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Editorial

Microbiome and Mental health – a new Gateway to Research

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The connection between microbiome and mental health has recently come to the attention. The human gastrointestinal tract alone contains a delicately balanced ecosystem of 100 trillion microorganisms, nearly ten times the number of cells in the entire human body.[1] These gut bacteria or microbiome play many physiological roles in the body e.g. synthesizing vitamins, developing the immune system, aiding digestion, and managing the stress response.[1] The human genome represents about 23,000 genes, whereas our microbiome represents over 3,000,000 genes, producing thousands of metabolites that may replace many of the functions of the host.[2]

Bacteria begin to form an inextricable link shortly before birth when they colonize our guts within the womb.[1] By the age of 3-5 years, they develop a full adult microbiome and a gut-brain axis. The microbiome remains relatively stable throughout life, but can be altered as a result of bacterial infections, antibiotic treatment, lifestyle, surgical, and a long-term change in diet.[3] Shifts in this complex microbial system have been reported to increase the risk of disease.[3]

The gut-brain axis (GBA) is a set of mechanisms through which the gut and brain communicate bidirectionally. Three of the main communication routes are the immune system, the nervous system, and the endocrine system.[4] One study found that when the gut bacteria from two different mice were swapped, stress-prone mice became calm and calm mice became stress-prone.[1]

The first mechanism through which bacteria in the gut interact with our brain is through inflammation. In a mentally and physically healthy person, anti-inflammatory cytokines are in equilibrium with pro-inflammatory cytokines.[5] Research has found that increased levels of pro-inflammatory cytokine activity in the brain lowers metabolism of neurotransmitters, specifically that of GABA; GABA, when in lower levels, causes depressive symptoms.[6]

The enteric nervous system is connected bidirectionally with the central nervous system. Normally, information is sent from the heart, lungs, pancreas, liver, stomach, and intestines to the brain (including the cerebral cortex, medulla oblongata, limbic system, etc.) via sensory fibers in the vagus nerve.[5] Elevated stress and anxiety have been shown to deplete one's microbiome of bacteria that produce anti-inflammatory cytokines, thus resulting in the biological effects inherent in inflammatory response and subsequent depression.[4]

Research shows that stress-induced neuroendocrine hormones can influence bacterial growth[7] and that endocrine effects of gut microbiota may influence host responses ranging from behavior to metabolism and appetite, and even immune responses.[8]

For many years, research has been underway to uncover the relationships between microbiome dysfunction and conditions such as colorectal cancer, inflammatory bowel disease, celiac disease, psoriatic arthritis, atopic eczema, childhood-onset asthma, rheumatoid arthritis, Type 1 and 2 diabetes and obesity.[4,9] Research has shown a link between gut and psychiatric disorders. Depression is known to be closely related to elevations in C-reactive proteins, inflammatory cytokines, and oxidative

stress.[10] There is a relationship between fecal bacteria (which served as a proxy to analyze the gut microbes) and symptoms of depression.[11] Previous studies have demonstrated that both schizophrenia and bipolar disorder are associated with alterations of the systemic immune system including low-grade chronic inflammation (increased plasma cytokines, soluble cytokine receptors, chemokines, acute phase reactants) and T-cell activation features.[11,12] In addition, elevated antibodies to S. cerevisiae were also found in individuals with schizophrenia and bipolar disorder.[13] Links between particular bacteria (Clostridium or Desulfovibrio) and phenotypes relevant to Autistic Spectrum Disorder (ASD) raise the question of whether microbial dysbiosis plays a role in the development or presentation of ASD symptoms.[14] Psychobiotics are beneficial bacteria (probiotics) or support for such bacteria (prebiotics) that influence bacteria–brain relationships.[15] Two bacterial genera, Lactobacillus and Bifidobacteria, and also Campylobacteria, Citrobacter, and Trichuris are common anti-inflammatory probiotics that have been shown to reduce anxiety and behavioral signs of distress in both human and rodent studies.[4,16] Probiotics decrease ruminative, negative thoughts in humans, and that the introduction of prebiotics (or fibers) that promote the growth of beneficial bacteria decrease anxiety.[4,16] It is challenging to find ways (recently fecal transplant and crapsules) to deliver desirable biota in a way where they can thrive in a new body.[4]

The human microbiome and its relationship to disease is a new and rapidly evolving field of study.[1,4,9] Understanding the links between the gut microbiome and disease may provide therapeutic or prophylactic tools to improve human health.[9]

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Review Article

Somatization and conversion disorders in children and adolescents

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Introduction

Medically unexplained physical symptoms (somatic symptoms) are common in children and adolescents[1] (Referred simply as children here after in this article). The severity of such symptoms varies from being transient, mild and self-limiting to being chronic and impairing. Various disorders comprising such impairing somatic symptoms are grouped into the category of somatization disorders. The word "Somatization" means the tendency to experience and communicate somatic distress and symptoms, unexplained by pathological findings.[2]

Children with somatization disorders often are first seen by general practitioner or a paediatrician. They are referred to mental health professionals late in the course of illness, often leading to excessive, unnecessary investigations and overuse of medical services. If not identified and managed early, these disorders are known to cause long term psychiatric complications, poor quality of life for the children and significant burden of care for families.[3] This article aims to help the reader to understand the etiological factors and clinical features of somatization disorder and also basic management principles.

Epidemiology

Though somatic symptoms are reported to be common in children, the epidemiological data about the somatization disorders in children is sparse. There is no data specific to the DSM-5 somatic symptom disorder in children. In his classical study, Apley reported that about 10% of school children had at least thrice experienced the severe pain abdomen over a period of three months.[4] Different population based studies have reported the different prevalence rates of somatic symptoms ranging from 2 to 10 % to 25 to 80%. Whereas a clinic based study reported a prevalence of 1.3 to 5%. Recurrent abdominal pain accounts for around 5% of the paediatric clinic visits. Headaches have been reported to affect 20% to 55% of all children, with 10% of teenagers reporting frequent headaches, chest pain, nausea, and fatigue.[5, 6] Higher prevalence of somatization is seen in girls (10.7%) than boys (4.5%)[6-8] Body dysmorphic disorder, another variant of somatoform disorder, has prevalence of approximately 1% (0.7 to 1%).[9,10] However, Dyl et al, in their study found that 6.7 % of adolescents have either definite or probable body dysmorphic disorder.[11]

Some differences in the prevalence of somatization in different cultures in observed in adults. Kleinman found the difference between prevalence of somatization higher in population of East in comparison to population of West[12] and study by Weiss et al, also found higher prevalence of somatisation in the psychiatric clinics in response to stress in the East in comparison to West.[13] These evidences favour the belief that, as a stress response, population from East tend to somatize, whereas population from West present with depressive symptoms, which again indicates the possible cultural attribution to variation in stress responses.[12,13] However, there is no definite evidence to say that the same trend is observed in children.

Nosological Aspects

There are some differences in how these disorders are described and classified by International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual of Mental disorders (DSM). Further there are differences between the recently released DSM-5 and its predecessor DSM IV–TR.

ICD-10 describes somatoform disorders as having:

(i) Repeated presentations of physical symptoms,
(ii) Persistent requests for investigations despite negative findings and reassurance, and
(iii) The resistance for the attempts to discuss the possibility of psychological causation. ICD-10 subdivides these disorders into somatization disorder, undifferentiated somatoform disorder, hypochondriacal disorder, somatoform autonomic dysfunction, persistent somatoform pain disorder, and other somatoform disorders.[14]

DSM-IV describes these disorders as having:

(i) Physical symptoms suggesting a medical condition; however, no medical disease, substance misuse or another mental disorder can be found to account for these symptoms
(ii) The symptoms cause significant distress or impairment in social, occupational or other areas of functioning
(iii) The physical symptoms are not intentionally produced. DSM-IV subdivides somatoform disorders into somatization disorder, undifferentiated somatoform disorder, conversion disorder, pain disorder, hypochondriasis, body dysmorphic disorder and somatoform disorder not otherwise specified (includes unexplained physical complaints, e.g., fatigue).[15]

As one can observe, conversion disorders are grouped together with somatoform disorders in DSM where as they are part of dissociative disorders in ICD. Neurasthenia is also a separate diagnostic category in ICD, whereas, Body dysmorphic disorder is not a separate diagnostic entity, it is considered under the category of hypochondriacal disorder.

DSM-5 has brought several changes. The term "somatoform disorder" is replaced by "somatic symptom disorder". Diagnosis is not based on "absence of any identifiable physical cause", rather a positive diagnosis based on the presence of maladaptive cognitive and behavioural patterns associated with the somatic symptoms like excessive preoccupation, exaggerated importance attached to symptoms and disproportionate impairment associated with the symptoms.[16] DSM-5 has achieved simplicity to some extent by removing some overlapping diagnostic entities. It has also emphasised the concept that presence of a medical illness do not rule out somatoform disorders, and they can coexist.[17] By discarding the mind body dualism, it has made some efforts to reduce stigma. Table No. 1 compares the different disorders included under the heading of somatoform disorders in ICD-10, DSM-IV TR and DSM-5.

Application of the above ready made diagnostic criteria to children poses some problems. Children rarely present with the classic syndromes described above, they rather present with discrete symptoms. It is difficult to find cognitive symptoms like exaggerated importance, excessive preoccupation with symptoms in children. For the latter problem, DSM-5 has given a provision to consider the parents' reaction to the symptoms.[16] Research focusing on formulating the specific diagnostic guidelines for children is needed. We have followed DSM-5 in this article.

Table-1: Comparison of the different disorders included under the heading of somatoform disorders in ICD-10, DSM-IV TR and DSM-5

ICD 10	DSM-IV TR	DSM-5
Somatization disorder	Somatization disorder	
Persistent Somatoform pain disorder	Somatoform pain disorder	Somatic symptom disorder
Undifferentiated somatoform disorder	Undifferentiated somatoform disorder	
Hypochondriacal disorder	Hypochondriasis	Somatic symptom disorder Illness anxiety disorder
No category	Conversion disorder	Conversion disorder
Somatic autonomic dysfunction	No category	No category
No category	Body dysmorphic disorder	No category
Other somatoform disorders Somatoform disorder NOS	Somatoform disorder NOS	No category

Etiology

The definite etiology of somatoform disorders is not known. Nevertheless, many bio-psycho-social factors are identified, which possibly play role. Thorough understanding of this model is also essential for complete assessment and holistic management of the disorder.

Biological factors

Children with somatic symptoms are more likely to have family members with higher levels of somatic symptoms.[18] Recent evidences suggest a strong genetic component in the form of polymorphism of catecholamine-O-methyl Transferase (COMT), related to pain sensitivity. The promoter region of serotonin transporter gene is associated with traits like neuroticism and anxiety, which are commonly found in children with frequent somatic symptoms.[18]

Other than the genetic factors, some other biological factors explain the generation of somatic symptoms in somatoform disorders. Patients with conversion disorders may have – prolonged motor reaction time, activation of prefrontal, orbitofrontal, and anterior cingulate areas and decreased blood flow to certain brain areas (basal ganglia and thalamus).[19-22]

Child related factors

Children who are conscientious, perfectionistic (obsessive), sensitive, insecure and anxious are more prone to develop frequent somatic symptoms under stress. Children with high levels of functional somatic symptoms have fewer adaptive coping skills. They use poor coping skills like disengagement, rumination over pain, avoidance, anger, cognitive interference or combination of them.[3,23] Preoccupied and fearful attachment styles also are associated with faulty symptom perception and service utilization.[24] Other psychological factors that may contribute to somatization is increased anxiety sensitivity and tendency for catastrophizing the physical symptoms. High anxiety sensitivity also influences the catastrophizing beliefs about physical symptoms by making them stronger.[25]

Family related issues

Children with somatic symptoms are more likely to have anxious mothers than healthy children. Somatization can also be a learnt behaviour. Further, parental reaction to the child's symptoms also determines the clinical picture. Over protective and anxious parents are more likely to have somatising children. Somatization can also be an indicator of underlying family disputes.[3,23,24,26,27]

Environmental factors

Negative and adverse events at home and school increase somatic symptoms in children. High academic expectations from parents, child-teacher relationship, bullying in peer group are commonly associated with stress and somatic symptoms. Sexual abuse is one important factor to be considered, as children who have undergone sexual abuse are more likely to have psychiatric consequences, including somatization.[26,27] It was also found that childhood abuse and neglect (both physical and emotional) may play causative rolein body dysmorphic disorder.[28]

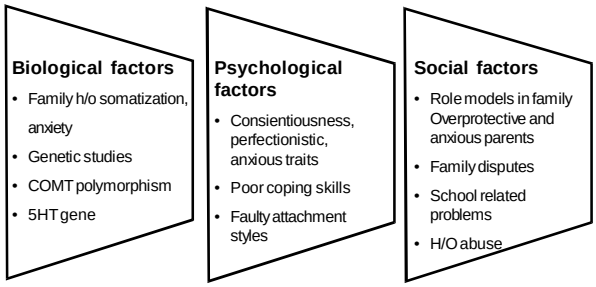

Fig. 1: Etiological factors for the children's somatic symptoms

Individual Syndromes

We have followed the DSM-5 classificatory system while describing the different somatization and conversion disorder in this chapter. In DSM-5, the term used is somatic symptom and related disorder with five subtypes which have been explained here (Table 2, 3, 4, 6, 7).

Somatic Symptom Disorder

The DSM-5 Somatic symptom disorder has replaced somatization disorder, undifferentiated somatoform disorder and somatoform pain disorder. The classic features of somatic symptom disorder are, multiple somatic symptoms and associated set of maladaptive thinking, feelings and behaviour that leads to exaggerated importance given to the symptoms and disproportionately high impairment. However, if impairing, single symptom is also

sufficient to make a diagnosis. Requirement for presence of a specific number of symptoms involving different systems like neurological, urogenital, gastrointestinal systems is eliminated in DSM-5, which was difficult to apply in children. Patients with DSM-IV TR diagnosis of hypochondriasis can be given this diagnosis if significant somatic symptoms accompany the hypochondriacal preoccupation. Patients with isolated chronic pain symptom should be given a specifier- "with predominant pain".[16] The diagnostic criteria for DSM-5 somatic symptom disorder are given in Table 2.

Table-2: Diagnostic guidelines for somatic symptom disorder as per DSM-5

DSM-5 Diagnostic guidelines for somatic symptom disorder
A. One or more somatic symptoms that are distressing and result in significant disruption of daily life.
B. Excessive thoughts, feelings, or behaviour related to the somatic symptoms or associated health concerns manifested by at least one of the following:
1. Disproportionate and persistent thoughts about the seriousness of one's symptoms.
2. Persistently high level of anxiety about health or symptoms
3. Excessive time and energy devoted to these symptoms or health concerns.
C. Although any one somatic symptom may not be continuously present, the state of being symptomatic is persistent (typically more than 6 months)
Specify if:
With predominant pain
Specify if:
Persistent
Specify current severity :
Mild
Moderate
Severe

Source: DSM-5, American Psychiatric Association

Somatic symptoms are equally common in both boys and girls before adolescence, whereas girls express more somatic symptoms after adolescence. Most common somatic symptoms are head ache, pain abdomen, fatigue, nausea, vomiting etc. DSM-IV TR undifferentiated somatoform disorder is the most common diagnosis in children.[5,18]

Children rarely present with multiple somatic symptoms. Often, they present with a single symptom, commonly pain symptom. Typically pain abdomen is located to the peri-umbilical region, worsens during day time and absent during night and on holidays. It can sometimes be associated with altered bowel habit, nausea, vomiting, and pallor. Persistent severe pain abdomen is often associated with significant stressor.

