problems" because of Internet use. The Cronbach's alpha coefficient in the current sample was 0.95.

Sample

The sample consist 3373 adolescents from government and private schools of different zones of Chandigarh. Out of these total participants 1225 were boys and 2148 were girls and these were selected on a non-random, purposive sampling basis. On the basis of the inclusive criteria, adolescents, in the age group 11-17 years (in the year 2020), The sampled participants were all from the age range of 11-17, with girls comprising 64% (n = 2148) of the sample and boys comprising 36% (n = 1225) of the study sample.

Data Collection

The data was collected through a survey method with the utilization of Google Forms. The questionnaire contained an agreement of informed consent, which had an acknowledgment regarding the participant's willing participation in the study, their agreement on sharing their details as well as a note of confidentiality. This was followed by a

section for the participant to provide their demographical details, followed by two separate sections. The questionnaire was then shared via social media sites and WhatsApp to various people with a small message, specifying the inclusive criteria for their participation to be counted in the study.

Results

Data was interpreted by using SPSS v 25. The results are described in following section:

Section I

The present research strives to study the relationship between aggression and internet addiction on a sample of adolescents in the age of 11-18 years. It also sets out to examine the gender difference on both variables. The sample was consisting girls 64% (n = 2148) and boys were comprising 36% (n = 1225) of the study sample. Out of total sample, 67% were from rural background and 33% from urban background. 43% were from nuclear family, while 51% and 6% were from joint and extended families respectively.

Section II

For considering the gender differences on different variables i.e. physical aggression, verbal aggression, hostility, anger, total aggression and on between internet addiction and aggression.

Table-1: Showing number and percentage distribution of participants

Variables	Number	Percentage
Boys	1225	36
Girls	2148	64
Rural	2266	67
Urban	1107	33
10-14 Years	1867	55
15-18 Years	1506	45
Nuclear	1437	43
Joint	1717	51
Extended	219	06

Apart from it fairly good to high correlation can be seen between subscales of both tests i.e. internet addiction and aggression. A positive correlation of Lack of control has been found with physical aggression, verbal aggression, anger, hostility and total aggression. Social withdrawal or emotional conflict has also been found to be positively correlated with physical aggression, verbal aggression, anger hostility and total aggression. Time management problem subscale has been reported to have positively correlated with physical aggression, verbal aggression, anger hostility and total aggression. Concentrating problematic behavior is also positively correlated with physical aggression, verbal aggression, anger hostility and total aggression. And all subscales of internet addiction

Table-2: Showing t ratio on different variables used in study

Variables	Groups	M	SD	t	Sig.
PHY AGG	B	7.17±	3.21	3.998	0.000*
	G	6.67±	2.89		
Verbal	B	6.04±	2.54	1.018	0.309
AGG	G	5.93±	2.48		
Hostility	B	3.8±	1.85	-0.056	0.955
	G	3.81	1.83		
Anger	B	6.77±	2.49	-0.635	0.525
	G	6.83±	2.52		
Total AGG	B	23.78±	8.38	1.598	0.11
	G	23.24±	8.02		
Lack of Control	B	7.39±	5.129	1.292	0.196
	G	7.16±	5.161		
SW/EC	B	9.38±	6.754	3.569	0.000*
	G	8.54±	6.486		
Time M Problem	B	7.21±	4.580	1.998	0.046
	G	6.89±	4.433		
Concertation Problem	B	4.39±	3.111	2.333	0.002*
	G	4.13±	3.028		
Internet Addiction	B	28.37±	17.55	2.115	0.035*
	G	26.89±	16.57		

Table-3: Showing correlation coefficients between aggression and internet addiction

Variables	Phy Agg	V Agg	Anger	Hostility	Total BPAQ
Lack of Control	.493**	.451**	.456**	.407**	.549**
S. Withdrawl/Emotional Conflict	.524**	.438**	.463**	.385**	.552**
Time Management Problem	.496**	.444**	.465**	.421**	.554**
Concentrating Problematic Beh.	.432**	.386**	.383**	.352**	.473**
Total IAT	.557**	.490**	.506**	.444**	.607**

are having positive correlation with all subscales of aggression among adolescents.

After considering differences in gender on various variables, Pearson's correlation coefficient was calculated. Findings are depicted in the table 4 which indicates that verbal aggression and hostility are positively correlated with age of participants. Type of family is also found to be positively correlated with physical aggression, verbal aggression, total aggression and on internet addiction. Physical aggression is also found to be positively correlated with socio economic status of family. Scales of aggression are having high positive correlation with each other which is indicating the construct validity of the scale. Total aggression is found to be positively correlated with internet addiction among adolescents.

between internet addiction and aggression, the also sought to find the differences between boys and girls on said variables along with socio demographic variables. In terms of socio demographic relationship with aggression, results of the research indicated that verbal aggression and hostility were found to be correlated with increased age. As age increase, both type of aggression were found to be increase in adolescents. Physical aggression was also found to be positively correlated with socio economic status. It may be implied that with age humans learn different kind of behaviors and so adolescents were also found to be high on aggression with increased age. Aggression was found more in joint and extended family adolescents in comparison to nuclear family adolescents. High socio-economic status makes a person strong enough to handle a number

Table-4 Showing correlation coefficients between Children's demographic variables and Study Variables (BPAQ & IAT)

	PA	VA	Anger	HL	Total BPAQ	LOC	SWEC	TMP	CPB	Total IAT
Age	.055**	.048**	.081**	.060**	.055**	.019	-.008	.038*	.003	.013
Gender	-.068**	-.018	-.002	.008	-.029	-.022	-.061**	-.034*	-.041*	-.047**
Grade	.009	.070**	.037*	.094**	.062**	.012	-.041*	.021	-.014	-.009

Table-5 showing correlation coefficients between Children's demographic variables and Study Variables (BPAQ & IAT)

	PA	VA	Anger	HL	Total BPAQ	LOC	SWEC	TMP	CPB	Total IAT
Education	.039*	.036*	.032	.031	.042*	.007	.034*	.048**	.015	.055**
Occupation	.042*	.027	.031	.004	.032	.023	.045**	.040*	.025	.039*
Income	.007	.005	-.012	-.020	-.005	-.004	.006	-.002	.002	-.001
SES	.000	-.022	.000	-.036*	-.018	.023	.017	-.007	.001	-.027
Fam Type	.050**	.026	.005	.002	.028	.017	.053**	.098**	.050**	.079**
Locality	.017	.022	.031	.043*	.033	-.002	-.001	.007	.029	.013

Discussion

The present study examined the relationship

of situation, in terms of legal and power; it may be a reason why physical aggression is found having

positive relationship with it.

In terms of relationship between aggression and internet addiction, a positive relationship, a number of studies confirmed the present research results. It can be a reason that adolescents spend a lot of time online to spend good time or to avoid stress. But along with it, internet usage itself cause distress in adolescents while it may give them temporary relief but negatively impacts them in long terms and aggression is one of these negative impacts.[12] The present study is also confirmed by Yen et al,[13] where a high correlation was found between aggression and internet addiction.

Conclusion

The current findings indicate that adolescents who are high on internet addiction appear to be more disposed to aggression or vice versa. Along with it, gender differences on variables were found only on Social withdrawal or emotional conflict, concentration problem and on physical aggression. On all these variables boys are higher than girls in terms of mean scores.

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Conflict of interest

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Original Article

To Study Neurocognitive Impairment in Perimenopausal and Postmenopausal Females

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ABSTRACT

Background: *Cognitive impairment is a frequent complaint during the menopausal transition and among postmenopausal women. Changes in the memory correspond with diminished estrogen production. Many perimenopausal and postmenopausal women report sleep concerns, depression and hot flushes and these factors may contribute to cognitive decline. Symptoms reported are difficulty recalling words or numbers, needing memory aids and forgetting why one was involved in certain behaviour.* ***Aim****: To study neurocognitive impairment in perimenopausal and postmenopausal females.* ***Materials and Methods****: The study was conducted on 50 perimenopausal and 50 postmenopausal females in the age group of 38-55 years presented to Department of Psychiatry and Obstetrics & Gynaecology, DMC & H Ludhiana. Subjects were assessed using MMSE, PGI memory scale and IQCODE Scale.* ***Results****: While comparing the MMSE domains between Perimenopausal and postmenopausal groups; few of the domains varied significantly like mean value for Orientation for perimenopausalage group was 9.42 ± 0.53 and for postmenopausal it was 9.00 ± 0.45 and mean value for Attention & Concentration for perimenopausalage group was 3.76 ± 0.71 and for postmenopausal it was 3.44 ± 0.50. While comparing the PGI memory scale and its domains between Perimenopausal and postmenopausal groups; few of the domains varied significantly like mean value for Attention & Concentration forperimenopausal age group was 2.96 ± 0.49 and for postmenopausalit was 3.32 ± 0.65 , mean value for Delayed Recall in case of perimenopausal age group was 2.06 ± 0.42 and for postmenopausalage group was 3.1± 1.35 and for Recognition mean value in case of perimenopausal age group was 3.72 ± 0.53 and for postmenopausalage group was 2.96 ± 0.28 . In IQCODE, Overall significantly highermean value of total IQCODE score was observed in postmenopausal (3.34 ± 0.10) than perimenopausal women (3.24 ± 0.09).* ***Conclusion:*** *These results help us to understand that decline inestrogen around menopause are associated with decline in cognitive functioning. Post menopausal females have worse performance indifferent domains of cognition which may require intervention.*

Keywords: *Cognition, Perimenopause, Postmenopausal stage, Attention, Menopausal transition, Neurocognitive impairment.*

Introduction

The female reproductive axis is unique in that it reaches a senescent state when other organs in the body are generally healthy.[1]

The 'perimenopause' means the time around menopauseand as per Stages of Reproductive Aging Workshop (STRAW+10) as including the 'menopausal transition stage' (Stages-2 and-1) plus only the first year (Stage 1a) of the 'early postmenopause stage' (Stage 1), i.e. until the diagnosis of menopause is ratified by 12 months of amenorrhea.[2]

Averageage of menopause is 47.5 years in Indian women.[3] Globally average age of menopause is 51.5 years, with most women experiencing menopause

between the ages of 45 and 55 years.[4]

Memory decline is a very common complaint throughout the menopausal transition.[5] Neurotrophic action of estrogen has been found in areas involved in memory and cognition.[6,7] Studies showed that 17-beta estradiol protects against beta-amyloid induced damage and tau-related changes. Furthermore, magneticresonance imaging (MRI) studies revealed that 17-beta estradiol increases the blood flow to the hippocampus and cortex. Allowed to promote the growth and survival of cholinergic neurons, hippocampal neurons become dense which finally contributes synaptic plasticity in the hippocampus and enhance the short and long-term memory.[8,9]

Aims and Objectives

To study neurocognitive impairment in peri-menopausal and postmenopausal females.

Materials and Methods

Sample Collection

The study was conducted on the perimenopausal and postmenopausal females of age group 38-55 years old presenting to Department of Psychiatry and Obstetrics and Gynaecology in DMC & H, Ludhiana.

For Patients

Inclusion Criteria

- Women who have given the consent for study.
- Age groups between 38–55 years.
- Females having premature ovarian failure having loss of normal ovarian function after age of 38 years presenting with symptoms of irregular menses, hot flushes and irritability.
- Perimenopausal females, who have irregular periods within tercycle gap of more than or equals to 60 days or having vasomotor symptoms.
- Postmenopausal females, who have not had periods for at least 12 months and are not using hormonal contraception, presenting to DMC & H, Ludhiana.

Exclusion Criteria

- Females with surgical menopause due to bilateral oophorectomy, irradiation and chemotherapy
- Females diagnosed with Alzheimer's disease and Pre senile dementia.
- History of pre-existing anxiety and depressive disorders.

Procedure

The study was conducted on the 50 perimenopausal and 50 postmenopausal females in the age group of 38-55 years presenting to Department of Psychiatry and Obstetrics and Gynaecology, DMC & H, Ludhiana. After clinical assessment, socio demographic Performa were filled. Subjects were further assessed using MMSE, PGI memory scale and IQCODE Scale.

Tools used

1. Sociodemographic Performa
2. Mini Mental State Examination (MMSE)
3. PGIMS (PGI Memory Scale)
4. IQ Code (Informant Questionnaire on Cognitive Decline)

Results

While comparing the PGI memory scale and its domains between the groups; few of the domains were found varied significantly like Attention and Concentration ($p = 0.002$), Delayed Recall ($p = 0.001$) and Recognition ($p = 0.006$). Overall, significantly lower mean value of total memory score was observed in post-menopausal than peri-menopausal women ($p = 0.001$).

While comparing the total IQCODE and its various domains between the groups; few of the domains were found varied significantly like Remembering things about family and friends ($p = 0.050$), Remembering what day and month it is ($p = 0.006$), Remembering where to find things which have been put in a different place from usual ($p = 0.001$), Learning new things in general ($p = 0.023$), Handling money for shopping ($p = 0.003$), Handling financial matters ($p = 0.023\%$), Handling other everyday arithmetic problems ($p = 0.021$). Overall significantly higher mean value of total IQ-CODE was observed in post-menopausal than peri-menopausal women ($p = 0.001$).

While comparing the MMSE domains between the groups; few of the domains were found varied significantly like Orientation ($p = 0.001$) and Attention & Concentration ($p = 0.011$).

Table-1: Association between Group and Parameters

Parameters	Group		p value
	Perimenopausal (n = 50)	Postmenopausal (n = 50)	
Age groups[***]			0.001[1]
38-45 Years	42 (84.0%)	3 (6.0%)	
46-50 Years	6 (12.0%)	20 (40.0%)	
51-55 Years	2 (4.0%)	27 (54.0%)	
Age(in years)[***]	42.9800	50.9600	0.001
Weight (in kg)	64.0600	67.100	0.129
Height (in cm)	160.72	161.34	0.064
BMI	25.032	26.184	0.141
Education			0.462[1]
Illiterate	7 (14.0%)	9 (18.0%)	
Matriculation	24 (48.0%)	29 (58.0%)	
Higher Secondary	6 (12.0%)	6 (12.0%)	
Graduation	12 (24.0%)	5 (10.0%)	
Post-Graduate	1 (1.0%)	1 (2.0%)	
Occupation[***]			0.025[1]
Homemaker	41 (82.0%)	48 (96.0%)	
Skilled	9 (18.0%)	2 (4.0%)	
Family Type			0.420[1]
Nuclear	20 (40.0%)	24 (48.0%)	
Joint	30 (60.0%)	26 (52.0%)	
Age at Menarche	12.7200	12.7400	0.898
LMP (months back)	3.6000	37.0800	0.001[***]
Medical illness			
Thyroid dysfunction	2 (4.0%)	5 (10.0%)	0.665
Hypertension	2 (4.0%)	2 (4.0%)	
Diabetes mellitus	6 (12.0%)	7 (14.0%)	
No illness	40 (80.0%)	36 (72.00%)	

***Significant at $p<0.05$,1: Chi-Squared Test

Table-2: Comparative distribution of PGI memory scale and its various domains\ between the groups

PGI Memory Scale	Group					p value
	Peri-Menopausal			Post-Menopausal		
	N	Mean	Std. Deviation	Mean	Std. Deviation	
Remote Memory	50	3.3400	1.31878	3.6200	1.52382	0.328 (Ns)
Recent Memory	50	3.0000	0.00000	3.0200	0.14142	0.320 (Ns)
Mental Balance	50	3.1400	1.56505	3.5200	1.52850	0.222 (Ns)
Attention And Concentration	50	2.9600	0.49322	3.3200	0.65278	0.002* (Sig.)
Delayed Recall	50	2.0600	0.42426	3.1000	1.35902	0.001* (Sig.)
Immediate Recall	50	1.0600	0.23990	1.0800	0.56569	0.818 (Ns)
Retention For Similar Pairs	50	2.9600	0.28284	3.0000	0.00000	0.320 (Ns)
Retention For Dissimilar Pairs	50	4.8600	0.63920	4.9000	0.58029	0.744 (Ns)
Visual Retention	50	3.8800	1.15423	3.8000	0.98974	0.711 (Ns)
Recognition	50	2.7200	0.53605	2.9600	0.28284	0.006* (Sig.)
Total Memory Score	50	2.9800	0.89191	3.8800	0.93982	0.001* (Sig.)

Test applied: student t-test

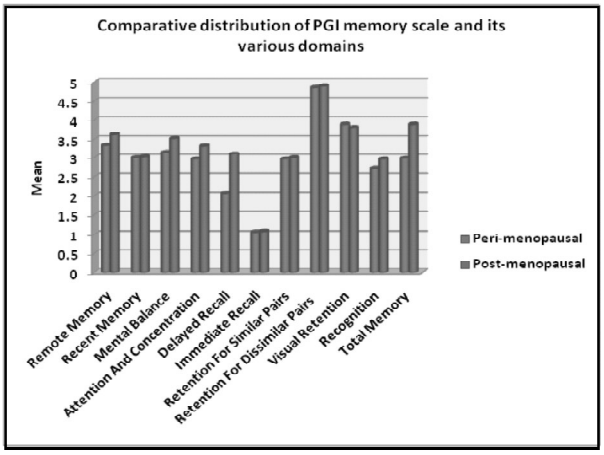

Figure 1: Comparative distribution of PGI memory scale and its various domains between the groups

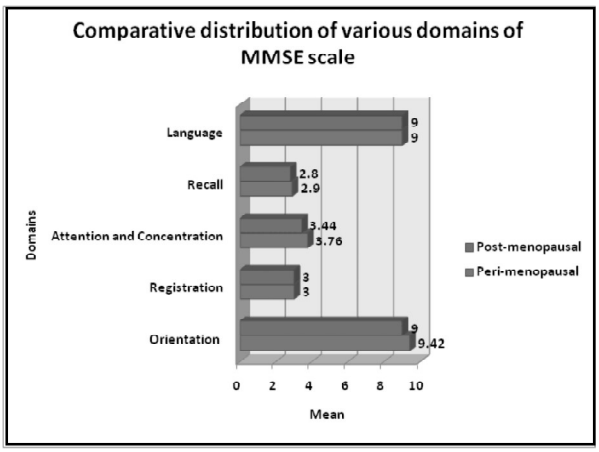

Figure 2: comparative distribution of various domains of MMSE scale between the groups

Table-3: Comparative distribution of total IQCODE and its various domains between the groups

IQCODE	N	Group				p-value
		Peri-Menopausal		Post-Menopausal		
		Mean	Std. Deviation	Mean	Std. Deviation	
Remembering things about family and friends	50	3.0800	0.27405	3.2200	0.41845	0.050* (Sig.)
Remembering things that have happened recently	50	3.1800	0.38809	3.2400	0.43142	0.466 (NS)
Recalling conversations a few days later	50	3.4400	0.50143	3.3800	0.49031	0.547 (NS)
Remembering his/her address and telephone number	50	3.7600	0.43142	3.8400	0.37033	0.322 (NS)
Remembering what day and month it is	50	3.2200	0.41845	3.4800	0.50467	0.006* (Sig.)
Remembering where things are usually kept	50	3.0400	0.19795	3.1200	0.32826	0.143 (NS)
Remembering where to find things which have been put in a different place from usual	50	3.2400	0.43142	3.6600	0.47852	0.001* (Sig.)
Knowing how to work familiar machines around the house	50	3.0200	0.14142	3.0000	0.00000	0.320 (NS)
Learning to use a new gadget or machine around the house	50	3.6800	0.47121	3.8400	0.37033	0.062 (NS)
Learning new things in general	50	3.5200	0.50467	3.7400	0.44309	0.023 * (Sig.)
Following a story in a book or on TV	50	3.0000	0.00000[a]	3.0000	0.00000[a]	—
Making decisions on everyday matters	50	3.0200	0.14142	3.0000	0.00000	0.320 (NS)
Handling money for shopping	50	3.0000	0.00000	3.1600	0.37033	0.003* (Sig.)
Handling financial matters	50	3.2600	0.44309	3.4800	0.50467	0.023* (Sig.)
Handling other everyday arithmetic problems	50	3.5400	0.50346	3.7600	0.43142	0.021* (Sig.)
Using his/her intelligence to understand what's going on and to reason things through	50	3.0800	0.27405	3.1000	0.30305	0.730 (NS)
IQCODE Total	50	3.2420	0.09222	3.3426	0.10945	0.001* (Sig.)

Test applied: student t-test

Table-4: Comparative distribution of various domains of MMSE scale between the groups

MMSE-domains	N	Group				p-value
		Peri-Menopausal		Post-Menopausal		
		Mean	Std. Deviation	Mean	Std. Deviation	
Orientation	50	9.4200	.53795	9.0000	.45175	0.001 (Sig.)
Registration	50	3.0000	.00000[a]	3.0000	.00000[a]	—
Attention and Concentration	50	3.7600	.71600	3.4400	.50143	0.011 (Sig.)
Recall	50	2.9000	.30305	2.8000	.40406	0.165 (NS)
Language	50	9.0000	.00000[a]	9.0000	.00000[a]	—

Test applied: student t-test

Discussion

In our study while comparing the PGI memory scale and its domains between perimenopausal and postmenopausal groups; few of the domains were found varied significantly like Attention and Concentration (p = 0.002), Delayed Recall (p = 0.001) and Recognition (p = 0.006). Overall, significantly lower mean value of total memory score was observed in post-menopausal than peri-menopausal women. This finding was explained by results from multiple large-scale survey studies indicating that peri- and post-menopausal women report a significantly greater number of memory problems than perimenopausal women. For example, Mitchell and Woods[10] reported that 62% of the women in the Seattle Midlife Women's Health Study (SMWHS, n = 230,mean age = 46.7 years) reported noticeable declines in cognitive performance following menopause. The most common complaints were difficulty recalling words or numbers, needing memory aids, and forgetting why one was involved in a certain behavior. The results arebeing supported by the fact that hippocampus and PFC, which aretargets for effects of estrogen (dysregulated during menopausaltransition and menopause), plays role in memory processing, working memory and memory encoding and storage. As estrogen supports the formation of dendritic spines and synapse that enhance long term potentiation in hippocampal region. Similarly, in a survey study conducted by Sliwinski et al.[11] which was designed to assess attitudes toward menopause in a sample of 88 post-menopausal Italian women, results indicated that 70% of participants reported deficits in memory. It was proposed that peri-and post-menopausal women express dissatisfaction with their cognitive abilities more frequently than do premenopausal women. In an additional study conducted by Gayatri Devi et al,[12] sample of 151 female faculty members between the ages of 30 and 60 years who worked for a large New York school district were randomly selected. Results of their study indicate that peri- and post-menopausal women were over three times more likely to report memory complaints than were premenopausal women. The study proposed that menopausal years coincide with loss of hippocampal neurons at the rate of ~5% perdecade beginning at 45 years of age. It was concluded that declining estrogen levels at this time may in some way increase the vulnerability of hippocampal neurons to toxicity and cell death, ultimately leading toclinical symptoms of cognitive loss.

In our study, Attention and concentration, one of few domains of PGI memory scale, showed significant (p = 0.002) difference between postmenopausal and perimenopausal females. This was in accordance with study conducted by Schaafsma et al.[13] In this study, cognitive performance and memory complaints were assessed in a sample of 120 Australian women between the ages of 45 and 60 years. Eighty two percent of the women in the sample reported memory complaints, and peri- and post-menopausal women were significantly more likely to report memory complaints than were premenopausal women.

Multivariate analysis indicated that subjective memory complaints were significantly associated with impairments in attention, reaction time, and verbal memory. When examined collectively, these results suggest that declines in cognitive ability result from hormonal changes occurring during menopause. Our results showed no significant difference

between post-menopausal and perimenopausal females as regards to other domains of PGI memory scale like remote memory, recent memory immediate recall. This was in accordance with study conducted by Drachman,[14] who mentioned that performance on immediate or primary memory tasks that do not require storage and retrieval of material such as digit span task and memory for remote past events appear to be relatively intactor not affected during menopausal transition period.

While comparing the total IQCODE and its various domains between the groups; few of the domains were found varied significantly like remembering things about family and friends (p = 0.050), remembering what day and month it is (p = 0.006), remembering where to find things which have been put in a different place from usual (p = 0.001), learning new things in general (p = 0.023), Handling money for shopping (p = 0.003), handling financial matters (p = 0.023), handling other everyday arithmetic problems (p = 0.021). Overall, significantly higher mean value of total IQ-CODE was observed in post-menopausal than peri-menopausal women (p = 0.001). No previous studies have examined this relationship between IQCODE and perimenopausal and postmenopausal women specifically.

While comparing the MMSE domains between the groups; few of the domains were found varied significantly like Orientation (p = 0.001) and Attention and Concentration (p = 0.011). This was found in agreement with study conducted by Kaur[15] among 404 women aged between 40 and 65 years from rural areas of Punjab (North India).

Some studies provided estrogen assistance in the form of estrogen/hormonal therapy to improve the domain of executive functioning and attention. Low estrogen levels after menopause increase the process of decreasing cognitive abilities that can support memory abilities, attention concentration, and speed in producing information.[16]

Conclusion

The present study was conducted to study the neurocognitive impairment in perimenopausal and postmenopausal females. In ourstudy, we noted the following points:

- Mean age of perimenopause and post-menopause is 42.9800 years and 50.9600 years respectively.
- In perimenopausal group, majority 84% of the women were observed in the age group of 38-45 years followed by 12% in 46-50 years and 4% in 51-55 years.
- In postmenopausal group majority 54% of the women were observed in the age group of 51-55 years followed by 40% women in 46-50 years and rest 6% women in 38-45 years of age group.
- While comparing the PGI memory scale and its domains between the groups; few of the domains were found varied significantly like Attention and Concentration (p = 0.002), Delayed Recall (p = 0.001) and Recognition (p = 0.006). Overall, significantly lower mean value of total memory score was observed in post-menopausal than peri-menopausal women (p = 0.001).
- While comparing the total IQCODE and its various domains between the groups; few of the domains were found varied significantly like Remembering things about family and friends (p = 0.050), Remembering what day and month it is (p = 0.006), Remembering where to find things which have been put in adifferent place from usual (p = 0.001), Learning new things ingeneral (p = 0.023), Handling money for shopping (p = 0.003), Handling financial matters (p = 0.023), Handling other every day arithmetic problems (p = 0.021). Overall, significantly higher mean value of total IQ-CODE was observed in post-menopausal than peri-menopausal women (p = 0.001).
- While comparing the MMSE domains between the groups; few of the domains were found varied significantly like Orientation (p = 0.001) and Attention & Concentration (p = 0.011).

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Original Article

Adjustment Disorder in Wives of Patients with Alcohol use Disorders

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ABSTRACT

Background: *Alcoholism is considered to be the major health as well as a social problem. It does not only affect an individual but affects the family as a whole. Among all members, the wives of patients with Alcohol use disorders are most adversely affected which brings about major psychological problems in them.* ***Aims:*** *To assess adjustment disorder in wives of patients with Alcohol use disorders.* ***Settings and Design****: Hospital based cross sectional study. Study setting-Psychiatry department / De-addiction centre of Tertiary care Medical College and Hospital in Rajasthan. Study units the wives of patients attending the department of psychiatry, with a diagnosis of Alcohol Dependence.* ***Material and Method:*** *On the basis of inclusion and exclusion criteria, 60 subjects were studied. Demographic details and history of psychiatric illness were noted as per the structured pro forma. GHQ-12 was used to screen for the presence of psychiatric comorbidity. Participants scoring >2 score on GHQ-12 were further assessed for the presence of adjustment disorder by the psychiatrist and were diagnosed according to the ICD-10diagnostic criteria.* ***Result****: Fifteen (25%) participants were diagnosed with adjustment disorder according to ICD-10. Among the subcategories of adjustment disorder the most common diagnosis was adjustment disorder with mixed anxiety and depressive reaction (60%) followed by adjustment disorder with prolonged depressive reaction (20%) and adjustment disorder with predominant disturbance of other emotions (20%).* ***Conclusion:*** *The present study concludes that the wives of patients with Alcohol Use Disorders have significant psychiatric co morbidities. Adjustment disorder with mixed anxiety and depressive reaction was the most common diagnosis among all adjustment disorders.*

Key words: *Wives of Alcohol Dependent males, Psychiatric morbidity, Adjustment Disorder*

Introduction

Alcohol use is a public health concern all over world and is a significant problem in India. Despite the fact that Alcohol use disorder significantly affects families as a whole, focus of the treatment is usually centred on individuals. Mental health of the wives, being the supporting pillars of the family and as seem they bear the burden of the problems, are neglected. According to an Indian study on wives of patients with alcohol use disorders, about 65% of the subjects had psychiatric illness, primarily mood disorders with 43% having depressive disorder.[1] So, Wives of patients with Alcohol use disorders are most vulnerable to have significant psychiatric disorders. Alcohol abuse affects couple relationships in many negative ways.[2] The patients with Alcohol Use Disorder are so obsessed with drinking that they ignore the needs and situations of their family members and are unable to take up their expected roles and responsibilities. In such conditions, the functions that are normally to be carried by husbands fall on their wives that add to their burden and sufferings.[3] Clinicians from 1970s observed that the psychological problems of caregivers were not as a

result of their own pathology but as a result of chronic stress. Addressing the mental health issues of spouses of persons with alcohol dependence will not only reduce their burden but also improve their quality of life and treatment outcome of persons with alcohol dependence.[4] Though significant levels of psychological distress seem to be apparent in wives of patients with Alcohol Use Disorders, surprisingly, very few studies have specifically explored this, either in the Indian research.[5] Most of the literature concludes that the coping behaviours used by wives of patients with Alcohol use disorder include avoidance, withdrawal or separation/divorce from marital relationship, co-dependency of alcohol, and feelings of helplessness and distress.[6] Many researchers have focussed on the effect on wives of patients with Alcohol Use Disorders who often fail to recognize the degree of their own pain. Their energies become focussed on their husbands which leads to the development of co-dependence. Their own personal needs, creativity and sexual and aggressive urges are often suppressed leading to blockage of the growth and development in the cognitive, emotional as well spiritual aspects, and over a period of time, the co-dependent spouse mostly becomes prone to stress leading to psychiatric disorders.[7] Health professionals, particularly psychiatrists and psychologists, comes in regular contact with the caregivers of patients with alcohol dependence. Conducting a study in this will help in planning and teaching effective coping strategies, to help them come out of stress.[8]

Methods

This cross-sectional study was conducted in psychiatry department of a tertiary care hospital attached to a medical college after approval from the research ethics committee. Participants consist of wives of newly diagnosed alcohol dependence patients accompanying them in the psychiatry OPD for treatment of alcohol disorder.

Study Group: The study group consisted of 60 wives of alcohol dependent patients attending psychiatric OPD.

Inclusion criteria

1. Wives (above18 years) of patients with newly diagnosed Alcohol Dependence attending psychiatry outpatient department/ De-addiction centre of tertiary care medical college and hospital in Rajasthan.
2. Wives of patients with Alcohol Use Disorders who will give written informed consent to participate in the study.

Exclusion criteria

1. Presence of any significant medical and/or surgical co-morbidity and/or Intellectual disability.
2. Wives of patients with Alcohol Use Disorders along with other substance dependence.
3. Previous history of any psychiatric illness.

Study design (Operational procedure)

Participants fulfilling the inclusion criteria were taken up for the study. These cases were enrolled after taking informed written consent from them to be included in the study. Sociodemographic details of the participants were recorded. GHQ-12[9] was used to screen for the presence of psychiatric comorbidity among the participants. Participants scoring >2 score on GHQ-12 were further assessed for the presence of adjustment disorder by the psychiatrist and were diagnosed according to the ICD-10[10] diagnostic criteria.

Instruments of study

Self-designed semi-structured proforma was used. It included the following Socio-demographic data GHQ-12 (General Health Questionnaire)[9] - This scale consisted of 12 questions (assessing 12 different symptoms) which evaluates the intensity of mental problems in the recent few weeks or a month. The Hindi version of GHQ-12 is a valid, reliable and sensitive tool and has been used in Indian patients.

The data thus collected was compiled and analyzed further. The quantitative data were analyzed by mean and standard deviation, and qualitative data were analyzed in percentage. The statistical analysis was performed by using SPSS 26 version software.

Results

As shown in Table 1, the sample which included 60 participants consisting of wives of alcohol dependent patients. Most common age group was of 18-25 years (n=24, 40%) followed by 26–35-year

Table-1: Socio-demographic distribution of wives of patients with alcohol dependence

Variables	Number (n)	Percentage (%)
Age Group (Years)		
18-25	24	40
26-35	15	25
36-45	12	20
> 46	9	15
Education		
Literae	15	25
Illiterate	45	75
Employment		
Employed	6	10
Unemployed	54	90
Residence		
Rural	39	65
Urban	21	35
Socio-economic status		
Upper	12	20
Middle (lower-middle, upper-middle)	21	35
Lower	27	45
Duration of marriage		
< 1 year	18	30
1-5 year	27	45
6-10 year	12	20
> 10 year	03	05

age group (n=15, 25%). Majority of participants were illiterate (n=45, 75%), unemployed (n=54, 90%) and of rural background (n=39, 65%). Majority of participants belong to lower socio-economic status (n=27, 45%). Maximum couples in the study had duration of marriage between 1-5 years. (n=27, 45%)

Table-2: Psychiatric comorbidity (GHQ-12, Cut-off score > 2)

Psychiatric comorbidity in wives of patients with alcohol dependence	Number of participants, n=60, (%)
Yes	35 (58%)
No	25 (42%)
Total	60 (100 %)

On applying GHQ-12 Hindi version, out of 60 participants, 35 participants (58%) scored more than 2 (cut-off score 2). (Table 2)

Table-3: Adjustment disorder in wives of patients with alcohol dependence (ICD-10 diagnostic criteria)

Adjustment disorder in wives of person with alcohol dependence	Number of participants, n=60, (%)
Yes	15 (25%)
No	20 (75%)
Total	35 (100%)

Table 3: 15 participants (25%) were suffering from adjustment disorder as per ICD-10 diagnostic criteria.

Table 4 depicts the subcategory of adjustment disorder as per ICD 10 diagnostic criteria. Out of 15, majority of participants were suffering from mixed anxiety and depressive reaction (n=09, 60%) followed by prolonged depressive reaction (n=03, 20%) and adjustment disorder with prominent disturbance of other emotions (n=03, 20%).

Discussion

In our study majority of subjects were in the age group of 18-25 years, illiterate, unemployed of rural background and belong to lower socio-economic status. Majority of the participants duration of marriage was less than 5 years. Our findings were in resonance with the findings of, Sharma et al,[3] Kishore et al[5] and Bhowmik et al[7] in terms of the comparatively younger age of the participants and Ghosh et al[11] in terms of domicile, education, socioeconomic status. However, our findings were in contrast with the findings of study done by Sreekumar et al[1] in which majority of the subjects were of middle age group, educated and employed. The possible reason behind this could be that the

Table-4: Adjustment Disorder in Wives of Patients with alcohol use disorder (ICD- 10), (n=15)

S. No.	Subcategory of Adjustment Disorder	No. of Wives of patients (Subjects)	Percentage
1.	Prolonged Depressive Reaction	03	20%
2.	Mixed Anxiety and Depressive Reaction	09	60%
3.	With predominant disturbance of other emotions	03	20%
4.	With predominant disturbance of conduct	–	–
5.	With mixed disturbance of emotions and conduct	–	–
6.	With other specified predominant symptoms	–	–
	Total	15	100%

institution where this study was conducted mostly cater to the rural population.

Prevalence of psychiatric comorbidity in our study was 58% (n=35) which was in resonance with the findings of Dandu et al[2] and Rajsheker et al[4] who reported 66% and 56% psychiatric comorbidity in their study respectively. On the other hand, Kishore et al[5] reported 90% psychiatric comorbidity in their study.

In our study, 25% (n=15) participants were found to be suffering from adjustment disorder which was in concordance with the findings of Soni et al,[12] on the other hand, Dandu et al[2] observed a slightly lower prevalence of adjustment disorder (18%) in wives of alcoholics. In contrast, few other studies reported a very low prevalence of adjustment disorder which was 4%, 13.3% and 4.3% respectively among wives of alcoholics.[12-14]

Among adjustment disorders, the most common diagnosis observed was mixed anxiety and depressive reaction which was seen in 60% (n=9) of participants followed by adjustment disorder with prolonged depressive reaction (20%, n=3) and adjustment disorder with predominant disturbance of other emotions (20%, n=3). In contrast to our findings Dandu et al[2] reported a higher prevalence of adjustment disorder with prolonged depressive reaction (63%) in their study followed by mixed anxiety and depression (21%) and adjustment disorder with predominant disturbance of other emotions (15%).

Limitations

- The study was a cross sectional study with a small sample size, it could have yielded more information if a longitudinal study with adequate sample size was planned on this issue.
- The study was conducted in the population attending the hospital, which forms a self-selected group. As such the findings cannot be generalized to the person staying in the community.

Conclusion

The present study concludes that the wives of patients with Alcohol Use Disorders have significant psychiatric morbidity in the form of adjustment disorder.

Implications of the study

Our results showed that wives of patients with Alcohol Use Disorders have high prevalence of adjustment disorder as psychiatric comorbidity. While assessing alcoholic patients, treating doctor should also ensure mental health screening of wives for early diagnosis and management.

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Original Article

Prevalence and pattern of Internet addiction in health care professionals during COVID-19 lockdown

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ABSTRACT

Background: *Internet addiction has major bearing on the mental health of various individuals and even health care professionals are not left untouched from it.* ***Aim:*** *To study the prevalence of Internet use in health care professionals (HCPs) pre-lockdwon, during and post Lockdown time.* ***Settings and design:*** *Educational institute and cross sectional study.* ***Methodology:*** *A total of 400 health care professionals from a tertiary care teaching hospital of northen India were contacted online by investigator for the purpose of gathering information on their internet addiction.* ***Results:*** *Internet Addiction (IA) was found to be maximum in age group 20 to 30 years (64.3%), most of participants were females (72.3%), most of them were married (65.1%), majority had income between 50,000 to 1 Lakh (42.6%) and majority were urban dwellers (98.8%). It was significantly associated with income andage of individuals (P<0.005). Scores of mild and moderate addiction were increased during lockdown periods. Sever addiction appeared during post-lockdown period only.* ***Conclusion:*** *The prevalence of IA is higher in HCPs than general population and whichfurther increased during lockdown period.*

Keywords: *Internet Addiction, COVID-19, Lockdown, Health care professionals.*

Introduction

Internet addiction (IA) is characterized by excessive or poorly controlled preoccupations, urges or behaviours regarding computer use and internet access that lead to impairment and stress.[1] Young described the cases of Internet addiction (IA) for the first time in 1998, where he proposed a classification of different internet related addictive behaviour.[2] Despite the lack of a consensus concerning diagnostic criteria so far, several studies have tried to estimate the prevalence of Internet addiction in general population rates range from 1 to 14% and it has been described as new 21st century epidemic.[3] The overall prevalence of internet addiction was found to be 10.8%, with moderate and severe internet addiction equal to 8% and 2.8%, respectively. Studies showed that the prevalence of internet addiction varies from 1.5% to 25% in different populations.[4]

Although Internet use plays a crucial role in our day to day life. During the lockdown, internet use has increased markedly with individuals being trapped in their homes for the entire day. When the physical meeting was not possible during lockdown times,the internet had provided a huge relief to people from buying even a small commodity to do banking at the convenience of their homes.

According to WHO, health care professionals include Doctors, Nurses, Midwives and support workers. There is a wide range of literature signifying internet addiction in general population, school going and college going students.[5] Internet is a vital means for any person in any region of the world for communication and connection with other coworkers and also for the purpose of dispensing information.[6] Medical profession is no exception to this, they have

been using this either to tide over their hard times for entertainment, to discuss their complex patient issues via the experienced panels through video meetings. But this regular use turning into addiction has not yet been prominently studied.

With the time requiring increasing adoption of electronic health records, telemedicine and other online resources, internet has become an important component of modern healthcare. For example, during the COVID19 pandemic there have been an expansion and utilization of telehealth services that would further increase the importance of telehealth in modern healthcare.[7]

The prevalence of IA was found to be 8 percent for mild severity and 2.8 percent for severe dependency using Young's Internet addiction test in a study conducted in Iran in 2011 on 426 medical students.[2] A meta-analysis that included 3,651 medical students reported a pooled prevalence rate of internet addiction at level of 30.1%.[8]

In a cross-sectional study on 597 medical and dental students from India reported the prevalence of extreme severity of IA to be 2.3% among dental students and 1.2% among medical students.[9]

In a study carried out on 90 first year undergraduate students in 2013 (Pre Lockdown) in a South Indian college, the prevalence of IA was found to be 18.8%.[10]

However, there is very scarce literature studying the comparative use of internet before, during and after lockdown amid COVID-19 and almost no Indian data comparing the use of internet during lockdown in medical professionals. So this necessitates the conducting of a study to know the patterns of use.

Materials and Methods

The present cross-sectional study involved the assessment of Internet addiction in Health care professionals of both sexes aged 20 to 60 years. The Institutional Ethics Committee clearance was obtained and the study was registered with Clinical trial registry-India (CTRI). Informed consent was obtained from the participants before including them in the study and anonymity of their identities was maintained throughout the study process. The contact details of health care professionals (HCPs) were taken from social media platforms like WhatsApp and Gmail. The HCPs were approached through an official WhatsApp group functional for resident doctors andnursing professionals.

Procedure

An email was sent to 300 Doctors and 300 Nurses depicting the outline of the study in anticipation of getting 200 samples from each category. A Google form containing Participant Information Sheet depicting purpose of study along with consent form, socio-demographic details including age, gender, occupation, marital status, education and family type were added. Once the participant consented for the study, they were asked to fill the responses on Young's Internet Addiction test (IAT). IAT is a 20-item 5-point Likert scale that measures the severity of self-reported compulsive use of the internet. According to Young's criteria, total IAT score between 20–39 represents average users with complete control of their internet use, a score between 40–69 represents over-users with frequent problems caused by their internet use, and a scores between 70–100 represents the internet addicts with significant problems caused by their use of the internet.[11] It took about 10 – 15 minutes to fill that form. The participants were asked to give responses on IAT for pre, during and after the Lockdown period.

For those participants who did not respond to the first mail, a reminder mail was sent second time after 1 week and those not responded to reminder mail were considered uninterested for study. Online data was collected through Google sheets.

Statistical Analysis

Data was analyzed using SPSS version 26. Descriptive analysis was done for percentage calculation, followed by application of Chi square test for association between sociodemographic and clinical variables with the severity of internet addiction. P value kept significant at <0.05 and highly significant at < 0.001.

Results

Initially Google form was sent to 600 participants and out of which 412 individuals responded back. Finally, responses from 200 nurses and 200 doctors were included in the final analysis. Remaining 12 forms were discarded due to incomplete information.

Table 1 shows that the majority of participants belonged to the age group of 20-30.Our study had predominant female participants (72.5%) and belonged to urban background 98.8%.

Table-1: Sociodemographic details of the participants in the study

Age:	20-30	64.5%
	31-40	14.5%
	41-50	12.3%
	51-60	5.5%
	>60	3.3%
Gender	Males	27.5%
	Females	72.5%
Marital status	Married	65.3%
	Unmarried	34.8%
Family type	Nuclear	84%%
	Joint	10.3%
	Extended	5.8%
Income	Upto 50,000	33.8%
	50,000-1 lakh	42.8%
	More than 1 lakh	23.5%
Occupation	Nurses	50%(n=200)
	Doctors	50%(n=200)
Residence	Urban	98.8%
	Rural	1.3%

moderate addiction. The prevalence of moderate score decreased in both doctors and nurses during post-lockdown period. There were no participants with internet addiction scores in severe range during pre- lockdown and lockdown period. Although the prevalence of severe internet addiction was reported up to 2.25% in both nurses and doctors groups during post-lockdown period.

Table 3 shows significant correlation amongst income and age group with severity of addiction during lockdown period and highly significant correlation amongst income and age with internet addiction during pre-lockdown and post-lockdown period.

Discussion

The COVID-19 pandemic and subsequent lockdowns affected the entire community. Internet was amajor source of communication and retrieval of information during this time. Health care professionals were also using this platform to share information and other purposes too.

The index study is the first Indian study to assess internet addiction in health care professionals during three time periods; before lock down, during lockdown and after lockdown.

Table-2: Internet addiction scores during three time periods

Severity	Participants	Pre lockdown	lockdown	Post lockdown
Normal	Nurses	105 (26%)	86 (21.5%)	108 (27%)
	Doctors	109 (27.25%)	87 ((21.75%)	109 (27.25%)
Mild	Nurses	67 (16.75%)	69 (17.25%)	56 (14%)
	Doctors	65 (16.25%)	66 (16.5%)	53 (13.25%)
Moderate	Nurses	28 (7%)	45 (11.25%)	27 (6.75%)
	Doctors	26 (6.5%)	47 (11.75%)	29 (7.25%)
Severe	Nurses	0	0	9 (2.25%)
	Doctors	0	0	9 (2.25%)

The normal internet addiction scores during three periods viz. before lockdown, during lockdown and after the lockdown has been depicted in table 2. The internet usage within normal range was comparable between doctors and nurses during pre-lockdown period. The number of participants within the normal range reduced from 26% to 21.5% and from 27.25 % to 21.75 % in nurses and doctors respectively during the lockdown period. The prevalence of mild scores increased from 16.75% to 17.25% and from 16.25% to 16.5% in nurses and doctors respectively during lockdown period. There was significant increase in internet addiction during the lockdown period from 7% to 11.25 % in nurses and 6.5% to 11.75% in doctors under the category of

Table-3: Correlation of various sociodemographic parameters with internet addiction scores during pre-lockdown, lockdown and post lockdown using Chi Square

	Before lockdown (p value)	Lockdown	Post lockdown
Income	0.001**	0.001**	0.001**
Age	0.001**	0.001**	0.001**
Gender	0.735	0.05*	0.056
Occupation	0.914	0.944	0.984

*Significant ** highly significant

Our study predominantly comprised of participants in the 20-30 age group. This could be attributed to the more awareness of internet usage, social media among younger population. Literature reports more prevalent use of internet in the age group 18 to 24 years and this is similar to our study findings.[12] In a study conducted on 49 doctors and 198 Nurses, 123 medical assistants, 73 other health care workers and 42 health care workers, IA was associated with age between 18 and 25 years.[13] Moreover, maximum literature exists for internet addiction on adolescent population only.[13,14,15]

The index study sample comprised of predominately females (72.3%), those belonging to urban population (98.8%) and nuclear family (83.8%). Since the study was conducted in the tertiary care city based hospital, this could be attributed to the individuals belonging to urban population and nuclear family.

The prevalence of IA during pre-lockdown amongst nurses was 23.75% in mild to moderate category, while amongst doctors it was 22.75%. During lockdown period, the prevalence increased to 28.5% amongst nurses and to 28.25 % in doctors. Post- lockdown, the prevalence of IA decreased to 23% amongst nurses and 22.75 % amongst doctors. Post Lockdown, nurses had 23% and doctors had 22.75% prevalence of Internet addiction. There was not much difference in prevalence of internet addiction among doctors and nurses in our study. In another German study conducted in general population, 2.1% met the criterion of internet addiction. Thus, health care workers had significantly higher prevalence of internet addiction. This could be attributed to the stressful long working hours[16] and dealing with human life, thus using internet as a temporary relief measure.[17]

In nurses group, during pre-lockdown period, 26% were having normal usage of internet, 16.75% had mild severity of internet addiction, 7% with moderate severity. While during the lockdown period, the normal usage decreased to 21.5%, participants with mild severity increased to 17.25% and 11.25 % had moderate severity of IA. While post-lockdown, 27% had normal usage of IA, 14% had mild severity, 6.75% participants had moderate severity and 2.25 % had severe addiction. Amongst doctors the normal usage was 27.5% during pre-lockdown period, mild addiction in 16.25 % of the individuals and moderate addiction in 6.5% of the individuals. During the lockdown period, normal usage decreased to 21.25%, mild increased to 16.5% while moderate increased to 11.75%. Post lockdown, normal usage was 27.25%, mild decreased to 13.25%, moderate decreased to 7.25% while severe came out to be 2.25%. Despite extensive research, authors could not find study comparing pre and the post-lockdown internet addiction rates in health care professionals.

The scores of Internet addiction were on the risein the moderate to severe range during lockdown period. In another Asian study, the prevalence of internet addiction increased during COVID-19 pandemic.[18] This could be due to the decreased motility and increased work related stress during COVID times which lead participants to confine to internet more as a form of dealing with it. However, the scores further decreased after lockdown period. This finding is unique in our study. The heightened, stressful and longer work hours, staying away from family during COVID-19 postings could have lead the health care professionals to look for internet usage as relief as it was most easily available during lockdown period and all other activities of recreation being closed during this time. Post-lockdown period, the scores decreased, thus hope of getting back to the life as before could be responsible for it. The scores within the severe range were seen only during the post lockdown period. It could be attributed to the ever increasing internet usage during the lock down period as we have seen. Around 9% of participants in both the group continued to use it in the post lockdown period, despite having the lockdown lifted. Thus, they still confined to the internet usage as a relief measure.

There was significant association of income and age with the internet addiction scores. Our sample comprised of predominantly young population, thus the association could be due to more awareness of various social media platforms and internet usage in them. The participants from income group of 50,000 to 1 lakh per month were more as compared to other income groups. This income group comprises of Junior resident doctors, staff nurses who were first line COVID workers during the lockdown period with hectic working hours leading to greater internet usage. In another study from North India reported that internet addiction was found to

be associated with higher family income.[19]Thus the current study is in accordance to this study.

Index study has strengths of adequate sample size, age stratification for individuals and online method of data collection. Though also have few limitations as study did not assess any psychiatric comorbidity, such as depression, anxiety, sleep disturbances, substance use which are often observed in the subjects with addictive disorders. Nevertheless, this is the first Indian study to compare the prevalence of internet use during pre-lockdown, during lockdown and post-lockdown period in HCPs.

Conclusion

Internet addiction is now emerging as a major public health problem. Internet addiction was found to be on the rise during pandemic (lockdown period) in this index study. Moreover a brief number of participants continued to have internet addiction in the severe range post-lockdown. Since health care professionals are responsible for taking care of health of other individuals; hence it is imperative to design policies to take care of their mental health too. The falling down of levels of addiction in post-lockdown period shows that the confinement during COVID period had led to these rising trends so this necessitate to design policies during Lockdown period so that in future it can be taken care of.

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Original Article

Probiotics as an add-on in Major Depressive Disorder

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ABSTRACT

Introduction: *Major Depressive Disorder (MDD) is a burdensome disorder which was earlier accepted as a disorder of reduced monoaminergic activity but it has now been established that the disturbance in equilibrium of gut microbiota has also been involved in the pathophysiology of depression. Inflammation, oxidative stress, dysregulated function of the hypothalamic-pituitary-adrenal axis, and decreased neurotrophins including brain-derived neurotrophic factor (BDNF) are the major pathophysiological pathways that play a role in pathogenesis of MDD. Probiotics have the potential to modulate the gut microbiome, thus, evolving a new era of probiotics referred to as "psychobiotics".* ***Objective:*** *To study the effect of probiotic supplementation on symptoms of depression in patients of major depressive disorder already on treatment with antidepressants.* ***Materials and Methods:*** *This was a randomized, double blind, placebo-controlled trial conducted on 100 patients of MDD presenting to DMC & H who were already on treatment with antidepressants. Patients were allotted to consecutively receive either probiotic or the placebo for 6 weeks. Both the patient and researcher were blinded. Patients were screened using MINI scale having only MDD and severity of depression was assessed at 0, 3 & 6 weeks each using HAM-D and MADRS scales.* ***Results:*** *After 6 weeks of intervention, patients who received probiotic supplements had significantly decreased HAM-D score with mean ± SD 28.04 ± 4.03 at Week 0 to 18.04 ± 3.55 at Week 6, as compared to placebo group with a mean score 28.00 ± 4.83 at Week 0 to 20.78 ± 8.12 at Week 6. MADRS score in probiotic group decreased from mean 41.34 ± 4.56 at Week 0 to 28.40 ± 3.93 at Week 6, as compared to placebo group with a mean score 41.56 ± 7.05 at the Week 0 to 30.22 ± 10.60 at the Week 6.* ***Conclusion:*** *These results suggested that adding probiotic to antidepressant treatment may have positive effect in patients with MDD. Large scale trials can be conducted according to the results.*

Keywords: *Gut-Brain Axis, Gut Microbiome, Probiotics.*

Introduction

Major Depressive Disorder is a burden some disorder which was earlier accepted as a disorder of reduced monoaminergic activity in the brain but it has now been established that disturbance in the equilibrium of the gut microbiota has also been involved in the pathophysiology of depression.[1] Inflammation, oxidative stress, dysregulated function of the hypothalamic-pituitary-adrenal axis, and decreased neurotrophins including brain-derived neurotrophic factor are the major pathophysiological pathways that play a role in pathogenesis of Major Depressive Disorder.[2] Probiotics have the potential to modulate the gut microbiome, thus, evolving a new era of probiotics referred to as "psychobiotics".[3] Thus, it is now established that patients with major depression have a pro-inflammatory phenotype with increased levels of pro-inflammatory cytokines such

as elevations in plasma interleukin-6 (IL-6) and tumour necrosis factor alpha (TNF alpha). Certain probiotic bacteria have an anti-inflammatory property with the capacity to alter a pro-inflammatory phenotype.[4,5] It is postulated that the effects of probiotics on psychiatric symptoms are mediated through the gut-brain axis by reducing systemic inflammation and modulating neurotransmission. By maintaining the integrity of the GI lining, probiotics decrease permeability caused by compromised tight junctions of endothelial cells in the GI lining, thus preventing bacteria and toxins to leak from the GI tract into the bloodstream.

Aims and Objectives

To study the effect of probiotic supplementation on symptoms of depression in patients of major depressive disorder already on antidepressants.

Materials and Methods

Source of Data: This was a randomized, double blind, placebo-controlled trial conducted on 100 patients of Major Depressive Disorder presenting to Department of Psychiatry in DMC & H who were already on treatment with antidepressants.

Inclusion Criteria

1. The patients with a diagnosis of Major Depressive Disorder according to DSM-5 criteria presenting to Department of Psychiatry in DMC & H, Ludhiana.
2. Age group between 18-65 years.
3. Patients who have agreed upon no changes in their routine physical activity and dietary intake throughout the study.

Exclusion Criteria

1. Any other major psychiatric disorder.
2. Regular intake of antibiotics or probiotics during last 2 months before recruitment for the study.
3. History of any renal, hepatic, cardiovascular or respiratory disease in the patient.
4. Female patients currently having pregnancy and lactation.
5. Immunocompromised patients.
6. Patients who have not given consent for the study.

Methodology

The study was a randomized, double blind, placebo-controlled trial, conducted on 100 patients of Major Depressive Disorderin age group of 18-65 years, presenting to Department of Psychiatry in DMC & H, Ludhiana who were already on treatment with antidepressants. Patients were allotted to consecutively receive either probiotic or the placebo for 6 weeks where both the patient and researcher were blinded. Patients were screened using M.I.N.I. having only MDD and severity of depression was assessed at 0, 3 and 6 weeks, each using HAM-D and MADRS scales. Antidepressant treatment was continued and the Probiotic as well as the Placebo were administered as an add on treatment. Unblinding was done after the study was completed.

Tools

1. Socio-Demographic Proforma
2. Mini International Neuropsychiatric Interview (M.I.N.I.) [6]
3. Hamilton Rating Scale for Depression (HAM-D)[7]
4. Montgomery Asberg Depression Rating Scale (MADRS)[8]

Trial Registration

Clinical Trials Registry - India: CTRI/2020/05/025027 [Registered on: 05/05/2020]

Results

Table 1 shows that in terms of socio-demographic variables, both the groups were biostatistically similar with no significant variation.

Table 2 shows Comparison of the two Groups in Terms of change in HAM-D over time. In Placebo Group, the mean ± SD HAM-D score decreased from 28.00 ± 4.83 at Week 0 to 20.78 ± 8.12 at Week 6 whereas in Probiotic Group, the mean ± SD HAM-D score decreased from 28.04 ± 4.03 at Week 0 to 18.04 ± 3.55 at Week 6. Thus, Probiotic Group showed greater improvement in HAM-D scores as compared to Placebo Group as there was a significant decrease in HAM-D score in Probiotic group as compared to Placebo group at the end of Week 6 ($W=1741.000$, $p < 0.001$).

Figure 1 shows Comparison of the two Groups in Terms of change in HAM-D over time and there was significant decrease in mean HAM-D score in

Table 1: Association between Group and Parameters

Parameters	Group		p value
	Placebo (Group A) (n = 50)	Probiotic (Group B) (n = 50)	
Age			0.264[1]
18–25 Years	5 (10.0%)	2 (4.0%)	
26–40 Years	18 (36.0%)	27 (54.0%)	
41–55 Years	21 (42.0%)	15 (30.0%)	
56–65 Years	6 (12.0%)	6 (12.0%)	
Gender			1.000[2]
Male	28 (56.0%)	28 (56.0%)	
Female	22 (44.0%)	22 (44.0%)	
Education			0.660[1]
Illiterate	10 (20.0%)	13 (26.0%)	
Primary School	13 (26.0%)	10 (20.0%)	
Middle School	5 (10.0%)	7 (14.0%)	
High School	9 (18.0%)	8 (16.0%)	
Higher Secondary/Diploma	6 (12.0%)	8 (16.0%)	
Graduate	5 (10.0%)	1 (2.0%)	
Honors/Post-Graduate	2 (4.0%)	3 (6.0%)	
Occupation			0.885[1]
Farmer	15 (30.0%)	12 (24.0%)	
Homemaker	13 (26.0%)	14 (28.0%)	
Semi-Skilled	9 (18.0%)	7 (14.0%)	
Businessman/Self-Employed	5 (10.0%)	9 (18.0%)	
Skilled	4 (8.0%)	3 (6.0%)	
Student	3 (6.0%)	2 (4.0%)	
Unemployed	1 (2.0%)	2 (4.0%)	
Retired	0 (0.0%)	1 (2.0%)	
Monthly Income (Rs)			0.840[1]
Upto 10,000	22 (44.0%)	22 (44.0%)	
10,000-20,000	14 (28.0%)	12 (24.0%)	
20,000-30,000	8 (16.0%)	7 (14.0%)	
30,000-50,000	2 (4.0%)	5 (10.0%)	
>50,000	4 (8.0%)	4 (8.0%)	
Family Type			0.914[2]
Nuclear	7 (14.0%)	6 (12.0%)	
Extended	15 (30.0%)	14 (28.0%)	
Joint	28 (56.0%)	30 (60.0%)	
Marital Status			0.635[1]
Married	33 (66.0%)	32 (64.0%)	
Unmarried	16 (32.0%)	14 (28.0%)	
Divorced	1 (2.0%)	3 (6.0%)	
Remarried	0 (0.0%)	1 (2.0%)	
Family H/o Psychiatric Illness (Yes)	25 (50.0%)	23 (46.0%)	0.689[2]
H/o Self-Harm or suicidal ideation (Yes)	33 (66.0%)	34 (68.0%)	0.832[2]
Any Psychiatric Co-Morbidity	0 (0.0%)	0 (0.0%)	1.000[2]

****Significant at p < 0.05, 1: Fisher's Exact Test, 2: Chi-Squared Test, 3: Wilcoxon-Mann-Whitney U Test*

Probiotic group as compared to Placebo group at Week 3 (p = 0.002) and at Week 6 (p < 0.001).

Table 3 shows Comparison of the two Groups in Terms of change in MADRS over time. In Placebo Group, the mean ± SD MADRS score decreased from 41.56 ± 7.05 at Week 0 to 30.22 ± 10.60 at Week 6 whereas In Probiotic Group, the mean ± SD MADRS scoredecreased from 41.34 ± 4.56 at the Week 0 to 28.40 ± 3.93 at Week 6. The results of this study showed that there was a significant decrease in MADRS score in Probiotic group as compared to Placebo group as there was significant

Table-2: Comparison of the two Groups in Terms of change in HAM-Dover time

HAM-D	Group		P value for comparison of the two groups at each of the timepoints (Wilcoxon-Mann-Whitney Test)
	A (Placebo Group)	B (Probiotic Group)	
	Mean (SD)	Mean (SD)	
Week 0	28.00 (4.83)	28.04 (4.03)	0.945
Week 3	23.50 (6.22)	21.60 (3.84)	0.002
Week 6	20.78 (8.12)	18.04 (3.55)	< 0.001
P Value for change in HAM-D over time within each group (Friedman Test)	< 0.001	< 0.001	

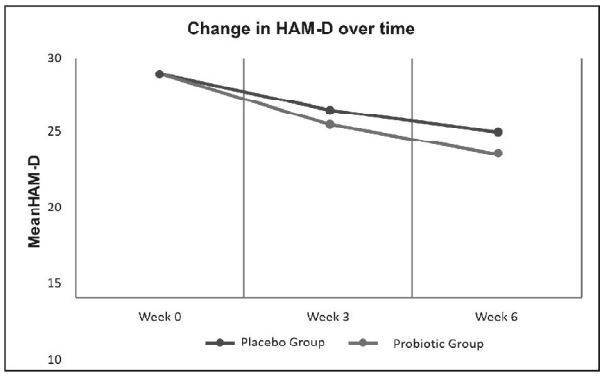

Fig. 1: Comparison (line diagram) of the two Groups in Termsofchange in HAM-D over time

decrease in mean MADRSscore in Probiotic group as compared to Placebo group at Week 3 (p=0.003) and atWeek6(p=0.001).

Figure 2 shows Comparison of the two Groups in Terms of change in MADRS over time and there was significant decrease in mean MADRS score in group B as compared to group A at Week 3 (p = 0.003) and at Week 6 (p = 0.001).

Discussion

In this study, in terms of socio-demographic variables, both the groups were biostatistically similar with no significant variation among the groups.

Table-3: Comparison of the two Groups in Terms of change in MADRS over time (n = 100)

MADRS	Group		P value for comparison of the two groups at each of the timepoints (Wilcoxon-Mann-Whitney Test)
	A (Placebo Group)	B (Probiotic Group)	
	Mean (SD)	Mean (SD)	
Week 0	41.56 (7.05)	41.34 (4.56)	0.363
Week 3	37.02 (9.16)	34.36 (4.16)	0.003
Week 6	30.22 (10.60)	28.40 (3.93)	0.001
P Value for change in MADRS over time within each group (Friedman Test)	< 0.001	< 0.001	

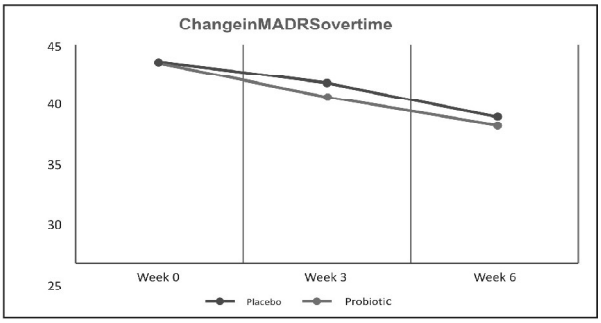

Fig. 2: Comparison (line diagram) of the two Groups in Terms of change in MADRS over time (n = 100)

Effect on HAMD scores

The present study showed that at the end of Week 6, the placebo group had mean HAM-D score of 20.78 which decreased from mean HAM-D score of 28.00 at week 0 Whereas, the probiotic group had mean HAM-D score of 18.04 at the end of week 6 which decreased from mean HAM-D score of 28.04 at week 0. The findings from the present study

showed that there was asignificant decrease in HAM-D score in probiotic group as compared to placebo group at the end of Week 6 (W = 1741.000, p < 0.001).

Our results were in agreement to a study conducted by Ghorbani et al[9] results of which showed a greater reduction in HAM-D score in synbiotic treated patients (Mean ± SD = -19.25 ± 1.71) compared to placebo taking group (Mean ± SD = -17.75 ± 2.05; p = 0.024). It was concluded that high plasma concentrations of proinflammatory cytokines detected in depressive patients were responsible for depressive symptoms, synbiotic therapy can modulate its stress responses and improve depression symptoms.

Effect on MADRS score

The present study showed that at the end of Week 6, the placebo group had mean MADRS score of 30.22 at the end of Week 6 which decreased from mean MADRS score of 41.56 at week 0, Whereas, the probiotic group had mean MADRS score of 28.40 at Week 6 which decreased from mean MADRS score of 41.34 at week 0. The findings from the present study showed that there was a significant decrease in MADRS score in probiotic group as compared to placebo group at the end of Week 6 (W = 1617.000, p = 0.001).

Additionally, In a study conducted by Jacka et al[10] it was determined that even dietary improvement may provide an efficacious and accessible treatment strategy for the management of MDD. It showed that the dietary support group demonstrated significantly greater improvement on MADRS scores than the social support control group. It was proposed that dietary improvement may influence depressive illness through its action on inflammatory and oxidative stress pathways, as well as brain plasticity.

Our study results are similar to a study conducted by Akkasheh et al[11] in which, after 8 weeks of probiotic intervention, patients had significantly decreased Beck Depression Inventory total scores (p = 0.001) compared with the placebo. It was concluded that probiotics might result in improved symptoms of depression through increased plasma tryptophan levels, decreased serotonin metabolite concentrations in the frontal cortex, and decreased dopamine metabolite concentrations in the amygdaloid cortex. Probiotics influence both the enteric nervous system and the central nervous system in addition to their effects on the mucosal immune system by modifying the gastrointestinal tract microbiome.

The results of our study are similar with a study conducted by Kazemi et al[1] whose results showed that probiotic supplementation resulted in a significant decrease in Becks Depression Inventory score (17.39–9.1) compared to the placebo (18.18–15.55) and prebiotic (19.72–14.14) supplementation (p = 0.042).

To conclude, Major depressive disorder is now considered a neuroimmunological disorder that comprises not only the monoamine deficiency, but also a persistent low-grade inflammation, oxidative stress, dysregulated function of the hypothalamic-pituitary-adrenal (HPA) axis, and decreased BDNF levels. Essentially, what we eat influences the composition of our gut microbiota and thus regulates the metabolites produced. When eating a healthy diet rich in probiotics, we feed the beneficial microbes in our gut and they return the favor by producing anti-inflammatory metabolites, energy, and beneficial neurochemicals.[3] MDD patients have raised levels of a variety of inflammatory markers including interleukin-6 (IL-6), interleukin-8 (IL-8), tumor necrosis factor - alpha (TNF-a), and C-reactive protein (CRP). The gut microbiota is now being viewed as a virtual endocrine organ that has bidirectional communication with the central nervous system through the microbiome-gut-brain axis. Probiotics could directly, or through influence of other gut microbes, play a role in depression by inhibiting gut and systemic inflammation and thus, activating the microbiome-gut-brain axis. These metabolites reduce systemic inflammation by regulating the immune system and calming the HPA axis, which helps bring the body back into homeostasis and reduces depressive symptoms.[13] The beneficial neurochemicals produced by the microflora are able to pass the blood-brain barrier and regulate levels of BDNF, GABA, dopamine, and serotonin in the brain, thus reducing depressive symptoms.[3]

Limitations

A limitation of the present study was that the sample size was limited to100 participants. Also,

the sample was limited to one hospital setting. It should be noted that in this study, probiotics and antidepressants were prescribed together, the specific beneficial effects of each drug to the improvement in symptoms of depression cannot be evaluated.

Summary and Conclusion

In our study we noted the following points:

- Interms of socio-demographic variables, both the groups were statistically similar with no significant variation.
- In Placebo Group, the mean ± SD HAM-D score decreased from 28.00 ± 4.83 at the Week 0 time point to 20.78 ± 8.12 at the Week 6 time point whereas in Probiotic Group, the mean ± SD HAM-D score decreased from 28.04 ± 4.03 at the Week 0 time point to 18.04 ± 3.55 at the Week 6 time point which was significant ($W = 1741.000$, $p < 0.001$).
- In Placebo Group, the mean ± SD MADRS score decreased from 41.56 ± 7.05 at the Week 0 time point to 30.22 ± 10.60 at the Week 6 time point whereas In Probiotic Group, the mean ± SD MADRS score decreased from 41.34 ± 4.56 at the Week 0 time point to 28.40 ± 3.93 at the Week 6 time point which was significant ($W = 1617.000$, $p = 0.001$).
- Therefore, Probiotic Group showed greater improvement in HAM-D & MADRS scores as compared to Placebo Group.
- Based on the findings of this study, it is concluded that probiotic capsule used in this study, containing probiotic not less than 2.5 billion cells of Lactobacillus acidophilus, Lactobacillus rhamnosus, Bifidobacterium longum, Bacillus coagulans, and Saccharomycesboulardii, has a beneficial effect as an adjuvant treatment in patients of Major Depressive Disorder.