Head ache often presents with the characteristics of tension type headache, described as a dull, constant pain in frontal region. It can also co-occur with migraine, hence a detailed assessment is warranted. Fatigue, muscle-ache, neurological symptoms often begin at adolescence.

Illness anxiety disorder

Illness anxiety disorder has replaced the diagnosis of hypo-chondriasis of DSM-IV TR anxiety disorder. It is characterised by the fear of having a dreaded illness. Repeated negative medical investigations and reassurance do not solve the problem, rather strengthen the patient's preoccupation. There is no literature specifically on illness anxiety disorder in children, literature on hypochondriasis is also poor. A proxy form has been described where caretakers excessively worry over their children with normal phenomena or minor symptoms. The hypochondriasis is believed to begin in late adolescence and early adulthood, and it leads to significant health care utilization. Depression, anxiety and obsessive-compulsive disorder (OCD) are the common co-morbidities of hypochondriasis.[1,18]

Conversion disorder

Conversion disorder is characterized by single or multiple deficits or symptoms suggestive of neurological or general medical conditions, but are not corroborating with any anatomical or pathophysiological explanations.

Conversion disorders are common in Indian set up than in western population.Usually onset is abrupt and in most commonly preceded by any stressful event. Presence of several factors like – personality related (anankastic personality traits), other axis I co-morbidities (anxiety or depression), grief, abuse, perceived parental rejection, stress at home or school settings are commonly associated with conversion disorder in children and adolescents.[19]

Common presentations include pseudo seizures, syncope, abnormal movements of limbs, paraesthesia, and impaired vision etc. Children can also present with symptoms mimicking the illness of

elders in the family. General physical examination, neurological examination and relevant investigations are always non-contributory. *La belle indifference*, once thought as pathognomonic symptom of conversion disorder is uncommon in children.[1,18] Table 5 shows difference between true seizure and pseudo seizure.[29]

Table 3: Diagnostic features of illness anxiety disorder as per DSM-5

DSM-5 Diagnostic guidelines for Illness anxiety disorder
A. Preoccupation with having or acquiring a serious illness
B. Somatic symptoms are not persistent or, if present, are only mild in intensity. If another medical illness is present or there is high risk for developing a medical condition (e.g. Strong family history is present), the preoccupation is clearly excessive or disproportionate.
C. There is a high level of anxiety about health, and the individual is easily alarmed about personal health status.
D. The individual performs excessive health related behaviours (e.g., repeatedly checks his or her body for signs of illness) or exhibits maladaptive avoidance (e.g., avoids doctor or appointments and hospitals)
E. Illness preoccupation has been persistent for at least 6 months, but the specific illness that is feared may change over period of time.
F. The illness-related preoccupation is not better explained by another mental disorder, such as somatic symptom disorder, panic disorder, generalized anxiety disorder, body dysmorphic disorder, obsessive compulsive disorder, or delusional disorder, somatic type.
Specify if:
Care seeking type
Care avoiding type

Psychodynamic theories postulate that patients unconsciously "convert" their underlying psychological conflicts into the physical symptoms, and the relief obtained by doing so is called primary gain. Secondary gain is term used for the 'gains' the patients obtain from outside because of the symptoms for example excessive sympathy and protection from the family and friends, concession from work or school etc. Secondary gains act as positive reinforcements and play significant role in maintenance of symptoms.[18]

Factitious disorder

Factitious disorder is characterised by intentional production of physical/ psychiatric symptoms. Unlike conversion disorder the symptoms of factitious disorder appear to be produced intentionally with anintent of deception. Factitious disorder differs from malingering in that the former the benefits are emotional and not materialistic. In children, two types of factitious disorder are identified. One where child himself produces the symptoms and the other one where symptoms in child are produced by a care taker, called as factitious disorder by proxy. The later one is commonly known as Munchausen syndrome, and was described for the first time by Meadow.[30]

Table-4: Diagnostic features of conversion disorder as per DSM-5

DSM-5 Diagnostic guidelines for conversion disorder (Functional neurological symptom disorder)
A. One or more symptoms of altered voluntary motor or sensory function.
B. Clinical findings provide evidences of incompatibility between the symptoms and recognized neurological or medical conditions.
C. The symptom or deficit is not better explained by any medical or mental disorder
D. The symptom or deficit causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or warrants medical evaluation.
Specify symptom type
With weakness or paralysis
With abnormal movement
With swallowing symptoms
With speech symptom
With attacks or seizure
With anaesthesia or sensory loss
With special sensory system
With mixed symptoms
Specify if:
Acute episode
Persistent
Specify if:
With psychological stressor
Without psychological stressor

Source: DSM-5, American Psychiatric Association

A review of factitious disorder in youth over past 30 years described 42 cases with the age ranging from 8 to 18 years old. The majority of

Table 5: Difference between true seizure and pseudo seizure

Sl. No	Clinical features	Epileptic seizures	Dissociative seizures
1	Clinical pattern	Stereotyped and know clinical pattern	No established pattern. Movements appear purposeful.
2	Place of occurrence	Anywhere	Usually indoors, at safe places.
3	Occurrence during sleep	Yes	No
4	Sustaining injury	Common	Uncommon
5	Speech	No verbalization during seizure Stereotyped sounds may be produced	Verbalization may occur and may be emotionally charged.
6	Facial expression	Trismus in tonic phase, symmetrical twitching in clinic phase	Emotional expressions may be seen
7	Duration	Usually short (for about 70 sec)	Can occur for minutes
8	Eye gaze	Staring/ up rolled	Avoidant gaze.
9	Pupillary reaction light	Absent, usually dilated pupils	Present
10	Corneal reflex	Absent	Present
11	Plantar reflex	Up-going	Absent
12	Post ictal confusion	Present	Absent
13	EEG	May be abnormal	Usually normal
14	Serum prolactin	Increased to more than 1000 IU/ml 15-20 minutes after seizure. Returns to normal levels within 1 hour.	Normal or less than 500 IU/ml

children were females, and were above 15 years of age. Frequently reported conditions were fever, ketoacidosis, purpura, and infections. The mean duration of falsification of symptoms was around 16 months before discovery. When confronted, all younger children accepted their behaviour, whereas only 55% of the older children did so. The patients were found to be bland, flat and indifferent. Dysthymia, oppositional defiant disorder, adjustment disorder, anorexia nervosa, passive dependant personality disorder and hysterical disorder were common comorbidities. Many of them began fabricating the symptoms after some experience with medical set up. Strained family relationships and family history of psychiatric illness were common findings.[31]

In the proxy form, the caretaker, often a parent deliberately produces symptoms in children. The motives are said to be assuming a sick role, enhancing self-identity by acting as a selfless caregiver or main-taining a relationship with medical professionals, where caretaker controls doctor's attention. Care-takers initially are perceived as concerned and caring. They are considered as model care givers by the health care staff. Majority of perpetrators are mothers. Assessment of mothers, revealed frequent histories of self-harm, factitious disorder, personality disorder and drug abusers. Child may or may not be part of deception, either actively or passively. Common presentations are gastro-

Table 6: Diagnostic features of factitious disorder

Diagnostic guidelines for Factitious disorder

Factitious disorder imposed by self

A. Falsification of physical or psychological signs or symptoms, induction of injury or disease, associated with identified deception.

B. The individual presents himself or herself to others as ill, impaired or injured.

C. The deceptive behaviour is evident even in the absence of obvious external rewards.

D. The behaviour is not better explained by another mental disorder such as delusional disorder or another psychotic disorder.

Specify :

Single episode

Recurrent episode

Factitious disorder imposed on an another (Previously Factitious Disorder by Proxy)

A. Falsification of physical or psychological signs or symptoms, induction of injury or disease, in another, associated with identified deception.

B. The individual presents another individual (victim) to others as ill, impaired or injured.

C. The deceptive behaviour is evident even in the absence of obvious external rewards.

D. The behaviour is not better explained by another mental disorder such as delusional disorder or another psychotic disorder.

***Note:** The perpetrator, not the victim, receives this diagnosis*

Specify :

Single episode

Recurrent episode

Source: DSM-5, American Psychiatric Association

intestinal, cardiopulmonary, neurologic, infections, dermatologic symptoms.

A review of literature of 451 cases of factitious disorder by proxy had revealed that majority of children were diagnosed before the age of 6. Most frequent methods were suffocation, drug administration and poisoning. Most frequent presentations were apnoea, anorexia, diarrhoea, seizures, cyanosis, asthma, fever etc. about 7% of the patients had long term disabilities and 6% were dead. Among the siblings, about 25% were dead and 60% had similar suspicious symptoms. Around 30% of the perpetrators had employment or training in health and related profession. About one fourth of them had psychiatric diagnosis, commonest being depression and personality disorders. About 22% had a history of child abuse.[32]

Psychological factors affecting medical illness

This is a newly introduced diagnostic entity in DSM-5. It is well known fact that psychological problems often coexist with medical illness and affect their course and outcome, for example relationship between asthma and anxiety, peptic ulcer and stress, cardiovascular illness and depression etc. Many patient related factors like coping skills, personality traits, and adherence to medical advice affect the medical illness.

Body dysmorphic disorder

Body dysmorphic disorder has been moved from somatoform disorder to obsessive compulsive spectrum disorder in DSM-5. This clinical entity is described here as it continues to be a part of somatoform disorders (hypochondriasis) in ICD and also for the sake of comparison with other somatization disorders.

In Body dysmorphic disorder, there occurs exaggerated concern towards ones appearance and some perceived bodily defects, which usually starts during the period of adolescence and follows a chronic course.[33,34] Individuals with body dysmorphic disorder, usually engage in activities like –

- Repeated self-checking of body morphology (mirror gazing, grooming)
- Repeated assurance seeking
- Repeated consultation and doctor shopping

Perceived body image distortion produces significant psycho-social distress and may lead to depression and suicidal behaviour.[11] A series of gender specific morphological changes occurs during adolescence which may be the target symptom in adolescents affected with body dysmorphic disorder.[11] However, this disorder is not extensively studied in paediatric population and research is needed to understand this entity in children and adolescents.[11,34] Body dysmorphic disorder in paediatric population is mostly related to skin and hair, producing significant decline in performance at school and social situations.[11,34]

Table-7: Diagnostic features of Psychological factors affecting medical illness

DSM-5 Diagnostic guidelines for Psychological factors affecting medical illness
A. A medical symptom or condition, (other than mental disorder) is present.
B. Psychological or behavioural factors adversely affect the medical condition in one of the following ways:
1. The factors have influenced the course of the medical condition as shown by a close temporal association between the psychological factors and the development or exacerbation of, or delayed recovery from, the medical condition.
2. The factors interfere with the treatment of medical condition (e.g., poor adherence)
3. The factors constitute the additional well-established health risks for the individual.
4. The factors establish the underlying pathophysiology, precipitating or exacerbating symptoms or necessitating medical attention.
C. The psychological and behavioural factors in criterion B are not better explained by an another mental disorder(e.g., panic disorder, major depressive disorder, posttraumatic stress disorder)
Specify current severity:
Mild
Moderate
Severe
Extreme

Source: DSM-5, American Psychiatric Association

Assessment and Management

Children with somatic symptoms are often referred to psychiatry either by a paediatrician or a general practitioner. It is not uncommon that child is labelled as "mental" or told that "all in your mind" before referring to a psychiatrist, for the dismal of

the parents and child. Hence the first step in the psychiatric management is taking parents and child into confidence and building a rapport.

A detailed history and physical examination is important not only to rule out any organic condition but also to make a positive diagnosis of somatic symptom disorder. Points that are helpful in making a diagnosis are - symptoms not fitting into any physical diagnosis, disproportionate disability, stressors which are temporally correlating, previous history of somatic symptoms, "role model" in family etc.[26,35] Child should be encouraged to express his feelings. Methods like asking the child to write on a related neutral topic or to paint can sometimes help in identifying the stressors. Assessment of temperament of child is essential. Response to the placebo, suggestion and psychological treatment should be assessed. Parents should also be assessed to understand the parent child relationships, family dynamics, family conflicts and their understanding and attitude towards child's symptoms. Information from school is also important to know any adjustment problems at school that would have led to symptoms.[35]

Diagnosing somatoform disorders, particularly conversion disorder in paediatric population is often a challenge.[36] One should think about the long term implications of such diagnosis. The diagnosis of somatoform disorder in children and adolescents needs to be reviewed time to time as many medical conditions may present in the early days as vague, unexplained symptoms with normal investigation findings.

Some tools have been developed for the structured assessment of the somatic symptoms in children. The children's somatization inventory (CSI-35) is a 35 item scale to assess the medically unexplained symptoms. It is the most widely used scale for this purpose and is well validated for community and clinical sample. A revised version with 24 items has been introduced to make the tool concise and to improve the validity.[37] The somatic complaint list is a self-report questionnaire, which has been found suitable in children between 8 to 12 years of age in the initial validation study.[38] Soma assessment interview (SAI) is a parent interview questionnaire.[39] Functional disability index (FDI) and Chalder Fatigue Self-Report Scale are also useful tools.[40]

Management of a child with somatic symptom disorder is individualized, however the general principles are same. The goals of management are enlisted in Table 7. It is important on the part of psychiatrist to convey the message that, he accepts that, child's symptoms and suffering are real and is genuinely concerned towards them. Psychia-trist should team up with paediatrician, child psychologist, and psychiatric social worker for a comprehensive management. Psychoeducation should address the issues like mind body relationships, physical manifestation of stress but one should avoid too much psychologizing the symptoms. Child should be handled with empathy. Focus should be on reducing the symptoms and improving the functioning. Pain diaries are helpful in delineating the conditions that exuberate the pain. Appropriate use of positive and negative reinforcements should be made to enhance the functioning. Secondary gains should be identified and cut. Age appropriate functioning should be encouraged and initiated as soon as possible. Face saving methods like physiotherapy, aerobic exercise, and hot fomentation can be useful.

Table-8: Treatment goals for somatic symptoms and related disorders in children

Goals	Issues addressed
Immediate goals	Involvement of family in treatment Cessation of unnecessary medical investigation Ensuring the safety of child
Short term goals	Maintaining reasonable medical care Symptom reduction To initiate age appropriate activities
Long term goals	Appropriate (not excessive) medical care Resolution of symptoms To develop appropriate coping skills To address environmental and psychological stressors Resumption of age appropriate activities

There is limited literature on usefulness of various non-pharmacological treatments in children with somatic symptoms. School based relaxation exercise administered by a nurse was helpful in reducing tension type headache in a study by Larsson and Carlsson (1996).[41] Guided imagery was superior to routine paediatric care in a small study on children

with recurrent abdominal pain.[42] Efficacy of CBT in somatization disorders especially in recurrent abdominal pain is promising. A randomised control trail by Robins et al concluded that cognitive behavioural family therapy was superior to standard medical care and improvement persisted even after one year.[43] Cochrane systematic review on psychological therapies for recurrent abdominal pain in children concluded that, psychological treatments are effective in reducing pain intensity for children and adolescents with headache and benefits from therapy appear to be maintained. Psychological treatments also improve pain and disability for children with non-headache pain. There is limited evidence available to estimate the effects of psychological therapies on mood for children and adolescents with headache and non-headache pain.[44]

There is no convincing evidence for pharmacotherapy for somatic symptoms in children. A multicentre randomised control trial (RCT) comparing Amitriptyline and placebo in children with functional gastrointestinal symptoms found that amitriptyline was no better than placebo.[45] Cochrane review on the antidepressants for the treatment of abdominal pain related functional gastrointestinal disorders in children and adolescents found only two RCTs eligible for inclusion (one of them is described above). Both studies failed to establish superiority of amitriptyline over placebo.[46]

Despite the lack of evidence for pharmacotherapy, drugs are sometimes used in children with somatic symptoms. SSRIs are have shown possible benefits in adults with somatoform disorder, and are sometimes also used in children. Low dose tricyclic antidepressants are often used by for functional gastrointestinal symptoms and headache. Antidepressants are advised only in case of significant comorbidities of anxiety and depression.

There are no standard guidelines for management of factitious disorder. Once the diagnosis is confirmed, the members of the treatment team with best therapeutic alliance with the parent should try confronting the behaviour. The aim of confrontation is to educate the parent about the health hazards to the child. Occasionally, perpetrators may confess when confronted. If otherwise, it is not useful to continue to confront even after multiple failed attempts. Before confronting, arrangements should be made to ensure child's safety. Sometimes child needs to be separated from the parent, in that case, child's psychological problems should be promptly addressed. Relapse is a common phenomenon in factitious disorder, hence a continued relationship with the child and the family is essential.[18,47]

Psychiatrist should be an integral part of treating team for management of psychiatric factors affecting medical illness. Proper Psychoeducation, family education, supportive psychotherapy, cognitive behavioural therapy and judicial use of antidepressants and anxiolytics may be needed.

Propositions in ICD 11

Propositions has been made for somatoform disorder in ICD 11 and the beta draft of ICD 11 has been released recently in the public domain.[48] The term "Bodily distress disorder" is proposed to replace somatoform disorder in ICD-11 and it will include all the diagnostic subcategories mentioned under somatoform disorder in ICD-10, except the entity "Hypochondriasis".[49] Bodily distress disorder (BDD) has been categorised according to the severity as mild, moderate and severe BDD. A new terminology "Body integrity dysphoria" has been introduced, which refers to an entity characterized by – *intense and persistent desire to become physically disabled in a significant way.*[48] It usually has its onset in the adolescence.

Conclusion

Somatic symptoms are common in children. They cause significant morbidity, long term psychiatric consequences and significant healthcare utilization. Recurrent functional pain symptoms, non-epileptic seizures, motor and sensory conversion disorder are common presentations. Specific diagnostic guidelines for children are lacking. Management principles include cessation of unnecessary medical investigations, proper psycho education, and use of appropriate positive and negative rewards to reinforce age appropriate functioning, avoidance of secondary gains, addressing family and scholastic problems and improving functioning. There is good evidence for usefulness of CBT in children. Pharmacotherapy is to be used only in case of significant psychiatric comorbidities.

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Review Article

Personality Theories: A Brief Overview

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Introduction

The term personality comes from the Latin word persona, which means mask. Those defining personality as a mask view personality as one's public self. We select to display to the world. This definition of personality implies that important aspects of a person remain concealed for some reason. The description of the personality word has been started with the famous definition given by Allport.[1] He stated that "Personality is a dynamic organization, within the person, of those psychophysical systems that determine his unique adjustment to the environment". Personality is generally defined as individual unique and relatively stable pattern of behaviour, thoughts and emotion. More or less stable, internal factors make one person's behaviour consistent from one time to another, and different from the behaviour other people would manifest in comparable situations.[2]

Theories of Personality

a) *Type Theories:* The personality types are used to communicate certain expected behaviours based on similarities. Such efforts have been made since ancient times.

i) Charak Samhita of Ayurveda or the Indian science of medicine, the original treatise classifies people on the basis of three elements called doshas i.e., (a) vata, (b) pitta and (c) kapha.

Each of these refers to a type of temperament referred to as prakriti (nature) of the person.

ii) Hippocrates,[3] a Greek physician, who proposed a typology based on the fluid or humour.

iii) Sheldon was proposed his personality theory on the basis of body structure.[4]

Types of personality	Symptoms
a) Vata: is produced by an interaction of akasha (ether) and vayu (air)	Dry, cold, light, subtle, clear and rough
b) Pitta emerges out of an interaction of vayu and agni (fire)	Unctuous, hot, acute, fluid, acid, mobile, and poignant
c) Kapha is produced by the joint action of jala (water) and prithvi (earth)	Cold, soft, unctuous, sweet, stable and viscid

Four temperament categories	Dominance	Characteristic
Sanguine	blood	Highly talkative, enthusiastic, active, and social
Choleric	yellow bile	Extroverted, independent, decisive, and goal-oriented, and ambitious
Melancholy	black bile	Analytical and detail-oriented, and they are deep thinkers and feelers
Phlegmatic	phlegm	Relaxed, peaceful, quiet, and easy-going

Three temperament categories	Body Structure	Temperament
Endomorphic	Fat, soft and round	Relaxed and sociable
Mesomorphic	Strong musculature, are rectangular	Energetic and courageous
Ectomorphic	Thin, long, and fragile	Brainy, artistic, and introverts

b) Trait Theory of Personality

1. In the trait theories the first name is Allport.[5] Heconducted idiographic research that focused on conscious motivation and personal traits.

He proposed his theory at three levels of traits:

a) *Cardinal trait:* These are defining characteristic, in a small number of us, that dominates and shapes all of our behavior. Mother Theresa is the most cited example of a person whose life focused on altruism — benefiting others, even to her own detriment.

b) *Central trait:* These are general characteristic, between 5 and 10 of which shape much of our behavior. For example, cheerfulness and shyness can be central traits.

c) *Secondary trait:* These are those characteristic, which apparent in only certain situations. For example, being uncomfortable in confined spaces can be a secondary trait. Our unique pattern of traits determines our behavior.

2. Second prominent trait theory is given by Raymond B. Cattell.[6] He has developed a different approach to the description and analysis of personality. He relies on data collected from three sources: a) person's life record, b) self-ratings, and c) objective tests. Drawing from people's life records and self-ratings, Cattell identified major personality factors both within individuals and across people in general.

He proposed two major types of traits:

A) *Surface traits:* These are those personality characteristics which are easily seen by other people (one's outward actions).

B) *Source traits:* In the opposite of surface traits, source traits are more basic traits that underlie the surface traits

Cattell[6] distinguishes between surface traits, which are observable patterns of behavior, and source traits, which he viewed as underlying, internal traits responsible for our overt behavior. He viewed the source traits as more important. Source traits can be identified only by means of computer analysis of all the collected data.

3. Hans Eysenck[7], proposed a theory that is trait as well as type in nature. He was tried to reduce description of personality to three major genetically influenced dimensions, which everyone possesses to varying degrees. He was also used factor analysis, a statistical procedure that identifies common factors among groups of items, to simplify a long list of traits into his three dimensions:

   a) Extroversion measures our sociability and tendency to pay attention to the external environment, as opposed to our private mental experiences.

   b) Neuroticism measures our level of instability — howmoody, anxious, and unreliable we are — as opposed to stability — how calm, even-tempered, and reliable we are.

   c) Psychoticism measures our level of tough-mindedness — how hostile, ruthless, and insensitive we are — as opposed to tender-mindedness — how friendly, empathetic, and cooperative we are.

4. Paul Costa and Robert McCrae[8] proposed a latest theory in the area of personality. They have developed a five-factor model of personality, nicknamed, "The Big Five." In cross-cultural studies, the same five factors have been identified in trait ratings. The Big Five Theory includes the traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism. (Acronym OCEAN).

   i) Openness-Person's willingness to try new things/experiences

   ii) Conscientiousness- Person's organization and motivation

   iii) Extraversion- Outgoing and social

   iv) Agreeableness-Basic emotional style of a person (easygoing, friendly, and pleasant)

   v) Neuroticism-A person's emotional instability or stability (excessive worriers, overanxious, and moody).

Trait theories basically describe the personality in terms of different different traits.

c) **Psychoanalytic based theories**

Sigmund Freud[9] developed a number ofhypothetical models to show how the mind

(or what he called the psyche) works: (a) Topographic model of the psyche: how the mind is organized. (b) Structural model: how personality works. (c) Psychogenetic model of development: how personality develops.

Conscious

a) Topographic model:-In the topographic model the mind is divided into three sub-parts.

Sub-conscious

i) *Conscious:* It is the part of the mind that holds everything you are currently aware.
ii) *Preconscious:* It contains everything you could become aware of but are not

Unconscious

currently thinking about.

iii) *Unconscious:* It is the part of the mind that we cannot usually become aware of. This is the deepest part of the mind. According to Sigmund Freud[10] our all type of repressed and disturbing memories stored in the unconscious level.

c) *Structural model:* According to Freud, structure of the mind divided into three parts:
   i) *Id:* It functions in the unconscious level and it is closely tied to instinctual and biological processes. It is the primitive core from which the ego and the superego develop. It is based on'pleasure principle' the idea that all needs have to be satisfied immediately, avoiding pain and seeking pleasure, regardless of external conditions.
   ii) *Ego:* It focuses on ensuring the id's impulses are expressed effectively in the context of the real world.The ego, as a source of rationality, conforms to the 'reality principle' – delaying the discharge of energy from the id until an appropriate object or activity can be found.
   iii) *Superego:* Third structure, the superego, which provides moral guidance, embodying parental and societal values. It has two sub-systems: (a) *conscience:* It consist images of what is right and what deserves punishment – this is the basis for guilt. (b) *Ego ideal:* It consist imagesof what is rewarded or approved of this is the basis for pride.

Sigmund Freud[9] describes two types of instinct:

a) *Life instinct or Eros:* A drive for life, love, growth, self-preservation, constructive works and human propagation. Libido – energy force for sexual activities.
b) *Death instinct or Thanatos:* A drive for aggression and death and destructiveness. Death instinct If external, leads to a person toward homicide and if internal leads to the person toward suicide or self-harm.

Types of anxiety

He defines anxiety in terms of an affective and unpleasant feeling which alerts ego to the impending danger so that person can behave in an adaptive way.

i) *Realistic anxiety:* It occurs when the emotional response to real danger.
ii) *Neurotic anxiety:* It occurs when anxiety regarding the ability of control of ego on id wishes, particularly sexual and aggressive impulse.
iii) *Moral anxiety:* It occurs when ego is threatened by superego.

c) **Psychogenetic model:** In the psychogenic model he emphasize on stages of personality development. Freudgave emphasis on the childhood traumas as key to neurotic disorder during adulthood.He believed that people normally progress through five stages of psychosexual development.

i) *Oral stage (0 to18 months):* The newborn baby is completely dependent on others for the satisfaction of all needs. During this stage body pleasure is centered on the mouth. The baby gets satisfaction from sucking, eating, and biting in the course of feeding.
ii) *Anal stage (18 to 3 years):* It is characterized by a shift in body pleasure to the anus. It is reflected by a concern with the retention and expulsion of faces. This is why Freud felt that it is during toilet training a child has

the first experience with externally imposed control. The pattern of toilet training, therefore, may influence later personal qualities and conflicts experienced by the person.

iii) *Phallic stage (3 to 6 years):* In this stage the child observes the difference between male and female and experiences what Freud called the Oedipus complex. This kind of attraction leads to serious conflict, which he termed as Oedipus and Electra Complexes in boys and girls, respectively.

iv) *Latency stage (7 to puberty):* This stage follows the phallicstage; there is very little explicit or overt concern with sexuality. The child represses his or her memories of infantile sexuality and forbidden sexual activity.

v) *Genital stage (puberty and above):* During this stage the personattains maturity in psychosexual development. The person becomes capable of genuine love for other people and can achieve adult sexual satisfaction. He or she may relate to others in a heterosexual fashion. However, if journey towards this stage is marked by excessive stress or overindulgence, it may cause fixation to an earlier stage of development.

Carl Gustav Jung Analytical Psychology

Definition of personality: Personality as wholeness or unity which helps to adapt with physical environment and society bythought, feelings, behavior and conscious and unconscious process. Jung believed that personality is shaped by the cumulative experiences of past generations extending back to our evolutionary past.

a) *Ego:* It is the conscious mind, responsible for our feeling of identity and continuity.
Structure of personality: According to Jung's[10] analytic theory of personality, the psyche—or whole personality—consists of interacting systems including the ego; the personal unconsciouswith its complexes; the collective unconscious with its archetypes, attitudes, and functions; and the self.

b) Personal unconscious: it is similar to Freud's preconscious and unconscious, a storehouse of all our own past memories, hidden instincts, and urges unique to us. It contains complexes, which are groups of associated, emotional, unconscious thoughts that significantly influence our attitudes, and associations that act as driving forces.

c) Collective unconscious is the powerful and influential system of the psyche that contains universal memories and ideas that all people have inherited from our ancestors over the course of evolution. The inherited memories are archetypes or common themes found in all cultures, religions, and literature, both ancient and modern.

Four especially important archetypes in Jung's theory are known as persona, shadow, animus &anima and self.

i) *Persona* – It is named after the mask worn by ancient Greek actors, or public personality, mediates between the ego and the real world.

ii) *Shadow* – A reverse image of the persona contains traits that are unacceptable to the persona, whether they are positive or negative.

iii) *Animus* – It is the masculine side of females while the anima is the feminine side of males.

iv) *Self* - It is the innate potential for wholeness, an unconscious ordering principle directing overall psychic life that gives rise to the ego, which compromises with and is partly shaped by external reality.

Psychic energy – the energy by which the work of personality is performed is called psychic energy. Principle of opposite- aspolarity in physical energy like polarity is in the wish, affect of the person. i.e. affect of pleasant and unpleasant. Principle of equivalence-if energy is expended in bringing about a certain condition, the amount expended will appear elsewhere in the system. Principle of entropy-states when two bodies of different temperatures are placed in contact with another heat will pass from the hotter to the colder body.

Alfred Adler Individual Psychology

While Freud emphasized sex, and Jung emphasized ancestral thought patterns, Adler emphasized

social interest as the primary determinant of behavior. He made consciousness the center of personality in his individual or ego theory of personality.[11]

Personality – Adler saw individual as unique. He also postulated a principle of dynamism, which in every individual is future directed and moves toward a goal. Once the goal is established, the psychic apparatus shapes itself toward attainment.