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Original Article

Predictors of Quality of Life among Patients with Bipolar Disorder with and without Cannabis Use Disorder: A Hospital-Based Cross-Sectional Study

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ABSTRACT

Introduction: *In the bipolar disorder (BD) literature, quality of life (QOL) is becoming a more prominent outcome of interest, paralleling the movement in mental health care and research from a narrow, biomedical focus to a broader, psychological approach.* ***Purpose****: The aim of this study is to identify the factors affecting quality of life of patients with bipolar disorder with and without cannabis use disorder.* ***Methods:*** *60 individuals with bipolar disorder without cannabis use disorder (CUD-) and 60 individuals with bipolar disorder with cannabis use disorder (CUD+) were recruited in the study. The Hindi version of the World Health Organization Quality of Life-BREF (WHOQOL-BREF) scale was used to measure the QOL of patients. The Wisconsin Card Sorting Test (WCST) was utilized to assess executive functions. Other tools for measurement included are Young Mania Rating Scale (YMRS score <6), Hamilton Depression Rating Scale (HDRS score <7), Cannabis Use Disorders Identification Test- Revised(CUDIT-R score >8), and Severity of Dependence Scale (SDS). Pearson correlation coefficients, independent t-test and hierarchical multiple regression analysis were applied to analyze the data.* ***Results:*** *The severity of cannabis dependence and duration of cannabis use were significantly correlated with each specific domain of WHOQOL-BREF in CUD+. The hierarchical multiple regression model revealed that duration of cannabis use, severity of cannabis dependence, and executive dysfunction were found to be the main factors predicting a decrease in each domains of QOLin CUD+ group. Executive dysfunction (Score on WCST) and unemployment were found to be predictive factors for all domains of QOL in CUD-group.* ***Conclusion:*** *Our findings indicate that poorer QOL in euthymic bipolar patients with and without cannabis use disorder cannot be explained exclusively by mood symptoms rather other important factor mentioned above are contributing to it.*

Key words*: Quality of Life, WHOQOL-BREF, Executive Functions, Cannabis Use Disorder, Bipolar Disorder.*

Introduction

Bipolar disorder (BD) leads to reduced functioning (social and occupational) and quality of life (QOL)[1] even during the remission phase as compared to the general population.[2] Also, Substance abuse is exceptionally common during the course of bipolar disorder, which have significant impact on the course and prognosis of these patients. Cannabis is the most widely used illicit substance in the world,[3] and is one of the most commonly used substances among individuals with psychiatric disorders.[4] Compared to the general population, patients with BD have a

two-to-three-fold increase in cannabis use disorder (CUD) rates.[5,6] The association between cannabis abuse (age at onset, quantity and duration of exposure) in patients with psychiatric disorders has been recognized as an independent risk factor for the occurrence of acute psychotic episodes, cognitive impairment, behavioural disturbances, symptom exacerbation, and negative events in the course of illness.[7,8,9] There are several large, prospective investigations[10,11] of the effects of alcohol use disorders on the course of bipolar illness. On the contrary, the effects of cannabis have been much less studied. The few systematic studies published suggest that cannabis abuse among patients with bipolar disorder associated with greater treatment non-compliance, impaired functioning[12,13] and increased duration or severity of mania.[14,15] In addition, patients with bipolar disorder who use cannabis are more likely to have psychotic symptoms[13], make more frequent suicide attempts,[16,17] and show a poorer response to lithium,[12] when compared with bipolar patients who do not use cannabis. However, no study has systematically assessed QOL in CUD+ patients and compared with CUD- patients. For example, though cannabis use has been found to be associated with decreased social functioning in the general population,[18] less is understood about the functional effects of cannabis use on patients with bipolar disorders. Therefore, the purpose of present study is to unravel the influence of cannabis on the QOL of patients with bipolar disorder. In this study we also seek to go one step further to evaluate important predictors of QOL in both the sample population (CUD+ and CUD-) and identifying those may help in development of targeted intervention or long-term programmes for care of patients with bipolar disorder.

Aim

The aim of this study is to identify the factors affecting quality of life of patients with bipolar disorder with and without cannabis use disorder.

Materials and Methods

This study was conducted in the psychiatry department of tertiary care hospital in north India, after clearance from the ethical and scientific committee. The study was cross-sectional in design in which subjects were selected by purposive sampling based on inclusion and exclusion criteria. The sample consisted of 60 euthymic bipolar male patients (aged 18-55 years, educated up to 10th grade) without a history of cannabis use disorder (CUD-) and 60 euthymic bipolar male patients (aged 18-55 years, educated up to 10th grade) with a history of cannabis use disorder (CUD+). The patients were chosen who had already been diagnosed with bipolar affective disorder, currently in remission according to ICD-10 Diagnostic criteria. The criteria of remission stage for the both groups which was defined as a score < 6 on the Young Mania Rating Scale (YMRS)[33] and a score < 7 on the Hamilton Depression Rating Scale(HDRS)[34] for at least 1 month. Other tools for measurement included are Cannabis Use Disorders Identification Test- Revised (CUDIT-R),[36] Severity of Dependence Scale (SDS)[37] Wisconsin Card Sorting Test (WCST)[38] and WHOQOL-BREF scale.[35] CUDIT-R[36] and SDS[37] scale were used to assess Cannabis harmful use and severity of cannabis dependence respectively. In CUDIT-R a cut off of 8 was selected, which indicates hazardous and harmful cannabis use and a score of over 10 strongly indicates cannabis dependence. The Wisconsin Card Sorting Test (WCST)[38] was utilized to assess executive functions. The Hindi version WHOQOL-BREF was used to measure the quality of life of patients. It covers domains such as physical health, psychological functioning, social relationships and environment in addition to items on general well-being (Item No. 1, 2). The items are scored from 1-5, and a higher score indicates better QOL. The study subjects were given full information about the nature of study and informed consent was taken from the subjects or their guardians present during that time in the OPD.

The results obtained were analyzed using appropriate statistics such as mean, S.D., Independent t-test was used to test significance between QOL variables for two groups. Pearson's correlation was used for the statistical analysis to determine the associations of variables and the QOL domain scores A hierarchical multiple regression analysis of the WHOQOL-BREF scores was applied to determine their predictors. The above statistics were done using the Statistical Package for Social Sciences (SPSS, ver 16). The levels of significance of 0.05, 0.01 and 0.001 were adopted in the study.

Results

Demographic and Clinical Characteristic

The two groups did not differ significantly with respect to gender, marital status, religion, socio-economic status and living place and also regarding the HDRS and YMRS scores. Bipolar patients with cannabis use disorder (CUD+) are less qualified than the other group (CUD-). Also, unemployment is more in the group using cannabis (41.7%) when compared to the group not using cannabis (21.7%). The mean age of the euthymic bipolar patients in both sample groups CUD- and CUD+ were 30.18 ± 5.21 and 31.23 ± 5.13 respectively. Patients with bipolar affective disorder showed a wide range of age of onset with a mean age of onset for CUD- and CUD+ group is 23.15 ± 4.66 and 23.28 ± 3.40 respectively. On the other hand, the patients in both groups did not differ with respect to duration of illness and duration of treatment. But the number of depressive episodes (CUD+ 0.26 ± 0.54, CUD- 0.76 ± 0.87) were more in CUD-. The socio-demographic and clinical characteristics of both groups are shown in Table 1.

Comparison of QOL between CUD+ and CUD- groups

The subjects in CUD-group had significantly better QOL in all domains of WHOQOL-BREF as compared to CUD+ subjects. Table 2 presents differences in QOL domain scores among the groups.

Variables associated with QOL in CUD+ and CUD- groups

In CUD- group, age was negatively associated with environmental domain of WHOQOL-BREF. Education and socioeconomic status did not correlate significantly with any sub domains of QOL while unemployment was negatively associated with psychological domain of QOL. Family history of bipolar disorder was inversely associated with physical domain and total score of QOL. The number of manic episode and total number of episodes were inversely correlated with scores on environmental domain of QOL. There was no significant correlation found between sub domains of QOL and duration of illness, and depressive episodes in CUD- group (Table 3).

In CUD+, age was negatively correlated with all sub domains of QOL except physical health domain. Marital status is positively correlated with sub domains of physical health, social relationship, environmental, and total score of QOL. Socio-economic status has positive but weak correlation with physical health domain of QOL. Duration of illness was inversely associated with quality of life; psychological health, social relationship, environmental domains, and total score of QOL. Total number of episodes and number of manic episodes were associated inversely with all sub domains related to WHOQOL-BREF and total score of QOL. Number of depressive episodes were also inversely associated with the physical health, environmental sub domains and total score of QOL (Table 3). Significant correlation was present between executive functions and quality of life in both the groups.

All domains of quality of life showed a significant negative correlation with the duration of cannabis use in CUD+ group. Severity of cannabis dependence was negatively associated with psychological health, social relationship, environmental and total score of QOL in CUD+ group (Table 4).

Predictors of QOL in both groups

The hierarchical multiple regression analyses with the stepwise method revealed that duration of cannabis use, severity of cannabis dependence, and executive dysfunction, were found to be the main factors predicting a decrease in the each domains of quality of life in CUD+. Executive dysfunction (Score on WCST) and unemployment were found to be predictive factors for all domains of QOL in CUD-. Results are shown in Table 5 and 6. Excluded variables are not reported herein.

Discussion

In order to determine important factors contributing to each quality-of-life domains for both the groups we have utilized stepwise hierarchical multiple regression analysis. All variables (demographic, clinical characteristics, and executive functions) that showed significant bivariate correlation with QOL were entered as independent variables with each QOL domain separately as a dependent variable.

In the present study unemployment and executive functions were found to be predictors of quality of life in CUD- group and marital status, duration of cannabis use, severity of cannabis

Table-1: Baseline Characteristics

		CUD- (n=60)		CUD+ (n=60)	
		N	%	N	%
Marital status	Married	35	58.3 %	34	56.7%
	Unmarried	25	41.7%	26	43.3%
Religion	Hindu	46	76.7%	48	80.0%
	Muslim	14	23.3%	12	20.0%
Education	High school	23	38.3%	39	65.0%
	Intermediate	21	30.0%	17	28.3%
	Graduate	12	20.0%	2	3.3%
	Postgraduate	4	6.7%	2	3.3%
Occupation	Unemployed	13	21.7%	25	41.7%
	Unskilled worker	21	35.0%	28	46.7%
	Skilled worker	20	33.3%	7	11.7%
	Professional	6	10.0%	0	.0%
Socioeconomic status	Lower	39	65.0%	38	63.3%
	Upper lower	15	25.0%	21	35.0%
	Middle	6	10.0%	1	1.7%
Habitat	Rural	30	50.0%	36	60.0%
	Semiurban	20	33.3%	19	31.7%
	Urban	10	16.7%	5	8.3%
		CUD-MEAN ± SD	CUD+MEAN ± SD	T	P
Age in years		30.18 ± 5.21	31.23 ± 5.13	1.111	0.269
Age of onset of illness in years		23.15 ± 4.66	23.28 ± 3.40	.179	0.858
Duration of illness in years		7.30 ± 3.82	7.81 ± 3.78	.743	0.459
Number of depressive episodes		0.76 ± 0.87	0.26 ± 0.54	3.764	0.000**
Number of manic episodes		3.81 ± 1.40	4.25 ± 1.81	1.459	0.147
Total number of episodes		4.58 ± 1.61	4.51 ± 2.10	0.195	0.846
Duration of treatment in months		4.10 ± 0.77	4.16 ± 0.71	.489	0.626

**p<.01

Note. CUD-Bipolar disorder without Cannabis Use Disorder; CUD+ Bipolar disorder with Cannabis Use Disorder; n: Number of patients; %: Percentage

Table-2: Comparison of QOL in the bipolar disorder CUD- and CUD+ groups

Variable (WHO-QOL-BREF)	BD without CUD Mean ± SD	BD with CUD Mean ± SD	T	P
Physical health domain	29.90 ± 11.07	22.60 ± 11.99	3.464	0.001**
Psychological health domain	30.85 ± 9.78	24.03 ± 12.37	3.346	0.001**
Social relationship domain	29.18 ± 14.18	20.23 ± 14.05	3.472	0.001**
Environment domain	35.40 ± 16.56	27.36 ± 14.26	2.846	0.005*
Total score of QOL	60.63 ± 10.88	52.06 ± 9.95	4.497	.000**

**p < .05; **p < .01*

n = 60 each. Higher score indicates better QOL.

Note. WHO-QOL-BREF: The World Health Organization Quality of Life – BREF version; CUD- : Bipolar disorder without Cannabis Use Disorder; CUD+: Bipolar disorder with Cannabis Use Disorder; SD: Standard Deviation.

dependence, and executive functions were found to be predictors of quality of life in CUD+ group. Though age, family history of bipolar disorder, duration of illness, depressive episode, manic episode, and total number of episodes were negatively related to the quality of life but their predictive power diminished when other variables are taken into account. This is not in accordance with previous studies done by Fenn et al.,[19] Cortena et al.,[20] Perlis et al.[21] who have found demographic variable (age) and clinical variables (depressive symptoms, manic symptoms and early age of onset)

Table-3: Correlations between Socio-Demographic, Clinical Characteristics, and QOL in CUD- and CUD+ groups

Variables	QOL domains									
	Physical		Psychological		Social		Environmental		Total score	
	CUD-	CUD+	CUD-	CUD+	CUD-	CUD+	CUD-	CUD+	CUD-	CUD+
Age (in years)	-0.09	-0.22	-0.11	-0.39**	-0.24	-0.30*	-0.26*	-0.41**	-0.24	-0.43**
Marital status	0.08	0.29*	0.11	-0.048	0.10	0.36**	0.19	0.41**	0.18	0.35**
Education	0.02	-0.05	-0.07	0.06	0.05	0.07	0.21	-0.09	0.10	0.01
Unemployment	-0.24	-0.05	-0.31*	0.02	-0.15	-0.02	-0.20	-0.04	-0.24	-0.05
Socioeconomic status	-0.12	0.27*	-0.12	0.11	-0.10	0.20	0.16	0.14	0.00	0.24
Family history of bipolar disorder	-0.26*	-0.04	-0.01	0.02	-0.24	-0.11	-0.23	-0.21	-0.26*	-0.12
Latest episode	0.01	0.09	0.14	-0.16	0.22	-0.23	0.15	-0.14	0.13	-0.08
Age of onset of illness in years	-0.20	-0.07	-0.24	-0.22	-0.20	-0.09	-0.08	-0.23	-0.21	-0.23
Duration of illness in years	0.14	-0.17	0.12	-0.34**	-0.05	-0.27*	-0.21	-0.32*	-0.06	-0.35**
Number of depressive episodes	-0.10	-0.31*	0.03	-0.23	-0.01	-0.15	-0.03	-0.35**	-0.07	-0.39**
Number of manic episodes	-0.01	-0.30*	-0.15	-0.36**	-0.08	-0.29*	-0.28*	-0.31*	-0.18	-0.38**
Total number of episodes	-0.06	-0.34**	-0.12	-0.37**	-0.07	-0.29*	-0.26*	-0.36**	-0.19	-0.43**

*p<.05;**p<.01 level
n=60 each
*Note.*QOL: Quality of life; CUD-:bipolar disorder without cannabis use disorder; CUD+:bipolar disorder with cannabis use disorder

Table-4: Correlation between QOL and duration of cannabis use and severity of cannabis dependence in CUD+ group

QOL domains	Duration of cannabis use(r)	Severity of cannabis dependence(r)
Physical health domain	-0.34**	-0.23
Psychological health domain	-0.41**	-0.73**
Social relationship domain	-0.39**	-0.51**
Environmental domain	-0.47**	-0.34**
Total score of QOL	-0.50**	-0.47**

** p<.01
Note. QOL: Quality of life

to be predictors of quality of life, but in this study, these findings are not replicated for BD patients with and without cannabis use disorder. The reason of this contrasting result could be because these variables were added in a stepwise multiple regression method with many other variables, thereby limiting the relative contribution of these variables.

In the CUD-group, our study found that executive dysfunction as measured by WCST[22] was still a predictor of total score of QOL and all domains of WHOQOL-BREF (table 5), after accounting for mood symptoms. This finding corroborates previous studies that found deficits in executive functioning and verbal abstraction as strong predictors of poor self-reported QOL.[23,24] These findings suggest that the quality of life is also mediated by the patient's cognitive function and not exclusively by mood symptoms. Additionally, unemployment was also found to be a predictor of the psychological domain of QOL. These findings emphasize the importance of cognitive rehabilitation for euthymic patients with BD, as well as the importance of diagnosing and treating cognitive impairments in patients with this condition, as such deficits have been found to be a significant contributor to both decline in quality of life and poor occupational functioning.[25]

The present study also found that bipolar patients with cannabis use disorder (CUD+) have poorer quality of life when compared to non-cannabis users (CUD-). The stepwise multiple regression analysis produced four multiple regression models worthy of reporting. Each model produced new information as variables were added or removed. Four variables remained as consistent predictors of quality of life. They are the duration of cannabis use, the severity of cannabis dependence, executive functions (WCST), and marital status. The severity of cannabis dependence was a strong predictor of domains of psychological health, social relationship and total score QOL. Moreover, the

Table-5: Stepwise hierarchical multiple regression analysis of influential factors on the quality of life of in CUD- group

Variable	*B*	95%CI		SE B	β	R^2	Δ R^2
		LL	UL				
QOL Physical health as a dependent variable							
Model 1						.23	.23***
Constant	42.62***	35.97	49.27	3.32			
WCST-PPE	-0.63***	-0.93	-0.33	0.15	-.48***		
QOL Psychological health as a dependent variable							
Model 1						.22	.22***
Constant	41.99***	36.07	47.91	2.96			
WCST-PPR	-0.49***	-0.74	-0.25	0.12	-.47***		
Model 2						.28	.06*
Constant	46.98 ***	39.58	54.34	3.70			
WCST- PPR	-0.45 ***	-0.69	-0.21	0.12	-.43***		
Unemployment	-2.57*	-4.97	-0.16	1.20	-.24*		
QOL Social relationship as a dependent variable							
Model 1						.48	.48***
Constant	57.65***	49.36	65.94	4.14			
WCST- PE	-0.90***	-1.15	-0.65	0.12	-.69***		
Model 2						.52	.04*
Constant	53.92***	45.23	62.61	4.34			
WCST- PE	-0.88***	-1.12	-0.64	0.12	-.67***		
WCST- FTMS	2.82*	0.30	5.34	1.26	.21*		
QOL Environmental as a dependent variable							
Model 1						.40	.40***
Constant	66.71***	-9.54	13.24	5.70			
WCST-TNCC	-0.83***	4.79	9.39	1.15	.63***		
Model 2						.45	.06*
Constant	71.92***	2.66	45.58	10.71			
WCST-TNCC	-1.04***	2.29	7.84	1.34	.45 **		
WCST-PNPE	-0.82*	-1.78	-0.17	0.40	-.30*		
Total score of QOL as a dependent variable							
Model 1						.58	.58***
Constant	80.33 ***	75.43	85.23	2.65			
WCST-PPE	-.975 ***	-1.20	-0.75	0.08	-.75***		

*p < .05; ** p < .01; ***p < .001

Note. CI: Confidence interval; *LL:* Lower limit; *UL:* Upper limit; QOL: Quality of life; CUD-: BD without cannabis use disorder; WCST: Wisconsin card shorting test; PPE: Percent perseverative errors; PPR: Percent perseverative response; PE: Percent errors; FTMS: Failure to maintain set; TNCC: Total number of categories completed; PNPE: Percent nonperseverative errors

Table-6: Stepwise hierarchical multiple regression analysis of influential factors on the quality of life in CUD+ group

Variable	*B*	95%CI		SE B	β	R^2	Δ R^2
		LL	UL				
QOL Physical health as a dependent variable							
Model 1						.20	.20***
Constant	35.33***	28.10	42.56	3.61			
WCST- TNE	-0.25***	-0.37	-0.12	0.06	-.45***		
Model 2						.29	.09**
Constant	42.30***	33.74	50.87	4.28			
WCST- TNE	-0.23***	-0.36	-0.11	0.06	-.42***		
Duration of cannabis use	-0.79**	-1.37	-0.21	0.29	-.30**		

Table-6: Contd.....

Variable	*B*	95%CI		SE B	β	R^2	ΔR^2
		LL	UL				
QOL Psychological health as a dependent variable							
Model 1						.53	.53***
Constant	59.30***	50.28	68.32	4.50			
SDS	-3.86***	-4.82	-2.90	0.48	-.73***		
Model 2						.58	.05*
Constant	55.27***	46.05	64.49	4.60			
SDS	-3.65***	-4.59	-2.72	0.46	-.69***		
WCST- FTMS	1.40*	0.28	2.52	0.56	.22*		
QOL Social relationship as a dependent variable							
Model 1						.26	.26***
Constant	48.57***	35.79	61.36	6.39			
SDS	-3.10***	-4.46	-1.75	0.68	-.51***		
Model 2						.39	.12**
Constant	34.01***	19.43	48.59	7.28			
SDS	-3.06***	-4.31	-1.81	0.62	-.51***		
Marital Status	9.87**	4.04	15.70	2.91	.35**		
QOL Environmental as a dependent variable							
Model 1						.22	.22***
Constant	41.48***	33.83	49.13	3.82			
Duration of cannabis use	-1.46***	-2.17	-0.74	0.36	-.47***		
Model 2						.32	.09**
Constant	28.45***	16.67	40.23	5.88			
Duration of cannabis use	-1.35***	-2.03	-0.67	0.34	-.44***		
WCST- PCLR	.24**	0.07	0.41	0.09	.31**		
Model 3						.39	.07*
Constant	15.71*	0.48	30.94	7.60			
Duration of cannabis use	-1.10**	-1.78	-0.42	0.34	-.36**		
WCST- PCLR	0.23**	0.06	0.39	0.08	.29**		
Marital status	7.84*	1.55	14.14	3.14	.27*		
SDS	-3.06***	-4.31	-1.81	0.62	-.51***		
Total score of QOL as a dependent variable							
Model 1						.29	.29***
Constant	73.08***	64.18	81.99	4.45			
SDS	-2.30***	-3.25	-1.36	0.47	-.54***		
Model 2						.40	.11**
Constant	63.18***	52.98	73.38	5.09			
SDS	-2.27***	-3.14	-1.40	0.44	-.53***		
Marital Status	6.71**	2.63	10.80	2.04	.34**		
Model 3						.50	.10**
Constant	58.97***	49.22	68.72	4.87			
SDS	-2.03***	-2.85	-1.21	0.41	-.48***		
Marital Status	6.39**	2.62	10.16	1.88	.32**		
WCST- FTMS	1.63**	0.64	2.61	0.49	.32**		
Model 4						.54	.03*
Constant	64.76***	53.70	75.82	5.52			
SDS	-1.99***	-2.79	-1.19	0.40	-.47***		
Marital Status	5.84**	2.13	9.55	1.85	.29**		
WCST- FTMS	1.54**	0.57	2.50	0.48	.30**		
WCST- PNPE	-0.39*	-0.78	-0.01	0.19	-.19*		

*p < .05; ** p < .01;***p < .001

Note. CI: confidence interval; *LL:* lower limit; *UL*: upper limit; QOL: Quality of life, CUD+: Bipolar disorder with cannabis use disorder; WCST: Wisconsin card shorting test, TNE: Total number of errors, FTMS: Failure to maintain set, PCLR: Percent of conceptual level responses, PNPE: Percent no preservative errors; SDS: Severityof dependence scale; Cont: Continuous

severity of cannabis dependence (SDS) was the only independent predictor of the psychological health domain of QOL in the first model (Table 6). The model reached significance, explaining nearly 53% of the variance in psychological health. As we already know that thinking, learning, memory and concentration are important facets of psychological domain of WHOQOL and bipolar patients with cannabis dependence have shown impairments in a variety of cognitive areas, including attention, executive functions, learning and memory, and psychomotor speed.[26] Conceptually, it makes sense that severity of cannabis dependence adversely affects psychological health. Hence, our results indicate that quality of life decrease as the severity of cannabis dependence increase, indirectly corroborating with the results of other studies that associated poor quality of life with regular cannabis use.[27,4,28] This finding is supported by Cougle et al.[27] who found that regular cannabis use predicts deterioration in mental health but not on physical health as assessed by the Short-Form Health Survey (SF-12).

The duration of cannabis use was also a strong predictor of the environmental domain of QOL in the first, second, and third models (Table 6) with a 22% variance. The physical health domain was also predicted by the duration of cannabis use in the second model, but it only explained an additional 9% of variance after controlling for covariates. Hence, current results suggest that physical health and environmental well-being worsen with long-term cannabis use, corroborating with results of other studies that prolonged cannabis use can cause a significant decline in quality of life and poorer mental health outcomes than patients who do not use cannabis.[29] With regards to the relationship between WCST scores and quality of life scores, we found that WCST variable showed strong associations with quality of life (Table 6). In the regression models WCST-total number of errors and percent of non-preservative errors were found to be negative predictors of physical health domain and total score of QOL respectively. Marital status was also found to be a positive predictor of social relationships domain, environmental domain, and total score of QOL in the second, third and fourth models. These findings could not be correlated with other studies as there is a paucity of literature in these areas.

Conclusion

The recorded poor QOL in both groups was associated with different factors in our study. In CUD- group, poor QOL was related to executive dysfunction and unemployment. While in CUD+ group, poor quality of life was related to increase severity of cannabis dependence, long duration of cannabis use and executive dysfunction. In bipolar patients with cannabis use disorder marital status was related to significant increase in QOL especially in areas of interpersonal relationship and social support. Therefore, these findings indicate that poorer QOL in euthymic bipolar patients with and without cannabis use disorder cannot be explained exclusively by mood symptoms rather other important factors mentioned above are contributing to it. The findings from this study could be used to guide clinicians to offer alternative strategies for cognitive rehabilitation[30] programs and functional remediation[31] to ultimately improve bipolar patients' functional outcomes and quality of life.[32] Future research may benefit from examining a well-controlled observational study with more rigorous quantification of the onset, frequency, quantity, duration, and type of cannabis intake, as well as the reason for usage and its relationship with health outcomes.

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Original Article

Mental Health of School Going Adolescent Girls: A Study of Narela Suburb of Delhi

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ABSTRACT

Background: *The present study is an attempt to explore the extent of mental health of school-going adolescent girls in sub-urban population of National Capital Territory of Delhi. Several studies indicate that the population of Delhi has high prevalence of psychiatric disorders, poor subjective wellbeing and unacceptably low level of awareness about mental health issues and services, especially adolescents who are living in economically distressed areas are suffering with high levels of anxiety and depression.* ***Objectives:*** *The present study explored the level of mental health among adolescent girls in sub urban population. This study focuses on the psychological problems, mental health issues and suitable measures for school going adolescent girls.* ***Methods****: An exploratory study was carried out on total number of 80 school going adolescent girls of age group 14 to 19 years in the government schools of Narela sub-urban area. Self-administered interview schedule and General health questionnaire-30 was adopted.* ***Results:*** *Results revealed that in the terms of Anxiety, somatization, social dysfunction and depression, it was found higher in class 12 students as compare to 11 class students.* ***Conclusion:*** *Adolescents are living in very economically distressed areas; several studies registered high levels of depression and anxiety. Improving social care and support in families and schools may remove distress and vulnerability among adolescent. In particular, strengthening supports from female families to their adolescents at home may improve the outlooks and mental condition of their daughters.*

Key words: *Mental Health, Adolescent girls, Psycho-social factors.*

Introduction

Narela sub-city is a tehsil/block in the northern region of National Capital Territory (NCT) of Delhi and sharing the borderwith Haryana. The present paper is an attempt to explore the mental health status of school going adolescents in this sub-urb of Delhi. The World Health Organisation[1] has stated quite clearly that "Mental health is not a state of absence from diseases but a state of well-being encompassing our physical, social and emotional lives". This concept also implies that a healthy person must actualize all the potentials of growth and development without being unduly tense or unhappy. It needs to be practically implemented, as this field has been dominated for too long by over-burdened medical professionals, who are solely pre-occupied with relief of immediate physical/biological human sufferings.

Adolescence has been defined by World Health Organization as the period of lifespan between 10–19 years. This is the age when they are no longer children, but not yet adults. They are developing rapidly with many physical, psychological and social changes and having an extreme degree of pressure from peers, from parents, from society and self. It has also seen that, they have lack of knowledge and skills to cope up with this kind of pressure. Adolescence is considered to start with puberty, this is a process of physical, psychological and emotional

development triggered by a cascade of endocrine changes that lead to sexual maturation and reproductive capability. In girls, a key marker of puberty is menarche the first menstruation.

Also known as teenage years it is undoubtedly stressful and challenging. Adolescents feel many types of pressures; they want to be cool, to be popular with peers, to be attention seeker, to be attractive in physical appearance, to seek the approval of parents, academic stress, to maintain social identity etc. Apart from this, many teenagers have many other special problems. It may be due to parents' divorce, parent being out of work or the family's financial problems, alcoholic parents and poverty, conflict and distressed conditions and so on. It has been noticed that usually the adolescents are not able to have the opportunity to clarify some of his/her confusions/problems and became a centre of the family's upheaval. Mental Health problems are very painful and distressing and when left untreated, can lead to have serious Consequences. Many times they are labelled as men-Tally sick by the society at large when they are normal according to norms of their sub-culture.

Abnormality is purely a behavior phenomenon and that criterion of the psychological abnormality is a behavioral criterion as prevalent in a particular society. It is only because of this that many people do not seek help for the mental diseases for their wards who are suffering from such diseases in the crucial age like adolescence. It is evident in developing countries like India; the cases of adolescent maladjustment very rarely come from the lower or lower middle classes as they do not consider it as abnormal.

Objectives

1. To assess the anxiety level of school-going adolescent girls.
2. To assess the problems of somatization, social dysfunction and depression of school-going adolescent girls.
3. To compare the mental health status of 11^{th} class students and 12^{th} class students.
4. To enlist the possible social work intervention to address the mental health issues of adolescents.

Research Questions

In view of the above, the present study is intended to look into the following questions.

1. Are the school-going adolescent girls suffering from anxiety disorders?
2. How far the school-going adolescent girls are suffering from somatization, depression and social dysfunction?
3. The students of which class face mental health problems most?
4. What could be the possible social work intervention to address such mental health issues of adolescent in the society?

Methodology

The study is exploratory in nature. The data was collected proportionately from the government schools of Narela assembly in North-West District. Schools were selected from the four wards of Narela assembly. One school was selected from each ward (Narela, Bankner, Alipur, Baktawarpur). As many as 20 adolescent girls from each school, 10 from 11^{th} class and 10 from 12^{th} class were taken. Therefore, 80 adolescent girls were chosen as a sample for the study. A self-prepared questionnaire and General Health Questionnaire 30 (Goldberg) was used to assess the mental health status and psycho-social factors associated with mental health. The four-point response scale as Less than usual, No more than usual, Rather more than usual and Much more than usual was used. The four dimensions were covered; Anxiety, Social dysfunction, Somatisation and Depression. Collected data was properly coded and systematically analysed using appropriate statistical techniques viz., percentages, cross tabulation, mean, standard deviation and correlation.

Results

The socio demographic profile of the respondents is as follows:

Table No. 1 shows the socio- demographic profile of the respondents. The data presented in the table shows that out of 80 respondents, the maximum number (31.25%) belong to age of 17 and minimum (2.5%) was at the age of 14 years. The mean age was 16.06. The girls who were living in Delhi for more than 15 years were 58 percent which is the highest value. Most of the girls belong to the middle socio-economic class (53.75%) and lower socio-economic status (45%). Table also shows that most

Table-1: Socio-economic Profile of the Respondents

Sr. No.	Socio-economic Profile of respondents	No. of respondents	Percentage (%)
1	**Age**		
	14	2	2.5
	15	22	27.5
	16	28	35
	17	25	31.25
	18	3	3.75
	Total	80	100.0
2	**Years of living in Delhi**		
	0-5 years	3	3.75
	6-10 years	8	10
	11-15years	22	27.5
	Above 15 years	47	58.75
	Total	80	100.0
3	**Education Status of Respondent**		
	11th class	40	50
	12th class	40	50
	Total	80	100
4	**Socio Economic Class**		
	Upper Class	1	1.25
	Middle Class	43	53.75
	Lower Class	36	45
	Total	80	100
5	**Type of family**		
	Nuclear	60	75
	Joint	20	25
	Total	80	100.0
6	**Main occupation (Family)**		
	Public	4	5
	Private	47	58.75
	Self Employed	29	36.25
	Total	80	100.0
7	**Total Monthly income from all the sources (Rs.)**		
	Up to 15000/-	34	42.5
	15001/ -30000/-	23	28.75
	30001/ -45000/-	13	16.25
	Above 45000/-	10	12.5
	Total	80	100.0
8	**Residence type**		
	Own House	51	63.75
	Rented Hostel	29	36.25
	Hostel	0	0
	Total	80	100.0

of the families were nuclear (75%). The prime occupation of the families was private or unorganized sector (58.75%). The maximum numbers of families have an income of Rs.15000 or less per month (42.5%). Almost63.75 percent respondents have their own house.

Table 2 shows the mental health of adolescent girls and the four dimensions i.e. anxiety, somatization, social dysfunction and depression. It shows the mean score and comparison between 11th class students and 12th class students. The mean score of anxiety of 12 class students is (17.65$\pm$6.29) is higher than 11th class students (14.83$\pm$7.34) and there is significant difference found at (0.68) level. It indicates that the 12th class students have higher anxiety level as compare to 11th class students. Similarly, the mean score of social dysfunction of 12th class students is (5.35$\pm$2.25) which ishigher than 11th class students (4.98 $\pm$ 2.76). There is significant difference at the level of .509. It represents the higher

Table-2: Mental Health Status of Adolescent Girls

Nature of mental health problem	Sample Group		T Test	P Value
	11th Class Students	12thClass Students		
Anxiety	14.83 ± 7.34	17.65 ± 6.29	-1.848	.068
Social Dysfunction	4.98 ± 2.76	5.35 ± 2.25	-.664	.509
Somatization	9.23 ± 3.54	9.70 ± 3.55	0.599	.551
Depression	2.53 ± 1.46	2.68 ± 1.65	.429	.669

social dysfunction among 12th class students. One of a related previous research (A Strydom et al. 2012) indicates the similar results, the prevalence of anxiety was 61.2 per cent and depression was 19.7 per cent. The prevalence of anxiety was 57.2 per cent among grade 11 students and 65.4 per cent among grade 12, this is comparatively higher in grade 12. The prevalence of depression was found 15.9 per cent in Grade 11 students and 23.8 per cent in grade 12 students and the mean scores ofanxiety and depression both were significantly higher among grade 12 students. So it clearly indicates that grade 12 students have higher anxiety and depressive symptoms compare to grade 11 students.

The mean score of somatisation of 11th class students is (9.23 ± 3.54) lower than 12th class students (9.70 ± 3.55) andthere is significant difference found at (.551) level. It indicates the higher somatisation among 12th class students. Similarly, the mean score of depression of 11th class students is (2.53 ± 1.46) lower than 12th class students (2.68 ± 1.65) andsignificant difference at .669 level. It indicates the higher depression level among 12th class students. So, overall 12th class students have found more anxiety, social dysfunction, somatisation and depression. One of the related previous study conducted by Deb et al. (2015) found that 64 per cent of the higher secondary students in Kolkata were suffering with due to academic reasons and one third of the students experienced parental pressure for better academic performance. An 81.6 per cent students especially the female students reported examination-related anxiety. Academic related stress was positively correlated with parental pressure. Examination-related anxiety was found significantly associated with gender and it was also positively related to psychiatric problems.Therefore we can conclude that, female students faced more anxiety which was related to examinations and related matters.

Discussion

The study is concentrated on mental health status of adolescent girls with the dimension of anxiety, depression, social dysfunction and somatization. The data was collected from four different public schools. The study found the problem lies more in 12th class students; the prevalence of mental health problems is higher as compare to 11th class students. Similar to some studies in India, the study found that 12th class students suffer with higher rates of anxiety, social dysfunction, somatization and depression. There may be so many psycho-social factors responsible for these problems but mainly it is due to the academic performance. According to Da Costa and Mash[3] struggle with academic workload was also found to be the biggest stressor in adolescents with anxiety and depression. Students feel over burdened with the board exams, unrealistic expectations and parental pressure also plays a major role. Students face too much pressure because of the board exams and they feel disturbed in many aspects in their normal life.[4-14] Kouzma and Kennedy[15] reported school related activities like tests, grade, need to do well imposed by others, worry about future, career choices and examinations and results are mainly responsible for stress in high school students. The analysis of the results shows that adolescents having lower socio-economic status belong to nuclear family and depend on the private income sources are the worst suffers, it means vulnerable economic condition is also a responsible contributor of mental health problems. Several studies also suggested that lower socio economic status reported higher prevalence of mental health problems. Along with this, adolescents without adequate family support are particularly vulnerable to risky behaviour and poor health. Very few studies explored the role of parent-children relationship and family-adolescent relationship with mental health problems. Parental involvement is a major contri-

butor for good mental health among girls and boys both. This area should be explored more. A study by Hasumietal[16] observed that mental health problems especially depressive symptoms are most common among Indian adolescents. It is also seen that symptoms of ill mental health increase with age. So, there are many contributors for ill mental health of adolescents. In general WHO has identified five major characteristics for responsive adolescent health services; accessible, acceptable, appropriate, effective and equitable. These can promote the level of health services. This will improve the accessibility of services and make easier for adolescents to obtain health services they need.

Role of social worker

Social workers can play a major roleto improve the quality of life of adole-scents through direct practice, case work practice, group work, family and individual crisis intervention, health related research, conflict management and psycho-educational programs. This may enhance the overall health of adolescents. Social workers may also help the adolescents with their families, teachers and social environment to address family problems, mental health problems and other behavioural issues. Family and school are the important contributors in the life of any adolescent, Social workers can help the families to establish supportive home environ-ment for children and work with the school to streng-then the early intervention programs and parent teacher association. Social workers can work with the community alsoto identify and integrating the resources and services from the community to strengthen the school programs. Social workers can organise support groups, diagnosis and treatment, and facilitate interventions to improve the mental health functioning of adolescents and strengthen them to cope with stress and enhance life skills.

Conclusion and Future Directions

The on-going situation of anxiety and depression may lead to several other impacts on academic performance, student learning capacity, sleep disturbances, employment attainment, physical and mental health and substance use outcomes. Teachers and family should work for the stress management skills and abilities that can make a positive change. There is a need to work on school based intervention, community based intervention and family or parent based intervention, so that these problems can be identified and treated at the right time. The social environment of family plays a major role to provide a better mental health of a child and adolescent. Adolescence is a crucial phase of life especially for a girl. The environmental stressors are the social determinants of physical and mental health of an individual. Social workers can work with these mental conditions and the social environment. They should focus on analysing that where the help needs, whether the changes need to occur at the individual level as well as the social environment. This therapeutic intervention and systematic assessment distinguishes social work profession from other health professions in the mental health sector. The Mental health professional can improve the social functioning, facilitating access to information and person adaptability through mobilisation of services at community level. They can also provide a significant contribution by working through social intervention.

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Original Article

Efficacy of Cognitive Behaviour Therapy and Behaviour therapy in Insomnia

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ABSTRACT

Introduction*: Insomnia is the most prevalent of all sleep disorders. Non-pharmacological interventions in recent years have been established as first-line treatments for nonorganic insomnia. Studies have shown Cognitive Behavior Therapy for Insomnia (CBT-I) to be effective for primary insomnia. Paradoxical intention is a Logo-therapeutic technique based on the existential origins of the founder, Viktor E. Frankl. Past research into the effectiveness of paradoxical Intention interventions has been inconsistent. There is a lack of evidence that Paradoxical Intention Therapy is differentially effective in insomnia when compared with CBT-I.* ***Aim:*** *To evaluate and compare the effectiveness of CBT-I and PIT and to study their effects on mental health in Non-Organic Insomnia in young adults.* ***Material & Method****: A mixed-gender group of 20 young adults with a mean age of 25.35 years. Participants were recruited via an online survey with the help of the Insomnia Severity Index. 100 participants responded to the online survey on Insomnia Severity Index out of which 24 met the inclusion criteria and finally 20 participants gave their consent to undergo the intervention modules. Participants were randomly assigned to two intervention groups namely CBT-I (n=10) and PIT group (n=10). Both the interventions were given for two months. Scores of Insomnia Severity Index, Pittsburg Sleep Quality Index, and Mental Health Inventory were taken as outcome measures at baseline (Pre-Intervention), at the end of the intervention (Post Intervention), and in a follow-up assessment after 45 days, assessment of Insomnia Severity and Sleep Quality was done to study the maintenance of the therapeutic effect and relapse. Informed consent was taken from participants before the intervention* ***Results****: It was found that both CBT-I and PIT are effective. Although CBT-I was associated with greater improvements than PIT. Both the groups showed significant improvements in the scores of outcome measures. The overall patterns of change with treatment demonstrated statistically and clinically significant improvements in the severity of insomnia symptoms as well as statistically significant differences in sleep quality and mental health.* ***Conclusions****: Both CBT and PIT are effective in non-organic insomnia but CBT-I might be a substantial treatment of choice with a more sustained and high effect for CBT-I when compared to Paradoxical Intention Therapy.*

Keywords*: Insomnia, Cognitive Behavior Therapy, Behaviour therapy, Paradoxical intention.*

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Introduction

Insomnia is the most prevalent of all sleep disorders in the general population and is also among the most common complaints reported to healthcare practitioners.[1] Non-organic insomnia is categorized under Dyssomnias in the most frequently used classification systems in clinical settings of ICD–10.[2] In the proposed version of ICD-11,[3] Insomnia Disorders are classified under the category of sleep-wake disorders. Insomnia disorders are further

subcategorized into two categories namely Chronic Insomnia and Short-Term Insomnia. Non-Organic insomnia or Primary insomnia refers to sleep problems that are not directly associated with any other health condition or problem. As compared to good sleepers, individuals with insomnia report more psychological distress and more impairments of daytime functioning.[4] Insomnia also increases the risk of developing subsequent depression.[5] Despite insomnia's high prevalence rate and adverse impact, it usually goes unrecognized and remains untreated. Most persons with insomnia start their treatment without professional guidance and do self-help remedies (e.g., alcohol, over-the-counter drugs) of limited benefit and questionable safety.[6]

When insomnia is brought to the attention of a primary care physician, treatment is typically restricted to pharmacotherapy. Although hypnotic medications are effective for the short-term management of insomnia only and there is limited evidence of their sustained efficacy in long-term use.[7] Recognition of the psychological factors that play an important role in maintaining sleep disturbances has led to increased interest in the use of non-pharmacological treatments for insomnia. Various drawbacks of pharmacological treatment and the acknowledgment of the mediating role of psychological factors in insomnia have started the development of non-pharmacological or behavioral interventions in recent years, especially for the management of chronic insomnia. These treatment methods usually include techniques for modifying maladaptive sleep habits, educating about more appropriate sleep hygiene practices, altering dysfunctional beliefs and attitudes about sleep, reducing autonomic and cognitive arousal, etc. Studies have shown Cognitive Behavior Therapy for Insomnia (CBT-I) to be effective for primary insomnia.[8,9]

The guiding rationale behind using Paradoxical Intention is that because sleep is essentially an involuntary physiological process, attempts to place it under voluntary control are likely to make matters worse. Paradoxical Intention is thought to work by reducing performance anxiety (the poor sleeper's inability to produce the criterion performance for good sleep) and by reducing associated sleep worry and sleep preoccupation. Paradoxical techniques in psychotherapy have been described for a long time. The use of Paradoxical Intention for insomnia was adapted from Viktor Frankl's work[10] by Michael Ascher and others in the late 1970s[11,12] when it was observed that people with insomnia had more success falling asleep when they tried to remain awake than they had when they tried to fall asleep. There is no evidence to suggest that PIT is differentially effective in sleep onset and sleep maintenance in insomnia.[13] There is a need for rigorous sleep research including testing and implementation of evidence-based treatment for insufficient sleep and insomnia.[14] These days online delivered therapies are also a trend and demand of the time but there is a need for more studies to evaluate their efficacies of therapies the following aim was framed

Aim

To evaluate and compare the effectiveness of online delivered CBT and PIT and to evaluate their effects on Sleep Quality and Mental Health in young adults.

Hypotheses

1. There would be a significant improvement in Sleep Quality, Insomnia Severity, and overall mental health after interventions in both CBT and PIT groups.
2. Cognitive Behavior Therapy group would exhibit greater sleep improvement, in comparison to Paradoxical Intention Therapy group for Sleep Quality, Insomnia Severity, and overall mental health.

Methodology

Study Design: Pre-Posttest Design was adopted for the present study.

Sample: A mixed-gender group of 20 young adults (CBT-I group; n=10 and PIT group; n=10). In the CBT-I group, six participants were males and four were females with a mean age of 25.8 years. In the PIT group, seven participants were males and three were females with a mean age of 24.9 years. All were students of either graduation or post-graduation courses. Convenience sampling of opportunity sampling technique was used for sample selection.

Assessment Measures:

Insomnia Severity Index (ISI)[15]

The Insomnia Severity Index is a seven-item self-report questionnaire assessing the nature,

severity, and impact of insomnia. The ISI was developed by Morin as a patient-reported outcome measure intended both for screening purposes and for assessing the efficacy of treatment. Although it is not intended to be a diagnostic tool, it is widely used to identify potential cases of insomnia and assess the perceived severity of insomnia. The usual recall period is the "last month" and the dimensions evaluated are: difficulty in sleep onset, sleep maintenance, and early morning awakening problems, sleep dissatisfaction, interference of sleep difficulties with daytime functioning, notice ability of sleep problems by others, and distress caused by the sleep difficulties. A five-point Likert scale is used to rate each item (e.g., 0 = no problem; 4 = very severe problem), yielding a total score ranging from 0 to 28. The total score is interpreted as follows: the absence of insomnia (0–7); sub-threshold insomnia (8–14); moderate insomnia (15–21); and severe insomnia (22–28). ISI is a reliable and valid instrument to quantify perceived insomnia severity.[16] The test-retest reliability for ISI has been found –0.84. The ISI is positively correlated with PSQI (Pearson's coefficient *r* " 0.45). Internal consistency for the ISI has been found excellent with Cronbach's α – 0.84.[17]

Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index[18] will be used to assess the extent of sleep quality among the sample selected. This scale contains 18-items self-reporting the respondents. The items measure seven components of sleep quality, a score ranging from 0 (no difficulty) to 3 (severe difficulty) for sleep duration, sleep disturbance, sleep latency, daytime disturbance, habitual sleep efficiency, sleep quality, and use of sleep medications. The total of these provides an index referred to as global sleep quality which ranges from 0 to 21. Reliability measures indicate that the PSQI generally has high internal consistency (α = .80 to .85) and test-retest reliability (r = .85 to .87). It also has acceptable concurrent validity; scores on the PSQI are highly correlated with scores on other subjective measures of sleep quality (r > .69) too.

Mental Health Inventory (MHI)

Mental Health Inventory[19] is also self-rated. This inventory has 38 items that describe the different states of mind. It includes six subscales viz. Anxiety, Depression, Loss of Behavioral/Emotional Control, General Positive Affect, Emotional Ties, and Life Satisfaction on Two Global Scale i.e., Psychological Distress and Psychological Well-Being. It also gives a Global Mental Health Index. Higher scores on Anxiety, Depression, and Loss of Behavioral/Emotional Controlindicate a negative state of Mental Health and vice versa whereas higher scores on General Positive Affect, Emotional Ties, Life Satisfaction, and Psychological Well-Being indicate a positive state of Mental Health. The higher the score on Mental Health Index better is the Mental health considered.

Procedure

Participants were recruited via an online survey with the help of the Insomnia Severity Index. 100 participants responded to the online survey out of which 24 met the inclusion criteria and finally 20 participants gave their consent to undergo the intervention modules. Those 20 young adults with Non-Organic Insomnia were randomly assigned to two groups: Cognitive Behavior Therapy for Insomnia (CBT-I, n = 20) and paradoxical intention Therapy (PIT, n = 20). The eight-session modules viz. CBT-I and PIT-I were administered to each of the participants. The intervention lasted for two months for both groups. Outcome measurements were taken at baseline (Pre-Intervention), at the end of the intervention (Post Intervention), in a follow-up assessment after 45 days, assessment of Insomnia Severity and Sleep Quality was done to study the maintenance of the therapeutic effect and relapse. Informed consent was taken from participants before the intervention. Sleep education, and sleep hygiene. Sleep diaries and self-reported-sleep arousal were assessed weekly while the severity of insomnia symptoms, Sleep Quality, and Mental Health Measures was assessed pre-treatment and post-treatment. The following were the inclusion and exclusion criteria:

Inclusion Criteria

- Age: 20 to 30 years
- Fulfilling the criteria of sleep disturbance according to ICD-10
- A specific cut off Score of 15 or More on the Insomnia Severity Index

- Those who give consent

Exclusion Criteria

- History of any major psychiatric/neurological illness
- History of any chronic physical illness
- Those taking any medicine/treatment for insomnia or any other psychiatric disorder
- History of any substance dependence

Interventions

Cognitive Behaviour Therapy for Insomnia (CBT-I):

The use of CBT-I aimed to reduce maintaining factors that perpetuate insomnia. Parameters, such as number and duration of naps, use and timing of sleep medication, ratings of sleep quality, daytime sleepiness, and daytime fatigue are also frequently included in sleep diaries. Subsequent sessions are designed to deploy multiple modalities along the course of several sessions.[20] The present intervention of CBT-I consisted of eight sessions. The primary goals of the first session were to build rapport with the client and to conduct a clinical sleep focused interview to identify barriers to good quality sleep and take sleep history, discuss treatment expectations and Introduce a sleep diary Second Session-was has taken within one week after the first session with the objective to orient the client regarding healthy sleep habits and sleep hygiene techniques In the third session that was held after one week from the second session, cognitive restructuring of the maladaptive thoughts and Identification of the maladaptive thoughts was done and winding down a plan for bedtime routine was made for the client. In the fourth Session, education regarding stimulus control was provided and rules for stimulus control and use of sleeping places were discussed. The participants were instructed to follow a new sleep schedule and stimulus control plan as discussed during the session. In the last session, barriers to completion of the sleep plan were discussed and participants were guided to continuing sleep-related strategies post-treatment along with strategies for treatment maintenance. Review the skills learned throughout the therapy by the participants and maintenance strategies were discussed.

Paradoxical Intention Therapy (PIT)

PI is a well-validated therapy.[8] It is based on the idea that 'performance anxiety' seems to emerge as a response to the patient's fears of being unable to fall asleep.[11] The rationale is to expose the patient to these fears through the paradoxical intention to remain awake for as long as possible rather than continuing the effort to fall asleep. This reduces performance anxiety and may help sleep come more easily.[21] In the present study, eight sessions of Paradoxical therapy for insomnia were given to the PIT group. In the first session, rapport was built with the participants and a clinical sleep-focused interview was conducted to identify the preoccupations/performance-based anxiety associated with insomnia, and a sleep diary was introduced. In the second session, a Review of the sleep diary record and evaluation of the effects were done. Participants were introduced to paradoxical thoughts and sleep education regarding healthy sleep habits was given to the participants In the third session, participants were instructed to remain awake as long as possible rather than continuing the effort to fall asleep and not to engage in any activity that is sleep incompatible like watching TV, etc, using mobile in bed. They were also instructed to lie on the bed in a darkened room keeping their eyes open as long as possible the fourth session assessment of barriers to completing the sleep plan and the problems that arose during the paradoxical intention procedure were discussed. Participants were also trained in Giving up Trying to sleep when he/she was bed by instructing simply "try to remain awake when you are in bed". Participants were reassured to reduce the anxiety and apprehensions about his/her sleep problem. In the fifth session, participants were provided guidance on continuing the learned techniques (e.g. sleep hygiene techniques and the paradoxical thoughts) post-treatment also. Strategies for treatment maintenance (e.g. anticipate and discuss upcoming challenges to sleep Plan) were discussed with the participants. Review the skills learnt during the sessions was done and the participants were motivated about maintenance of the PIT program.

Results and Discussion

The study was conducted with the main aim to evaluate and compare the effectiveness of CBT-I and PIT and to study their effects on sleep quality and

mental health in Non-Organic Insomnia in young adults. A mixed-gender group of 20 young adults was taken.

The results in Table 1 revealed that there are significant differences between the pre and post-intervention groups of cognitive behavior therapy participants on sores of ISI, PSQI, and all domains of MHI viz. Anxiety, Depression, Loss of Behavioral/Emotional Control, General Positive Affect, Emotional Ties and Life Satisfaction on Two Global Scale i.e. Psychological Distress and Psychological Well-Being and overall Mental Health Index. The findings of the present study are consistent with the results of the research studies conducted on CBT-I so far. The finding is very promising and indicates that the CBT treatment of insomnia is currently the most effective treatment for chronic insomnia.[22] A recent pilot study in a student population showed that CBT-I yielded treatment responses similar to results typically found in the general population.[23] Recent evidence from several countries has shown that unguided internet based CBT-I is highly successful in relieving students as well as adults with chronic insomnia of their sleep problems.[24,25] The preliminary data suggest that CBT-I is feasible to implement to treat insomnia in younger people.[26]

The results in Table 2 revealed that there are significant differences between the pre and post-intervention groups of Paradoxical Intention Therapy participants in sores of ISI, PSQI, and all domains

Table-1: shows the Means and SDs of the scores obtained by the CBT-I group (Pre and Post Intervention) on ISI, PSQI, and MHI domains and the corresponding values with their level of significance

n=10 Variables	CBT-I Group (Pre-Intervention)		CBT-I Group (Post-Intervention)		t-values	Level of Significance
	Means	SDs	Means	SDs		
Insomnia Severity Index (ISI)	21.70	2.75	9.20	5.09	12.75	.000
Pittsburg Sleep Quality Index (PSQI)	14.00	2.00	7.40	3.09	12.18	.000
Anxiety	38.10	8.00	21.40	9.26	7.38	.000
Depression	16.30	3.33	9.30	4.16	8.57	.000
Loss of Behavioral/Emotional Control	39.50	8.33	22.20	11.21	7.78	.000
General Positive Affect	22.20	3.42	39.60	10.63	6.62	.000
Emotional Ties	4.10	1.66	6.10	2.13	6.00	.000
Life Satisfaction	3.70	1.33	4.40	1.17	2.68	.025
Psychological Distress	83.80	9.68	54.70	16.33	7.55	.000
Psychological Wellbeing	32.60	5.01	57.10	12.54	7.88	.000
Mental Health Index	99.50	11.03	121.30	13.98	5.91	.000

Table-2: Shows the Means and SDs of the scores obtained by the PIT-I group (Pre and Post Intervention) on ISI, PSQI, and MHI domains and the corresponding values with their level of significance

N = 10 variables	PIT-I Group (Pre-Intervention)		PIT-I Group (Post-Intervention)		t-values	Level of Significance
	Means	SDs	Means	SDs		
Insomnia Severity Index (ISI)	21.50	3.02	18.10	4.48	3.69	.005
Pittsburg Sleep Quality Index (PSQI)	13.80	2.29	10.80	3.32	4.10	.003
Anxiety	38.80	7.08	33.50	8.31	4.72	.001
Depression	15.80	3.39	11.50	3.17	4.93	.001
Loss of Behavioral/Emotional Control	39.20	9.35	34.00	9.23	3.98	.003
General Positive Affect	23.40	3.56	22.30	3.33	0.57	.578
Emotional Ties	4.60	1.42	6.60	2.11	4.24	.002
Life Satisfaction	4.10	1.37	4.60	1.07	2.23	.052
Psychological Distress	84.40	10.26	77.20	7.96	5.54	.000
Psychological Wellbeing	33.00	5.03	39.80	9.51	3.02	.014
Mental Health Index	99.60	14.4	111.50	12.93	3.69	.005

of MHI viz. Anxiety, Depression, Loss of Behavioral/Emotional Control, Emotional Ties and Life Satisfaction on Two Global Scale I.E. Psychological Distress And Psychological Well-Being and overall Mental Health Index except for General Positive Affect. Paradoxical Intention is considered to work by reducing performance anxiety (the poor sleeper's inability to produce the criterion performance for good sleep) and by reducing associated sleep worry and sleep preoccupation[27]. Ascher and Turner[12] compared the efficacy of progressive relaxation, stimulus control, and paradoxical intention in ameliorating sleep-onset insomnia. Results of their study indicated that the three were equally effective.

to their assessment scores before the intervention, both the groups showed improvements in the scores of assessment measures after intervention first hypothesis of the study was that there would be a significant improvement in scores of assessment measures after interventions in both CBT and PIT groups that was proved. The results in Tables 1 and 2 revealed that there is a significant improvement between the before and after intervention scores in both the groups in ISI, PSQI and most of the domains of MHI. A recent systematic review concluded that there are large differences in treatment effects across different intervention modalities, with sleep hygiene interventions showing small effect sizes, whereas cognitive-behavioral therapy for insomnia (CBT-I)

Table-3: shows Means and SDs of the scores obtained by the CBT-I PIT group (Pre and Post Intervention) on ISI, PSQI, and MHI domains and the corresponding 't' values with their level of significance (Between Group)

Variables	Groups	Mean	Std. Deviation	t-values	Level of significance (2 -tailed)
Insomnia Severity Index (ISI)	CBT	12.50	3.10	6.76	.001
	PIT	3.40	2.91		
Pittsburg Sleep Quality Index (PSQI)	CBT	6.60	1.71	3.99	.001
	PIT	3.60	1.64		
Anxiety	CBT	16.70	7.14	4.52	.001
	PIT	5.30	3.49		
Depression	CBT	7.00	2.58	2.26	.036
	PIT	4.30	2.75		
Loss of Emotional/behavioral control	CBT	17.50	6.45	5.09	.001
	PIT	5.40	3.83		
Positive Affect	CBT	17.60	7.82	4.72	.001
	PIT	5.1000	2.96		
Emotional Ties	CBT	2.00	1.05	.000	1.00
	PIT	2.00	1.49		
Life Satisfaction	CBT	0.70	0.82	.000	1.00
	PIT	0.70	0.48		
Psychological Distress	CBT	29.10	12.17	5.38	.001
	PIT	7.20	4.10		
Psychological Wellbeing	CBT	24.9000	8.63391	5.27	.001
	PIT	8.4000	4.83506		
Mental Health Index	CBT	21.8000	11.66000	2.02	.059
	PIT	11.9000	10.19204		

The results given in table 3 revealed that there were significant differences between the CBT group and the PIT group in most of the scores of assessment measures. The CBT-1 group has improved significantly better than the PITgroup (post-intervention) in the domains of MHI. However, in the domains of Emotional Ties and Life Satisfaction, the differences between the groups are not significant. Compared yielded large effect sizes.[28]

Conclusion

In conclusion, online delivered cognitive behavioral therapy is more effective in improving sleep in young adults with insomnia when compared with Paradoxical intention therapy delivered through the same mode. Primary care providers should consider

CBT-I as a first-line treatment option for insomnia. Psychological interventions are effective in improving insomnia symptoms and efforts should be made to educate the public about sleep problems and expand access to these therapies to those who suffer from sleep problems.[28]

The implications of the study

There are important clinical implications for this kind of research. These initial findings demonstrate that it is feasible to use CBT-I and PIT with young adults and sleep behaviors are highly modifiable, brief targeted insomnia treatments are a particularly promising area of intervention. In summary, this study provides support for the feasibility of online delivered CBT-I and PIT intervention for young adults with insomnia symptoms. Future research is needed to determine preliminary efficacy on sleep outcomes and to examine whether changes in sleep can produce changes in psychological and physical functioning.

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Original Article

Anxiety and Depression in patients suffering from Premature Ejaculation (PME)

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ABSTRACT

Background: *Premature Ejaculation (PME) has been a common cause for treatment seeking in medical and surgical clinics after consultation and treatment from faith healers/quacks and ayurvedic/homeopathic/naturopathic Doctors.* ***Aims and Objectives:*** *To assess psychiatric co-morbidity in patients suffering from premature ejaculation.* ***Material and Method****: In this hospital-based cross-sectional observational study, sixty adult (>18 years) male patients with premature ejaculation, fulfilling the inclusion criteria were enrolled after obtaining informed consent. Diagnosis of premature ejaculation was made as per ICD-10 diagnostic criteria. General Health Question (GHQ-12) was applied and patients scoring higher on GHQ-12 (cut-off score > 2) were further assessed using Hamilton Depression Rating scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A).* ***Results:*** *Out of the 60 patients, (n = 37, 62%) had psychiatric morbidity. Thirty (50%) patients were suffering from depression and 7 (12%) had anxiety. Ten patients (27%) were suffering from mild depression, 15 (41%) from moderate depression and 5 (13%) from severe depression. Similarly, 1 (3%) patient was having mild anxiety, 5 (13%) patients moderate and 1 (3%) suffering from severe anxiety.* ***Conclusion:*** *Early identification and management of psychiatric comorbidity in these patients can have significant positive impact on outcome of premature ejaculation.*

Keywords: *Premature Ejaculation, Psychiatric Morbidity.*

Introduction

Premature Ejaculation first acceptable clinical definition was given by Masters and Johnson, its first acceptable clinical definition was given by Masters and Johnson as "the inability of a man to delay ejaculation long enough for his partner to reach orgasm on 50% of intercourse attempts.[1]

According to literature, Premature Ejaculation (PME) affects about 20-30% of men in the sexually active age group and can cause a significant psychological stress and loss of self-esteem thus affecting both the quality of life, of both the patient and the partner.[2]

Premature ejaculation (PME) has been a common disorder in sexual disorder clinics in world-wide. WHO's quantified Definition of PME as early ejaculation (before or within 15 seconds of beginning of intercourse) but does not provide empirical confirmation for the same. PME can be conceptualized as consisting of three domains which are (1) Short intra-vaginal ejaculatory latency time [IELT], (2) a lack of perceived self-efficacy or control about the timing of ejaculation and (3) Distress and Interpersonal difficulty related to the Ejaculatory Dysfunction.[3]

According to literature Premature Ejaculation divided into 2 groups: (1) Primary or Lifelong and (2) Secondary or Acquired. Lifelong premature ejaculation was defined by Persistent Rapid Ejaculation from the beginning of sexual activity, whereas Acquired Premature Ejaculation developed following a period of normal Ejaculatory function. *DSM-IV*

classification also added 2 specifiers: situational (when premature Ejaculation occurs only in 1 context, such as with 1 partner) and generalized. Waldinger and Schweitzer proposed a new classification of Premature Ejaculation based on clinical presentation. It provides 4 subtypes of "true" premature ejaculation (2 of which have already been described): (1) the Lifelong type that is linked to putative genetic factors (2) the Acquired type that may be caused by Endocrine, Urologic, or Psychological factors; (3) Natural variable Premature Ejaculation in men who have occasional rapid Ejaculations; and (4) Premature-like Ejaculatory Dysfunction in men who have a normal Ejaculation latency but who subjectively report rapid ejaculation.[4]

With the finding of this study, it would help further in improving our understanding in defining needs and priorities to provide the framework for future research endeavour.

Materials and Methods

Study Design

Present study is a descriptive, cross-sectional, tertiary care hospital-based study done using convenient sampling method and was duly approved by the institutional research ethics committee.

A total of 60 participants who were suffering from premature ejaculation were enrolled after obtaining written informed consent from each participant. Participants with Dhat syndrome, other Psychosexual Disorders, Psychotic Disorders, Intellectual disability and organic brain syndrome or with coexisting any significant Medical, Urological and Surgical co-morbidity or history of Medicine taken for any Major illness were excluded from the study.

Data was collected using self-designed performa covering socio-demographic details, illness characteristic. All the participants under the study were assessed using general health questionnaire. The general health questionnaire (GHQ)[5] is a self-administered screening questionnaire, developed by David Goldberg in 1974, one of the first mental screening devices for medical and surgical settings aimed at detecting individuals with a diagnosable psychiatric disorder. All the subject who scored high on GHQ (cut-off score > 2) were interviewed in details and a psychiatric diagnosis were made according to ICD-10[6] diagnostic criteria. Patients scoring higher on GHQ-12 (cut-off score > 2) were further assessed for severity of depression and anxiety using Hamilton Depression Rating scale (HAM-D)[7] and Hamilton Anxiety Rating Scale (HAM-A).[8]

The data thus generated was subjected to statistical evaluation using SPSS 25 software. The results obtained from the study are expressed as mean ± S.D.

Table-1: sociodemographic profile of patients with premature ejaculation (PME)

Variables	(n = 60)	n%
Age	29.43 (±10.54)	Mean (S.D)
18-25	18	30 %
26-35	15	25 %
36-45	12	20 %
46-55	09	15 %
Above 55	06	10 %
Religion		
Hindu	36	60 %
Muslim	24	40 %
Sikh	00	00 %
Christian	00	00 %
Marital Status		
Single/Divorced/Widowed	24	40 %
Married	36	60 %
Family Background		
Urban	18	30 %
Rural	42	70 %
Education		
Illiterate	36	60 %
Primary & Secondary	15	25 %
Graduate & Post Graduate	09	15 %
Occupation		
Unemployed	33	55 %
Labourer / Farmer	15	25 %
Job/Business	12	20 %
Socioeconomic class		
Lower (Upper / Lower)	27	45 %
Middle(Upper / Lower)	21	35 %
Upper	12	20 %
Family Type		
Nuclear	45	75 %
Joint	15	25 %

Table-2: Based on GHQ 12 (Cut-off Score > than 2)

Psychiatric Morbidity Present	Number of patients (n=60, 100%)
Yes	37, (62 %)
No	23, (38%)
Total	60, (100 %)

Results

Table 1: A total of 60 consecutive premature ejaculation patients were enrolled in the study. Mean age of participants was 29.43 ± 10.54. Majority of patients were illiterate (n = 36, 60%) and unemployed (n = 33, 55 %). Most of them belonged to nuclear family (n = 45, 75%), were of lower socio-economic status (n = 27, 45%) and 42 (70%) of them were of rural background.

Table 2: Psychiatric co-morbidity was present in 37(62 %) participant as can be seen from Table 2.

Table 3: These patients with psychiatric co-morbidity were interviewed further by psychiatrist and diagnosis was made as per ICD-10 Diagnostic criteria. Thirty (50%) patients had depression and 7 (12%) had anxiety.

Table 4: While assessing severity of depression by Hamilton Depression rating scale, among 30 patients having depression, 27 % had mild depression, 41% had moderate depression and 13% patient was suffering from severe depression.

Table 5: Similarly, while assessing severity of anxiety by Hamilton anxiety rating scale, among 5 patients of anxiety, 03% patients had mild anxiety, 13% patients had moderate anxiety and 03 % patients were suffering from severe anxiety disorder.

Table-3: Distribution of subjects based on their diagnosis

Psychiatry Diagnosis (ICD-10 Criteria)	Number of PME Patients (n=60)	Percentage (%)
None	23	38%
Depression	30	50 %
Anxiety	07	12 %
Total	60	100%

Table-4: Severity of depression in patients of Premature Ejaculation

Severity of depression (HAM-D Scale)	Premature ejaculation patients, n = 37, (f %)
None	07 (19 %)
Mild	10 (27 %)
Moderate	15 (41 %)
Severe	05 (13 %)

Table-5: Severity of anxiety in patients of Premature Ejaculation

Severity of Anxiety (HAM-A Scale)	Premature ejaculation patients, n = 37, (f %)
None	30 (81%)
Mild	01 (03 %)
Moderate	05 (13 %)
Severe	01 (03 %)

Discussion

The current study was done in a hospital-based setting in a rural area and the mean age of the subjects in our study was 29.43 ± 10.54, which is similar to other study by Chavan et al[3] and Pal et al[9] in which the mean age reported was 33.22 ± 8.43.

In our study majority of subjects were in the age group of 18–25 years, married, in nuclear family, illiterate, unemployed of rural background and belong to lower socio-economic status. Our findings were in resonance with the findings of Rao et al[10] in terms of education, family type and socioeconomic status. However our findings were in contrast with the findings of study done by Verma et al[11] in which 42% were educated and 52% were belonged to middle socioeconomic status.The reason for the above finding could be because majority of patients were from urban area in this study (92%).

Prevalence of psychiatric morbidity in our study was 62% which was somewhat in resonance with the findings of Arul et al[12] who reported 56% of psychiatric morbidity in their study.On the other hand Jamil et al[13] reported 85% of psychiatric morbidity in their study but one major limitation of this study was the small sample size in comparison to our study.

In this study, depression was the most common psychiatric disorder observed in 50 % of patients and our finding was in concordance with the finding of the study by Verma et al[11] who also reported depression as the most common psychiatric disorder in their study. In terms of severity of depression, 27% had mild depression, 41% had moderate depression and 13 % patient was suffering from severe depression.

Interestingly, a very low prevalence of anxiety disorder (13 %) was observed in our study and our findings were in contrast to the findings of study by Jamil et al[13] and Rajkumar et al[4] in which anxiety disorder reported were 56% and 23% respectively. The possible reason behind this could be due to difference in sample size and methodology. In this study 3% patients were found to have mild anxiety, 13% moderate anxiety and 3% patients from severe

anxiety disorder. On the other hand, Arul et al[12] reported a higher prevalence of anxiety disorder (29%) out of which 14% participants had mild anxiety and 16% were suffering from moderate anxiety.

Limitations

This study has certain limitations. First of all, it was a cross-sectional study with a small sample size. Secondly, consecutive sampling method was used for enrolling participant. Thirdly, this study was conducted among the participants attending hospital which forms a self-selecting group and the findings of this study cannot be generalized.

Conclusion

Comparatively high prevalence of depression and anxiety was observed in patients suffering from premature ejaculation in this study.

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Original Article

A Study of Psychiatric Morbidity in Patients Presented with Attempted Suicide in A Tertiary Care Hospital in Northern India

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ABSTRACT

Background*: Suicide is a major public health issue that affects people all around the world. It is responsible for almost one million fatalities per year. Because a past suicidal attempt is the strongest predictor of future suicide, knowing the circumstances that lead to a suicidal attempt might aid in the development of suicide prevention methods. Psychiatric illnesses are one of the most important predictors of attempted suicide.* ***Objectives****: The aim of this study was to look at the psychiatric morbidities that have a role in attempted suicide.* ***Methods:*** *The present study was conducted in the Department of Psychiatry, Jawahar Lal Nehru Medical College and Hospital, Aligarh, Uttar Pradesh. Suicide attempters referred for psychiatric evaluation from various departments of the hospital during the period December 2018 to November 2019 were evaluated.* ***Results:*** *Approximately 56.25% (n = 45) patients were found to have concurrent psychiatric illness while remaining 43.75% were without illness.* ***Conclusion****: Most of the subjects in our study had some diagnosable psychiatric illness. Major Depressive Disorder being the most common cause in our study.*

Keywords: *Attempted suicide, Psychiatric morbidity, Major depressive disorder.*

Introduction

Suicide is a major public health issue in both industrialised and developing nations.[1] Attempted suicide is a serious public health concern that is linked to a variety of psychological and medical factors. Attempted suicide is characterized as a potentially self-harming act with a non-fatal result that confirms, either explicitly or indirectly, that the person has made a decision to kill himself or herself. Injuries may or may not end with the expected action.[2]

According to World Health Organization (WHO) estimates around one million people die each year from suicide and 10-20 times as many suicide attempts each year.[3] According to NCRB statistics, the number of suicides in the country increased by 28 percent in the decade from 1997 to 2007 (from 95,829 in 1997 to 122,637 in 2007). It also indicates a rise of 3.8% (113,914 to 11,812) from 2006 to 2007.[4]

The range of psychiatric morbidity in suicide attempters is reported from 10% to 93% in India.[5] Although psychiatric morbidity was found to range from 46% to 62% in suicide attempters in the data from other studies. In India multiple studies have been done to rule out psychiatric comorbidity in suicide attempters which showed varied results.[6] Even though having a better understanding of suicidal behaviour was very helpful to prevent suicide, there is a paucity of data in developing countries including India. Since psychiatric disorders are one of the major causes of attempted suicide, it is good to know about psychiatric morbidity leading to suicidal attempt. Thus, this study was conducted to assess psychiatric morbidity among subjects presented with suicidal

attempt to hospital emergency service and admitted in various departments in a tertiary care centre hospital.