Subjectivity of perception – Humans are motivated by their expectation of the future than by experiences of the past. Personality is not determined by external cause rather by subjectivity perception. Human behavior are determined by the future expectation

Fictional Finalism – Adler called this fictional finalism. Many people behave as if there were a heaven or a hell in their personal future. Of course, there may be a heaven or a hell, but most of us don't think of this as a proven fact. That makes it a "fiction" in Vaihinger's and Adler's sense of the word. And finalism refers to the teleology of it: The fiction lies in the future, and yet influences our behavior today

Style of life: Adler's self is a personalized, subjective system that interprets and makes meaning from our experiences, trying to fulfill our unique style of life, the system principle by which the individual personality functions.Striving for success:Our creative self-constructs our personality out of the raw material of heredity and experience. Adler believed that people strive for superiority to be altruistic, cooperative, creative, unique, aware, and interested in social welfare. He thought that we all try to compensate for inferiority complexes based on what we see as physical, intellectual, or social inadequacies. Social interest:Social interest is the inevitable compensation for all of our natural weaknesses. Adler thought that birth order was an important factor controlling personality. Birth order: He hypothesized that the oldest child (who is prepared for the appearance of a rival) is likely to develop into a responsible, protective person; the middle child is likely to be ambitious and well adjusted; and the youngest child is likely to be spoiled.

Erik Erikson's Psychosocial Theory

Erikson[12] developed a theory of personality development with a focus on social adaptation. He calls attention to the problems of social adaptation. With advancing age we face a wider range of human relationships. The solution of problems faced during the eight psycho-social stages determines adult development. His emphasis on social and cultural forces is crucial as it distinguishes him from Freud. He also viewed development as a life-long process. In this process ego identity is central. His concept of identity crisis of adolescent has drawn considerable attention. Erikson believed that "human personality in principle develops according to steps pre-determined in the growing person's readiness to be driven toward, to be aware of, and to interact with, a widening social radius". On the other hand, the society "in principle, tends to be so constituted as to meet and invite this succession of potentialities for interaction and attempts to safeguard and to encourage the proper rate and the proper sequence of their enfolding." Thus young people must generate for themselves some central perspective and direction that gives them a meaningful sense of unity and purpose. Favorable outcomes of each stage are sometimes known as "virtues", a term used in the context of Erikson's work as it is applied to medicine, meaning "potencies."

The Erikson life-stage virtues, in order of the eight stages in which they may be acquired, are:

I. ***Basic trust vs. basic mistrust:*** This stage covers the period of infancy. 0-1 year of age. - Whether or not the baby develops basic trust or basic mistrust is not merely a matter of nurture. It is multi-faceted and has strong social components. It depends on the quality of the maternal relationship. The mother carries out and reflects their inner perceptions of trustworthiness, a sense of personal meaning, etc. on the child. If successful in this, the baby develops a sense of trust, and virtue named 'hope' is developed which "forms the basis in the child for a sense of identity".
II. ***Autonomy vs. Shame*** – It around early childhood around 1–3 years old- Introduces the concept of autonomy vs. shame and doubt. During this stage the child is trying to master toilet training.
III. ***Initiative vs. Guilt*** - Preschool / 3–6 years - Does the child have the ability to or do

things on their own, such as dress him or herself? If "guilty" about making his or her own choices, the child will not function well. Erikson has a positive outlook on this stage, saying that most guilt is quickly compensated by a sense of accomplishment. After successful completion of this stage child has developed 'purpose' virtue.

IV. ***Industry vs. Inferiority:*** School-age / 6-11. Child comparing self-worth to others (such as in a classroom environment). Child can recognize major disparities in personal abilities relative to other children. Erikson places some emphasis on the teacher, who should ensure that children do not feel inferior. In the successful completion of this stage the virtue is competence has been developed.

V. ***Identity vs. Role Confusion:*** - Adolescent / 12 years till 18. Questioning of self. Who am I, how do I fit in? Where am I going in life? Erikson believes, that if the parents allow the child to explore, they will conclude their own identity. However, if the parents continually push him/her to conform to their views, the teen will face identity confusion. Fidelity virtue has been developed.

VI. ***Intimacy vs. isolation:*** - This is the first stage of adult development. This development usually happens during young adulthood, which is between the ages of 18 to 35. Dating, marriage, family and friendships are important during the stage in their life. By successfully forming loving relationships with other people, individuals are able to experience love and intimacy. Those who fail to form lasting relationships may feel isolated and alone.

VII. ***Generativity vs. stagnation:*** - It is the second stage of adulthood and happens between the ages of 35-64. During this time people are normally settled in their life and know what is important to them. A person is either making progress in their career or treading lightly in their career and unsure if this is what they want to do for the rest of their working lives. Also during this time, a person is enjoying raising their children and participating in activities, that gives them a sense of purpose. If a person is not comfortable with the way their life is progressing, they're usually regretful about the decisions and feel a sense of uselessness.

VIII. ***Ego integrity vs. despair:*** - This stage affects the age group of 65 and on. During this time an individual has reached the last chapter in their life and retirement is approaching or has already taken place. Many people, who have achieved what was important to them, look back on their lives and feel great accomplishment and a sense of integrity. Conversely, those who had a difficult time during middle adulthood may look back and feel a sense of despair. Wisdom virtue is emerging in this stage.

Erikson's research suggests that each individual must learn how to hold both extremes of each specific life-stage challenge in tension with one another, not rejecting one end of the tension or the other.

Karen Horney

Horney brought a feminist perspective to psychoanalytic theory and sharply attacked the male bias, she saw in Freud's work. Her counterpart to Freud's penis envy in females was the male's womb envy or desire to procreate. She thought that males and females both are envious of attributes of the other sex, but that women were more envious of men's societal status than their penises. Horney proposed that youngsters feel helpless and threatened, and learn to cope by showing affection or hostility toward others, or by withdrawing from relationships.Adults who use all three strategies are healthy, whereas according to her theory, using only one strategy leads to mental illness.[13]

Needs of child hood: Horney believed that there are two needs are important in childhood: satisfaction need and safety need.

Basic anxiety: these are the feelings of loneliness and helplessness which is connected to the repression of hostility.

Neurotic needs: recurrent failure becomes parts of personality which leads to neurotic needs.

These 10 neurotic needs can be classed into three broad categories:

1. *Needs that move you towards others:*

These neurotic needs cause individuals to seek affirmation and acceptance from others and are often described as needy or clingy as they seek out approval and love. The need under this category areNeed for Affection and Approval, Need for a Partner, and Need for Personal Admiration.

2. *Needs that move you away from others:* These neurotic needs create hostility and antisocial behavior. These individuals are often described as cold, indifferent, and aloof.The neurotic needs under this category areNeed to Restrict One's Life, Need for Self-Sufficiency and Independence.
3. *Needs that move you against others:* These neurotic needs result in hostility and a need to control other people. These individuals are often described as difficult, domineering, and unkind. The needs under this category are Need for Power, Need to Exploit Others, Need for Prestige, Need for Personal Achievement, and Need for Perfection and Unassailability.

d) **Humanistic Theories of Personality**

Abraham Maslow's Holistic Dynamic Theory[14]: Trained as a behaviorist in the 1920s, Maslow thought that behaviorism could not account for his observations of developing children. He asserted that we are born good and move toward self-actualization as our goal.

i) *The physiological needs*. These include the needs people have for oxygen, water, protein, salt, sugar, calcium, and other minerals and vitamins. Also, there's the needs to be active, to rest, to sleep, to get rid of wastes (CO2, sweat, urine, and feces), to avoid pain, and to have sex.

ii) *The safety and security needs*. When the physiological needs are largely taken care of, this second layer of needs comes into play. One will become increasingly interested in finding safe circumstances, stability, and protection.

iii) *The love and belonging needs*. When physiological needs and safety needs are, by and large, taken care of, a third layer starts to show up. One begin to feel the need for friends, a sweetheart, children, affectionate relationships in general, even a sense of community.

iv) *The esteem needs* Maslow noted two versions of esteem needs, a lower one and a higher one. The lower one is the need for the respect of others, the need for status, fame, glory, recognition, attention, reputation, appreciation, dignity, even dominance. The higher form involves the need for self-respect, including such feelings as confidence, competence, achievement, mastery, independence, and freedom.

v) *Self-actualization:* is reaching toward the best person one can be.

Rogers' self-theory

He proposed the self-theory,[15] an organized, consistent set of beliefs andperceptions about us, which develops in response to our life experiences. Experiences that are inconsistent with our self-concept cause us to feel threatened and anxious. If we are well adjusted, we can adapt by modifying our self-concept. Rogers believed that we are all born with a need for unconditional positive regard, for acceptance and love from others independent of how we behave, and positive self-regard from ourselves. When positive regard is not unconditional, conditions of worth dictate behaviors that cause us to approve or disapprove of ourselves. The difference between our real self, and what Rogers calls the ideal self, or what we think society wants, is called incongruence. To become fully functioning (Rogers' term for self-actualization), we must learn to accept ourselves (unconditional positive self-regard) and unite the real and ideal selves into one again.

e) **Behavioral Theory of Personality**

i) Skinner was an influential behavioral psychologist of the last half century. As a result of his observations of experimental studies with pigeons, rats, people, and a variety of other organisms, Skinner developed his operant conditioning theory. Skinner maintained that behavior is personality. The environment shapes who we become, and who we become is determined by the contingencies of reinforcement we have experienced. If we

change someone's environment, we change his/her personality.[16]

ii) George Kelly's Personal Construct Theory. The primarily cognitive theories of personality, the personal-construct theory of engineer and psychologist George Kelly[17] is the best known. He thought that, like scientists, we all try to make sense of our world by generating, testing, and revising hypotheses about our social reality, called personal constructs. We develop personal constructs, for example, when we consider how someone is similar to or different from someone else. Our personal constructs are a set of bipolar categories we use as labels to help us categorize and interpret the world.For example, our personal constructs can include happy/unhappy, energetic/ inactive, selfish / generous, etc. We apply our personal constructs to all of the situations we are in, and revise them when they are not accurate. Our pattern of personal constructs determines our personality. People who use few constructs tend to stereotype others. People who use too many tend to have difficulty predicting other people's behavior.

iii) Bandura[18] thinks that we learn more by observational learning than by operant conditioning.He explains behavior using his concept of reciprocal determinism, which states that the characteristics of the person, the person's behavior, and the environment all affect one another in two-way causal relationships. The person includes personality characteristics, cognitive processes, and self-regulation skills. The person's behavior includes the nature, frequency, and intensity of actions. The environment includes stimuli from the social or physical environment and reinforcement contingencies.According to Bandura, self-efficacy is the major factor in how we regulate our lives. Self-efficacy is our belief that we can perform behaviors that are necessary to accomplish tasks, and that we are competent. Bandura has extended his theory to behavior of the individual in groups. Collective efficacy is our perception that with collaborative effort, our group will obtain its desired outcome.

iv) Julian Rotter's sociallearning theory is focused on locus of control, the degree to which we expect that a reinforcement or outcome of our behavior is contingent on our own behavior or personal characteristics, is under the control of others, or is unpredictable. Those with an internal locus of control think they control and are responsible for what happens to them—for example, their hard work gets rewarded[19].

Conclusion

All personality theories stress the importance of experiences, particularly childhood experiences, in shaping and influencing personality. They differ, of course, in the precise dynamics of how experiences contribute to personality development and change. Whereas the effects of experience take center stage in personality theories, physiological factors are normally given only a secondary role. Though some theories mention heredity and other biological factors (Eysenck's theory in particular), the classic theories have mostly ignored biological sources as contributors to personality. The personality theorist attempts to describe what all humans have in common (human nature), what some have in common, and the uniqueness of each individual (individual differences). A comprehensive explanation of personality would specify the relative importance of genetics, traits, sociocultural determinants, learning, existential– humanistic considerations, unconscious mechanisms, and cognitive processes.

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Review Article

Preclinical Concepts of Depression

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Introduction

Health is pivotal for the growth, development of every individual and is vital for a happy and healthy life anywhere in the world. The World Health Organization [WHO] definition of health includes physical, social, spiritual and mental health, and not merely the absence of disease.[1] The maxim, "there is no health without mental health" underlines the fact that mental health is an integral and essential component of health.[2] Due to outcome of technological advancement, changing lifestyles, biological clock variations etc. diseases like, common mental disorders (CMDs), depression, alcohol use, suicidal behaviors, anxiety, drug use, sleep disorders and several others are on the rise.[3] Disorders related to brain affect everyone, irrespective of age, gender, residence and lifestyles, even though some of them are at a higher risk for certain illnesses. These CMDs are neglected by individuals and families and ignored till they become severe. According to National Mental Health Survey (NMHS) 2015 the prevalence of depression for current, life time was 2.7% and 5.2%. This indicated that, nearly 1 in 40 and 1 in 20 suffer from past and current depression, respectively. It was reported to be more in females, in the age-group of 40-49 years and among people in urban metros, also high rates were reported among the elderly (3.5%).[2] WHO defines depression as a CMD which, is characterized by persistent sadness, lack of interest and pleasure, fluctuations between feelings of guilt and low self-esteem, as well as sleep and/or appetite disorders that affect activities of daily living? These manifestations occur in the different types of depression and are distinguished in terms of intensity, duration and mode of presentation (WHO, 2017).[4] "WHO ranks depression as the fourth leading cause of disability worldwide andestimates that by 2020, it will be the second leading cause.[5] Indians are among the world's one of the most depressed people. The average age of depression is 31.9 years, 18.8 years, 22.7 years in India, China and US respectively.[5] Aim of this review is to assemble all possible information related to depression including definition, types,symptoms, causes, mostly concentrating upon preclinical areas anatomy, physiology and biochemistry of depression.