Materials and Methods

This was a cross-sectional hospital-based study conducted at Jawaharlal Nehru Medical College and Hospital, Aligarh, Uttar Pradesh from December 2018 to November 2019. A total number of 80 patients were evaluated with detailed psychiatric interview including a detailed psychiatric history; mental status examination on a specially designed proforma. The psychiatric diagnosis was made using DSM-5 criteria.

Inclusion Criteria

1. Patient's aged between 18-60 years.
2. Patients who gave informed consent for the study.
3. Suicide attempters referred for psychiatric evaluation from various departments of the hospital.

Exclusion Criteria

1. Patient's aged below 18 years or above 60 years.
2. Patients did not give informed consent for the study.

Results

Psychiatric disorders were present in 45 patients while there was no psychiatric disorder in 35 patients out of 80. Amongst the male, psychiatric disorder was present in 21(53.85%), while in females, 24 (58.55%) had psychiatric disorders.

Among the psychiatric disorders associated with suicidal attempts, Major depressive disorder was present in 14 (31.10%), out of which 5 (23.80%) were males and 9 (37.50%) were females.

Bipolar disorder was present in 2 (4.50%) attempters, 1 in both male (4.76%) and female (4.16%) respectively. Schizophrenia was present in total 2 (4.5%) patients, both were females (8.33%) while 8 (17.70%) had personality disorder, in which 2 (9.52%) were males and 6 (25.0%) were females. Multiple substance abuse was present in 8 (17.70%) of total, 7 (33.33%) in males and 1 (4.16%) in females while Alcohol use disorder was present in 5 (11.10%) patients, 4 (19.04%) in males and 1 (4.16%) in female. There were 2 (4.5%) patients with Impulse control disorder, 1 (4.76%) in both male and female (4.16%) respectively. Panic disorder was present in 1 (2.2%) patient, that was female (4.16%). Obsessive compulsive disorder was present in only 1 male while adjustment disorder was present in 2 females.

Table-1: Presence or absence of psychiatric disorders among suicide attempters

	Male (n = 39)		Female (n = 41)		Total
	No.	Percentage	No.	Percentage	(n = 80)
Without psychiatric illness	18	46.15	17	41.45	35
With psychiatric illness	21	53.85	24	58.55	45

Table 2 –Co-morbid psychiatric disorder among suicide attempters

Psychiatric morbidity	Total number of patients (n=45)	Percentage
Major depressive disorder	14	31.1
Bipolar disorder	2	4.5
Schizophrenia	2	4.5
Personality disorder	8	17.7
Multiple substance use disorder	8	17.7
Alcohol use disorder	5	11.1
Impulse control disorder	2	4.5
Panic disorder	1	2.2
Obsessive compulsive disorder	1	2.2
Adjustment disorder	2	4.5

Table-3: Cross-tabulation of gender vs psychiatric morbidity in suicide attempters with psychiatric illness

Psychiatric morbidity	Male (n = 21)		Female (n = 24)		Total (n=45)
	No.	Percentage	No.	Percentage	
Major depressive disorder	5	23.8	9	37.5	14
Bipolar disorder	1	4.76	1	4.16	2
Schizophrenia	0	0	2	8.33	2
Personality disorder	2	9.52	6	25.0	8
Multiple substance use disorder	7	33.33	1	4.16	8
Alcohol use disorder	4	19.04	1	4.16	5
Impulse control disorder	1	4.76	1	4.16	2
Panic disorder	0	0	1	4.16	1
Obsessive compulsive disorder	1	4.76	0	0	1
Adjustment disorder	0	0	2	8.33	2

Discussion

In the present study according to the DSM-5, approximately 56.25% (n = 45) patients were found to have concurrent psychiatric illness while remaining 43.75% (n = 35) were without illness. Similar higher prevalence was reported in study by Latha et al.[7] while studies by Shrivastava et al.,[8] Chandrasekaran et al.,[9] Jain et al.,[10] Sethi et al.[11] have recorded much lower prevalence.

In our study the most common was major depressive disorder accounting for 31.10% (n = 14) cases, followed by personality disorder and multiple substance use disorder both accounting for 17.7% (n = 8). Alcohol use disorder as a cause of suicide attempt was found to be 11.1% (n = 5). Bipolar disorder, schizophrenia, adjustment disorder and impulse control disorder each accounting for 4.5% (n = 2). Least was found for obsessive compulsive disorder and panic disorder 2.2% (n = 1). Similar dominance of depressive disorder was found in study done by Bhatia et al.[12]

Our findings are in concordance with study done by Singh and colleagues in 2016 where major depressive disorder was the leading cause of suicide attempts.[13]

Kanchan et al. in the study concluded that 28% of females and 11% of male who committed suicide had depression.[14] Manoranjitham et al., (2010) also reported relation of suicide attempts and co-morbid psychiatric disorder.[15]

Our results are in line with the case-control research conducted by Gururaj G and colleagues (2004), who over a span of 3 months collected cases from police reports and found that alcohol intake, history of chronic abuse, history related to chronic alcohol abuse in one's partner and dependency on alcohol increased the risk of suicide.[16] Vijayakumar et al., (1999) reported that subjects with personality disorder or the presence of axis 1 disorder as per DSM-3 increased the suicidal risk. In 2008 study conducted by Chavan and colleagues found that chances of suicidal attempts increase with presence of co-morbid psychiatric illness (34%) and alcohol or other substance use (24%).[17]

Conclusion

Most of the subjects in our study had some diagnosable psychiatric illness but only few took treatment for the same. By this it can be concluded that there is an urgent need to promote education regarding the nature of psychiatric disorder and their treatability across the community for early detection and timely treatment to reduce suicide attempts. So better accessibility of mental health care needs to be promoted which can be done by stigma reduction programs, effective skills on the part of primary health care and family physicians for identification and management of individuals who are prone to attempt suicide.

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Original Article

The Role of High Sensitive C-reactive Protein (cs-CRP) in Depression

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ABSTRACT

Background*: Depression and inflammation are closely intertwined, and possibly powering each other in a bidirectional loop. Various studies have explained the role of low-grade inflammation in development of depression. Elevated C-reactive protein has observed in depression but exact association between hs-crp and depression is still unclear.* ***Aim:*** *To assess the role of hs-crp as pro-inflammatory marker in depression.* ***Methods:*** *The level of serum hs-crp was measured in 70 diagnosed cases of depression as per ICD-10 DCR against 60 ages, sex and body weight (BMI) matched control subjects. The degree of depression in the case group was assessed by the BDI-II scale.* ***Results:*** *The findings of the study showed that hs-CRP levels in depression do not show significant difference from healthy controls with no psychiatric illness.* ***Conclusion:*** *In present study, we failed to derive a significant association of hs-CRP levels with severity of depression. As such, in this context, we cannot rule out the predominance of moderate depression patients as the possible reason for this.*

Keywords: *Depression, Inflammation, High Sensitive C-reactive Protein.*

Introduction

Major depressive disorder is reported to be the most common mood disorder. Worldwide, Depression is one of the leading causes of disease burden and is ranked as the second leading cause of disability. It is also considered as a major contributor to the global burden of diseases.[1] As per global burden of disease data 2017, in India 45·7 million population have depressive disorders. One in seven Indians was affected by mental disorders of varying severity. As per research depression contributes most to the mental disorders.[2] According to the estimates of the World Health Organization, 322 million people, amounting to 4.4% of the world population are affected by depression.[3]

The etiology of depression is multifactorial, with several environmental and genetic risk factors implicated in its development and clinical course. A growing body of research suggest the association of inflammatory pathways in the etiology of depression.[4,5] Study has explained that the Stress-induced inflammatory signals can be transmitted to the brain, where they may interact with neurotransmitters and neurocircuits, influencing the risk for depression and non-responsiveness to available antidepressant treatments.[6] Currently, both Clinical and preclinical evidences have suggested that chronic (neuro) inflammation is involved in the patho-physiology of depression.[7] Amongst inflammatory markers, C-reactive protein (CRP) is a well-known biological marker of systemic inflammation. C- reactive protein is an acute phase reactant protein secreted mainly by hepatocytes in response to the activation of the innate humoral system. It is easily measured through a blood sample also in its high-sensitivity form (hs-CRP) and used in clinical practice mainly as a biomarker of infection, chronic disease state, and chronic low-grade inflammation[8]. High sensitivity

(hs)-CRP is a more sensitive test for subtle inflammation, and serum hs-CRP may reflect a low-grade systemic inflammatory state of various mental disorders.[9]

Therefore, the present review aims at systematically investigating the role of hs-CRP in major Depressive Disorder (MDD) taking into account the neuro-inflammatory state. A secondary aim is evaluating whether hs-CRP may represent a useful biomarker in clinical practice, able to early identify and characterize those depressed patients according to their different illness stages, and severity.

Methods

A case control study carried over a period of 18 months in the department of psychiatry Era's Lucknow medical college and hospital, Lucknow with a group consisting of 70 drug naïve patients diagnosed as case of depression with symptoms present more than 2 weeks based on International classification of diseases, tenth revision, diagnostic criteria for research (ICD-10-DCR) criteria[10] for diagnosis of depression and 60 healthy controls in the age group of 18-60 years age and sex matched non blood related normal individuals without depressive symptoms and any other psychiatric illnesses, screened by Mini International Neuropsychiatric Interview (M.I.N.I).[11] After taking informed consent, both cases and controls were interviewed to obtain relevant data. The subjects excluded with any organic brain lesions, other major illnesses like cardiovascular diseases, hypothyroidism, liver disorder, diabetes mellitus and malignancy, on cholesterol lowering drugs, Pregnancy, lactation, use of OCPs, Substance abuse except nicotine, History of recent significant weight loss, known history of dyslipidemia, with severe depression with psychosis. The nature and purpose of study explained to the subjects. Clearance from the institute ethics committee was taken.

Assessment Tools

Diagnosis was based on ICD-10 DCR and controls were screened by using Mini International Neuropsychiatric Interview (M.I.N.I). Severity of depression was rated on 21 item beck's depression inventory II (BDI II).[12] Each item is scored with a value between 0 and 3, yielding a total score between 0 and 63, according to which depression was graded as normal (0-13), mild (14-19), moderate (20-28), and severe (29-63).

LaboratoryInvestigations

About 3 ml of blood sample was collected from cubital vein from each of the subjects, by aseptic technique in a plain vial with appropriate labeling from all the participants and was sent for evaluation of levels of highly sensitive C-reactive protein (hs-CRP). Sample was transferred for serum separation by doing centrifugation for 10 min at 3,000 RPM, hence separating the cells from the serum and the smear layer was removed carefully. The serum thus obtained was then stored at -20°C for the analyses at a later date. Prior to assay, the frozen samples was brought to room temperature slowly and mixed gently. All samples were then tested together at once. High sensitive C-reactive protein serum levels will be estimated using hs-CRP ELISA kit supplied by CALBIOTECH Inc, USA. The sensitivity of the hs-CRP kit is 10 ng/ml. Data so collected was fed into computer using Microsoft Excel 2013 software and was subjected to statistical analysis.

Statistical Analysis

The data was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. Data has been represented as frequencies (numbers) and proportions (percentages) and mean ± standard deviation. Chi-square test was used to compare the qualitative data. Continuous data was compared using Independent samples 't'-test and ANOVA. Correlation of domain scores with hs-CRP level was done using Pearson's correlation coefficient. A 'p' value less than 0.05 indicated a significant association.

Results

Results are expressed as mean ± SD. Table 1 show the socio-demographic distribution of subjects recruited in the study. Age of cases ranged from 18 to 60 years with a mean age of 39.27 ± 11.64 years. Majority of patients were aged between 31 and 50 years (57.1%) and were males (52.9%). The sex ratio of the cases was 1.12. Majority of patients were Hindus (62.9%), urbanites (54.29%), from outstations (58.57%), married (91.43%), lived in joint family (74.29%), illiterate or educated upto 8th class (52.9%), non-tobacco users (55.7%) and non-

smokers (87.1%). Maximum were housewife/student (40%) and had total monthly family income in 5,001-10,000 range (37.1%). Statistically, no significant difference in cases and controls was observed for all the demographic variables excepting marital status with proportion of unmarried individuals being significantly higher in controls as compared to that in cases. All the cases and controls had BMI and blood pressure in normal range and there was no statistically significant difference between two groups with respect to BMI and blood pressure levels.

Among the clinical profile in Table 2 Majority of cases had depression of moderate grade (67.1%) followed by severe grade (20%) and mild grade (12.9%) respectively. Number of depressive episodes ranged from 1 to 4. Majority of cases (64.3%) had only one episode. There were 19 (27.1%) patients with two episodes while 6 (10%) had more than two episodes. Mean number of depressive episodes was 1.46 ± 0.70.

While comparing the levels of hscrp (Table 3) In both the groups, hs-CRP levels ranged from 0.00 to 0.23 mg/L. Mean hs-CRP was 0.14 ± 0.11 mg/L in cases as compared to 0.16 ± 0.10 mg/L in controls. Though the mean value was higher in controls as compared to that in cases yet this difference was not significant statistically (p=0.218).

Table 4 explains that Mean hs-CRP levels were 0.11 ± 0.12, 0.15 ± 0.10 and 0.11 ± 0.12 mg/L respectively in cases with mild, moderate and severe depression, thus showing the mean value to be maximum in moderate grade and minimum in mild grade, however, on evaluating the data statistically, the difference was not found to be significant (p=0.441).

Table 1: Social and Demographic Profile of patients enrolled in the study

Demographic variable	Category	Cases (n=70)		Controls (n=60)		Total (n=130)	
		No.	%	No.	%	No.	%
Age	≤ 20 years	4	5.7	0	0.0	4	3.1
	21-40 years	37	52.8	30	50.0	67	60.0
	40-60 years	29	41.4	29	48.3	58	44.6
	>60 years	0	0.0	1	1.6	1	0.8
Mean Age ± SD (Range) in years		39.27 ± 11.64 (18-60)		40.20 ± 11.31 (22-62)		39.70 ± 11.45 (18-62)	
Gender	Male	37	52.9	31	51.7	68	52.3
	Female	33	47.1	29	48.3	62	47.7
Religion	Hindu	44	62.9	35	58.3	79	60.8
	Muslim	26	37.1	25	41.7	51	39.2
Marital Status	Married	64	91.43	17	28.33	81	62.3
	Unmarried	5	7.14	43	71.67	48	36.9
	Widow(er)	1	1.43	0	0.00	1	0.8
Place	Rural	Rural	32	45.71	31	51.67	63
	Urban	Urban	38	54.29	29	48.33	67
Type of family	Joint	18	25.71	15	25.00	33	25.4
	Nuclear	52	74.29	45	75.00	97	74.6
Occupation	Unskilled labour/Farmer	23	32.86	13	21.67	36	35.4
	Skilled labour/ Vendor	10	14.29	15	25.00	25	19.2
	Businessman	6	8.57	7	11.67	13	10.0
	Job	3	4.29	3	5.00	6	4.6
	Housewife/ Student	28	40.00	22	36.67	50	38.5
Educational Status	Illiterate	13	18.57	13	21.67	26	20.0
	Upto 8th	24	34.29	21	35.00	45	34.6
	10th-12th	22	31.43	18	30.00	40	30.8
	Graduate and above	11	15.71	8	13.33	19	14.6
Monthly income	≤ 5,000	23	32.9	17	28.3	40	30.8
	5,001-10,000	26	37.1	26	43.3	52	40.0
	>10,000	21	30.0	17	28.3	38	29.2
Smoking Status	Currently smoking	9	12.9	10	16.7	0.376	0.540
Tobacco status	Currently consuming	31	44.3	17	28.3	3.530	0.060
Mean BMI ± SD (kg/m²)		21.46 ± 1.44		21.90 ± 1.68			
Mean SBP ± SD (mmHg)		117.09 ± 15.88		119.03 ± 7.71			
Mean DBP ± SD (mmHg)		76.31 ± 9.05		77.57 ± 6.77			

Table-2: Distribution of subjects according to depression episodes

Severity of Depression (n=70)		First episode (n=50)		Recurrent Depressive Episodes (≥1 episode) (n=20)	
Mild (14-19)	10 (14.3%)	F.32.0	9 (18%)	F.33.0	1 (5%)
Moderate (20-28)	50 (71.4%)	F.32.1	37 (74%)	F.33.	13 (65%)
Severe (29-63)	10 (14.3%)	F.32.2	4 (8%)	F.33.2	6 (30%)

Table-3: Comparison of hs CRP-Levels of Cases and Controls (mg/L)

Group	n	Mean	SD	Min	Max
Cases	70	0.14	0.11	0.00	0.23
Controls	60	0.16	0.10	0.00	0.23

Table-4: Association between Severity of Depression and hs-CRP (mg/L)

Severity Grade	n	Mean	SD	Min	Max
Mild	10	0.11	0.12	0.00	0.23
Moderate	50	0.15	0.10	0.00	0.23
Severe	10	0.11	0.12	0.001	0.23

Discussion

The present study explored the associations of inflammatory biomarker i.e. hs-CRP levels in patients with depression. The research revealed depression as a systemic illness and tries to explain it on the basis of various neurobiological mechanisms.[13] Evidence regarding association of depression and systemic inflammation is also emerging, linking the impact of depression over physical well-being of the affected patients.[14,15] Recognition of depression as an inflammatory disease and association of depression with systemic illnesses to some extent can be described and explained on the basis of identification of inflammatory markers like hs-CRP. Hence, the present study was carried out with an aim to assess the association between high sensitive C-reactive protein (hs-CRP) with depression.

In our study, Age of cases ranged from 18 to 60 years with majority of patients were aged between 31 and 50 years (57.1%) and were males (52.9%). The sex ratio of the cases was 1.12. Pediatric and elderly patients were excluded in our study as hs-CRP levels are influenced by age.[16,17] Depression in adults and elderly has been widely studied and well documented.[18,19] In present study, majority of cases were males. However, depression is reported to be more common in females.Amongst studies from India, Grover et al.[20] reported proportion of females to be 50.2% while Dinesh et al.[20] in their series had a total of 77.8% females. A recent study showed that Depression was considerably associated with hs-CRP only in men, indicating a biological difference between men and women that can independently modify the relationship between hs-CRP and depression.[22]

As far as other studies evaluating the association of hs-CRP with depression are concerned, they have also been conducted in patients with different age and gender profiles. Ma et al.[23] conducted their study among patients with a mean age of 48.5 years and a sex ratio of 1.04. Zhang et al.[24] conducted their study in a study population with an average age of 60.26 years and with sex ratio in favor of females (M:F=0.87). Jangpangi et al.[25] on the other hand conducted their study among a study population with mean age 30.33 years and a sex-ratio favouring females (M:F=0.88).

In present study statistically, no significant difference in cases and controls was observed for all the demographic variables excepting marital status with proportion of unmarried individuals being significantly higher in controls as compared to that in cases. As such, none of these variables have been reported to have a direct association with hs-CRP levels. Marriage may both affect mental health and

be affected by it. A happy marriage may provide substantial emotional benefits. Married people are happier, more satisfied and less depressed than those who are unmarried. These emotional benefits may, in turn, improve their physical health, by reducing the total stress, depression, and other mental health problems.[26] Thus, though marriage can have a relationship with depression but whether it has an association with hs-CRP levels, has not been revealed by any previous study. Thus, despite a significant difference in marital status of cases and controls, it cannot be considered to have a confounder effect.

As far as severity of depression was concerned, among cases, majority had moderate severity (71.4%). There were 10 (14.3%) cases each with mild and severe grade of depression. Compared to present study, Jeenger et al.[27] had a much higher proportion of severely depressed patients (43.1%) as compared to present study (14.3%).

This study showed a higher mean value in controls as compared to that in cases, however, the difference between two groups was not significant. Jeenger et al.[27] in their study found mean CRP levels to be 3.69 ± .28 mg/dl and 3.12 ± 2.97 mg/dl respectively in cases and controls, despite having a higher mean value in cases as compared to controls they did not find this difference to be significant and ruled out an association of depression with increased CRP levels. Our findings also endorse the same. However, Jangpangi et al.[25] in their study reported the mean hsCRP levels of depression patients to be not only higher (2132 ± 50.24 ng/ml) as compared to normal controls (1969 ± 69.16 ng/ml) but also found this difference to be significant. A number of other workers also report significantly higher CRP levels in depression cases as compared to controls.[28,29]

In the light of findings of present study, we too, like Berk et al.[30] like to state that the relationship between hs-CRP and depression should be viewed with caution and should be related with other traditional markers of systemic inflammation such as obesity, dyslipidemia, diet, etc. before jumping the bandwagon to consider depression as a systemic illness and its link with systemic inflammation.

Conclusion

In present study, we failed to derive a significant association of hsCRP levels with severity of depression. As such, in this context, we cannot rule out the predominance of moderate depression patients as the possible reason for this. Moreover, the fact that our study population was free of all the other systemic inflammation risk factors like obesity, dyslipidemia, cardiovascular disease, hypertension or diabetes could also be responsible for such a scenario. Further studies with inclusion of a diversified study population and inclusion of more variables are recommended to investigate this issue in detail.

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Original Article

Psychological Profile of Patients with Somatization Disorder

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ABSTRACT

Background: *Somatization Disorder (SD) is one of the most common problems with symptoms of multiple and frequently changing physical symptoms and their persistence are associated with various psychological disturbances.* ***Aim:*** *The present study aims to assess stress, depression and anxiety among Somatization Disorder patients.* ***Objective:*** *To see the relationship of stress, depression and anxiety with somatization disorder.* ***Method****: A total 50 patients diagnosed with somatization disorders according to the International Classification of Diseases–10th Revision (ICD-10) were assessed for seeing the relationship between stress, depression and anxiety in patients with somatization disorder.* ***Result:*** *The results have indicated various significant findings in relation to level of stress, depression and anxiety in SD patients.* ***Conclusion:*** *The results suggest that somatization disorder is associated with other psychological disturbances like stress, depression and anxiety.*

Keywords: *Somatization Disorder, Stress, Anxiety, Depression*

Introduction

Somatization Disorder (SD) is a form of mental and behavioural disorder that causes one or more bodily symptoms including pain, neurological problems and gastrointestinal complaints.[1] SD is likelihood to experience somatic distress in regard to psychosocial stress and to seek medical help. The symptoms may or may not be identifiable to a physical cause including general medical conditions, other mental illnesses and substance abuse but certainly they cause excessive and disproportionate level of distress. The persistence of somatic symptoms is associated with various psychological disturbances like depression, anxiety, lots of fidgeting behaviour, restlessness and nervousness.[2]

A study by Katon in the year 1982 stated that somatization disorder carries number of psychological disturbances like anxiety, depression, and stress reactions.[3] While going through the researches of somatization disorder, it is noticed that number of researches are associated with psychological discomforts; anxiety and depression are the commonest.[4,5]

Somatization occurs when a person feels exaggerated and extreme anxiety about physical symptoms.[6] A study conducted by Liao et al. in 2017 stated that the health anxiety is the most common feature of diagnostic criteria of somatization conditions.[7] Another study revealed that somatic symptoms are associated with psychiatric disorders with high rates of anxiety symptom.[8] This is supported by another study by Mostafaei whoconducted research in Isfahan University of Medical Sciences and Health Services in Isfahan province, Iran in the year 2019. The result of this study concluded that stress, anxiety and depression are more prone in patients with somatization disorder but it was found that anxiety was more than stress and depression in SD patients.[9]

Materials and Methods

The study was initiated to identify psychological disturbances among patients with somatization

disorder from 2017-2019. The current research was done to assess the stress, anxiety and depression among patients with Somatization Disorder. For this purposes, 50 participants were selected from Department of Clinical Psychology in collaboration with Department of Clinical Psychology, Santosh Deemed to be University, Ghaziabad, U.P. who were diagnosed with SD according to the International Classification of Diseases–10th Revision (ICD-10) and basing upon their willingness. For this study, the selected test measures were: SD Checklist, Sinha Anxiety Scale (SAS), Stress Reaction Checklist (SRC), Beck Depression Inventory (BDI). Confirmed diagnosis of somatisation disorder by physician and clinical psychologist by referring the ICD 10 and those who have ability to read and write based on primary education up to graduation were included and those participants who were not willing to participate were excluded. All included participants were required to fill up the consent form. Statistically Mean, Standard Deviation and Correlation by Carl Pearson's method of SD patients were calculated for the analysis.

Results

The arrangement of the table is based on the distribution of scores on Somatization Disorder Checklist, Stress Reaction Checklist, Beck Depression Inventory and Sinha's Anxiety Scale. Somatization disorder, stress, depression and anxiety were analyzed by computing mean and standard deviation. Karl Pearson correlation was computed to assess the relationship of somatization disorder with stress, depression and anxiety.

Table 1 and Histogram 1 indicate that the patients of somatization disorder have moderate level of somatic complaints and moderate level of stress. It also signifies that the patients have mild to moderate depressive features and high level of anxiety.

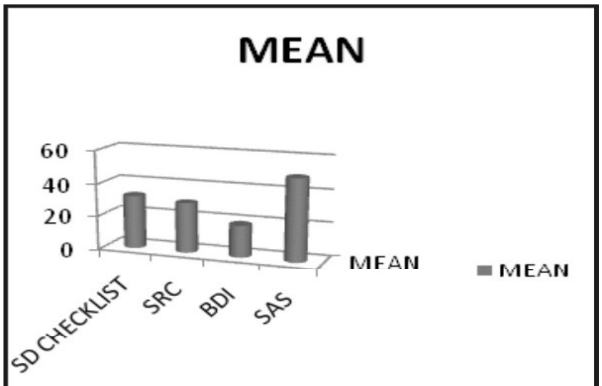
Table 2 indicates that there is a significant relationship of SD with stress, depression and anxiety. The significant finding of the study shows that the individual with high somatic complaints are more prone to feel stressed, depressed and anxious.

Discussion

People with somatic symptoms like; multiple and frequently changing physical symptoms and their persistence are associated with various psychological disturbances like depression, anxiety, stress. The same has been targeted in this investigation. Multiple studies have concluded that both increased health anxiety and number of bother some somatic symptoms have predictability for Somatization disorder.[10] In this study it was found that people with SD have high anxiety. This finding is validated by a study which stated that Somatization occurs when a person feels extreme, exaggerated anxiety about physical symptoms.[3] Another study supported this finding which stated that somatic Symptoms are associated with psychiatric disorders with high rates of anxiety symptom.[9] Also, the present investigation found that

Table-1: Mean with standard deviation between stress, depression and anxiety and level among patients with Somatization Disorder

	SD Checklist	SRC	BDI	SAS
Mean	32.28	30	18.84	49.32
Standard Deviation	± 3.73	± 6.98	± 8.26	±22.13



Histogram 1: Mean with standard deviation between somatic symptoms, stress, depression and anxiety

Table-2: Correlation of SD with stress, depression and anxiety

	Stress	Depression	Anxiety
Correlation of SD with Stress	0.23		
Correlation of SD with Depression		0.14	
Correlation of SD with Anxiety			0.05

people with SD have moderate depression and stress. The research has concluded that SD leads to number of psychological disturbances like anxiety, depression, stress reactions etc.[11] Another study was conducted by a researcher Howard in 2017 which stated that higher level of stress is present along with major depression and anxiety disorder are associated with Somatization Disorder.[12] In an article titled as Somatization Disorders in Children and Adolescents bySibler in 2003 stated that somatic symptoms in children is positively associated with level of stress.[13]

The results have also concluded that anxiety is found to be the highest among other psychological disturbance like depression and stress. This finding is validated by the research stress, anxiety and depression are more prone in patients with somatization disorder but it was found that anxiety was more than stress and depression in SD patients.[9]

Conclusion

The results suggest that somatization disorder is associated with other psychological disturbances like stress, depression and anxiety. It is recommended that patient with SD should go for Individual therapy, cognitive behavior therapy, group therapy, management of Daily routine, management of diet, mindfulness, meditation and enhancement of sleep pattern, family counseling for improving family dynamics, stress and anxiety management programs. But among these, CBT is the more efficacious treatment modality for SD as it works on distorted thoughts and beliefs and help the patient to restructure these thoughts into the positive one. Multiple studies have been compared between CBT and other psychological interventions and studies have concluded that CBT showed higher response rates in comparison to the otherpsychological intervention. In general, the evidence-base of CBT is very strong therapeutic intervention in comparison to the other psychological interventions.[14-16]

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Psychomicrobiology

Microbial Therapeutics or Neurobiogenesis of Irritable Bowel Syndrome

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Introduction

Irritable bowel syndrome (IBS) is a disorder characterized by chronic abdominal pain and discomfort associated with alteration in the bowel habits in the absence of a demonstrable pathology. The prevalence of IBS in the industrialized world among the general population is10% - 15%, the high prevalence together with the associated co-morbidities significantly impacts both patients and society, especially in terms of quality of life and medical costs.[1] Though abdominal distension, bloating, flatulence, straining and urgency are the symptoms with which the patients most commonly present with but non-gastrointestinal symptoms such as chronic pelvic pain, temporomandibular joint disorder, fibromyalgia and chronic fatigue syndrome are also seen in patients with IBS. Most profoundly, anxiety, depression and somatoform disorders are the psychiatric associated comorbidities that are highly linked with IBS. These comorbidities require prompt medical attention because if left untreated then they can impact the quality of life of the patient negatively[2] and incur significant economic loss due to the need for medical consultations and work absenteeism.[3] Rome IV criteria which is a symptomatic based criteria is currently used to categorise IBS into the following four major subtypes depending on the predominant stool pattern-IBS with constipation (IBS-C), IBS with diarrhoea (IBS-D), IBS with mixed bowel habits (IBS-M) and unclassified IBS.[2] The dysregulation of the autonomic system in the gut, is likely responsible for the alterations of bowel habits whereas symptoms of abdominal pain and discomfort are thought to involve an additional change in the bidirectional communication between the gut and the brain. Known as the "gut-brain axis", it causes a modified perception of visceral events in the form of hyperalgesia or allodynia.[1] Though the etiology of IBS is incompletely understood but there is growing evidence that IBS might be a post-inflammatory and stress-correlated condition.[4] Both host and environmental factors, including diet, have been found to play a key role in triggering the symptoms. Among the host factors, central alterations (i.e., aberrant stress responses, psychiatric comorbidity and cognitive dysfunctions) and peripheral alterations (i.e., intestinal dysmotility, visceral hypersensitivity, low-grade immune activation and altered intestinal barrier function) are both involved.[5] Human gut microbiome is a term which is used to define the collective genome and microbial cellular or structural elements and metabolites of the microorganisms inhabiting the gastrointestinal (GI) tract and is now considered as a virtual organ. Gut microbiota (GM)is the largest population of microorganisms that reside within the GI tract of humans and metabolites that are produced by the GM help with the physiological and metabolic processes as well as provide immunity against pathogens.[6] The human intestinal microbiota is made up of trillions of microorganisms most of which are of non-pathogenic bacterial and viral origin and it functions in tandem with the host's defences and the immune system to protect against pathogen colonisation and invasion. Gut dysbiosis is basically the disruption of the microbial balance which can result in a wide range of consequences and can be associated with different diseases.[7] However, the possibility of a link between the GM and brain processing behaviour through the microbiota-gut-brain axis also exists.[8]

In 2018, Bambury et al proposed a pathway for discovery of microbial therapeutics in mental health, known as psychobiotics.[9] The fact that microbiome is affected by diet and exercise, its effect on the mood and cognition may also be considered.[10,11] Thus, the GM may serve as a target for the treatment of IBS through the use of microbial therapeutics or microbiota-based treatment including food constituents that can affect the gut microbes or live microbial administration or its products for therapeutic purposes.[12]

Microbial Therapy

Microbial therapy consists of either food constituents that can affect the gut microbes or live microbial administration or its products for therapeutic purposes. They act by repopulating the GM to help balance the human intestinal microorganisms in numerous medical conditions including mental health and cognitive disorders where they affect the synthesis of neuroactive compounds or neurotransmitters. Genetically engineered microbial therapy are also available and may have similar therapeutic benefits. The different types of microbial therapy are as follows:[6]

1. Probiotics
2. Prebiotics
3. Synbiotics
4. Paraprobiotics
5. Postbiotics
6. Proteobiotics

1. Probiotics:

Probiotics are non-pathogenic bacteria and yeast, present in certain types of food or supplements and can cause a positive influence in humans. The World Health Organization defines probiotics as live microorganisms which when administered in adequate amount confer a health benefit on the host.[13] The main types of probiotic bacteria typically belong to Lactobacillus genus, including the species acidophilus, sporogenes, platarum, rhamnosum, delbrueck, reuteri, fermentum, lactus, cellobiosus, brevis; the Bifidobacterium genus, which include bifidum, infantis, longum, thermophilum, animalis; the Streptococcus genus, primarily the species: lactis, cremoris, salivarius, intermedius as well as other genus consisting of Leuconostoc, Pediococcus, Propionibacterium, Bacillus and Enterococcus (esp. Enterococcus faecium). The other probiotic microorganisms are yeast and molds which include Saccharomyces cerevisiae, S. boulardii, Aspergillus niger, A. oryzae, and Candida pintolopesii.[14] These supplements available in the form of pills, capsules or liquids may carry the microorganism to the large intestine for better effects. Different fermented food products like yogurt, pickles, kefir or tea like kombucha are the source for probiotics and help optimize the microbial flora in humans. In lactose intolerant subjects non-dairy probiotics are preferred[15] but engineered probiotics are also available nowadays.[16] Probiotics can act throughout the GI tract as well as outside the GI system.[17] Within the GI tract, it can either interact directly or via enzymatic activity with the intestinal microbes, or it can act on the intestinal mucosa or epithelium causing alteration in the intestinal barrier function as well as the mucosal immune system. Outside the GI tract, probiotics can act on the brain, liver and other organs.[6]

2. Prebiotics:

Prebiotics are non-digestible dietary components that reach the colon intact and promote the growth and activity of the bacteria of the GI tract.[18] It includes other substances such as polyphenols and polyunsaturated fatty acids along with the typical carbohydrates. In 2008, the International Scientific Association of Probiotics and Prebiotics (ISAPP) defined "dietary prebiotics as a selectively fermented ingredient that results in specific changes in the composition and/or activity of the gastrointestinal microbiota, thus conferring benefit(s) upon host health".[19] Prebiotics can be obtained naturally from a variety of different food, such as fruits and vegetables as well as dietary supplements[20] and can help with the growth of probiotics and the production of short-chain fatty acids (SCFA).[21] Most prebiotics are oligosaccharides and are therefore indigestible by humans however, the gut bacteria is able to utilize them and hence restore the composition of the GM and enhance the action of probiotics.[22]

3. Synbiotics:

The combination of prebiotics and probiotics in order to obtain a synergistic effect are known as synbiotics. Synbiotic therapy is basically designed in order to improve the effectiveness of the pro-

biotic.[23] Synbiotics by restoring the gut dysbiosis in many health conditions can help in improvement of immune function, reduction of incidence of nosocomial infections and other effects on human health.[20] It has also been noted that the presence of prebiotics protects probiotics from bile acid stress, however, variability with different combination of probiotics and prebiotics can occur.[24]

4. Paraprobiotics:

Paraprobiotics (or ghost probiotics) are inactivated and non-viable probiotic cells, which when and if taken in adequate amount, can cause health benefits through antioxidant, anti-inflammatory and several metabolic and immune pathways.[25] Current research exploring the potential benefit of adding paraprobiotics to probiotic containing yogurt is currently underway where in paraprobiotic yogurt will contain dead *Lactobacillus* and *Bifidobacterium*. The advantage of this would be increased stability of the yogurt for a wide range of temperatures and a prolonged shelflife[26] but the functionally will remain similar to probiotic yogurt.[27]

5. Postbiotics:

The metabolic by-products of gut microbes, in particular the crude extracts from probiotics that elicit a biological response, such as protecting the intestinal mucosal barrier can be considered to be postbiotics.[28] In essence, postbiotics are the by-products of probiotics after feeding on prebiotics and often isolated through gas chromato-graphy.[29] Both postbiotics and paraprobiotics have the potential to be used as pharmacological agents in the prevention and treatment of various psychiatric and neurocognitive disorders but since some studies have suggested caution around the use of probiotics in immunocompromised patients, postbiotics may serve as a safer alternative.[6]

6. Proteobiotics:

Proteobiotics are metabolites of probiotics that possess antimicrobial activity through interruption of cell-to-cell communication, therefore interrupting the virulence strategies,[29] this prevents bacterial colonization by not killing the bacteria that can help prevent the development of antibiotic resistance. A study conducted on the effects of proteobiotics from lactobacillus acidophilus on enterohemorrhagic Escherichia coli (EHEC) O157:H7 infection, showed that it prevented the virulence of EHEC O157:H7.[30]

Inflammatory Bowel Syndrome and Microbiome

There is increasing evidence that the gut microbiota plays an important role in gastrointestinal (GI) disease including IBS. The fecal microbiota of IBS patients is found to be significantly different from healthy subjects, potentially contributing to altered bowel habits and influencing transit in colon.[31] Several studies conducted have indicated the reduction in Bifidobacterium, Lactobacillus and Faecalibacterium and increase in bacterial species like Veillonella, Ruminococcus and the proinflammatory bacterial species such as Enterobacteriaceae.[32] Conversely, a recent systematic review of gut microbiota in patient with IBS reported increased abundance of family Lactobacillaceae and genus Bacteroides.[33] Both higher and lower ratio of Firmicutes/Bacteroidetes, which is a rough indicator of altered microbial population, has been reported in IBS subjects.[34] IBS-specific microbiome signature that is associated with severity of symptomsis the presence of Clostridiales, Prevotella and methanogenic species.[35] Factors such as gut metabolome, intestinal permeability and inflammatory pathways have also been suggested to play a role in the gastrointestinal disease associated with a microbiome-related background.[36,37] Alteration of the indigenous gut microbiota in the pathogenesis of IBS is related to not only the type of microorganisms comprising the microbiota but also to the number in which they are present. Small intestinal bacterial over growth (SIBO) may cause increased gas fermentation, gas production and altered gut movement and has been suggested to play an important role in the generation of IBS symptoms including abdominal distention, bloating and flatulence. This is an addition to the indirect evidence that alterations in the gut microbiota are pathogenic factors in the development of IBS. However, the prevalence of SIBO in IBS is not consistent, with clinical studies varying from 4% to 84%. This inconsistency is due to the problems of hydrogen breath test that is commonly used as a diagnostic tool.[38] Several studies have shown an association between previous bacterial or viral gastrointestinal infections and the risk of developing

post-infectious IBS (PI-IBS). A range of bacterial pathogens have been implicated in PI-IBS, including Clostridium difficile, Vibrio cholerae, Campylobacter jejuni, Escherichia coli and Salmonella enterica serovar Typhimurium.[37]

The reduction of visceral pain and/or change in the problematic bowel habits in IBS is the main purpose of most current therapeutic interventions in IBS. However, the manipulation of the gut microbiota is an emerging field in the management of IBS. Although it is not clear whether the alterations in the gut microbiota in IBS patients precede or are an outcome of the disrupted local gut microenvironment condition, modulation of gut microbiota for treatment of the IBS has sparked interest in recent years.[38] Dietary interventions that are known to modulate gut microbiota, such as a diet low in FODMAPs (Fermentable Oligo-, Di-, Monosaccharides and Polyols), have also reported to reduce symptoms of IBS in several randomized placebo-controlled trials.[39] A systematic review and meta-analysis including 45 studies and 21,421 individuals with infectious enteritis, reported a fourfold higher risk of developing IBS in individuals with gastrointestinal infection.[40] Recent observations have suggested a positive effect of fecal microbiota transplantation in alleviating IBS symptoms.[41]

Overall, evidence supporting microbiome-based therapeutic approaches for the treatment of IBS has been growing tremendously. During the past decade, the emergence of the gut microbiome as a biological system with high therapeutic potential and advances in the understanding of the microbiome and its interaction with the host has opened a new horizon in biotechnology and precision medicine. There is strong evidence supporting the role of diet and microbiome in triggering and progression of IBS hence targeting the microbiota appears promising considering the positive response showed by some patients to microbiome-related therapies. However, due to the complexity and heterogeneity of IBS along with lack of highly predictive diagnostic and prognostic biomarkers unsatisfactory outcomes have resulted in some studies. Several studies have demonstrated the capacity to collect comprehensive, longitudinal datasets for individuals which include the quantification of intestinal and dietary metabolite concentrations, classification and characterization of the host data (including diet, anthropometrics, lifestyle and disease background) and microbiome data (such as strain-level composition and abundance, metagenomics, meta-transcriptomics and metabolomics). However, most of the current studies that involve the interactions between human physiology, microbiome and food remain correlative rather than explanatory. A deeper understanding of the various underlying mechanism is important in developing a therapeutic intervention which is safe and efficient at the same time, such as pre/probiotics, synbiotics, antibiotics and dietary regimes/food supplements for the management of IBS. The detection of factors that potentially interfere with the efficacy of the synbiotics and dietary compounds and the exploration of the underlying mechanisms, require the development of algorithms that will integrate multi-scale data and hence, suggest the optimal combinations that would result in desired beneficial transformations in the effective management of IBS.

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Psychophysiotherapy

Effect of Physical Therapy Exercises on Mental Health in Patients with Rheumatoid Arthritis

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Rheumatoid arthritis is a chronic systemic autoimmune condition that mainly affects synovial joints causing inflammation (synovitis), joint erosion and cartilage damage resulting in reduced functional status and disability in many patients.[1] The disease is characterized by symmetrical arthritis, degradation of the articular cartilage and epiphyses, and the presence of extra-articular lesions and systemic complications, including vasculitis, reactive amyloidosis, and pulmonary fibrosis. RA is progressive, significantly worsens the quality of life of patients (QoL), contributes to disability and associated with an increased risk of cardiovascular complications.[2]

RA can also manifest as extra-articular disease including cardiovascular and respiratory systems causing pericarditis, myocarditis, pericardial and pleural effusions. Also, ophthalmological, gastrointestinal, nervous and renal system dysfunction can occur in the long term in RA patients leading to higher mortality and morbidity rates.[3,4] In RA, quality of life is significantly decreased due to pain, fatigue and disability, caused by local and systemic inflammation leading to anxiety and depression.[5,6] Major depressive disorders (MDDs) are detected in 17% of RA patients, which according to the World Health Organization Global Burden of Disease Study, is the most pressing issue in the middle-aged population.[7]

Depression and anxiety are the major concerns of RA patients which are due to Cytokine-related mechanism and the psychological impact of chronic illness on a patients' mental as well as physical well-being.[8] Symptoms like joint pains, fatigue and early morning stiffness affect QoL and contribute to increased depression and other psychological issues in RA patients.[9,10] Longterm exposure to raised cytokines such as IL-1b, tumour necrosis factor (TNF)-a and IL-6 in RA can cause maladaptive responses to sickness behaviour, causing fatigue, pain, fever and depression.[10,11] Depression presents with low mood, low self-esteem, fatigue, lethargy, insomnia, psychomotor dysfunction and repetitive negative thoughts making it potentially fatal if left untreated. Depression is two times more prevalent in RA patients than in the general population, and it is also evident that not all patients are assessed for their mental well-being.

Studies show that anxiety and depression can lower pain threshold and chronic pain further aggravates anxiety and depression. Furthermore, people with arthritis and depression tend to have more functional limitations, are less likely to adhere to their treatment regimens, and have increased odds of developing other health problems. The vicious cycle of pain, poor health and negative mood can significantly change the course and management.

Mechanism

People with RA with the highest pain levels are the most likely to be anxious or depressed. Chronic stress is known to change levels of nervous system chemicals. The stress hormones and neurochemicals – like cortisol, serotonin and norepinephrine – affect mood, thinking and behaviour. There is a well-documented event called cytokine-induced depression, where cytokines are increased, and depression occurs. Specific cytokines, such as interleukin-1, interleukin-6, and tumour necrosis factor-α, are involved in the pain and inflammation process in RA.[12]

The pathophysiology of RA is multifactorial. The proinflammatory effects of TNF-a[12] on inflammatory cytokines are of central importance in the pathogenesis of RA. The circadian rhythm of inflammatory cytokines (IL-6, TNF-a) and glucocorticoids explains a worse disease activity of RA in the early morning.[13] Inflammatory cytokines like IL-23 together with IL-17A, IL-1 and IL-6 induces systemic and local inflammation in RA. Increasing levels of IL-1, IL-6, C-reactive protein and TNF-alpha in T-cell mediated inflammation were found in patients with depression or anxiety. HPA axis dysregulation by IL-6 may lead to anxiety and depression in RA patients. The level of IL17A is also highly associated with the severity of depression.[14,15] A raised IL-6 level for 6 months plays an important role in the occurrence of depression, and more suicide attempts are seen in people with an increased level.[16]

Cognitive impairment may occur in RA patients because of the direct effect of inflammation on the brain, the impact on cerebral blood vessels in the same way as cardiovascular complications or adverse effects from glucocorticoids and immunosuppressants. Pain, fatigue, anxiety and depression are also responsible for cognitive dysfunction. Cytokines released in RA cause systemic inflammation and interfere with mood, cognition and sleep.[17]

Treatment

The aim of treatment in RA is to suppress the inflammation and to optimize patient's physical, psychological and social functioning. People suffering from this disease may feel sick, tired and sometimes get fevers; this disease can last for many years or a lifetime.[18] Since there is no cure, patients require help and support from healthcare professionals to manage the symptoms, which can affect their everyday function.

The general objective of first-line treatment is to lessen pain and decreasing aggravation. NSAIDS like Aspirin, Naproxen, ibuprofen etc are fast acting drugs which relieve the pain. In addition to this Corticosteroids, are a more potent anti-inflammatory drug than NSAIDs but they are only indicated for a short period of time at low doses. In addition to this weak opioids such as tramadol may play an effective role in the short-term management of pain caused by RA, but the adverse effects outweigh the benefits. They recommend that other analgesics be considered firstline of treatment.[19,20] Second-Line Management includes Disease-Modifying Antirheumatic Drugs. The overall goal of second-line treatment is to promote remission by slowing or stopping the progression of joint destruction and deformity. Drugs are considered to be slow-acting because they take from weeks to months to be effective.

Physical Therapy and Psychophysiotherapy Treatment for RA patients

Physical therapy complements pharmacotherapy and plays an integral role in the nonpharmacologic management of RA. Patients with RA benefit from physical therapy as it preserves joint mobility and strengthens muscles[21] Physical therapy consists of using various Electrotherapy modalities and Kinesiotherapy techniques which helps in relieving the pain associated with rheumatoid arthritis and improving the functional status by achieving functional ROMs and strength thereby improving physical and mental health and hence improving QOL. Physical therapy helps in improving psychological health of RA patients primarily because of direct effect of exercises and secondarily because of improvement in the symptoms like pain and disability caused by RA.

Physical therapy mainly includes flexibility, endurance, aerobic conditioning, range of motion (ROM), strength, bone integrity, coordination and balance exercises which help in improving chronic pain and disability associated with RA. The common components of Physiotherapy include Exercise therapy, Joint protection advice, provision of functional splinting, usage of assistive devices and Patient education. Physical Therapy aims at improving disease management knowledge, pain control, improving activities of daily living (ADLs), improving in joint range of motion, preventing joint damage, improving strength, fatigue levels, aerobic condition, stability and coordination and quality of life. Exercise should be followed by applying hot and cold packs to prevent any muscle soreness.

In patients with RA, cryotherapy is recognized as the most effective method of analgesic physical therapy. Cryostimulation has been proven to be a safe method that does not have a negative impact on peripheral vessels and heart function. The analgesic effect of cryotherapy in RA patients is associated

with the destimulating effect on pain receptors.[22]

Electrotherapy aims at providing analgesia via pain gate mechanism and is delivered through transcutaneous electrical nerve stimulation (TENS) currents, interferential currents (IFC), which are commonly used to control musculoskeletal pains and neurological pains. In addition to this, various high frequency heating modalities like Short Wave Diathermy, Microwave Diathermy and Ultra Sonic Therapy are used to improve circulation thereby washing out painful metabolites thereby helping in relieving pain and inflammation. Electrotherapy also includes Iontophoresis which works through the transcutaneous delivery of charged medications (i.e. lidocaine, corticosteroids, salicylate, antibiotics) and is used for delivery of substances that need local penetration in order to avoid systemic effects, especially in cases where oral absorption is variable or contraindicated.

Exercise therapy aims at improvement of the patient's physical fitness and is therefore expected to cause a reduction of pain and disability in arthritis patients. Additionally, certain kinds of exercise (e.g., walking exercise) aims directly at a reduction of the patient's disability.

According to the recommendations proposed by the American College of Sports Medicine (ACSM), in RA patients aged 50–64 years, attention should be paid to exercises to strengthen the muscles. The use of hand orthoses in the acute phase of arthritis reduces friction of the articular surfaces, prevents excessive stress on the joints, thus inhibiting the progression of hand deformation. The results of many 30 studies show that in patients with arthritis, the orthosis reduces pain and improves joint function, balance and improve the flexibility of the musculoskeletal system[23].

Various studies have demonstrated the beneficial role of exercises over depression and anxiety in RA patients. The beneficial role of exercise on depression depends on the regulation of neurotransmitter, neurogenesis, neurotrophic factors, and cerebral blood flow. A study including 312 Spanish patients with clinically significant depression over 65 years old reported that at least 60 min daily moderate-intensity regular exercise (muscle strengthening, aerobic exercise, flexibility and balance exercises) could significantly alleviate depression symptoms[24]. Exercise induces the increased level of brain-derived neurotrophic factor (BDNF), which contributes to the increased ability against anxiety and depression[25]. The dysfunction of hypothalamic–pituitary–adrenal (HPA) axis, the increased secretion of corticotropin-releasing hormone (CRH), the impaired responsiveness to glucocorticoids, the increased size and activity of the pituitary were found in patients having depression. The ability of exercise to regulate HPA axis supported physical exercise is one of the methods to improve depression symptoms.

According to many studies, exercise exerted anti-anxiety effects by improving hippocampal neurogenesis and normalizing the neurotransmission of neuropeptide Y (NPY). Similar to depression, the decreased BDNF level is a vulnerability factor for anxiety.[26] Numerous studies have found that physical exercise can increase the expression of BDNF in the dentate gyrus[27] and was found to be able to restore BDNF to pre-stress levels, suggesting that exercise protects against stress-induced decreased level of BDNF.[28] The regulation of the inflammatory system by exercise is another possible mechanism against anxiety. It has been proved that elevated levels of pro-inflammatory cytokine C-reactive protein (CRP) was associated with anxiety disorders.[29] Also, Swimming, Yoga and Tai Chi are good for the muscles and not too stern on the joints.

A number of alternative therapies exist to combat psychological distress, and they can be encompassed into a stress management programme. Treatments include cognitive behavioural therapy (CBT), meditation and relaxation, biofeedback, patient education and exercise. Cognitive behavioural therapy is recommended as a first-line treatment for mild to-moderate anxiety and depression in RA patients.[30] CBT is problem and solution focused, encouraging self-management and promoting self-efficacy. It specifically addresses misconceptions, errors in thinking, unhelpful beliefs and maladaptive patterns of behaviour (e.g. non-compliance with conventional therapy, including drugs, chronic pain management, and joint protection and planning and pacing principles).[31] It focuses entirely on thoughts, feelings, behaviours, personal interactions, stressors and issues likely to have an impact on fatigue yet demonstrated a wide range of additional clinical and psychological benefits.

Conclusion

In addition to physical symptoms, cognitive symptoms like Depression and Anxiety are more prevalent in RA patient and not all patients are treated for their mental well-being. Since a correlation between the severity of depression and the activity of RA is found, managing psychological symptoms might optimize the care of RA patients in a better way. Physical Therapy plays a very important role in managing both physical and psychological symptoms of RA. Among the methods of physical therapy, cryotherapy (cryostimulation), electrotherapy, functional kinesotherapy and exercise therapy plays special role in managing both physical and cognitive symptoms.

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Commentary

Management of Somatization Disorder among Professional Students

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ABSTRACT

Introduction*: Somatization is defined as multiple, recurrent and frequently changing unexplained physical symptoms. If we go through the research review of past work we find that somatization is poorly understood and is found to be "blind spot" or in other words we can say Somatoform disorder remains neglected in spite functional impairment and financial burden.* ***Aim****: Present study is review study concerning of the above topic in order to find the current scenario of somatization disorder and the research question is how to make it manageable by the help of psychological techniques.* ***Objectives****: The present study aims to review existing psychological problems especially somatization disturbance among professional students and to seek a solution of the above is the problem in terms of management which have done so far.* ***Material and Methods****: Since it is a review study so number of studies have been consulted of past two decades which were related to the identification & management of somatization disorder among young professional students. The method of treatment was Predominantly related to psychological treatment.* ***Conclusion:*** *We have peeped into the studies of variety of professionals like engineering, management and other professionals and found that there is no specific psychological module to manage somatization disorder among professional student. It is recommended that institute must enhance the tutorial activities as well as development of soft skills preferably communication. Certainly cognitive behavior management can be a better alternative.*

Keywords: Somatization Disorder, Professional Students, Management

Introduction

Courses such as MBBS, Engineering Sciences & IT are quite demanding which often lead to stress, headache, poor self-coping ability due to lot of syllabus in their course. The journey to become a professional startwith many new experiences such as making new friends, going through new syllabus and interaction with their new teachers. Professional students react to the different situations in college in a multiple different way. For some of them, separation from their home is a cause of stress. Besides an abrupt change from school to college, high dependence on their teachers, fear of academic failure, drop-outs are present which may lead to stress and unexplained physical symptomso in nut shell they remain engaged throughout their training path. In this phase many psychological changes occur like somatic complaints, nervousness and so on.

Somatization is defined as multiple, recurrent and frequently changing physical symptoms usually present for at least two years before the patient is referred to a physician and psychiatrist.[1] At times students also go through to exam stress which may lead to somatic complaints. Koh and colleagues in 2006 showed effects of exam stress on somatization, indicated a significant positive relationship in participants.[2] One of the researcher module says that female professional students have better mental health. It is also noticed that mental health problems among professional student is due to low study control, time

pressure and highly demanding performance. Since this population is educated population so self-treatment is very prevalent and it is found more among medical students.[3]

One of thestudy was reported in 1985. It was on the law students who faced very high level of stress but this study have a methodological problem that limit the generality of conclusion. Even the study was conducted on first year students of one law school and the management of distress was on simple counseling basis.[4] A study reported that management aspect was related to treatment of functional somatic syndrome without the presence of organic pathology. This general professional group was given non pharmacological treatment. Non pharmacological treatment involving active involvement of students like psychotherapy and change of their routine. They were benefited. It has also been noticed that due to sustained anxiety and stress a student's emotional social and academic adjustmentgets influenced. The treatment procedure included individual counseling, enhancement of emotional and physical well-being.[5] A study has been conducted which is related to treatment for somatization discomfort. They applied mindfulness which after long-term follow-up creates positive effect and gets cumulated into successful treatment.[6] Cognitive behavioural therapy (CBT) has been by far the most extensively researched psychological intervention for Medically Unexplained Symptoms and related disorders and its success rate is very high.[7] Cognitive behavioral therapy (CBT) refers to the most popular psycho-therapeutic approach and most widely studied that has been applied to a variety of problems.[8]

Multiple studies have been compared between CBT and other psychological interventions and majority of the studies have reported that CBT showed better response rates in comparison to other psychological intervention.[9] In general, CBT has a very strong therapeutic evidence in comparison to other interventions.[10]

CBT is effective for various psychological problems but the strongest evidence is present for effectiveness of CBT in anxiety disorder, somatization disorder, bulimia, anger control problems and general stress.[11] A research has concluded that the cognitive behavioral intervention was effective in improving pain and physical functioning components of patients' health.[12] In 2007, a research reported through Psychosomatic Medicine where they have reviewed published literature which is highly evident on efficacy of CBT for patient with SD or Medically Unexplained Symptoms in relation to the comparison between pharmacological, non-pharmacological and psychological intervention, where they have noticed that whatever studies have carried out in primary, secondary and tertiary care setting, CBT has shown its evidence for managing SD.[13] A study has found by their meta-analysis that CBT is effective intervention for SD because the exposure of CBT certainly reduces the physical symptoms, psychological distress and discomforts.[14]

CBT is beneficial as it allows the individual to engage in healthier thinking patterns by becoming aware of the negative and often unrealistic thoughts that dampen feelings and moods and also beneficial in decreasing wide variety of maladaptive behaviors.[15]

Discussion

By going through the studies as such there is no settled guideline that which therapy will be used for which faculty of professional students as well as for which problem of somatization disorder. The general module of treatment is usually problem based and student based. The frequently used techniques are allowing the subjects for talking out-Free Association (Brief Psychodynamic Therapy). Besides Individual therapy, cognitive behavior therapy, group therapy, management of Daily routine, management of diet, mindfulness, meditation and enhancement of sleep pattern, family counseling for improving family dynamics, stress and anxiety management programmes.

Conclusion

It is suggested that as such that there is no specific psychological module to manage somatization disorder among professional students. Their programme should be individual based except common learning difficulties related to syllabus and communication hazels. It is recommended that institute must enhance the tutorial activities as well as development of soft skills preferably communication. Certainly, cognitive behavior management can be a better alternate.

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Newer Development

Role of Repetitive Transcranial Magnetic Stimulation (rTMS) on Executive Functioning in Treatment Resistant Depression

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Introduction

Depression is a common psychiatric disorder with high morbidity. This may impact somatic and psychological problems and decrease a person's ability to function at work and home. Although depression may be considered primarily a mood disorder, it also involves significant cognitive changes. Up to fifteen percent of patients with depression eventually present with treatment resistant depression. Depression is usually considered refractory when two drug trials of different classes of antidepressants (adequate in terms of duration, dosage, and adherence) fail to give a significant symptomatic improvement.[1]

Cognition is defined as the mental process of comprehension, judgment, memory, and reasoning. Executive functions in general are a part of the cognitive process. Executive functions include fluency, working memory, set-shifting ability, set maintenance, planning, response inhibition, error detection, abstraction, strategizing, and organization.[2]

Cognitive impairment/executive functions impairment have been found to be associated with depression. Executive functions like memory, thinking, planning may get affected but automatic processes relatively remain intact. Depression changes the ability to think, it impairs one's Cognitive functions like memory, attention, decision-making abilities, and processing of information. These impairments are markedly associated with frontal lobe dysfunction in depression. Cognitive/executive functional deficits in depression have been linked to cerebral blood flow abnormalities in specific areas, especially in the medial prefrontal cortex, and alterations in neurotransmitters. The greater degree of depression is associated with higher levels of impaired executive functioning.[3]

TMS (Transcranial magnetic stimulation) is a form of brain stimulation, non-invasive in which changing magnetic field is used to generate electric current at a specific area of the brain. The Food and Drug Administration (FDA) has approved repetitive transcranial magnetic stimulation (rTMS) for the treatment of both MDD (major depressive disorder) and TRD (treatment resistant depression) in adolescent and adult populations.[4]

More than half of depressive patients who did not respond to antidepressants may show significant benefit with rTMS. Out of this percentage, patients who get full improvement are found to be about one-third of these individuals. Hence rTMS has the potential in improving symptoms of depression and also executive functioning in depression. TMS can, however, exert long-lasting effect when pulses are repeated at regular intervals in a process of rTMS. This procedure is non-convulsive, non-invasive, requires no anaesthesia, and safe in terms of side effects and is not associated with cognitive side effects.[5]

Repetitive Transcranial Magnetic Stimulation (rTMS)

Transcranial magnetic stimulation, since its introduction in 1985, has been studied for its efficacy in different psychiatric disorders and is increasingly used in clinical settings throughout the world.

Recently, rTMS has been used alone or in combination with medication as a treatment method for TRD.

In depression, rTMS is applied to the left dorsolateral prefrontal cortex (DLPFC) to modulate mood-related circuits. This brain area is readily accessible to the TMS coil and is highly interconnected with limbic structures which have a role in mood modulation and major depression.[6]

Cognitive Impairment/ Executive Functioning

Patients with depression exhibited impairments in cognitive areas such as executive functioning, attention, memory and processing speed as a residual symptom during the remission period with the impacts on psychosocial functioning.[7] Originally it was assumed that rTMS deteriorates cognitive functioning, but in contrast to this, many rTMS studies showed selective improvements in patients after HF-rTMS over the left prefrontal sites.[8]

Cognitive functioning in TRD after rTMS sessions

In 2002 Moser et al. did a randomized study on improved executive functioning following rTMS. 19 middle-aged and elderly patients with refractory depression were taken in the study. Active and sham rTMS treatment was given to see the cognitive effect. Neurocognitive tests of cognitive function showed improvement. Executive functions measured were attention, memory, language visuospatial adjustment, response inhibition. Improvement was seen in Trail making test-B only.[9]

Fitzgerald et al. in 2009 did a study on a randomized trial of the anti-depressant effects of LF and HF-TMS in TRD. In all groups and on all clinical outcome measures, significant improvements were seen from baseline to end point.[10]

Brunoni et al. 2014 in a review paper found improvement in working memory with non-invasive brain stimulation of the DLPFC in one of the systematic review and meta-analysis. Active vs. sham rTMS over the prefrontal cortex was associated with a significant improvement in working memory as indexed by the n-back, with a medium effect size in terms of reaction time. The study was to test neurocognitive effects after two weeks of HF-rTMS in TRD patients. It revealed that there were improvements in depressive symptoms in 53% of patients.[11]

Cheng et al. 2016 conducted a study on medication-resistant depression patients to see effects on executive functions of different forms of prefrontal theta-burst stimulation (TBS). Patients were divided in 4 groups, A (cTBS), B (iTBS), C (c TBS + iTBS), D (sham). 10 sessions were given. More than 50% reduction of depression scores after 2 weeks of TBS treatment was seen and responders in group B only showed a significant improvement in WCST performance. The study showed improvement in Executive Functioning with left prefrontal iTBS.[12]

Corlier et al., in 2020 did a study on the effect of rTMS treatment of major depressive disorder on cognitive control. rTMS treatment significantly reduced depressive symptoms. In addition, particular improvement in both reaction times and accuracy on the Stroop test in a condition-specific manner, suggesting a decreased interference-effect. Improvement in accuracy was noticeably strongest for older patients in the incongruent condition, suggesting that rTMS treatment can enhance cognitive control and may benefit most in older patients. Results also suggested that rTMS may have differential effects on accuracy and reaction times. The significant role of interaction among 4 things (time, clinical outcome, condition and age) for Stroop performance accuracy, but reaction times showed an interaction among 3 only with no effect of age.[13]

Tong et al. 2021 did a randomized double-blind sham-controlled study to see the impact of rTMS on the theory of mind and executive function and its correlation with brain-derived neurotrophic factor (BDNF) in total of 120 MDD patients. Studies have implicated the pathogenesis of impaired theory of mind (ToM) with hypofrontality and executive function (EF) in MDD. These symptoms are generally resistant to treatment. Each participant received 10 Hz frequency of rTMS (sham or true), 20 sessions over 4 weeks. EF was assessed with the WCST with BDNF assessments carried out at baseline and 2, 4, 12, and 24 week follow-ups. The improvement in the ToM (FEIT, HT) in the active rTMS group was significantly different from that in the sham rTMS group. There were significant differences in the domains on WCST after logarithmic transformation at different time points in the active rTMS group. However, there was no significant difference in log-transformed BDNF concentration between the two groups. BDNF was

negatively correlated with WCST parts completed at end the of 24th week. The results showed rTMS may improve the ToM and EF of patients with MDD.[14]

Indian Studies

Sarkar et al. 2014, did a systematic review and meta analysis of trials of treatment of depression in all controlled trials from India. In this review, the clinical efficacy of antidepressants, electroconvulsive therapy (ECT), and repetitive transcranial magnetic stimulation (rTMS) for management of depression was evaluated. Data was extracted using standard procedures and the risk of bias was evaluated. From 35 clinical trials effect sizes were computed. Overall, medications were superior to placebo for the treatment of depression. The effect was greatest for tricyclic antidepressants followed by monoamine oxidase inhibitors. ECT was superior to antidepressants and active rTMS was found to be superior to sham rTMS.[15]

Jha et al. 2016, with brain SPECT guided rTMS in refractory major depressive disorder, found rTMS is a potential treatment. By SPECT, the potential techniques in the site of stimulation was found. This study assessed the difference in the outcome of brain SPECT assisted rTMS versus standard of 20 sessions of rTMS. 13 patients (gp1) received rTMS on hypoperfusion in the prefrontal cortex, as identified by SPECT. 7 patients (gp II) were given rTMS in DLPFC. Improvement was noted using standardized instruments. Patients in group I showed better responses than in group II. No significant side effects were noted.[16]

Verma et al. 2018, did a retrospective analysis of adjunctive rTMS in the management of 22 TRD patients. High-frequency (Hf) rTMS was given. The outcome was assessed based on the changes in scores of HAMD. In the end, 50% of the participants showed significant reduction response in the scores.[17]

Jagawat et al. 2022, conducted a Double-Blind Randomized sham control study to assess the effects of Repetitive Transcranial Magnetic Stimulation (rTMS) on Executive Functioning in Treatment Resistant Depression. The authors examine the effects of active and sham rTMS on executive functioning in patients of treatment resistant depression by comparing pre and post rTMS effects on mood symptoms, executive functioning for both groups (active and sham) and assessing the co-relation between the effects on executive functioning and mood changes due to rTMS. The study included 20 individuals (10 in each arm)of either gender, aged between 18-50 years suffering from mild to moderate depression (assessed by HAM-D). The executive functioning was assessed by using NIMHANS Neuropsychological Battery (Digit Symbol Substitution Test-DSST, Digit Sequencing Test-DST, Colour Trail making B test, and Stroop test), 10 sessions of either active HF-rTMS (10Hz) or sham rTMS (allocated by random sampling) were applied to the left DLPFC over two weeks. The mean age was found to be 42.62 years with 60% males and 40% females. On DSST Positive effects of rTMS was found for information processing speed in the active group compared to sham. On other tests, DST, CTB and Stroop test, the findings were not statistically significant. Significant positive correlation was present between HAM-D and Stroop tests scores in active group. The severity of depression reduced significantly due to rTMS treatment. The important finding of this study is the decrease in time on DSST after treatment with rTMS in the active group showing improvement in visuomotor coordination, attention, and information processing speed in patients with TRD.[18]

Conclusion

On the basis of available information, the lacunae in researches were traditional cognitive evaluations, very few executive functions were included in most of the studies, the cognitive task was not tested for validity/reliability, small sample size, the sham control group was not included in many studies, many studies were single-blind studies. Thus, there is a need for further research to assess the relationship between rTMS, executive functions and mood symptoms with the help of more neurocognitive test in a large sample of TRD.

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Newer Development

Is Behavioural Addiction Similar to Substance Addiction? A Review

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Introduction

Humans have developed a variety of ways to get pleasure throughout history, and drug addiction is one of them. Pleasure seeking behaviour is triggered by the activation of the reward system, which eventually leads to addiction. Addiction is now acknowledged as a personality characteristic; some people become hooked to substances, while others become addicted to certain behaviours. Behavioural addictions are a newer notion that is becoming acknowledged as being related to drug addiction. For years, behavioural addictions went unnoticed since "addictive behaviour" was legal and socially acceptable, functional damage was delayed to emerge, and substance addiction received more attention.

Non-substance-use behaviours like as gambling, gaming, and sex have gotten more attention in recent decades as potential addiction foci. Gambling, computer gaming, and sexual behaviour are examples of behaviours that can lead to compulsive participation.[1-6] These behaviours may be classified as non-substance or behavioural addictions in severe situations when individuals feel unable to control them without external influence.

Adolescents' lives are becoming increasingly influenced by the Internet. While there are several advantages, there are also hazards associated with misuse and addiction. Many addictive behaviours, such as gaming, social networking, shopping, and pornography, may take place primarily online and are fuelled by continual access via smartphone and other mobile device technology.

Recognize the clinical signs and symptoms of behaviour addiction (compulsive use, withdrawal, tolerance, and negative consequences), treat comorbid conditions (other substance use disorders (SUDs), attention deficit hyperactivity disorder (ADHD), anxiety, depression, and hostility), and begin pharmacological and psychosocial interventions.

Terminologies Used in Addiction Psychiatry

Abuse: Use of any medication in a way that deviates from accepted societal or medical patterns, generally through self-administration.[7]

Misuse: Similar to abuse, but typically refers to medications that have been prescribed by a physician but have not been appropriately utilised.[7]

Addiction: The recurrent and increasing use of a substance/behaviour, the withdrawal of which causes discomfort and an overwhelming desire to use the agent again, as well as physical and mental deterioration.[7]

Dependence: The use of a narcotic or chemical substance on a regular basis, with or without physical dependency. Physical dependency is defined as an altered physiologic state produced by frequent administration of a medication, which leads in a particular symptom when the drug is stopped.[7]

Substance and Behavioural Addiction: Place in DSM-5 and ICD 10/11

Internet Gaming Disorder (IGD) is included in developing measurements and models rather than the core classification scheme in DSM-5 (condition for further study). The diagnostic criteria for gambling disorder and IGD are similar to those for substance use disorder in the DSM-5, referring to withdrawal and tolerance symptoms, persistent use despite negative consequences, and loss of control over the activity. However, other activities, such as obsessive shopping and compulsive sexual activity, are not classified as such in the DSM-5. [8,9]

Disorders owing to addictive behaviours are identifiable and clinically significant syndromes associated with discomfort or impairment with personal functions that arise as a result of recurrent rewarding behaviours other than the use of dependence-producing drugs, according to ICD 11. Gambling disorder and gaming disorder are two disorders caused by addictive behaviours that can occur both online and offline.[10]

Other behavioural disorders like as theft and compulsive sexual behaviour are covered under impulse control disorders in ICD 11 when it comes to addiction behaviour. The repeated failure to resist an impulse, drive, or urge to perform an act that is rewarding to the person, at least in the short term, despite negative consequences such as longer-term harm to the individual or others, marked distress about the behaviour pattern, or significant impairment in personal, family, social, educational, or occupational functioning are all symptoms of impulse control disorders.[11]

Common Features Relating Behavioural and Substance Addiction The failure to resist an inclination, desire, or temptation to commit an act that is detrimental to the person or others is a key aspect of behavioural addictions. Substance addicts describe an uncontrollable need to drink or take drugs. A repeated pattern of behaviour that contains this key quality within a given domain characterises each behavioural addiction. This pattern of behaviour eventually interferes with functioning in life areas that are similar to SUDs.