Types of depression

Major depression disorders (MDD) not a single disorder but has many differing phenotypic presentations that have features of many forms, just like other illnesses, such as heart disease and diabetes. However, important is that within each of these types, there is variety in the number, timing, severity and persistence of symptoms and also differences in how individuals experience depression depending on age, gender etc. (Table 1)

Depression not only causes great mental agony but also intrudes upon elementary biological processes that regulate inflammation, coagulation, metabolism, autonomic function, neuroendocrine regulation, sleep, and appetite.[9-12] These disturbances are likely to contribute to the premature coronary artery disease premature osteoporosis and the doubling of mortality in patients with major depression at any age independent of suicide, smoking, or significant physical illness.[13-17]

Etiology[18-20]

- Stressful environment
- Inheritance - Some types of depression run in families, indicating that a biological

Table-1: Types of Depression

1. **Melancholic:** hyper arousal, anxiety, feelings of worthlessness and hopelessness, deficiency of self for future satisfaction in relationships or work. Prevents experience of pleasure in one's achievement.[6] Alterations in a multiple system affecting inflammation and metabolism. A diurnal variation in the severity of depressed mood, which is most severe early in the morning.[7] Melancholic's marks evidence of an activated stress system. Signs of hyperarousal: hypercortisolism, suppression of the reproductive and growth hormones, insomnia.
2. **Atypical depression:** Patients often seem to shut off from themselves. Associated with a disturbing sense of disconnectedness and emptiness, usually complains of a cognitive and mental tiredness and avoids others. Neurovegetative symptoms - lethargy, fatigue, excessive sleepiness, increased food intake, weight gain.[8]
   Both atypical and melancholic depressions have **Anhedonia** (*inability to feel pleasure in normally pleasurable activities)*. **Dysphoria** (state of unease or generalized dissatisfaction with life)
3. **Major depression (MD):** characterized by a combination of symptoms that last for at least two weeks, with sad and/or irritable mood. Interfering with the ability to work, sleep, eat and enjoy other delightful activities. Disabling episodes of depression can occur once, twice, or several times in a lifetime.[5]
4. **Dysthymia:** Involves long-term (chronic) symptoms that prevent the affected person from functioning at "full steam" or from feeling good but do not disable him/her[5]. Less severe but usually longer lasting type of depression
5. **Bipolar disorder (manic depression):** Group of mood disorders that were formerly called manic-depressive illness or manic depression, involve cycles of mood that include at least one episode of mania or hypomania and may include episodes of depression. Mania affects thinking, judgment, and social behavior that cause serious problems and embarrassment in society. Shows a particular pattern of inheritance. Mostly chronic and recurring.
6. **Postpartum depression (PPD):** State that describes physical and emotional changes occurring in women after delivery of a child. Can happen after the birth of any child, not just the first child. Often keeps a woman from doing the things she needs to do every day. PPD are of different kinds - **"BABY BLUES" -** sudden mood swings, crying for no reason, feeling impatient, irritable, restless, anxious and lonely. May last for few hours or up to one to two weeks after delivery.[5] **Postpartum psychosis** is a very serious mental illness, it happens quickly, often within the first three months after childbirth. Depression causes them to lose touch with reality, have auditory hallucinations, delusions as well.

vulnerability to depression can be inherited.

- An external event- A serious loss (death), chronic illness, difficult relationship (divorce), financial problem, or any unwelcome change in life patterns can trigger a depressive episode.
- A combination of all above (genetic, psychological and environmental factors).
- Regardless of ethnicity, men appear to be particularly sensitive to the depressive effects of unemployment, divorce, low socioeconomic status.
- Physical, emotional or sexual abuse- either as a child or in females.
- Specific medications- used in treatment of high blood pressure, cancer, seizures, extreme pain and to achieve contraception can result in depression.

Individuals with anxiety, attention deficit hyperactivity disorder (ADHD), substance abuse (Alcohol or drug abuse), and developmental disabilities are more prone.

Clinical features of major depressive disorder are mentioned in Table No. 2[23-27]

Anatomical changes in depression

Structural and functional changes in MDD have been reported especially in the brain structures related to emotionalprocessing and mood regulation.[28] In MDD patients, morphological abnormalities have been reported including volume reduction in several brain structures such as the hippocampus, basal ganglia, anterior cingulate cortex (ACC), orbitofrontal cortex (OFC), and dorsolateral prefrontal cortex (DLPC), decreased cortical thickness, decrease in gray matter volume, and deterioration in white matter integrity.[29,30] These volume changes in regions are thought to be part of the network and pathways of neurons involved in depression. Meta-analyses show that the volumes of both the left and right hippocampus decrease even in the first episode of depression.[31] There are also reports of reversal in decreased hippocampal volume with treatment of antidepressants or ECT in the patients with depression.[32,33] Volume changes in the hippocampus therefore may be a potential diagnostic marker in depression. Patients with depression exhibit activity changes in areas such as the OFC, DLPC, ventromedial prefrontal cortex (VMPC), insula, amygdala, and ACC, all are found to be associated with functions such as the regulation of emotions, cognitive control, and reward

Table-2: Clinical features of major depressive disorder

Symptoms	General	Children	Teenagers	Elder
Sadness/ mood swings	present	present	present	present
Irritability/anger	present	present	present	present
Changes in appetite	decreased	Not common	Present/higher risk of obesity	may be caused by other illnesses
Insomnia / excessive sleeping	Both	Not common	common	With other disorder
Indecisiveness/lack of concentration	present	present	present	Present due to age also
Memory loss	present	Schoolwork suffers	Work suffers	Present due to age also
Fatigue/ tiredness	present	present	present	present
Suicidal thoughts/attempts	May be	—	—	Males at high risk
Sexual drive	reduced	—	—	—
Special features	—	behavior problems (ADHD)	Antisocial behaviour	Antisocial behaviour

processing.[34,35] Patients with MDD exhibit hypo-active responses to emotional stimuli in the frontal regions and hyperactive responses in the limbic regions.[30] For example, depressed patients show an increased activity in the amygdala, ventral striatum and medial prefrontal cortex and decreased activity in the dorsal prefrontal cortex when looking at frightened or sad face images.[36-38] In earlier studies, frontal hypo-metabolism was found before treatment and the reversal with treatment could possibly be the best predictor of treatment response to both antidepressants and cognitive behavioral therapy.[39]

Physiological changes in depression

Hypothalamus-pituitary-adrenal (HPA) axis system - Depressive disorders resemble the physiology of chronic stress. Disorders of the HPA axis are observed in 50–75% of patients with diagnosed depression.[40] The following status is found: increased concentration of glucocorticoids in plasma, urine and cerebrospinal fluid, changes in the daily profile of glucocorticoid secretion with more frequent and longer periods of secretion, increased secretion of glucocorticoids in response to ACTH, an increase in the volume of hypophysis and adrenal glands.[41,42] In the patients with a tendency to dwelling upon unpleasant events the level of cortisol is higher than in a comparative group of healthy subjects.[43] The hippocampus is a structure of the brain which is particularly susceptible to stress-induced functional changes and dysregulation of the HPA axis. In such cases, a drop in the expression of the brain-derived neurotrophic factor (BDNF), deterioration of long-term potentiation (LTP), and inhibition of neurogenesis in the dentate gyrus (DG) are observed.[42] The series of physiological and behavioral programs are responding in acute danger. These will enhance chances of survival during life threatening situations which includes tachycardia, increase in blood pressure and blood flow to the brain and to the stressed body site, breakdown of tissue and the mobilization of fuel. Inhibition of functions like feeding, sleep, sexual behavior, growth and reproduction are done, which are likely to diminish the possibility of surviving any emergency. Fear-related behaviors predominate during stressful situations and are crucial for survival during emergencies. There is rapid use of simple, well-rehearsed behavioral and cognitive responses which are simple and speedy. More complex, new or untested responses are inhibited that require considerable time to assemble.[44] Morale is maintained by stimulating the mesolimbic dopaminergic reward system during the acute crisis.

Inflammatory and prothrombotic status- During exposure to stressmultiple systems are set to produce an acute inflammatory response, representing a premonitory readying of the immune system in case of possible acute injury during a threatening situation. Acute phase response is activated by Nor-Epinephrine (NE) and other mediators, of the innate immune system. Multiple inflammatory mediators stored in visceral fat are also released, including interleukin-6 (IL- 6). C-reactive protein (CRP) and serum amyloid A (SAA) are among the two best-known proinflammatory mediators of the acute phase response,[45] while fibrinogen is an important procoagulant compound. Duringthe stress, a prothrombotic state is developed; a promontory procoagulant state is established

so as to prevent a possible hemorrhage. Plasminogen activator inhibitor-1 (PAI-1), is released by visceral fat, in the acute stress response. Insulin is also a proinflammatory compound.[7]

Insulin Resistance - Acute insulin resistance is also an intrinsic element of the stress response. Insulin resistance is caused by stress mediators such as cortisoland cytokines. Ininsulin resistance, insulin dependent cells, such as muscle and fat, have less glucose transferred across their cell membranes according to circulating insulin, so that plasma glucose levels increase. This is beneficial to the critical cells (brain, immune system and the breast) that do not depend upon insulin for glucose transport. Thus, during various emotional stress and/or infections, increased glucose need is initiated and sustained in insulin-independent structures of the brain and immune system.[7]

Biochemical Pathways in depression

Corticotrophin and Cortisol pathway in Depression – Corticotropin-releasing hormone (CRH) is responsible for the regulation of ACTH release, which is related to the HPA axis and associated with neurotransmission and autonomic, immunological, neuroendocrine and cardiovascular responses.[46] In anterior pituitary; CRH stimulates ACTH release which acts on the adrenal cortex promoting the release of cortisol (involved with stress and adrenaline release), estrogen and mineralocorticoids into the bloodstream. The CRH system contributes to the transduction of many of the components of the stress response. Two main components of the CRH system are the amygdala and hypothalamic CRH systems. The amygdala CRH system is largely responsible for the activation of anxiety and fear related behaviors and CRH antagonists block fear conditioning. The hypothalamic CRH system is responsible for the regulation of the HPA axis and contributes to the activation of the LC-NE system. The hypothalamic CRH systems consist of three descending pathways as depicted in Figure 1. The pathophysiology of stress is similar to that of major depression, where in both cases there is decreased appetite, sleep disturbances and hypervigilance. Reduced libido and psychomotor changes in depression are associated with the release of CRH. MDD is associated with abnormal release of CRH and deregulation of the HPA axis, consequently, increased release of ACTH, in addition to excessive secretion of cortisol (hypercortisolemia).[47]

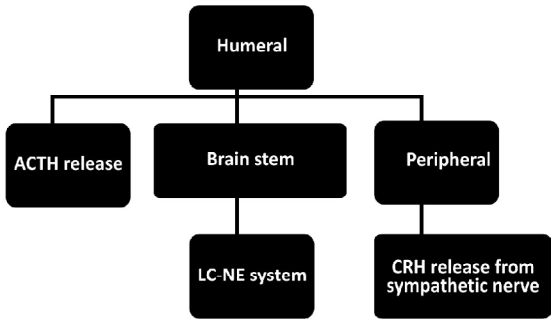

Fig. 1: Descending pathways of CRH system

Locus Ceruleus-Norepinephrine (LC-NE) Systems -The LC-NE system is a general alarm system for the brain and increases the signal-to-noise ratio in key areas that regulate the stress response. It has many effects similar to those of CRH system, such as the intense arousal, inhibition of neurovegetative functions, and it reciprocally activates the amygdala and hypothalamic CRH systems. The amygdala CRH system also contributes to the activation of the hypothalamic CRH system and the LC-NE system.[7]

The kynurenine pathway - Hyperactivity of the HPA axis and dysregulation of the immune system are the source of irregularities in the activity of the kynurenine pathway (transform tryptophan into two essential compounds engaged in mood regulation, i.e., serotonin and melatonin).[48] Based on the kynurenine pathway hypothesis of depression etiology, inflammatory factors cause excessive activation of indoleamine-2,3-dioxygenase (IDO), an enzyme present in microglia, astrocytes and neurons.[49] This enzyme catabolizes tryptophan, into kynurenine (KYN) which is then converted to neurotoxic quinolinic acid in the brain, which increases the risk of neurodegenerative processes. In this way, IDO reduces the amount of tryptophan available for the production of serotonin,[49] which is directly linked with the etiology of depression. Quinolinic acid binds to N-methyl D-aspartate (NMDA) receptors. Thus, because of the pro-inflammatory cytokines inducing IDO, depression may develop as a result of the decrease in serotonin levels due to reduced tryptophan on the one hand and glutamatergic neurotoxicity on the other as

shown in Figure 2.

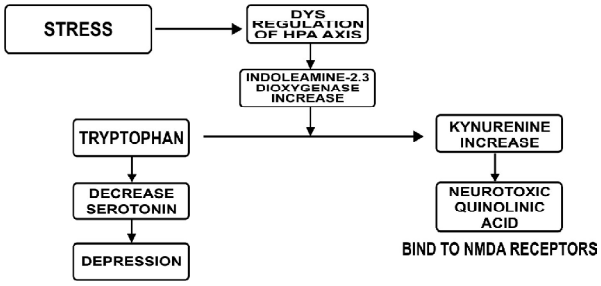

Fig. 2: Biochemistry of Depression

Enzymes of inflammation - Manganese Superoxide Dismutase (MnSOD), Myeloperoxidase (MPO), and inducible Nitric Oxide superoxide synthase (iNOS) are among most popular enzymes of inflammation which take part in the etiology of recurrent depressive disorders (RDD). These enzymes actively engage in the production of free radicals, as well as damaging proteins, fatty acids and cellular DNA leading to brain damage through neurogenesis weakening as well as amplification of neurodegenerative processes.

Cytokines and inflammatory markers - The neuroendocrine and immune systems play an important role in stress response. Therefore, inflammatory markers have been extensively investigated in stress-related disorders and depression. Inflammatory mediators have been found to affect many factors (monoamine and glutamate neurotransmission, glucocorticoid receptors (GRs) resistance, and hippocampal neurogenesis) that are thought to be important in the etiopathogenesis of MDD. This suggests that inflammatory markers may be used as a marker for the diagnosis and treatment response of depression. Cytokines are members of the interleukin (IL) family. They are produced by macrophages, natural killer cells, and T lymphocytes. Cytokines are classified as pro-inflammatory or anti-inflammatory. IL-1, IL-6, and tumor necrosis factor α (TNFα) are known as pro-inflammatory cytokines, and IL-4, IL-10, and IL-13 are known as anti-inflammatory cytokines.[50] Cytokines play a role in the maintenance of normal brain function and development by supporting neuronal integrity, neurogenesis, and synaptic remodeling. It has been reported that the cytokines released by peripheral immune cells and adipose tissue enter the central nervous system (CNS) through some regions of the blood-brain barrier or by the active reuptake mechanism and also affect behavioral responses.[51] It is suggested that inflammatory variables may lead to depression by (i) affecting neurotransmitters, (ii) decreasing serotonin and inducing glutamate toxicity by stimulating IDO in glial cells, (iii) suppressing neurogenesis by decreasing BDNF activity, or (iv) increasing HPA axis activity.[50,51,52] Stress and inflammatory cytokine activation have been reported to adversely affect neurogenesis and neuroplasticity.[53,54] Cytokines such as TNFα and IL-6 exert a direct suppressive effect on hippocampal neurogenesis.[55,56] Increased levels of cytokines stimulate the HPA axis. The effect of cytokines on the HPA axis may be through direct through stimulation of the CRH or through altering the GR expression to induce GR resistance.[57] Most changes in depression are found in proinflammatory cytokines such as IL-1, IL-6 and TNFα, and C - reactive protein (CRP).[58] It has been reported that serum levels of IL-1, IL-6, and TNFα and the messenger ribonucleic acid (mRNA) expressions of these in peripheral cells are increased in patients with MDD.[59,60]

Neurotransmitter systems - The disturbance of the three mono-amine neurotransmitter systems, serotonin (5-HT), NE, and dopamine (DA) systems may be present in diverse neural circuits in different brain regions. Also, the disturbance of these monoamine neurotransmitters may even affect the function of their receptors and the downstream receptors.

5-HT (Serotonin) system - The reduction and excess of 5-HT in the brain may play an important role in the regulation of the emotional condition of the disease. Disturbances in the synthesis, release, transport, and retake of 5-HT may aggravate depression. It is found that reserpine interferes with synaptic vesicle of serotonin, it depletes brain stores of 5-HT, and increases the urine concentrations of 5-HT major metabolite 5-hydroxyindoleacetic acid (5-HIAA), therefore producing depression in humans.[61] These findings support that 5-HT systems are a biochemical basis for MDD. 5-HT deficiency in the brain may augment negative emotions in MDD, including depressive mood, self-accusation and criticism, disgust, fear, anxiety, aggression, irritability and loneliness. Previous studies found that

serum 5-HT concentrations in patients with MDD were significantly lower than those in healthy controls.[62,63] Long-term reduction of serotonin synthesis may contribute to high susceptibility of MDD. 5-HT produces its physiological functions through the binding and interaction with multiple 5-HT receptors. Seven families of 5-HT receptors, including 5-HT1 to 5-HT7 receptors with their subtypes, have been identified.[64,65] Numerous studies have found that abnormalities of 5-HT1 (5-HT1A, 5-HT1D) and 5-HT2 (5-HT2A, 5-HT2C) receptors in the CNS may be responsible for the manifestation of MDD. Postmortem and neuroimaging studies informed that patients with MDD exhibited elevated density and/or activity of 5-HT1A auto receptors compared with healthy controls.[66,67] Studies have proven sensitivity of postsynaptic 5-HT1D receptors and a distinctly higher distribution of 5-HT1D receptors in the globus pallidus in patients with MDD and/or suicide victims.[68,69] A meta-analysis reported reduction in 5-HT1A receptor binding in the insula, raphe nuclei, hippocampus, occipital cortex, and anterior cingulate cortex in patients with MDD.[70]

NE (Norepinephrine) system - Precursors of tyrosine and NE ingest NE into the noradrenergic nerve endings by tyrosine transporters. In 1979, Zis et al proposed that depressive symptoms were caused by the decrease of NE in the CNS.[71] NE reduction in the CNS is associated with reduction of positive emotions in patients with MDD, (decrease in pleasure, interest, happiness, alertness, energy and loss of confidence). On the contrary, the symptoms of anxiety were assumed to be caused by hyperactivity of NE in theCNS. During stress, CRH can activate the NE pathway in the locus coeruleus-temporal hippocampal area, which releases NE and induces alertness and anxiety symptoms.[72]

DA (Dopamine) system - DA is a neurotransmitter in the hypothalamus and pituitary which is a key neurobiological substrate for reward, concentration, motivation, psychomotor speed, and the ability to experience pleasure, and also play a role in the modification of emotional behavior.[64] Dopamine activity has been verified to be involved in depressive[73] or anxious processes. A study has linked reward-related, motivated behaviors with the mesolimbic DA system.[74] Injuries of these functions are all well-known characteristics of MDD. Immediate bidirectional control (inhibition or excitation) of specified midbrain DA neurons modifies multiple independent depressive symptoms. This process affects depressive symptoms which further alter the DA neural encoding of action in the limbic circuits. Moreover, poor functioning of DA neurons may cause depressive symptoms. Patients of MDD were found with lower level of DA metabolites in the CSF compared with healthy controls.[75] Deficiency in DA receptor functions may lead to the failure in inhibition from the prefrontal cortex to the amygdala, and induce over excitability of the amygdala, resulting in induction of fear and anxiety behavior.

Circuits between 5-HT, NE and DA - The NE and 5-HT neurotransmitter systems are mutually connected in the CNS. NE plays a role in the regulation of the release of 5-HT. Stimulation of the α_2 receptor on the axon terminals can inhibit the release of 5-HT, and that of α_1 receptors on neuronal cell bodies or dendrites may cause positive feedback on the release of 5-HT. 5-HT systems also can exert negative influence on NE systems and DA system through the 5-HT2A and 5-HT2C receptor-mediated mechanisms.[76] Both NE and 5-HT nerve fibers project signaling in the frontal cortex and hippocampus, this results in an important regulatory role in cognition and behaviors, especially in mental and emotional regulation in the CNS.[77] There are multiple interactions between the 5-HT and DA systems. Increased or reduced neurotransmission of serotonergic or noradrenergic systems can affect dopamine function and induce similar changes in dopamine signaling. Acute stimulation of the basal 5-HT2A receptor in the basal area may inhibit DA function and causes acute motor changes and, in the midbrain, may inhibit DA activity, causing loss of libido.

Conclusion

The present review succeeded to achieve its targets regarding major depressive disorders [MDD].

1. Neuroimaging data suggested vital information regarding pre and post treatments of depression, anatomical picture of depression is clear.
2. Physiological pathways of depression are noticeable on its hormonal disbalances of HPA axis.

3. Serotonin-kynurenine hypothesis of depression has improved our understanding of pathogenesis of depression and of possible links between depression and medical conditions associated with chronic inflammation.
4. KYN pathway of tryptophan metabolism could be measured as a new target for prevention and treatment of depression.
5. Cytokines, are strong potentials both in terms of being markers of depression and in providing important information about the etiology of MDD. DA, NE and 5-HT systems are clear on their grounds. More researches are required for differentiating MDD and set of biochemical markers, which probably could constitute an efficient panel for supporting the diagnosis and prognosis of the same.

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Original Article

A Study to Assess the Magnitude of Various Minor Physical Anomalies in Schizophrenia and to compare them between Schizophrenic Patients and their First-degree Relatives

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Abstract

Introduction: *Minor Physical Anomalies(MPA) are mild, clinically and cosmetically insignificant errors of morphogenesis which have a prenatal origin and may bear major informational value for diagnostic, prognostic and epidemiological purposes.* ***Material and methods:*** *It was a cross-sectional comparative hospital based study. The subjects were recruited for the study by the purposive sampling technique.The study was conducted at the Institute of mental health and hospital Mathura Road Agra.The study sample consisted of 20 schizophrenia patients diagnosed as per ICD-10 DCR (WHO, 1992) criteria, 20 first degree relatives, one for each patient. Total sample size is 40.* ***Results:*** *It is observed that in schizophrenic patients' maximum anomalies were present in eyes (0.55 ± 0.88), mouth (0.45 ± 0.60) followed by anomalies of head (0.35 ± 0.81), feet (0.30 ± 0.47) and ear (0.20 ± 0.52). The lowest anomalies were present in hand region (0.05 ± 0.22). It is observed that in schizophrenic FDRs maximum anomalies were present in eyes (0.40 ± 0.52) feet (0.20 ± 0.52) and ear (0.10 ± 0.30) and then equal anomalies in head and hand (0.05 ± 0.22). High Waldrop mean score of mouth in schizophrenics (0.45) compared to their FDRs(0.00) is statistically significant.* ***Conclusion:*** *It seems worthwhile to combine multiple markers of abnormal neurodevelopment to answer such questions. Future studies should be carried out on a larger sample size with equal socio-demographic representations including female population to enhance the significance.*

Keywords: *Minor Physical Anomalies, Schizophrenia, PANSS scale, Waldrop scale.*

Introduction

Minor Physical Anomalies (MPA) are mild, clinically and cosmetically insignificant errors of morphogenesis which have a prenatal origin and may bear major informational value for diagnostic, prognostic and epidemiological purposes.[1]

MPAs are subtle morphologic signs that are of little or no consequence but which represent fixed markers of gestational developmental abnormality. MPAs evolved into a construct of interest to schizophrenia researchers as well as those studying a variety of other neurodevelopmental and behavioral disorders, including but not limited to attentional disorders, autism, fetal alcohol syndrome, learning disabilities, and sensory impairments.

The presence of MPAs is a sensitive physical indicator of embryonic development and serves as indicators of altered morphogenesis that occurred

early in gestation.[2] These may be minor abnormalities of the head, feet, hands, and face (e.g., high-steepled palate, large or small distance between tear ducts). As both skin and central nervous system develop from the same ectodermal tissue in utero, MPAs may be external markers of abnormal brain development. High rates of MPAs are associated with disorders that have known prenatal CNS involvement, such as down's syndrome.[3] Hence, MPAs are believed to reflect some event related to CNS development.

Minor Physical Anomalies (MPA) has been reported to be more frequent in persons with schizophrenia.[4] The Waldrop scores were higher in patients (48%) followed by relatives (28%) and controls (10%), with more anomalies in the head, eyes, ears, and feet.[5] It is not yet clear whether MPAs are specific for schizophrenia or they hold ground for psychosis in general. Another fundamental question is whether MPAs reflect some genetic vulnerability or any defect in embryogenesis because studies with siblings of these groups of patients did not come out with any definitive statement.

To the best of one's knowledge, previous studies have only looked for frequency of minor physical anomalies in schizophrenia but have not explored the socio-demographic correlates or the possible relationship with symptom severity, neither have they attempted to assess the first degree relatives of the patients thus providing and insight into the genetic basis of MPAs.

The present study aims at evaluating the comparison between prevalence of minor physical anomalies in patients diagnosed with schizophrenia and their first degree relatives thus attempting to explore the relevance of neurodevelopmental hypothesis regarding schizophrenia.

Material and Methods

Study design: It was a cross-sectional comparative hospital based study. The subjects were recruited for the study by the purposive sampling technique.

Study place and population: The study was conducted at the Institute of mental health and hospital Mathura Road, Agra. It is a tertiary referral center with bed strength of 800, and a postgraduate teaching hospital, which imparts training in psychiatry, clinical psychology, psychiatric social work and psychiatric nursing. The hospital has a wide catchments area which includes the states of Uttar Pradesh, Madhya Pradesh, Rajasthan, Haryana andUttarakhand admitted as inpatients and diagnosed with schizophrenia.

Study period: Data was collected over a period of 12 months from 15th march 2009-15th March 2010.

Sample size

The study sample consisted of 20 schizophrenia patients diagnosed as per ICD-10 DCR (WHO, 1992)[4] criteria, 20 first degree relatives, one for each patient. Total sample size is 40.

Inclusion criteria

Patients

1. Inpatients/ Outpatients, male, 18-50 years of age.
2. Diagnosis of Schizophrenia according to ICD10.[6]
3. At least two episodes of illness including the present episode.
4. Patients accompanied by first degree relatives.
5. Only those patients were included in the study who gave informed consent.

First Degree Relatives

If more than one FDR are available, then the one nearer to patient by age would be taken up for study. Preference – sibling > son > father

Exclusion criteria

Patients

1. History of head trauma, major neurological disorder, or seizure disorder.
2. Psychoactive substance dependence (except nicotine).
3. Mental retardation.

First Degree Relatives

History suggestive of

1. Psychotic or affective disorder,
2. Head trauma,
3. Major neurological disorder or
4. Seizure disorder.

Procedure: After obtaining informed consent, all the patients, their first degree relatives (FDRs) meeting their respective exclusion and inclusion criteria were taken up for the study. Detailed data was collected on the sociodemographic and clinical data sheet designed for the purpose. All patients and their respective FDRs were assessed for minor physical anomalies with the Waldrop scale andfor schizophrenia PANSS scale was used.

Positive and negative symptoms of schizophrenia[7]

The tools used for schizophrenia in this study were PANSS (Positive and negative symptoms of schizophrenia). The PANSS is a widely used research tool to measure psychopathology in schizophrenia. It is a 30 item, seven point (1-7, from absent to extremely severe) scale, rated with the help of a semi-structured interview. It has three subscales to measure specifically (1) the severity of the positive (7-items) symptoms, (2) the severity of the negative (7 items) symptoms and (3) evaluates symptoms, which cannot be linked decisively to either the positive or negative syndrome (16 items). composite scale. The difference between positive and negative scores indicates whether positive or negative symptoms prevail.

Waldrop scale[8]

The scale used to assess minor physical anomalies is the Waldrop scale used in majority of the earlier studies. It is a simple 5-10-minute examination for the assessment of 17 anomalous features and therefore provides an opportunity for much more extensive assessment of minor physical anomalies. Seventeen morphological abnormalities were assessed in six body regions: head, eyes, ears, mouth, hands, and feet. Most of the abnormalities were scored qualitatively as present (1) or absent (0).

General Health Questionnaire (GHQ12)[9]

The GHQ is a good screening instrument for psychiatric illnesses. The original version consisted of 140 items which was later reduced to briefer versions. The one consisting of 12 items has been used widely and effectively to screen out psychiatric illnesses. It is a self-reported scale. To screen any psychiatric morbidity in normal controls, General Health Questionnaire-12 was administered.

Analysis of data

Data was analyzed using standard statistical software package, SPSS 10.1. Descriptive statistics and inferential statistics, such as students 't' test, independent t test was used. The level of significance (alpha) of 0.05 and 0.01 were adopted in the study. Chi-square test was used to ascertain group difference between categorical variables, students 't' test was used in case of determining group difference of dimensional variables.

Results

Present study includes 20 schizophrenia patients and 20 their first degree relatives.Schizophrenia patients had a mean age of 30.45 ± 1.58 their first degree relatives had a mean age of 38.53 years (± 14.99).

Table-1: Mean and S.D. of Various Minor Physical Anomalies (MPA) Across Group

	Schizophrenia	Schizophrenia FDR
MPA Head	0.35 ± 0.81	0.05 ± 0.22
MPA Eye	0.55 ± 0.88	0.40 ± 0.82
MPA Ear	0.20 ± 0.52	0.10 ± 0.30
MPA Mouth	0.45 ± 0.60	0.00 ± 0.00
MPA Hand	0.05 ± 0.22	0.05 ± 0.22
MPA Feet	0.30 ± 0.47	0.20 ± 0.52
Total	**1.80 ± 1.64**	**0.75 ± 0.91**

Table 1 depicts the mean scores of various MPAs in patients of schizophrenia. It is observed that in schizophrenic patients' maximum anomalies were present in eyes (0.55 ± 0.88), mouth (0.45 ± 0.60) followed by anomalies of head (0.35 ± 0.81), feet (0.30 ± 0.47) and ear (0.20 ± 0.52). The lowest anomalies were present in hand region (0.05 ± 0.22). It is observed that in schizophrenic FDRs maximum anomalies were present in eyes (0.40 ± 0.52) feet (0.20 ± 0.52) and ear (0.10 ± 0.30) and then equal anomalies in head and hand (0.05 ± 0.22)

Table 2 shows mean, standard deviation and t value computed through independent t test showing more anomalies in head region in schizophrenia (0.35) compared to FDRs of schizophrenia (0.05) though the difference is not large enough to be called statically significant, high Waldrop mean scores of eye region in schizophrenic patients(0.55) compared to their FDRs(0.40) though not to the level of statistical significance.Waldrop score of ear in

Table-2: Comparison of MPA in schizophrenia and their FDRs

Comparison of MPA in schizophrenia and their FDRs

MPA	Patients and Controls	N	Mean	Std. Deviation	t-value
Minor physical anomalies of head	Schizophrenia pt	20	.3500	.81273	0.12
Walrdrop score	Schizophrenia control	20	.0500	.22361	
Minor physical anomalies of eye	Schizophrenia pt	20	.5500	.88704	0.58
Walrdrop score	Schizophrenia control	20	.4000	.82078	
Minor physical anomalies of ear	Schizophrenia pt	20	.2000	.52315	0.46
Walrdrop score	Schizophrenia control	20	.1000	.30779	
Minor physical anomalies of mouth	Schizophrenia pt	20	.4500	.60481	0.002**
Walrdrop score	Schizophrenia control	20	.0000	.00000	
Minor physical anomalies of hand	Schizophrenia pt	20	.0500	.22361	1.00
Walrdrop score	Schizophrenia control	20	.0500	.22361	
Minor physical anomalies of feet	Schizophrenia pt	20	.3000	.47016	0.529
Walrdrop score	Schizophrenia control	20	.2000	.52315	
Minor physical anomalies total	Schizophrenia pt	20	1.8000	1.64157	0.017**
Walrdrop score	Schizophrenia control	20	.7500	.91047	

schizophrenic patients (0.20) greater than their FDRs(0.10). High Waldrop mean score of mouth in schizophrenics (0.45) compared to their FDRs (0.00) which is statistically significant.