The natural history, phenomenology, and negative consequences of behavioural and chemical addictions are very similar. Both types of addiction have a greater rate of beginning in youth or young adulthood than among older individuals.[12] Both have natural histories that might include chronic, recurrent patterns, with many people healing without the need for formal treatment.[13]

Feelings of "stress or arousal before doing the act" and "pleasure, satisfaction, or relief at the time of completing the act" are common precursors of behavioural addictions. The ego-syntonic character of these behaviours is comparable to that of drug use behaviours in terms of experience. Behavioural and drug addictions, on the other hand, may become less ego-syntonic and more ego-dystonic with time. This is due to tolerance, which causes addictive behaviour to become less pleasant and more of a habit or compulsion, or to be driven by negative reinforcement rather than positive reward.[14,15]

The phenomenological parallels between behavioural and chemical addictions are striking. Many persons with behavioural addictions, as well as people with SUDs, describe a desire or desiring state before to engaging in the behaviour. Furthermore, these behaviours frequently reduce anxiety and provide a "high," comparable to drug intoxication. In both behavioural and SUDs, emotional dysregulation may play a role in cravings.[16] Many persons with PG, kleptomania, compulsive sexual behaviour, and compulsive purchasing describe a reduction in these pleasant mood benefits with time or a need to raise the intensity of behaviour to get the same mood impact, similar to tolerance.[17-19] While refraining from the behaviours, many persons with these behavioural addictions experience dysphoria, which is similar to withdrawal. There have been no instances of physiologically noticeable or medically significant withdrawal states from behavioural addictions, unlike drug withdrawal.

PG, the most researched of the behavioural addictions, sheds more light on the link between behavioural addictions and SUDs. PG generally begins in infancy or adolescence, with males starting sooner than females, as is the case with SUDs.[20,21] Men have higher PG rates than women. According to research, women accelerate faster than males from the point of substance use to chronic misuse and dependency, a process known as telescoping.[22] Financial and marital issues are prevalent in behavioural addictions, just as they are in SUDs. Individuals with behavioural addictions, like those with chemical addictions, typically engage in criminal activities such as theft, embezzlement, and writing bad checks to either fund or cope with the repercussions of their addicted behaviour.

The Neuroscience of Reward System

The major brain network involved in reward processing is the cortico-ventral basal ganglia circuit. The orbitofrontal cortex, anterior cingulate cortex, ventral striatum, ventral pallidum, and midbrain dopamine neurons make up this reward network (Fig.1). The ventral striatum, sometimes known as the brain's "reward centre," is one of them.[23] It's critical to comprehend how these areas interact. The

sensory cortices provide information to the orbitofrontal cortex and ventral striatum, which calculate the reward values for each process. The data is subsequently projected to the anterior cingulate cortex, which does a cost-benefit analysis to determine the effort required for alternative activities. The anterior cingulate cortex next transmits projections to the anterior ventromedial prefrontal cortex and the dorsolateral prefrontal cortex, which aid in the decision-making process by providing information on reward value, effort, and reinforcement history.[24]

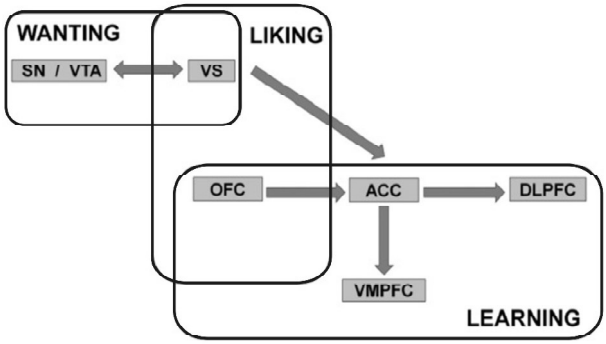

Fig. 1: "Schematic illustration of the key structures and pathways of the reward system. SN: substantia nigra. VTA: ventral tegmental area. VS: ventral striatum. OFC: orbitofrontal cortex. ACC: anterior cingulate cortex. DLPFC: dorsolateral prefrontal cortex. VMPFC: ventromedial prefrontal cortex".[24]

Neurobiology: Similarities in Behavioural and Substance Addiction

Multiple and comparable neurotransmitter systems (e.g., serotonergic, dopaminergic, noradrenergic, opioidergic) are implicated in the pathophysiology of behavioural addictions and SUDs, according to an increasing body of research. 25 Serotonin (5-HT), which is involved in behaviour inhibition, and dopamine, which is involved in learning, motivation, and the salient of stimuli, including rewards, may have a role in both diseases.[25,26]

Platelet monoamine oxidase B (MAO-B) activity, which correlates with cerebrospinal fluid (CSF) levels of 5-hydroxyindole acetic acid (5-HIAA, a metabolite of 5-HT) and is considered a peripheral marker of 5-HT function, is one source of evidence for serotonergic involvement in behavioural addictions and SUDs. Low CSF 5-HIAA levels have been linked to impulsivity and sensation-seeking in people with PG and SUDs.[27]

In both behavioural addictions and SUDs, pharmacologic challenge tests that assess hormonal response following administration of serotonergic medications provide evidence for serotonergic dysfunction.[28]

The processing of incoming reward information via the ventral tegmental area/nucleus accumbens/orbital frontal cortex circuit may be an underlying biological basis for urge-driven illnesses, according to preclinical and clinical research. The nucleus accumbens and orbital frontal cortex receive dopamine from neurons in the ventral tegmental region.[29,30]

The fundamental mechanism for pursuing rewards (gambling, drugs) that stimulate the release of dopamine and create sensations of pleasure has been hypothesised to be changes in dopaminergic pathways.[31] Limited data from neuroimaging research suggests that behavioural addictions and SUDs have a same neurocircuitry.[15]

In risk-reward evaluations, reduced activity of the ventral medial prefrontal cortex (vmPFC) has been linked to impulsive decision making and impaired responsiveness to gambling signals in compulsive gamblers.[32] People with SUDs have also been reported to have aberrant vmPFC functioning.[33] In Internet gaming addicts, game cue-related brain activity occurs in the same brain areas as drug cue-related brain activation in drug addicts (orbitofrontal, dorsolateral prefrontal, anterior cingulate, nucleus accumbens).[34]

The dopaminergic mesolimbic route from the ventral tegmental region to the nucleus accumbens may be implicated in both SUDs and PG, according to brain imaging study. While conducting simulated gambling, participants with PG showed less ventral striatal neural activity with fMRI than control subjects, comparable to results in alcohol-dependent people while processing monetary incentives.[35,36]

Reduced ventral striatal activity has also been linked to cravings in those suffering from drug and behavioural addictions.[37] Individuals with Parkinson's disease (PD) and PG appear to release more dopamine in the ventral striatum after participating in a gambling activity than those with PD alone, a reaction comparable to that triggered by drug or drug-associated signals in drug addicts. Studies of treated PD patients show that dopamine has a role in behavioural addictions.[38-41]

More than 6% of individuals with PD had a new onset behavioural addiction or impulse control problem (e.g., PG, sexual addiction), according to two studies, with rates significantly higher among those on dopamine agonist treatment.[42,43] A higher levo-dopa dosage equivalency was linked to an increased risk of behavioural addiction. Antibodies targeting dopamine D2/D3 receptors boost gambling-related motives and behaviours in non-PD persons with PG, contrary to expectations based on dopamine involvement, and have no effectiveness in the treatment of PG.[44,45,46] To understand the specific function of dopamine in PG and other behavioural addictions, more study is needed.

Family History and Genetics

First-degree relatives of probands with PG, kleptomania, or compulsive purchasing had considerably higher lifetime rates of alcohol and other SUDs, as well as depression and other mental illnesses, than control individuals in small family investigations. These controlled family investigations back up the theory that behavioural addictions and SUDs are linked genetically.[47,48,49]

By comparing the concordance of identical (monozygotic) and fraternal (dizygotic) twin pairs, the genetic vs environmental contributions to certain behaviours and diseases may be assessed. Risk for alcohol use disorders accounted for 12 percent to 20% of the genetic variation in risk for PG and 3% to 8% of the nonshared environmental variation in risk for PG in a study of male twins utilising the Vietnam Era Twin Registry.[50]

Two-thirds (64%) of the co-occurrence of PG and alcohol use disorders was due to genes that affect both disorders, implying that the genetically transmitted underpinnings of both conditions are similar. These findings are comparable to others that have suggested that a variety of SUDs have shared genetic contributions.[51]

Molecular genetic investigations of behavioural addictions are few. Individuals with non-problematic gambling had a higher frequency of the D2A1 allele of the D2 dopamine receptor gene (DRD2) than those with PG and co-occurring PG and SUDs. In healthy individuals, a number of DRD2 gene single nucleotide polymorphisms (SNPs) have been linked to personality assessments of impulsivity and experimental measures of behavioural inhibition, but these have not been tested in persons with behavioural addictions. Excessive internet users exhibited higher frequencies of the serotonin transporter gene (5HTTLPR) long-arm allele (SS) than healthy controls, which was linked to better harm avoidance.[52,53,54]

Neurobiological comparison of Behavioural Addiction with Substance-Use-Disorders (SUDs)

There are few neurobiological discoveries in behavioural addictions, and evidence on compulsive shopping, kleptomania, and obsessive sexual activities is especially scarce. However, current data show that there is underlying neurobiological dysfunction, which is consistent with SUD results.

The most complimentary findings between drug and behavioural addictions have been findings of lower white-matter integrity.[55-61] The findings of cognitive tasks in SUDs and PG show that frontal activation is decreased.[62-67] Although there have been conflicting results, findings involving risk/reward decision-making (including reward processing) have shown decreased ventral-striatal activity in PG and SUDs. In behavioural addictions and SUDs, greater activity in the dorsal striatum has been reported in a few studies.[68-73]

Neurotransmitter activity in behavioural addictions and substance use disorders has proven to be contradictory. Although there have been conflicting results in PG and SUDs, and individual differences seem to be relevant to dopamine release, neurochemical evidence has suggested reduced dopamine transporter and D2-like receptor availability at rest and dopamine release during activity related to addictive behaviour.[74-81] Behavioural addictions and SUDs have distinct serotonergic function than controls, according to neurochemical studies. In behavioural addictions and SUDs, clinical trials using dopamine antagonists and medicines targeting serotonin systems have had poor or mixed outcomes. For both sorts of disorders, clinical findings using opioid antagonists have proven to be good. Limited evidence from pharmacologic probes suggests that glutamatergic activity has a role in PG and SUDs. Noradrenergic activity may play a role in PG and SUDs, according to neurochemical and clinical studies.[82-89]

Cue-induction and resting-state imaging investi-

gations have shown less conclusive and seemingly contradictory results. In obsessive video gaming, resting-state and cue-induction studies show increased activity in several brain areas. Problem/PG and SUD cue-induction investigations have yielded mixed findings for both ventral striatal (gambling; SUD) and frontal activity. These disparities might be due to differences in participant characteristics and other methodological factors between studies.[90-94]

In conclusion, evidence show that behavioural addictions and SUDs are caused by neurobiological malfunction. White matter integrity, brain function during cognitive task performance, neurotransmitter activity, and overall heritability are some of the more complimentary findings.

Commonalities in Treatment

Behavioural addictions and SUDs frequently react well to the same pharmacological and non-pharmacological therapies.

There are presently no medicines licenced to treat behavioural addictions, however several medications that have shown promise in the treatment of substance abuse disorders have also showed promise in the treatment of behavioural addictions.[95] Naltrexone, a mu-opioid receptor antagonist authorised by the US Food and Drug Administration for the treatment of alcoholism and opioid dependence, has showed promise in uncontrolled investigations of compulsive purchasing, compulsive sexual activity, internet addiction, and pathologic skin picking. These findings imply that mu-opioid receptors play a role in behavioural addictions in the same manner as they do in SUDs, potentially via modulating the dopaminergic mesolimbic pathway.[96-104]

Bupropion showed promise in reducing troublesome behaviours in both IGD and GD, although the pharmacodynamics of the two groups were different.[105]

Medications that change glutamatergic activity have been used to treat both behavioural and drug addictions. Topiramate, an anti-convulsant that, among other things, inhibits the AMPA subtype of glutamate receptor, has showed promise in open-label trials of PG, compulsive shopping, and obsessive skin plucking, as well as effectiveness in decreasing alcohol, cigarette, and cocaine usage.[105-109]

In one research of compulsive gamblers, N-acetyl cysteine, an amino acid that restores extracellular glutamate concentration in the nucleus accumbens, decreased gambling impulses and behaviour, and reduced cocaine desire and usage in cocaine addicts. These findings imply that glutamatergic regulation of dopaminergic tone in the nucleus accumbens is a common mechanism in behavioural addiction and substance abuse disorders.[110-113]

Twelve-step self-help techniques, motivational enhancement, and cognitive behavioural treatments, which are frequently used to treat SUDs, have been effectively utilised to treat behavioural addictions as PG and compulsive sexual conduct, among other non-pharmacological treatment options. Relapse prevention is a psychosocial strategy that supports abstinence by detecting patterns of misuse, avoiding or coping with high-risk circumstances, and adopting lifestyle adjustments that reinforce better habits.[114-117]

Conclusion

In several aspects, including natural history, phenomenology, tolerance, comorbidity, overlapping genetic contribution, neurobiological processes, and treatment response, there is growing evidence that behavioural addictions are similar to substance addictions. However, the data available for PG is the most thorough, with only minimal data for compulsive purchasing, internet addiction, and video/computer game addiction, and practically no evidence for other behavioural addictions including sexual addiction.

There is enough evidence to regard PG as a non-substance or behavioural addiction, according to the DSM-5. It has been recommended that the DSM-5 classify it as an addiction and associated disorders rather than an impulse control disorder (a new category encompassing both substance related and non-substance addictions). It is still premature to consider other behavioural addictions as full-fledged independent disorders, much less classify them all as similar to substance addictions, rather than as impulse control disorders, given the current state of knowledge, especially in the absence of validated diagnostic criteria and prospective, longitudinal studies. Future research, including human and animal studies, will be necessary to bring our understanding of behavioural addictions up to par with that of substance addictions, particularly in the areas of

genetics, neuroscience (including brain imaging), and therapy.

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Viewpoint

Adapting Deaddiction Treatment Services in COVID 19 Pandemic in India: A steep learning curve

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Introduction

COVID 19, has undoubtedly been the most catastrophic health crisis of our times significantly affecting mental health. A systematic review and meta-analysis on the prevalence of psychological morbidities among the general population, health-care workers, and COVID-19 patients amidst the COVID-19 pandemic reported that about half of the population faced psychological impacts of the pandemic.[1] In addition, COVID 19 pandemic posed significant biopsychosocial challenges related to substance use. This article focuses on the existing deaddiction services sector in India, factors contributing to difficulty in delivering deaddiction services during COVID 19 pandemic challenges faced and lessons learnt.

Framework Prior to Covid 19 Pandemic

The Ministry of Health and Family Welfare operates a Drug De-Addiction Programme (DDAP). This programme was started in 1985-86 and modified in 1994 and 1999.

In India, the three approaches to issue of drug use are "supply reduction," "demand reduction," and "harm reduction."

- The "supply reduction" sector focuses on reducing the availability of illicit drugs and is the mandate of Department of Revenue, Ministry of Finance, the Narcotics Control Bureau, Ministry of Home Affairs, Government of India and a variety of other Central and State Government agencies. It also includes training of Police Officers by Addiction experts. e.g. in Delhi, training in Substance Use Disorders Deaddiction for police officers at Specialized Training Centre of Delhi Police is conducted by several experts.
- The "demand reduction" sector, on the other hand, deals with reducing the demand for substances, identification of drug users; providing effective treatment for them. Nodal Ministries for the same include Ministry of Social Justice and Empowerment (MoSJE) and Ministry of Health and Family Welfare (MOHFW) of Government of India.
- MoHFW also provides financial grants for augmenting post abuse treatment facilities in selected Central Government Hospitals/ Institutions and the Government Hospitals/ Institutions in North-East States including de-addiction services and rehabilitation services to the patients and training to medical doctors in de-addiction.
- The Drug Treatment Clinics (DTC) scheme is another strategy for enhancing the provision of treatment services coordinated nationally by the NDDTC, AIIMS and as of now, 27 DTCs are functional in different states in the country.[2]
- "Harm reduction" includes policies and programs that are aimed at reducing the harms from drugs. It includes prevention of HIV among people who inject drugs and various strategies for this are implemented

by the National AIDS Control Organization, Ministry of Health and Family Welfare (MoHFW).[3]

Impact of Lockdown on SUDS

The Government of India imposed lockdown from 23rd March 2020[4] to check the spread of COVID 19 infection.

During the lockdown period, the substance use disorder cases increased manifolds.[5] Alcohol was identified as the most common substance used during this period (73%). A change in the drinking pattern of people was also noticed. A study conducted on alcohol consumption during Covid 19 concluded that 30% individuals changed their drinking pattern during pandemic with 16% actually drinking less, whilst 14% consumed more than their routine intake patterns.[6]

Psychosocial Factors Contributing to Substance Use during COVID 19 Pandemic

These include:

a) *Work from home* - Work from home option resulted in change of workplace environment. Several employees were laid off resulting in additional stress. According to one report, 28% of work-from-home employees reported burnout with 48% feeling stressed due to task deadlines, and 35% of employees working from home were worried about self/family's mental health.[7]

b) *Financial Stress and Unemployment* - Financial losses during lockdown forced companies to terminate employment of redundant staff resulting in high rates of unemployment. Many unemployed persons and their family members developed psychiatric issues. An online Indian survey reported that about 40.5% of the participants reported anxiety or depressive symptoms.[8]

c) People started using substance as a means of maladaptive coping. In a cross-sectional study with 73 individuals with a previous history of alcohol abuse on disulfiram, Balhara et al. found that 20% of them admitted to trying to procure alcohol for consumption during lockdown.[9] Another study assessed 6416 participants during COVID-19 and found that the overall rate had gone from 31.3% to 32.7% for drinking and from 12.8% to 13.6% for smoking.[10]

d) *Covid-19 related anxiety* - In a survey conducted by a corporate hospital in Delhi, India 55% met the criteria for significant anxiety symptoms and more than one-fourth were experiencing significant depressive symptoms. Key concerns were worry about own or family members health.[11]

e) *Marital Conflicts and Domestic Abuse* - The National Commission for Women in India reported surge in reported cases of domestic violence with 587 cases of domestic violence during the lockdown period between March 23 and April 16, 2020 as compared to 396 cases complaints reported one week before lockdown.[12] A study of 938 women Brazil found that when their partners used alcohol and drugs, they were more vulnerable to domestic violence.[13]

f) As a recreational activity: Many users got inclined towards substance use which became a new recreational activity. In a study in China, known users reported an increased intake, and there was a significant relapse from ex-users.

g) *Difficulty in accessing substance* - During the period of lockdown the access to substance became difficult. Consequently, several persons with SUDs experienced severe craving, withdrawal and withdrawal related complications resulting in numerous deaths. Over 81,000 drug overdose deaths occurred in the United States in the 12 months ending in May 2020, the highest number of overdose deaths ever recorded in a 12-month period, according to data from the Centres for Disease Control and Prevention (CDC), most of which aggravated during the pandemic.[14]

A proposed model for the Bidirectional relationship between Covid 19 and Substance Use is given in Figure 1.

Biological contributors to SUDs in COVID 19 pandemic.

Neurobiological data indicates that stress impairs catecholamine modulation of prefrontal circuits, which in turn impairs executive functions. The corticostriatal-limbic dopamine pathways have

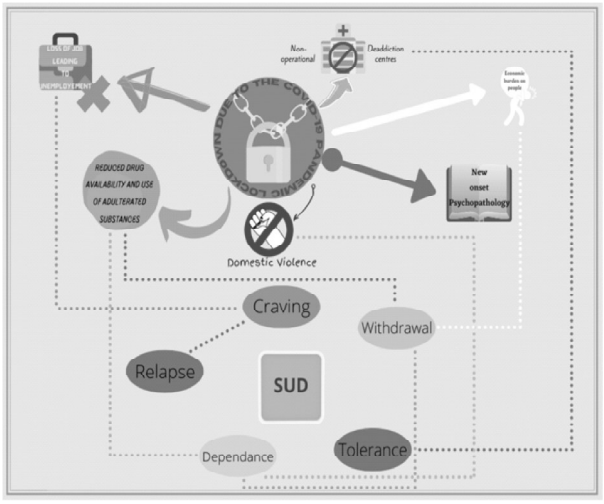

Fig. 1: Bidirectional relationship between Covid 19 and Substance Use

been associated with impulsivity, decision making, and addiction risk and are highly susceptible to stress-related signalling and plasticity associated with early-life stress and chronic stress experiences.

Thus, stress in vulnerable individuals result in maladaptive coping and increased risk of addiction. Evidence also suggests that stress regulatory molecules, including neuropeptides such as neuropeptide (NPY) endocannabinoids, and neuroactive steroids play a role in addiction vulnerability.[15,16]

Substance Use as a risk factor for Covid-19

A systematic review on the smoking habits of patients infected with SARS-CoV-2, had found that smoking may be associated with an adverse outcome.[17] Eung et al found an increased expression of the ACE-2 gene in the airways of subjects in current smokers than in non smokers, which is the main receptor used by SARS-CoV-2 to gain entry into the host mucosa thus increasing risk of Covid 19 related complications.[18]

Opioid intake is also a risk factor for respiratory depression which may be aggravated by comorbid Covid19 infection.[6] A retrospective case-control study of electronic health records (EHRs) data of 73,099,850 unique patients, of whom 12,030 had a diagnosis of COVID-19 in the United States reported that people with substance use disorder, specially recent opioid use disorders, are at higher risk for COVID-19 (adjusted odds ratio = 10.244 [9.10–11.52], $P < 10^{-30}$) and worse outcomes (death: 9.6%, hospitalization: 41.0%, $P < 0.05$).[19]

Behavioural Addiction

During the lockdown there was restriction of outdoor activities. This resulted in surge in behavioural addiction specially internet, phone and gaming addiction.

Internet addiction, internet sex, and video games were most frequently reported in some studies conducted during COVID 19 pandemic.[20,21]

Barriers and Challenges for Deaddiction Service Delivery

The previously stated facts made it clear that adequately functioning deaddiction services faced the brunt of lockdown.

a) *Closure of Centres* - Many private deaddiction facilities were shut down which put a huge burden on the working facilities.[5]
b) *Restricted Transport* - Public Transport was disrupted in lockdown making it difficult for both patients and service providers to reach deaddiction services thereby affecting the workload and logistics of the deaddiction facilities which continued to function.[23]
c) *Limited Resources and Manpower* – Due to limited availability of preventive measures staff became Covid positive which reduced the available manpower. Moreover, numerous staff, including psychiatry residents, nursing staff and other support workers were diverted to Covid 19 facilities for management of Covid patients.[5]
d) *Restricted Admissions* - The admissions to these deaddiction centers were limited so as to prevent over crowding and decrease risk of spread of infection.[24]
e) *Delay in Opening of Centres* - There was also marked delay in opening of previously sanctioned new facilities and expansion of existing facilities e.g. at our very institute due to lockdown as it affected recruitment of new staff and acquisition of requisite resources for the same.
f) *Community Outreach Programmes* - There was complete shutdown of various community outreach programs run by many deaddiction facilities which were often sometimes the first point of contact for many substance users.
g) *Barriers to Teleconsultation* - Prior to

lockdown, there was paucity of tele-psychiatry infrastructure in most psychiatric or deaddiction facilities. Moreover, there were concerns regarding feasibility and acceptability of teleconsultation services, many of which were first notified during the period of lockdown itself.[25]

The problem was further exacerbated by limited awareness about the rules and regulations pertaining to prescription of certain psychotropic like benzodiazepine and opioids by telemedicine as there was limited clarity about the legal and forensic ramifications of these.

In a survey of first 100 patients contacted for the purpose of teleconsultation in NIMHANS Bangalore, 71 preferred teleconsultations whereas 29 said they would prefer in person consultations. Reasons mentioned for in person preference were: personal satisfaction (38%), digital illiteracy (3.4%) and healthcare system-related reasons (17.3%), continuity of supply of medicines at NIMHANS (17.3%), doctors at NIMHANS explain how to take medicines (13.8%), correctness of prescriptions (6.8%), medicines supplied by NIMHANS are more effective (3.4%).[26]

h) *Post lockdown Issues* - Further barriers such as overcrowding in functioning deaddiction facilities along with high risk of infections due to distancing norms not followed by patients made it difficult to deliver services.[27]

i) *Complicated and Severe Withdrawal* - A study in Bangalore showed an increase in the average number of cases from 4 to 8 per day with Delirium Tremens (DT) with or without seizures being the most common presentation, followed by withdrawal seizures and hallucinosis.[24]

j) An interesting way of looking at it was that Lockdown was a "missed opportunity" as many patients had to leave substances suddenly and lack of efficient service delivery made it difficult to utilise the opportunity.

Meeting the Challenges: Steep Learning Curve

Despite all these challenges that the deaddiction facilities had to face during this period extensive efforts were made by both government and private facilities to meet the challenges.

a) Many centers utilized the time to strengthen the indoor facilities, streamline outdoor facilities and train the existing manpower.

b) Telephonic counseling of clients and caregivers was initiated and group psychotherapy was done using virtual platforms.

c) The Covid 19 pandemic saw a rise in ideas of self-harm and suicide among patients of SUD's alone or SUD's with Cluster B traits due to non-availability of treatment, counselling, substance and jobs. The Suicide and Mental Health Support Helplines helped not just persons in distress but also provided information to callers with SUDs regarding functioning deaddiction facilities near them thus providing referral pathways. NIMHANS helpline, mPower helpline and a helpline by Assam Police and Department of Psychiatry, GMC Assam were some helplines where mental health professionals were employed as counselors.[28]

d) As due to lockdown many people were separated from their families, there was disruption of social support of the patients. This created an opportunity for innovative social support framework which comprised of people who were in the contact of clients with SUDs such as Landlords and Neighbours, Community and religious organizations, workplace colleagues, NGOs etc. A Delhi based social enterprise, SPYM which had been working with people with substance use disorders, provided shelter to more than 5000 people, and trained about 1,500 volunteers in critical care amidst COVID-19.[29] In Nagaland, several NGOs such as Network of Nagaland Drugs urged the government not to neglect people with drug addiction, TB and AIDS.[30]

e) Several deaddiction facilities undertook virtual awareness drives focused on Substance Use Disorders, Biopsychosocial Impact, Treatment modalities, Functioning Deaddiction facilities where clients with SUD or their caregivers could contact. To enable those seeking treatment for addiction, government had geotagged 560 centres recently with all details for deaddiction

centres available online.[31]

Conclusion

Though, providing deaddiction service delivery during Covid-19 pandemic was accompanied by huge risks and challenges, it provided an opportunity to address the existing lacunae in deaddiction service delivery. Telemedicine for SUDs and Behavioral Addictions, initiatives from Governmental and NGO sector can address this issue comprehensively.

As substance use disorders are a biopsycho-social phenomenon, - medical, psychological and social aspects should be taken care of. It is imperative to make general public aware of increased Covid-19 related complications of substance using virtual awareness drives.

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List of Abbreviations

NGO- Non Government Organisation
LMIC- Low To Middle Income Country
SUD- Substance Use Disorder
ACE- Angiotensin Converting Enzyme
DT- Delirium Tremens

Drug Review

Endoxifen: A Protein Kinase C Inhibitor in Bipolar Disorder

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Bipolar disorder (BD) is a chronic mood disorder of varying severity, characterized by episodes of mania, hypomania, and alternating with episodes of depression. It is one of the most challenging and disabling psychiatric disorders with a global prevalence of ~1%. Acute bipolar mania can be a medical emergency that often leads to psychiatric hospitalization. Pharmacotherapy is one of the main ways of treating acute bipolar mania. Various second-generation antipsychotics, lithium and valproate are used as first-line monotherapy in adults with acute mania according to recent guidelines. Despite many treatment options, literature reports breakthrough episodes in treated patients ranging from 40% to 60%. In patients with acute bipolar mania, rapid reduction of symptoms is a key treatment goal; however, there is also a need for effective maintenance of effective treatment after a period of acute stabilization.[1]

Protein kinase C (PKC) exists as a family of closely related subspecies and has been recognized to play a central role in the pathophysiology of BD. PKC has a heterogeneous distribution in the brain, its isozymes are highly expressed in frontolimbic structures such as the PFC, hippocampus, and amygdala, which are involved in mood regulation. PKC is inhibited by mood stabilizers such as lithium and valproic acid. In addition, PKC signaling is involved in the regulation of processes that are affected in BD, such as neuronal excitability, neurotransmitter release, glutamatergic neurotransmission, neuroplasticity, apoptotic pathway activation, mitochondrial dysfunction, and oxidative stress and neuroinflammation.[2]

Endoxifen is an active metabolite of tamoxifen with fourfold PKC inhibitory activity compared to tamoxifen. In addition to its potent anticancer and bone agonist effects, endoxifen has an emerging role as an antimanic agent in bipolar disorder. A multicenter, double-blind, active-controlled trial of endoxifen 8 mg daily compared with divalproex 1000 mg, the current standard of care, was conducted in patients with acute manic episodes of BD I with/without mixed features. The primary study end point was mean change in YMRS total score (YMRS) at day 21. Endoxifen (n = 116) significantly reduced YMRS total score from 33.1 to 17.8 and also improved Montgomery-Åsberg Depression Rating Scale (MADRS) scores from 4.8 to 2.5. Early time to disease remission was observed with endoxifen compared to divalproex. None of the patients required rescue medication (an indicator of good efficacy) and there were no drug-related withdrawals. Changes in Clinical Global Impressions-Bipolar Disorder and Clinical Global Impressions-Illness Severity scores indicated that endoxifen treatment was well tolerated. Thus, the study demonstrated the efficacy of endoxifen in reducing manic symptoms and a faster onset of action compared to divalproex with a good short-term side effect profile. It was also shown that the steady-state of endoxifen was achieved within 14 days of its administration. Further, the antimanic effect (response) of endoxifen monotherapy is manifested as the exposure is increased. Regression analysis of YMRS total score and area under the concentration-time curve (AUC) indicated that the plasma-concentration to response relationship was linear, with $R^2 = 0.9559$. Long-term studies are needed to confirm the positive results in terms of long-term

efficacy and safety.[3]

The most common side effects of endoxifen reported in these studies include headache, vomiting, insomnia. Other adverse effects were: gastritis, epigastric discomfort, diarrhea, restlessness, somnolence, etc. Some of the side effects reported with other therapies for the treatment of manic episodes of bipolar I disorder were not observed during the clinical development program of endoxifen, such as a decrease in the number of blood platelets, a change in the levels of thyroid-stimulating hormone in the blood. There were no deaths, serious or significant adverse events during the conduct of the studies. Overall, endoxifen was found to be well tolerated and safe in bipolar I patients with acute manic episodes with or without mixed features. An important caveat is that the trial was very short (only three weeks). Due to the possible antiestrogenic activity of endoxifen, use of this drug in higher dose may be restricted.The long-term safety of endoxifen has also not been established in patients with bipolar disorder.[4]

Tamoxifen is an estrogen receptor antagonist whose mood-regulating properties are considered to be mediated via central PKC inhibition. In an earlier clinical trial, tamoxifen citrate, which is a precursor to endoxifen, was shown to be effective in the treatment of the manic phase of bipolar I disorder. This was a three-week, randomized, double-blind, placebo-controlled, parallel-arm trial involving 66 subjects. The primary outcome measure was change in YMRS score, and the secondary outcome measure was change in Clinical Global Impressions-Mania score, weekly assessment of depression and psychosis, and adjunctive use of lorazepam. An intent-to-treat analysis showed that treatment with tamoxifen (n=35) produced a mean decrease in YMRS and Clinical Global Impressions-Mania scores of 5.84 and 0.73 points per week, respectively, compared with a mean increase of 1, 50 and 0.10 points per week. with placebo (n=31).[5] A metanalysis found 5 randomized controlled trials of tamoxifen in acute manic patients, 3 as add-on and 2 as monotherapy.[6] Results of the studies indicate evidence of efficacy for tamoxifen over placebo in reducing manic symptoms.

Considering the established use of tamoxifen as hormonal therapy, repurposing of its metabolite, endoxifen, for the management of BD, appears to be safe. Like any new drug, the evidence for the efficacy of endoxifen is in the early stage but it offers a new alternative in the management of manic phase of the BD. Endoxifen in the form of 8 mg tablet, is approved by CDSCO- the central drug licensing authority of India, for the acute treatment of manic episodes with or without mixed features of bipolar I disorder.[7] In contrast to valproate and lithium, a potential advantage of endoxifen is that its therapeutic drug monitoring is not required owing to a wide therapeutic index. Long term role of endoxifen in bipolar disorder as well as other psychiatric disorders needs to be explored.

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Case Report

Psychosis in Early Adolescence - Unrevealed Guilt and Trauma

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Introduction

Psychotic disorders in an early adolescence are uncommon but it marks the beginning of a life time of contact with mental health services. There is now considerable evidence that childhood trauma, including exposures such as sexual, physical, and emotional abuse, and neglect is a risk factor for psychotic disorde.[1] As per previous study history of trauma has been associated with both persecutory ideation and hallucination.[2]

Here authors report a case where a young girl in presented with an acute psychosis due to certain psychological and environmental factors. When these factors were addressed, patient reached to a complete state of remission.

Case Report

AK 14 yr old girl, unmarried, Sikh, student from lower socioeconomic status, living with grand parents and brother presented to psychiatry department with in March 2014. The illness had abrupt onset with continuous course and precipitating factor was sexual abuse by school teacher thirteen days ago. The patient had irrelevant talk, fearfulness, disinhibited behavior, and auditory hallucinations where her deceased father was talking to her. Patient was diagnosed as Acute and Transient Psychotic Disorder as per ICD- 10.

Pharmacotherapy was started with Risperidone 2 mg/day, Trihexiphenidyl 2 mg/day, Clonazepam 0.25 mg whenever required. Patient improved in 1 month and gradually her medication was tapered off over next 5 months but social interaction remained decreased. She was regular in her studies and was maintaining her activities of daily living.

In November 2015, patient again presented with mutism, loss of interest and crying spells but no stressor could be elicited. In view of previous improvement, antipsychotic was restarted. Patient showed functional recovery but interaction remained decreased for about one year. In view of this detail evaluation was carried out.