Discussion

The main objective of this study was to determine the prevalence of minor physical anomalies in schizophrenia and compare the same with prevalence in first degree relatives of the patients in order to explore whether the neurodevelopmental hypothesis holds true for schizophrenia. First degree relatives were included in the study to see if there is any genetic explanation of occurrence of minor physical anomalies as has been suggested by earlier studies (Ismail et al, 1998; Gourion et al, 2004).[10,11]

Our results in schizophrenic patients show maximum number of anomalies in eye region followed by mouth and hand region similar to study done by Ismail et al, McGrath et al in (2002).[10,12]

Our study also reports increased MPAs of mouth region compared to FDRs in Schizophrenia which is statically significant. similar to the results of past studies who report topographical distribution of MPAs in schizophrenic individuals are highly variable, although it is generally held that the greatest number of MPAs occur within the oral cavity.[13]

Importantly, information about which regions are most susceptible to MPAs can provide clues to the temporal origins of the dysmorphology and its underlying relationship to brain development.

Our results are supported by study of Ismail et al[10] about the frequency of MPAs in schizophrenic patients and their normal siblings. Patient had significantly more minor physical anomalies than comparison subjects in all body areas tested and also more minor physical anomalies than their siblings. Siblings had more minor physical anomalies than control group. Our study showed higher number of anomalies in eye, head and mouth similar to Ismail et al study which had increased hand, eye and mouth minor physical anomalies compared to controls.[10]

Our study is also supported by a recent study by Trixler et al who suggested that specific anomalies of the mouth and head may have more relevance to neurodevelopmental abnormalities than does the cumulative prevalence of MPAs. This is also supported by hypothesis by MPAs of the craniofacial region may form concurrently with the in utero structural brain changes that ultimately are associated with schizophrenia.[14,15]

Our study when seen in context of Weinberger study et al posited that information about body regions are most susceptible to MPAs in the context of schizophrenia can provide clues to the temporal origins of the dysmorphology and its relationship to neurodevelopment.[16]

Results of our study is also supported by study of Murphy and Owen, 1996 who found that there is general agreement that schizophrenic cases possess more MPAs than healthy controls. It is also clear, however, that the magnitude of the disparity in MPA scores between cases and controls varies widely across studies.[17] Currently, there is no clear explana-

tion for this outcome variability.

Similarly, Green et al[18] assessed minor physical anomalies in schizophrenia and their siblings, and found significantly more MPAs in schizophrenic patients than normal controls. In Trixler's study schizophrenic group MPAs were significantly higher than controls while Alexander's study in1992 didn't find any difference.[14,18,19]

Our study concluded that schizophrenic patients had significantly more anomalies than their FDRs These findings seems to support the neurodevelopmental hypothesis to be true in schizophrenia which is supported by study of Lohr and Flynn who assessed using Waldrop Scale that Schizophrenia group had significantly higher levels of MPA than the controls.[20]

Conclusion

Although assessment of MPAs offers a convenient way to bridge the gap between the time of data collection and the time of interest (prenatal and perinatal), this method offers only sketchy information regarding the specific time period (e.g., which month of development)involved. It seems worthwhile to combine multiple markers of abnormal neurodevelopment to answer such questions.

There were few limitations of this study as the sample size was modest, which makes it difficult to generalize the result.The female population was under-represented in the study. Similarly there was no representation of urban population. Future studies should be carried out on a larger sample size with equal socio-demographic representations including female population to enhance the significance.

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Original Article

A study of burden of care among mothers of mentally retarded children and adolescents attending child and adolescent psychiatry OPD in a tertiary care center in North India

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Abstract

Background: *Mothers are the most important caregivers of children. When a child with disability is born a mother's responsibilities increase by leaps and bounds. Caring for a child with mental retardation (MR) challenges the role of mother and may lead to excessive burden of care.* ***Method:*** *A non-experimental descriptive cross sectional assessment of burden of care among mothers of mentally retarded children and adolescents attending child and adolescent psychiatry OPD was done using burden assessment schedule.* ***Results and conclusion:*** *The mean age of children with mental retardation was 9.09 ± 3.07 years. The mean age mothers of children with mental retardation was 32.97 ± 6.25 years. Maximum burden of care was found in physical and mental health domains (14.33 ± 2.81) followed byexternal support domain (10.79± 2.24), taking responsibility (9.3 ± 1.06)and Caregivers routine (8.77 ± 1.67). In this study, it was found that mother of mentally retarded children and adolescent experience burden of care which increases as the financial status of the family decreases. The burden of care is higher in severe to profound MR than mild to moderate MR. The burden of care in the domain of physical and mental health was highest.*

KEYWORDS: *Mothers, Burden Assessment Schedule, Mental Retardation.*

Introdution

Mental retardation (MR) is a developmental disability in which the intellectual ability and adaptive behavior of an individual becomes deficient to a sub-average level. According to this definition, for an individual to be called mentally retarded, he or she must fulfill at least the following three characteristics. First, the individual must have below average intellectual ability i.e. individual's IQ must be below 70 on the standard tests. Secondly, there must be a significant impairment in the adaptive behavior of the individual. The individual must demonstrate an inability to meet the standard of personal and social responsibilities appropriate to his/her age group. Thirdly, these deficiencies in intellectual functioning and adaptive behavior must occur during the developmental period of the individual.[1]

Recent mental health survey in India shows state wide prevalence for MR to be 0.5% in Uttar Pradesh.[2] Western studies also shows parental burden due to disabilities in children.[3-4] It has been seen that a diagnosis of MR in the child brings about a psychological, financial and social stress among the family. It primarily effects the parents of these children. Most of the stress is often borne by the

mothers in the family as they are the most important caregivers in such families. Burden of care refers to the physical burden and emotional reactions of caregivers including the perception of strain, reduced morale, anxiety and depression. A family who has a child with mental retardation will experience many challenges such as physical problems, emotional stress, psychological disturbances, family problems, and additional financial burden.[5] Some caregivers adapt well to these situations of caring for a child with a disability but others may not. The attitudes and emotional reaction of caregivers of disabled children are of crucial importance in planning for their treatment and rehabilitation. It is found that 71% of the mothers felt scared when they realized that their child is retarded. Some caregivers do not admit that they have a child with retardation and keep the child behind closed doors for fear of criticism from others. Lack of understanding about the nature of this condition and stigma associated with it may worsen caregiver stress.[6]

Mothers of mentally disabled children undergo more stressful experience than mothers of normally developing children.[7] Social problems within the family reveal that parental feelings strongly expressed anxiety about future effecting the siblings negatively, psychological stress of various kinds,social isolation of the family and economic burden.[8] Parents of children with disabilities face many stresses like little opportunity to explore their own needs and depression.[9] The quality of life of the mothers was found to be below average. It was seen that the mothers experienced the most difficulty in the domains of perception of inadequacy and emotional burden.[10] With the scope of helping the mothers cope up with these stressful situations, there is a dire need for conducting more studies in gaining insight of their burden as caregivers. The main aim of this study is to assess the burden of care among mothers of mentally retarded children and adolescents and to find the association between burden of care with the severity of MR.

Material and Methods

Non experimental, cross-sectional descriptive design was used for the present study. The study was conducted in the Child Psychiatry OPD of the Psychiatry Department of King George's Medical University, Lucknow, UP. The study was conducted from November 2016 till April 2017. The study was approved from the institutional ethics committee. In this study 74 mothers of children diagnosed with MR as per DSM-IV-TR were screened for the selection criteria. 61 mothers were included in the study who brought their children for the various services in the department of psychiatry KGMU. 13 mothers were excluded and reasons of exclusion were unwillingness of the mother due to requirement of priority management of their child and presence of any other member of the family with chronic disabling illness. Informed consent was taken from all the study participants. Socio-demographic and clinical details were recorded on semi-structured proforma. Burden of care was assessed by using Burden assessment schedule (Thara et al. 1998)[5]. Descriptive statistics (frequency distribution and percentage, mean and standard deviation) was used to analyse the socio-demographic, clinical data. Inferential Statistics t-test, one-way analysis of variance were used to find the relationship of burden of care with selected demographic and clinical variables.

Results

The mean age of mothers of mentally retarded children and adolescents was 32.97 ± 6.25 years. Almost half of the mothers belonged to Urban (50.82%) and other half (49.18%) belonged to rural households. Majority of the mothers were (70%) were Hindu. 42.62% mothers were illiterate, 40.98% mothers lived in households earning between 5000-10,000/- per month and 32.79% belong to <5000 monthly income group. Majority of mothers (65.5%) lived in nuclear families and 72.13% were housewife, and majority (80.33%) were living with their partners (Table-1). The mean age of children with mental retardation was 9.09 ± 3.07 years.

The burden of care was assessed under 8 domains, the burden in the physical and mental health domain was found to be highest (14.33 ± 2.81) followed by external support domain (10.79 ± 2.24), taking responsibility (9.3 ± 1.06), caregiver's routine (8.77 ± 1.67), and patient's behavior (7.6 ± 1.42). (Table 2).

On comparing the burden of care as per the severity of mental retardation it was found that burden was significantly higher in severe MR in the external support domain (p value = 0.004) (Table

Table-1: Socio-demographic profile of mothers n=61

Sl. No.	Variables	Frequency	Percentage %
1	**Age (in years)**		(32.98 ± 6.25)
	20-30 years	19	31.15%
	31-40 years	39	63.93%
	Above 40 years	03	4.92%
2	**Domicile**		
	Urban	31	50.82%
	Rural	30	49.18
3	**Religion**		
	Hindu	43	70%
	Muslim	18	30%
4	**Education**		
	Illiterate (speak and understand Hindi)	26	42.62%
	Junior high school	15	24.69%
	High school	06	9.84%
	Inter mediate	03	4.91%
	Graduation and above	11	18.03%
5	**Type of family**		
	Nuclear	40	65.57%
	Joint	21	34.43%
6	**family income**		
	<5000	20	32.79%
	5000-10000	25	40.98%
	>10000	16	26.23%
7	**Total number of family member**		
	2 member	01	0.64%
	3 member	04	6.56%
	4 member	14	22.95%
	Above 4 member	42	68.85%
8	**Occupation**		
	Working	17	27.87%
	Housewife	44	72.13%
7	**Are you living with your partner**		
	Yes	49	80.33%
	No	12	9.67%
7(a)	**If no then give reason**		
	Separated	07	58.33%
	Divorced	01	8.33%
	Widow	04	33.33%

Table-2: Distribution of total burden of care on various domains of burden assessment schedule (n=61)

Sl. no.	Subgroup	Score range	Mean ± SD
1	Physical and mental health	6-18	14.33 ± 2.81
2	External support	5-15	10.79 ± 2.24
3	Taking responsibility	4-12	9.3 ± 1.06
4	Patient's behavior	3-9	7.6 ± 1.42
5	Caregivers routine	4-12	8.77 ± 1.67
6	Caregiver's strategy	3-9	7.3 ± 1.27
7	Support of patient	4-12	6.54 ± 1.34
8	Other relations	4-12	6.23 ± 1.81

3). While in all other domains the difference is not significant on the basis of severity. The total burden score was also not significantly different.

The burden of care among mothers according to family income (Table 4), shows that lower income groups has statistically significant higher burden

Table-3: Domain wise burden of care according to severity of mental retardation (n=61)

Burden of care	Severity			p-value
	Mild (n=23)	Moderate (n=20)	Severe & Profound (n=18)	
Physical and mental health	13.61 ± 3.17	14.75 ± 2.27	14.78 ± 2.28	0.30
External support	10.26 ± 2.2	12.1 ± 2.22	10 ± 1.68	0.004
Caregivers routine	8.57 ± 1.84	8.75 ± 1.37	9.05 ± 1.77	0.65
Support of patient	6.26 ± 1.51	6.85 ± 1.35	6.56 ± 1,04	0.36
Taking responsibility	9.43 ± 0.95	9.15 ± 1.18	9.33 ± 1.09	0.68
Other relations	5.96 ± 1.89	6.1 ± 1.188	6.72 ± 1.60	0.38
Patient's behavior	8,91 ± 2,53	8.85 ± 3.06	9.28 ± 2.21	0.87
Caregiver's strategy	8.17 ± 1.33	8.2 ± 1.06	8.83 ± 1.46	0.21
Total adjusted burden score	71.17 ± 11.25	74.75 ± 9.27	74.56 ± 8.21	0.41

(One-way ANOVA). Level of significance p = <0.05

Table-4: Domain wise burden of care according to family income (n=61)

Burden of care	Family income			
	< 5000 (n=20)	5000-10000 (n=25)	>10000 (n=16)	P value
Physical and mental health	14.7 ± 2.43	15.32 ± 2.08	12.31 ± 3.34	0.001
External support	11.7 ± 1.87	11.08 ± 2.14	2.07 ± 2.07	0.001
Caregivers routine	8.75 ± 1,62	9.44 ± 1.66	7.75 ± 1.24	0.005
Support of patient	6.9 ± 1.29	6.76 ± 1.36	5.75 ± 1.07	0.01
Taking responsibility	9.3 ± 1.13	9.29 ± 1.08	9.31 ± 1.01	0.10
Other relations	6.5 ± 1.96	6.72 ± 1.51	5.13 ± 1.67	0.01
Patient's behaviour	9.8 ± 1.85	9.52 ± 2.69	7.16 ± 2.51	0.003
Caregiver's strategy	8.25 ± 1.16	8.48 ± 1.45	8.38 ± 1.31	0.85
Total adjusted burden score	75.9 ± 9.30	76.64 ± 7.56	65 ± 8.97	0.0001

(One way ANOVA). Level of significance p= <0.05

scores in the domains of Physical and mental health (P=0.001), external support (P=0.001), caregivers routine (P=0.005), Support of patient (P=0.01), other relations (P=0.01), patient's behaviour (P=0.003) and total adjusted burden score (P=0.0001).