During interview, patient revealed that in 2013 when AK was 13 years old, her mother had eloped with her paramour along with AK's younger brother. On request, patient helped her mother without understanding nature of act and consequences. Mother had left a suicide note and asked AK not to reveal about the incident. With this AK's father was disturbed, but soon after got to know details. He could not bear the humiliation and committed suicide by hanging. AK was raised by her paternal grandparents. With this she had guilt feelings. When she met her mother approximately after a week in police station to hand over her brother to grandparents, mother didn't acknowledge AK. At this AK felt abandoned and fully responsible for broken family. She had guilt of not being able to save her father and responsible for father's death. With this, treatment was reviewed again. Tab Risperidone was tapered off, Tab Etizolam was given SOS and non pharmacological treatment was started.

Non pharmacological treatment

Supportive therapy – The goal was to reduce suffering and improve the coping skills. During initial sessions rapport was established where patient revealed guilt about her past actions, and feeling of responsibility for broken family. Patient was allowed to ventilate until patient reached to catharsis. Further plan was made to start Acceptance and Commitment Therapy (ACT) and to enhance coping skills of the patient.

Acceptance and commitment therapy - The total number of 6 sessions were taken. The core principles are – cognitive defusion, acceptance, the present moment, values, self-as-context, and committed action.[4] The main objective of this therapy is to accept in present with what life brings us and to "move toward valued behavior".

During the ACT, AK was taught to rectify her emotions, memories, thoughts and images by increasing interaction with family members and frequent session at short intervals. AK was made to learn to be in contact with the present moment by explaining the significance regarding awareness of here and now, experience with openness, interest and receptiveness.

She was made to understand about values i.e., 1) her aspirations for future career, 2) responsibilities towards her paternal grandparents, 3) caring and protection for younger brother, 4) value of life given by god in which AK was encouraged to share what is important to self.

Finally, AK was made to set her goals according to values while carrying her responsibility. She was educated and assured that due to her age she was not able to understand gravity of situation and related decisions.

Patient had continuous repeated negative thoughts in her mind. Due to this she had symptoms of depression which were dealt with teaching her deep breathing techniques, learn to share feelings with family members or treating physician, maintain daily diary, pursuing hobbies, spend quality time with younger brother. She was motivated to do stitching, pursue with higher studies to become a government lecturer with financial backup.

Once AK achieved significant improvement, then booster sessions were started i.e., one session per month to strengthen her coping skills as relapse prevention. After the therapy AK's academic performance improved and socio-occupational functioning improved significantly to her premorbid level. AK was maintaining well till her last follow up in May 2018 without any pharmacological and non pharmacological treatment support.

Discussion

In the index case the patient was given initially pharmacotherapy afterwards when patient revealed her guilt then focus of treatment was shifted to psychological treatment. Supportive work was started initially, once the patient's distress decreased, ACT was initiated.

In this patient there is strong association between trauma and psychosis. Patient felt abandoned by her parents, she was unable to recover from her father's death and cheating by her mother. Afterwards she experienced childhood sexual abuse, which was instrumental in her getting in contact with mental health professionals. In this the role of trauma (sexual abuse) as a precipitating factor in hallucinations may be quite direct. Trauma (death of father, separation from mother)-related flashbacks along with other memories of good period acted as intrusions that entered the content of hallucinations (auditory) and led to abnormal behavior. This was further explained by the process that victimization can lead to sensitization of the dopamine system, [5] which has long been thought to play a role in psychosis. Though more studies are required to understand the complex mechanism of trauma leading to psychosis. Literature reveals stronger associations of abuse and psychosis, compared with neglect.[5]

Dopamine plays a central role to mediate the "salience" of environmental events and internal representations. Therefore, its dysregulation results in an aberrant assignment of salience to the elements of one's experience, at a "mind" level. With the use of antipsychotics, it "dampen the salience" of these abnormal experiences and leads to resolution of symptoms.

The resolution of symptoms is a dynamic process: antipsychotics tends to resolve the symptoms and help patient "work through" her symptoms toward a psychological resolution and decreases socio occupational dysfunction per se.

This framework of antipsychotics and psychotherapy provides a heuristic for "congruence" between the neurochemical biology of psychosis and the undeniably personal nature of the experience of psychosis. As psychosis is a dynamic interaction therefore psychotherapies for psychosis would be an alliance with pharmacotherapies. Most patients are prescribed with antipsychotic drugs but no specific help for the cognitive-psychological resolution is given. Antipsychotics remove the driving force from cognitive domain and psychotherapy pulverize the schemas constructed already. With this patient

on treatment with antipsychotics along with psychotherapy take weeks to months to recover.[5]

AK's story has critical and complex association of guilt followed by trauma (sexual assault) with psychosis. Children in their early age group or adolescence are not able to easily express as they encode these events in memories. The understanding about nature of traumatic events and circumstances and consequences is not mandatory for memory to be long term.[6]

AK's case was re-evaluated when the patient improved symptomatically but did not reach to her pre-morbid state. The diagnosis was revised but current diagnostic criteria's do not define sensitivity of young traumatized symptomatic children to make a clear diagnosis on the basis of which management plan can be formulated. In this case caregivers had an insight about the traumatic experiences though they were unable to help her. Caregivers were unaware of the ongoing emotional turmoil in her subconscious mind until AK had complete socio-occupational dysfunction. Caregiver in this case immediately sought the medical services for help and thus played a major role in complete recovery of the patent. Therefore, along with medical services caregivers plays an important role in recovery of the patient.

AK case is a reminder that the suffering of the children who experienced traumatic events does not end when the trauma is over but mark the beginning of a vicious cycle of trauma symptoms, functional impairment and further traumatization. To end this vicious circle, there is need to be aware about childhood emotions, effects of traumatic events, medical services at every platform like schools, newspapers, awareness lectures / workshops, theatre, cinema etc so that it becomes one of the health priority to lead to good and healthy physical and mental well being.

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Case Report

A Rare Case of Tramadol Dependence with Propofol and Midazolam Abuse

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Introduction

Tramadol is a synthetic opioid. It inhibits the reuptake of norepinephrine and serotonin. It is a selective agonist of mu receptors. The action of 5HT/NE inhibition is both complementary and synergistic and results in analgesic effects of tramadol. It is used to treat moderate to severe pain. Tramadol had a less dependence earlier in 1970s. But its addiction was soon acknowledged with many cases of physiological dependence. The maximum cases of tramadol-addiction were found from research done in Sweden constituting 104 patients, with women in largest number. In another scenario 97% of the addicts had a history of addiction of other substances too.[1]

Propofol is also known as "milk drug" or "white one" as it has a typical white color, its significance raised in Korea as the drug was linked in the death of gynecologist's lover in August 2012. The exploitation of propofol among medical professionals is seen worldwide and some exploitation has also led to death. Propofol addicts have described a wide variety of emotions such as general feeling of wellbeing, ecstasy, exhilaration. Its abuse potential is due to its action on dopamine. It involves a positive modulation of inhibitory function of neurotransmitter gamma-aminobutyric acid (GABA) through GABA-A receptors.[2] Propofol is an intravenous anesthetic agent which is ultra-shortacting, it is most frequently used in starting and maintenance of general anesthesia, sedation for mechanically ventilated adults and procedural sedation. It is also implicated for pediatric anesthesia.[3]

Midazolam is short acting benzodiazepine which was approved in December 1985 by Food and Drug Administration as an i.v. starting and sedative agent for general anesthesia. Till now, it is most lipid soluble benzodiazepine and it has a property of solubility and stability in water. Its ultra-short duration is due to metabolic inactivation. The half-life of midazolam in humans is 1 to 3 hours. Midazolam has relatively high rates of self-injection which is almost identical to short acting barbiturates.[4] The high sedation property of midazolam fused with its exceedingly rapid onset may add to its powerful reinforcing potential compared to diazepam which is also apparent in rat.[5]

In this case report, we are describing the case of a 23-year-oldmale who was dependent on Tramadol and have recently started taking Tramadol, Propofol and Midazolam simultaneously.

Case Report

Mr. R, a 23-year-old unmarried male, educated up to 12th standard, working as a nursing staff in a hospital in Haryana, belonging to nuclear family presented to emergency department accompanied by his mother. Patient was taking injection tramadol for 1.5 years, and have now also started taking Injection Midazolam for 25 days and Injection Propofol for 25 days. Patient was substance free till theage of 20 years when he took tramadol injection first time for his pain relief for renal stone and soon became a dependent tramadol user at the age of 22 years. He started with 2 vials per day for euphoric, relaxing effects of tramadol as well as to induce sleep. He used to purchase it from nearby medical shop as he was a nursing staff. After continuing for 4-5 months, he started experiencing restlessness, and decided to increased his dose. Now started taking 4 vials per day during afternoon and evening, this continued for 6 months. He tried to stop drug use

but experienced severe withdrawal symptoms on trying to do so. So, to avoid taking tramadol, he switched over to Injection Midazolam intravenously 2-3 vials per day and Injection Propofol intravenously 2 vials per day. Sometimes he used to take them separately and sometimes all three that is tramadol, propofol and midazolam together on a single day and this continued for 20-25 days. During this time period, he stopped going to work and visited hospital just for purchasing injections. He started experiencing pain abdomen, burning micturition, headache, disturbed sleepand while injecting he was caught by his mother and was brought to private hospital in Jaipur where he was admitted for 1 day and diagnosed as a case ofacute drug overdose but his oxygen saturation started falling, so was shifted to another private hospital where he was diagnosed with right side pneumonia. Due to financial reasons his family member decided to not continue treatment there and he was brought to emergency department in tertiary care hospital attached to a medical college for further evaluation and treatment.

History of cigarette (nicotine) intake present since 10 years, he used to take on and off with his friends, approximately 3-4 cigarette per day.

Family history was positive for Alcohol dependence in brother, his brother died due to Alcohol related disorders. Birth, development and childhood history was unremarkable. He became sexually active at the age of 18 years of age and had multiple physical relationships with his girlfriends over time. The premorbid personality appeared well-adjusted.

On the day of admission, his physical examination was unremarkable. Blood pressure was 130/70 mm Hg, Pulse was 118 bpm, Temp was 99.1 F. On mental status examination, patient was conscious, unkempt, poorly nourished, poor hygiene, cooperative. Eye to Eye contact initiated and maintained, rapport established easily, speech was coherent and relevant-tone, pressure and volume appeared normal, but psychomotor activity was slightly increased. Mood was sad and quality of affect appeared anxious. Thought content revealed ideas of guilt. Motivation was fair. As per ICD-10 a diagnosis of Mental and behavioral disorders due to multiple substance abuse was made. Patient was admitted in Male psychiatry ward for further management and evaluation.

Routine hemogram, renal and liver function tests were done. Hb was 11.4 gm/dl, TLC was 6.3 cells per cubic millimeter of blood, platelet count was 227 x 10^3/ul, SGPT was 68 units per litre of serum, SGOT was 91 units per liter of serum, Total bilirubin was 0.7 mg/dl, Serum creatinine was 0.62 mg/dl, Albumin was 3.6 g/dl. Viral markers were non-reactive. USG whole abdomen was found to be normal. Respiratory medicine referral was sought in view of his recent diagnosis of right-side pneumonia and since patient was febrile with fever 99.1 F. Chest X-ray was advised and he was started on injection paracetamol 1 gm intravenously twice a day, Injection ceftriaxone 1 gm intravenously twice a day, Injection Azithromycin 500 mg intravenously once a day for 5 days. ECG was done which was within normal limits.

Intravenous fluids Dextrose normal saline 500 ml and Injection Optineuron 1 ampule was started intravenously twice a day after testing. Injection Lorazepam 1 ampule intramuscularly was started thrice a day for sedation. Tablet Tapentadol 100 mg thrice a day was started as patient was complaining of pain. Tab cyclobenzaprine15 mg twice a day was started for muscle relaxation. An antipsychotic medication was started that is Tablet Quetiapine 200 mg one in morning and 2 tablets in night. Tablet Trifluperazine 5 mg in combination with tablet Trihexyphenidyl 2 mg was started. On day 3, there was constipation and weakness for which symptomatic management was provided. On day 5 patient was switched from Injectable lorazepam to Tablet Lorazepam 2 mg, 2 tablets in morning, 1 tablet in afternoon, 2 tablets in night and gradually tapered off every 3 days. On day 7 Tab clonidine 100 mcg ½ twice a day was started. BP monitoring was advised every 4-hourly with clonidine. On day 10, there was mild improvement in patient's symptoms and his appetite and sleep improved. Patient was provided psycho-education and relapse prevention sessions on regular basis. He was discharged on request of his relatives during week 2 with an advice to continue out-patient follow up.

Discussion

Tramadol dependence has been frequently reported in literature but this case was unique as this patient was dependent on tramadol but has started abusing midazolam as well as propofol simultaneously. In comparison to the case series

published by sarkar et al[1] on tramadol dependence, they reported 7 cases, majority of the patients were unemployed and were in the age group of 25-35 years of age and majority started tramadol for opioid detoxification or to relieve pain. In our casealso, patient started tramadol to relieve pain and later became dependent tramadol user.

In the study conducted by lee et al on propofol abuse in 36 participants,[2] author reported that more than 70 percent of the participants were healthcare providers including nurse and doctors. In our case report also, patient was working as a nursing staff and to avoid tramadol addiction, he started taking Injection propofol and injection midazolam but subsequently started abusing them all together.

So there is a need to understand the risk of prescribing tramadol for pain relief specially in health care providers who has easy access for these medicines.

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Case Report

Is Virtual Eye Movement Desensitization and Reprocessing Therapy Effective in Childhood Obsessive Compulsive Disorder? : A Case Report

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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 behaviors.[1] Data suggest that the prevalence of obsessive-compulsive disorder among children and adolescents ranges from 1% to 3%.[2] Cognitive behavioral therapy (CBT) and Serotonergic drugs, such as selective serotonin reuptake inhibitors (SSRIs) and clomipramine, are the most widely used therapeutic modalities of OCD.[3]

Eye movement desensitization and reprocessing (EMDR) is a therapy which is a structured three pronged protocol used to address past, present, and future aspects of a person's traumatic memories. It is based on Francine Shapiro's adaptive information processing (AIP) model, which conceptualizes mental illnesses as a manifestation of unresolved traumatic experiences. It follows a standard eight-phase procedure.[4] (Table 1)

Table-1: Eight-phase protocol of EMDR[4]

Phase 1	History Taking
Phase 2	Preparation
Phase 3	Assessment
Phase 4	Desensitization
Phase 5	Installation
Phase 6	Body Scan
Phase 7	Closure
Phase 8	Reevaluation

Treatment starts with taking an AIP-informed history, preparation and stabilization of the client, and assessment of target memory. The patient is then asked to bring in mind the chosen target, simultaneously attending to a visual, auditory, or tactile bilateral stimulus (BLS). After a set of BLS, he is asked to report whatever comes up, mostly memories, thoughts or sensations. This process is repeated until the memory is no longer disturbing. When the memory is desensitized (reflected in a rating of 0–10 on the Subjective Units of Disturbance [SUD] scale), the procedure focuses on strengthening a selected positive cognition, as rated on the Validity of Cognition (VOC) scale. Lastly any disturbing body sensations, if present, are processed.[4] After working on the past memories, present disturbances and anxieties related to future are similarly addressed.

In our case, we have followed a trauma based approach using EMDR therapy in virtual mode as the sole treatment modality in a child with OCD.

Case Report

Master A, a 10 year-old boy from an urban nuclear family, studying in fifth standard, with no past history of psychiatric disorder presented with repetitive intrusive thoughts and images of killing his parents with a knife. It had started after he witnessed a fight between his parents. Initially the thoughts and images were rare, would come only on seeing a knife and he could distract himself without much difficulty. However, within a span of 3-4 months those became more frequent, coming several times in a day even without an external cue. These

thoughts would cause anxiety interfering in his daily functioning. The boy recognized them as his own, irrational thoughts,and would pray multiple times to get rid of them. There was no history suggestive of depression, psychosis or any organic condition. There was no history of psychiatric disorder in the family.

After discussion with his mother, it was decided not to put the boy on any medication. As hospital visit was notpossible for him due to the COVID-19 lockdown, virtual EMDR sessions were planned. Butterfly hug was chosen as the mode of BLS. The disturbing image to be processed during the EMDR sessions was chosen as" his parents are fighting and threatening to kill each other" His negative belief was "I am a bad boy" whereas his positive belief was "I am a good boy". He reported feeling fearful and heaviness in his chest when he thought of the disturbing image and negative belief. At the beginning of the first EMDR session, the SUD score was measured as 9 whereas the VOC score was 2. As he could not narrate his experience in words, he chose to draw it after each set of BLS. As the sessions progressed, the SUD score came down to 0, the VOC score rose to 7 for "I am a good boy" and he reported feeling relaxed with no disturbing body sensations. In the next phase of treatment, present triggers of parents fighting and seeing and working with a knife was worked on, finally proceeding with the future template where the boy imagined himself coping effectively with the possible future challenges. A total of six EMDR sessions were done with him.

His symptoms were rated on the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS).[5] At the beginning of the treatment, score on CY-BOCS was 24, which was in the severe range. After the final session, the score reduced to 2. The treatment effect persisted at one month and six month follow ups with CY-BOCS score of 1 (subclinical).

Discussion

This case highlights that past traumatic experience may be directly linked to the onset of OCD in some individuals. EMDR therapy is recognized as an effective treatment for post traumatic stress disorder; however, research on its use for OCD is limited. Our case report contributes to the existing data on successful use of EMDR in childhood OCD. Notably, the boy was treated without any psychotropic medication which further validates the effectiveness of EMDR in this population. To the best of our knowledge, this is the first reported case where EMDR sessions were carried out via a virtual platform highlighting the importance of digitalization of psychological services which has become very essential in the present times.

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Case Report

Antipsychotic induced Parkinsonism with Focal Hand Dystonia in a patient of Schizophrenia

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Introduction

The mainstay of treatment for schizophrenia and other psychotic diseases is antipsychotic medication. These medications have a proven therapeutic efficacy. However, they cause a number of movement disorders such as acute dystonia, parkinsonism, akathisia, and tardive dyskinesia. Parkinsonian symptoms develop within days of beginning antipsychotic medications. Muscle stiffness, tremors, bradykinesia, bradyphrenia, postural abnormalities, and hypersalivation are signs of drug-induced parkinsonism.[1] In Dystonia, muscle spasms in any region of the body can be both painful and extremely frightening. We report the case of a female patient with schizophrenia who developed parkinsonism with focal hand dystonia while being treated with antipsychotics.

Case Report

A 16 year-old female came to psychiatric OPD with complaints of hypersalivation, tremulousness in both distal upper limbs, slowness in activities, stiffness in body and difficulty in speaking for 20 days. On further enquiring, patient was on psychotropic drugs for complaints of irrelevant talk, suspiciousness, fearfulness, social withdrawal and decreased sleep which were present for 6 months. Patient was consulting a psychiatrist for one month who advised her tab Risperidone 8 mg/day, tab Haloperidol 15 mg/day, tab Quetiapine 200 mg/day, tab Escitalopram 30 mg/day and tab Trihexyphenidyl 6 mg/day. Retrospectively a diagnosis of Schizophrenia was made as per DSM-5. Her past and family history were insignificant. Extrapyramidal symptoms developed within one week of taking psychotropics. An inpatient care was decided seeing the patient's symptoms.

On admission, her vital signs were stable without evidence of impending airway obstruction, pulse rate 96 bpm, blood pressure 110/68 mmHg, respiratory rate 16 per minute, temperature 36.2 degree Celsius, SPO_2 99% on room air and weight 40 kg. On examination, there was drooling of saliva, mask like facies, difficulty in speaking, tremors in distal upper limbs bilaterally, rigidity in all 4 limbs and an assisted gait. Deep tendon reflexes were brisk in all 4 limbs. After detailed examination, patient was held on intra venous fluids, all psychotropic drugs were stopped and injection promethazine 50 mg intramuscular stat was given. There was only some improvement in her symptoms. So, another dose of Promethazine injection was given after 20 minutes following which extrapyramidal symptoms resolved and patient became ambulatory and started speaking with no difficulty. Patient was then shifted to tab Trihexyphenidyl 8 mg/day in divided doses which was tapered off to 4 mg/day in 3 days and tab Olanzapine 5mg was added since psychotic symptoms reappeared after parkinsonism symptoms were resolved.

Even when the parkinsonism symptoms were resolved, there was still focal dystonia in her right wrist which was missed initially because of parkinson's features as well as rarity of such presentation. Patient was unable to extend her palm at the wrist joint and unable to hold objects or write with her right hand and it did not get resolved even after giving promethazine injection and high doses of THP. There was no history of trauma to right hand or presence of dystonia before taking drugs. So, neurology opinion was seeked out where nerve conduction velocity test was advised. There was normal conduction velocity in right median, ulnar and radial nerve. She was advised physiotherapy exercises for same. Detailed investigations (hemogram, liver function test, renal function test, serum electrolytes, electrocardiogram) were sent, all came out to be normal.

Patient was discharged on tab Olanzapine 10 mg/day and tab THP 4 mg/day. On 2 week follow up there was improvement in focal hand dystonia and she was advised to continue physiotherapy.

Discussion

Drug-induced parkinsonism is a sub acute syndrome that resembles Parkinson's disease. Although being less alarming than dystonia. It is more prevalent, more challenging to treat, and can result in severe disability throughout maintenance therapy especially among the elderly. Bradykinesia is characterised by flexed posture, soft voice, decreased arm swing, masked facies, and slower initiation of activities.[1] Patients may also experience sialorrhea, and postural or gait disturbances.[2]

Dystonia is a group of disorders that share some characteristics but have a wide range of clinical presentations.[3-5] Involuntary sustained or intermittent muscular contractions that result in aberrant postures and/or repetitive movements are the common characteristics. Though a tremor-like movement might occasionally predominate, dystonic movements are usually patterned or twisting. The most frequent kinds are adult-onset focal dystonia (AOFD), which can affect the neck, upper face, mouth, jaw, larynx, or other body parts (such as writer's cramp and other focal hand dystonia). Young people, who are naive to neuroleptics, and those who take high potency antipsychotics are more likely to develop dystonia.

Focal dystonia is significantly disabling due to pain and impairment, reduction in daily living activities (ADL) participation, and employment issues.[6,7] According to several studies, focal dystonia frequently causes difficulties beyond motor symptoms, including loss of independence and self-confidence, depression, social withdrawal, insomnia, and fatigue.[7,8]

Acute dystonic reactions commonly manifest with the following symptoms: tongue protrusion, forced mouth opening, head tilting back or to the side, an arching back and upward or side way turned eyes (oculogyric crisis). Focal limb dystonia due to psychotropics is a rare entity. Acute dystonia is treated with anticholinergics or antihistamines along with stopping the offending medication. The majority of cases resolve within 12 to 48 hours, even without medical intervention.[9]

In our patient,who was naïve to psychotropics, parkinsonism and focal hand dystonia occurred after receiving high doses of multiple psychotropics. Though parkinsonism symptoms were resolved completely, there was no improvement in right hand focal dystonia even after giving high doses of centrally acting anticholinergic drug which was unlikely. We did not find any literature as per our knowledge regarding psychotropic induced parkinsonism with focal hand dystonia which doesn't resolve with anticholinergics and persist even when parkinsonism resolved. So, it seems a rare presentation.

Conclusion

A concrete aetiology of psychotropics induced dystonia is still very unclear, further research and clinical studies need to be done. Even though focal limb dystonia due to psychotropics is a rare entity but it's chance of occurrence should always be considered.

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Book Review

VOYAGES: Memoirs of Travelling Shrink

Author: Dr Veena Kapoor

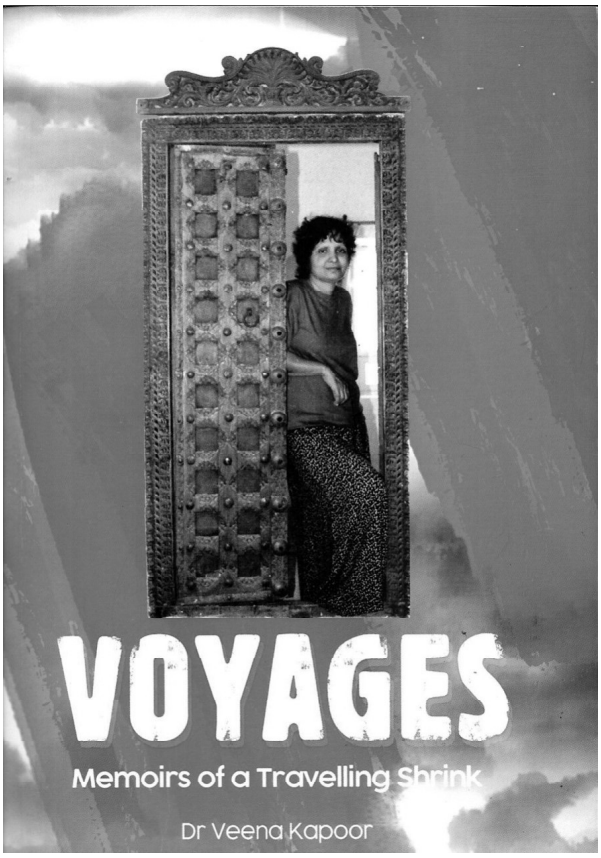
The book, as the title, reveals the experiences of author. It is divided into three parts. Part one is related to author's personal journey. Part two relates to her professional journey and Part three describes her travels to India and Abroad.

Author's personal account reveals the journey from birth to schooling and family life. It is described in short stories covering 25 chapters.

The professional journey began from Maulana Azad Medical College. New Delhi to her post-graduate training in Ohio, practicing experience in Birmingham before coming back to India. She opened up her own clinic, 'Samvedna'. Utilizing her experience, she combined 'autonomous individualistic psychotherapy' approach to an 'eclectic family approach'. Her work on psychosocial problems of society especially stigma is remarkable. She highlighted and worked on psychological issues related to women. This part of book is being professionally described as case vignettes.

Part three reveals her travel experiences to different places in India and Abroad. She had intentionally avoided mentioning her personal and professional glorifications received from society. This shows her simplicity and modesty.

All sections of the book have been beautifully described in story form along with memorable photographs. The book is a fulfillment of gap created due to vacuum in the missing life experiences of leading renowned psychiatrists in their own words. There is a need for every professional to write his/her professional journey in his/her own words. This will not only bring introspection but also motivate younger generations.



Every person should read the book and learn.

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Eternal Journey — Dr Saadgi Jagawat

Dr Saadgi Jagawat was born in Ranchi on 2nd April 1993. Her formative schooling years were spent in Delhi, Noida, Gwalior, and Jaipur following which she decided to pursue medicine. Through AIPMT she was selected to the prestigious Topiwala National Medical College, (TNMC & Nair Hospital) Mumbai. She had an option to take Pathology from SMS Jaipur, Radiotherapy from TATA Mumbai, Medicine from Medanta Gurgaon but she opted DNB Psychiatry at Vidhyasagar Institute of Mental Health & Neuro Sciences (VIMHANS), New Delhi in 2019. She was a very sincere, hardworking and dedicated doctor. She was very popular among her faculty, colleagues, patients and their caregivers. She was a very simple, humble and soft-spoken doctor. She had performed well in theory and practical of her internal and external Assessments. She had submitted her Thesis to National Board of Examination (NBE), New Delhi and appeared in final theory examinations in December, 2021. Her 3 years DNB Psychiatry training was going to complete in May 2022.

It was sudden, tragic, accidental demise of her life on 29/12/2021, the day, the cruel hands of destiny snatched her from us to create a vacuum which can never be filled. She had a passion for Mental Health and De-addiction. She had a plan to work on social and community Psychiatry and her main emphasis was on removal of stigma related to Mental Health by Spreading Awareness programme. She had a dream to Start Psychiatry and De - Addiction centre in Rural Areas. The society lost a budding Psychiatrist.

Beside Studies, she was very sensitive and social person, very fond of talking and meeting new people. She had qualities like being highly studious, energetic, sensible, sincere and humble. She was a dancer, swimmer, travelor and fashion icon. May be that is why she choose to be in a profession where she would be interacting to people from different cultures. She had a passion for Dance, Traveling, Table Tennis and of course Shopping. She learned Classical Dance from renowned dance teachers during her childhood. She had actively participated in dance programs of college and intercollege competitions. She was fond of watching movies and swimming. She had a plan to travel Finland but destiny had taken her to eternal journey. She is always with us and will be always with us. May her soul rest in peace. May almighty give strength to all of us to bear the irreparable loss.

Dr. Tushar Jagawat
Past President,
Delhi Psychiatric Society

Dr. Savita Jagawat
Life Associate Member,
Delhi Psychiatric Society

Forthcoming Events

Please link to following websites:

- https://conference-service.com/conferences/psychiatry.html
- https://waset.org/psychiatry-conferences
- https://psychiatry.psychiatryconferences.com/
- https://www.rcpsych.ac.uk/events
- https://allconferencealert.net/topics/psychiatry.php
- https://www.mdlinx.com/psychiatry/conference.cfm

Interesting Articles

- Calderaro M, et al. Offspring's risk for suicidal behaviour in relation to parental death by suicide: systematic review and meta-analysis and a model for familial transmission of suicide. Br J Psychiatry 2022; 220 : 121-129.
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- Tang VM, et al. Continuation Magnetic Seizure Therapy for Treatment-Resistant Unipolar or Bipolar Depression. J Clin Psychiatry 2021; 82(6) : 20M13677.

Annual Awards

Delhi Psychiatric Society Annual Awards

(Rules & Regulations)

1. **Dr. Ravi Pande Memorial Award for Young Psychiatrist:**
   a) The original research done by a young Psychiatrist below 40 years of age
   b) It should be unpublished and not elsewhere submitted
   c) The paper is to be presented at the time of CME/Annual Conference
   d) 70% marks are for written evaluation and 30% for presentation
   e) Presenter and at least 50% of co-authors must be full members of the Society
   f) Consent is required from all authors

2. **Dr. Saadgi Jagawat Memorial Award for Female Postgraduate Student:**
   a) The original research done by a female postgraduate (MD/DNB/DM)
   b) Certificate of doing PG is required from the Head/ Institution
   c) It should be unpublished and not elsewhere submitted
   d) The paper is to be presented at the time of CME/Annual Conference
   e) 70% marks are for written evaluation and 30% for presentation
   f) Presenter (PG student) and at least 50% of co-authors must be full members of the Society
   g) Consent is required from all authors

3. **Dr. Ravi Nehru Memorial Award for Best Published Paper:**
   a) Published work in the field of Neuropsychiatry or Neuropsychology
   b) Principal Author and at least 50% of co-authors should be members of the Society at the time of publication
   c) The published work should be in the previous 2 years (i.e., for 2022 Award, July 2019 to June 2021)
   d) Consent is required from all authors

4. **Dr. J.S. Neki Memorial Best Poster Award:**
   a) Based on Original research
   b) It should be unpublished and not elsewhere submitted
   c) The poster is to be presented at the time of CME/Annual Conference
   d) Presenter and at least 50% of co-authors must be full members of the Society
   e) Consent is required from all authors

5. **Dr. H.C. Raheja Memorial Oration Award:**
   a) The oration award will be declared in advance at every annual conference of the society.
   b) Any Life Full Member of the society can propose the name of any other Life Fellow of the society for the oration award. The proposal including four copies of the bio-data of the nominee must be submitted to the Chairperson, Awards Committee by a date determined by the Executive Council of DPS.
   c) The proposal must be accompanied by a written consent of the nominee.
   d) To be eligible for the award, the nomination shall be assessed on the following criteria:
      i) Contribution to the service and development of psychiatry in India - 30 marks
      ii) Contribution to the Delhi Psychiatric Society - 30 marks

iii) Contribution to teaching, training and research in Psychiatry - 20 marks
iv) Overall seniority in Psychiatry, recognition, and standing amongst fellow Psychiatrists in India - 20 marks

e) The speaker can choose any topic for the oration. He shall intimate the title of the oration to the chairperson awards committee prior to the conference.

6. Dr. N.K. Bohra Memorial Psychiatrist of the Year Award:

a) Any Life Full Member of the society can propose the name of any other Life Fellow of the society for the award. The proposal including four copies of the bio-data of the nominee must be submitted to the Chairperson, Awards Committee by a date determined by the Executive Council of DPS.
b) The nominee must have contributions to the service and development of psychiatry in India; Contribution to the Delhi Psychiatric Society and overall seniority in Psychiatry, recognition, and standing amongst fellow Psychiatrists
c) Age above 60 years
d) Name will be finalized by the executive council of DPS in consultation with Awards Committee

General Rules

- Awards are open for Full members of the society
- Kindly submit 4 copies of Full paper (3 copies to Chairman) and 1 copy to the Coordinator/ General Secretary along with a soft copy.
- The award papers will become the property of the Delhi Psychiatric Society and shall be published in the Delhi Psychiatry Journal with the necessary editorial corrections
- Names (along with email and contact numbers) of Chairperson and Coordinator and last dates will be announced

Guidelines

Instructions to Authors

Aims and Scope of the Journal

This journal is aimed to help in the academic development of its readers. To accomplish the objectives we publish following sections in the journal: Original articles, reviews, view points, short reports, case reports letters and newer developments.

Prior Publication

All the articles are published in this journal with the understanding that they have never been published or accepted in any journal previously or submitted to any other journal simultaneously. However, publication of abstracts in conference's abstract book will not be considered as prior publication if such abstracts are limited to 300 words. It includes all kind of printed material (whether scientific or not), symposia, panel discussion, paper/poster presentation, workshops etc. If author/s are submitting any other paper with overlapping content to any other journal, they must inform the editor with the explanation of the differences in the paper.

Submission of the manuscript

Manuscripts should **preferably be submitted online** at the journal's account: dps_journal@yahoo.co.in or manbhatia1@rediffmail.com. Receiving of the manuscript will be acknowledged within no more than ten working days, failing which authors are free to submit it elsewhere. However, it is advisable that they make sure that the mail has not returned and recipient mail-id is filled correctly. Authors who want to submit hard copy of manuscripts must send 2 copies along with CD to editorial office – Department of Psychiatry UCMS and GTB Hospital, Dilshad Garden, Delhi-110095 (India).

Authorship

All persons designated as authors must qualify authorship criteria. It implies that all the authors have participated sufficiently to take the public responsibility of the content. Authorship credit should be based on substantial contributions to (1) conception and design or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, and on (3) final approval of the version to be published. Conditions 1, 2, and 3 must all be met. Participation solely in the acquisition of funding or the collection of data does not justify authorship. Other persons involved in the study may be acknowledged at the end of the manuscript.

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For clarification see following reference styles.

Sample citations

According to our previous work,[1,3-8,19]
The Patient's were studied as follows.[3,4]

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 evidence for an association. J Clin Psychiatry 2012; 73 : 37–50.
- **Book**
  1. Stahl SM. The Prescriber's Guide (Stahl's Essential Psychopharmacology, 4th ed. Cambridge, U.K.: Cambridge University Press, 2011.
- **Chapter of a book**
  1. Blacker D. Psychiatric Rating Scales In: Sadock BJ, Sadock VA, editors. Kaplan and Sadock's Comprehensive Text Book of Psychiatry. Vol. I. Philadelphia: Lippincott Williams and Williams; 2000. pp 755-782.

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