Discussion

The present study was done using a cross sectional research design in the department of psychiatry of King George's Medical University in the child psychiatry out-patient department. In majority of the cases, mothers accompanied their children for diagnosis, treatment and follow up. In this study we found that there was moderate to severe burden among the mothers of mentally retarded children which was seen in previous studies as well. Vijesh and Sukuraman[11] in their study revealed that that mothers who had children with disabilities had considerable burden of care. Similarly Gosch[8] and Tisbosch[9] reported that parents of children with lower levels of cognitive functioning perceived more burden.

On analyzing the burden of care on mothers in various domain using burden assessment, it was found that maximum burden of care was found in physical and mental health domains (14.33 ± 2.81) followed by external support domain (10.79 ± 2.24), taking responsibility (9.3 ± 1.06) and Caregivers routine (8.77 ± 1.67). These findings are congruent with the study by Pal T et al. which shows the high burden in the domain of physical and mental health, external support domain, taking responsibility and Caregivers routine.[12] The reasons could be that these mothers had to persistently engage with such children ignoring her own care. Mother of these children also has to bear the critical comments and stigma associated with the condition of her child which could be the reason for lack of external support and sharing responsibility of the child as well as caregiving which increases the burden in these domains.

The present study shows that there is signifi-

cantly higher burden in the following domains. Physical and mental health (P=0.001), external support (P=0.001), Caregivers routine (P=0.005), Support of patient (P=0.01), other relations (0.01), Patient's behavior (0.003) among mother with low family income. Total adjusted burden score was also significantly higher (P=0.0001). (Table 4) Similarly significant relationship between the levels of parent's burdens and their monthly income was reported in previous study.[13] This means that the burden perceived by caregivers increases as the financial status decreases.

In the present study we also found that there is inverse relation of burden with education of mother. This finding is in congruence with studies by Majumdar et al.[14] which shows that parental education had an inverse relationship with the burden. It can be elaborated that educated caregivers had a chance to clarify their doubts and expand their horizons with internet, TV, posters, and handouts. Illiterates lack such exposure. This was also emphasized by Narmada et al.[15] who mentioned that educated mothers have good interaction and tolerance towards their child's behavior, have better understanding of nature of the illness and how to manage mentally retarded children there by experience lesser burden.

When we assessed burden of care as per the severity of MR, it was found that burden was significantly higher in severe MR in the external support domain (p value = 0.004). It can be understood as the patients having severe disability require more care. Upadhyay and Havalappanavar[16] found that the parents of moderately retarded children noted more of psychological problems than those of mildly retarded. Sethi also reported parents of children with severe to profound mental perceive more burden.[17] A similar finding was also found in previous study by Pal T et al.,[13] where burden of care increased as severity of mental retardation increased.

Strengths and Limitations

Strengths of our study are firstly the study has been done with standardized tools and methodology. Secondly, in this study the cases who have any other family member with chronic physical or mental disability requiring constant carewere excluded. The number of siblings of children with MR were not analysed. Generalization of finding is not possible because it is a clinic based study with small sample size.

Conclusion

In this study, the burden of care in the domain of physical and mental health was highest. Mothers of mentally retarded children and adolescent experience burden of care which increases in external support domain as the severity of MR increases. There is significantly higher burden of care among mothers with low family income and illiteracy. Similar studies should be conducted for identifying the scope of improving quality of life of mothers of mentally retarded children. Measure should be taken in our country to cater the mental health need of mothers who care for children with mental retardation. More studies specially multi-centric needs to be conducted in the specialized centers. In our country now District Early Intervention Centers have been started under government programs in various parts of the country for early diagnosis and management of various disabilities including mental retardation. Further studies on these centers on the very topic will add more insight in the area of burden of care as well as may suggest measures to decrease the burden of care on parents of disabled children and adolescents.

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Original Article

Relevance of Patterns of Use and Preferred Contents in Problematic Internet Use among Undergraduate Students

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Abstract

Background: *Problematic internet use (PIU) has diverse adverse impact on different spheres of life of undergraduate students, who are in process of identity exploration through finding direction in world views, work and love. Internet use is a widely studied phenomenon worldwide. In Indian set-up, there are fewer attempts to study the impact of patterns of internet use on PIU, and variations in preferred contents and purposes of internet use among problematic and normal internet users.* ***Aim:*** *The current study was aimed to explore whether the patterns of use of internet, preferred contents in internet and purposes of internet use lay their impact on problematic internet use.* ***Methods:*** *This study was conducted in a sample of 480 undergraduate students (equal male and female participants) aged between 18 to 25 years. They were selected in equal numbers (f=120) from medical, engineering, management and non-professional streams of education with convenient sampling. Semi-structured data sheet was used to obtain information about demographics, patterns of use, preferred contents and purposes of use of internet. Online cognition scale was used to assess PIU. Data were analyzed by descriptive statistics, ANOVA and t-test.* ***Results and conclusion:*** *In current study, it was found that more than two years of use and higher than two hours daily use of internet has significant impact on the severity of PIU. Further, it was observed that individuals with PIU are more inclined to contents and purposes related to entertainment, gaming, social networking, pornography, and romance than normal internet users.*

Key Words: *Patterns, Contents, Problematic internet use, Undergraduate students*

Introduction

In India, prevalence of problematic internet use (PIU) is estimated around 19.85% among undergraduate population, which is quite alarming. Low life satisfaction, psychological distress, poor emotional control etc. were also found to be associated with it.[1]

Researchers report that the undergraduate students experience pressure due to different academic demands on them and this pressure has an adverse impact upon their life-satisfaction and adjustment. They try to cope with such pressure in different ways (either solving problems or using different sorts of defenses to protect themselves). Internet has become an easy way to escape problems (postponing the academic tasks by texting, chatting, or using different entertainment means) similar to substance use.[2] It is a matter of worry that PIU has become a form of coping mechanism. Undergraduate students remain in process of enhancing or growing their identity by finding meaning and achievement in different spheres of

their life.[3,4] PIU may deviate them from these goals. Therefore, it is important to find out the factors associated with PIU.

In a study in young population, it was observed that average time spent on internet (in general population) was 2.13 hours (SD 1.98) every day. The common reasons for using internet reported were urge to use internet and using it to over come negative mood. Quite high numbers of participants were found with inability to control use hours and using it simultaneously while accomplishing crucial tasks such as eating etc. It was observed that their physical activity had gone down since they started using it.[5] These findings are indicating that using internet in these patterns are either replacing other conventional methods of mood modification or reducing physical activity, which might result in various life-style related medical conditions among the young individuals with PIU.

It is reported in studies that intra-individual factors are more appealing in PIU than inter-individual factors. Self-avoidance, poor regulatory function, addictive traits, anger, and poor coping are prominently found associated with PIU with larger effect sizes across the studies.[6] However, there are fewer attempts by researchers to explore whether using patterns of internetand preferred contents in it are more vulnerable factors leading to PIU. Only few researches were sought, which found that more duration of use in terms of frequency and hours are likely to lead addiction to internet.[7] Hence, the current study was aimed at:

1. to explore whether the patterns of use of internet, such as years of use and daily use hours of internet, and;
2. preferred contents in it and purposes of using internet lay their impact on severity of PIU.

In the line of above study,[6] these factors are primarily intra-individual factors, which need to be explored so that if something meaning is found in the results, might be helpful in the treatment of undergraduate students with PIU.

Material and Methods

Purposive sampling method was considered convenient seeing the nature of study. A sample of 480 (240 problematic and 240 normal internet users with equal numbers of male and female students), aged 18 to 25 years served as the participants for the study. One hundred and twenty students (30 males with problematic and 30 males with normal internet use and 30 females with problematic and 30 females with normal internet use) were selected from each streams of education, i.e., medical, engineering, management, and non-professional from different colleges and institutions in Raipur, C.G., India. Classification of participants as problematic and normal internet users in sample was done in order to know the difference between preferred contents and purposes of internet use between them. Classification was done based on the mean score on online cognition scale.

Online Cognition Scale (OCS) is a questionnaire about the thoughts related to the internet. It emphasizes more on the assessment of cognition than behaviour related to problematic internet use. It was developed by Davis, Flett, and Besser.[8] The OCS is a 36-item questionnaire that measures problematic Internet use. Respondents rate the agreeableness on a seven-point Likert scale for each item. The scale has high in-ternal consistency as a total measure of prob-lematic Internet use (α=0.94) and for each of the four OCS dimensions: social comfort (α=0.87), loneliness/depression (α=0.77), diminished impulse control (α=0.84), and distraction (α=0.81). Item-total correlations were highly significant, ranging from 0.47 to 0.77 for social comfort, 0.49 to 0.81 for loneliness/de-pression, 0.50 to 0.76 for diminished impulse control, and 0.55 to 0.80 for distraction.

Another tool used in the study was a semi-structured purposefully prepared data sheet to gather information about demographic variables, patterns of internet use i.e., daily use (in hours) etc. and contents usually surfed or watched (websites) in internet platform by participants and the different purposes for which they had been using internet.

Data was analyzed using descriptive statistics, one way ANOVA and t-test through Statistical Package for Social Sciences (SPSS 20.0) version.

Results

Table 1 reveals that mean scores on OCS of the participants in relation to years of use of internet (for how many years they have been using internet). It can be seen from the table that those who have been using internet since 2 years or more, have

higher OSC scores. However, the mean score (M = 111.61, SD = 27.63) of participants who have been using internet less than 6 months is higher than those with 6 months to 1 years of use (M = 108.37, SD = 28.21). But the participants in that group are relatively less in number (f = 26). Otherwise, it is observed from ANOVA in Table 2 that there is a significant $F(4,475) = 3.17$, $p < .05$ impact of years of use of internet on the severity of PIU, which was assessed by OCS.

Table-1: Mean and SD on OCS of internet users in relation to years of use (beginning of using internet)

Different years of Internet use	Mean	Std. Deviation	N
< .5 year	111.61	27.63	26
.5 to 1 year	108.37	28.21	37
1 to 2 years	120.51	30.27	135
2 to 5 years	124.25	29.79	162
>5 years	122.85	24.78	120
			480

Note: OCS = Online Cognition Scale

Table-2: ANOVA showing impact of years of use of interneton severity on OCS

Sources	Sum of Square	Df	Mean Square	F
Different years of Internet use	10345.62	4	2586.40	3.17*
Error	386622.97	475		
Total	7418358.00	480		

*p<0.05
Note: OCS=Online Cognition Scale

Table 3 represents that those individuals who have been using internet since last two years or more are having significantly higher ($p < .05$ & $p < 0.01$) PIU in comparison to those individuals who have been using it for lesser years than two years. Moreover, there is no significant ($p > 0.05$) difference between participants using internet for 2 years or more on the severity of PIU as assessed by OCS.

It is revealed from Table 4 that PIU is increasing in severity with increasing daily use hours of internet with an exception of those individuals who use it more than 8 hours daily (M = 127.36, SD = 26.78). There are relatively less (f = 30) participants in more than 8 hours and 6 to 8 hours categories of internet use. Although, their mean scoresare higher than those who use internet 1 hour (M = 110.34, SD = 24.30), 1 to 2 hours (M = 113.42, SD = 25.66) and 2 to 4 hours of daily (M = 123.34, SD = 32.37). Further, ANOVA (Table 5) revealed that there is a prominent significant impact F (5, 474) = 7.19, $p < 0.01$ of daily use hours on the severity of PIU.

Table-3: t-tests showing significance of difference between different categories of years of use of internet on severity of PIU as assessed by OCS

Different years of internet use	Df	t-test
< .5 year and .5 to 1 year	61	.452
< .5 year and 1 to 2 years	159	1.39
< .5 year and 2 to 5 years	186	2.028*
< .5 year and >5 years	144	2.05*
.5 to 1 year and 1 to 2 years	170	2.19*
.5 to 1 year and 2 to 5 years	197	2.95**
.5 to 1 year and >5 years	155	3.00**
1 to 2 years and 2 to 5 years	295	1.069
1 to 2 years and >5 years	253	.668
2 to 5 years and >5 years	280	.421

*p < 0.05;**p < 0.01
Note: PIU = Problematic Internet Use; OCS = Online Cognition Scale

Table-4: Mean and SD on OCS of internet users in relation to daily use (in hours) of internet

Different daily use hours of internet	Mean	Std. Deviation	N
1	110.34	24.30	58
1 to 2	113.42	25.66	138
2 to 4	123.34	32.37	146
4 to 6	130.43	24.01	78
6 to 8	133.26	30.98	30
>8	127.36	26.78	30
			480

Note: OCS=Online Cognition Scale

Following the ANOVA in Table 5, it is seen in table 6 (t-test) that more than 2 hours of daily use of internet appeared a kind of cut-off point to determine the PIU. Those participants who have been using internet for more than 2 hours daily are significantly higher ($p < 0.01$) than those who use it for lesser than 2 hours. Moreover, there is no

significant difference ($p > 0.05$) between different categories of more than 2 hours of daily use of internet, such as 2 to 4 and 4 to 6 hours and/or 4 to 6 and more than 8 hours of use of internet etc.

Table-5: ANOVA showing the impact of daily use of internet (in hours) on the severity on OCS

Sources	Sum of Square	Df	Mean Square	F
Different daily use hours of internet	27992.66	5	5598.53	7.19**
Error	368975.92	474		
Total	7418358.00	480		

**p < 0.01

Note: OCS=Online Cognition Scale

Table-6: t-tests showing significance of difference between different categories of daily use of internet (in hours) on severity of PIU as assessed by OCS

Different daily use hours of internet	Df	t-test
1 and 1 to 2	194	.778
1 and 2 to 4	202	2.76**
1 and 4 to 6	134	4.80**
1 and 6 to 8	86	3.88**
1 and >8	86	3.00**
1 to 2 and 2 to 4	282	2.85**
1 to 2 and 4 to 6	214	4.78**
1 to 2 and 6 to 8	166	3.69**
1 to 2 and > 8	166	2.67**
2 to 4 and 4 to 6	222	1.69
2 to 4 and 6 to 8	174	1.53
2 to 4 and > 8	174	.636
4 to 6 and 6 to 8	106	.505
4 to 6 and > 8	106	.576
6 to 8 and > 8	58	.789

**p < 0.01

Note: PIU = Problematic Internet Use; OCS=Online Cognition Scale

Table 7 and 8 reveal the qualitative analysis of difference in percentage for different contents and purposes the internet being used by problematic and normal internet users (who were classified based on score on OCS). Table 7 indicates that higher percentage of participants in problematic internet users group have been observed to use contents in internet which are related to social networking, entertainment, gaming, pornography and romance. Whereas, there is a slight (negligible) difference between normal (90.8%) and problematic users (92.1%) for the use of Google platform, which is the platform for different sorts of information, knowledge, ect.

Similarly, table 8 suggests that in terms of purposes of use of internet, seeking information is one variable, in which the difference in percentage of participants between problematic (90.4%) and normal (87.5%) users is least. Otherwise, for all other purposes i.e., entertainment, communicating, online marketing, online games, pornography, establishing and maintaining online relationship, problematic internet users are sufficiently higher in percentage than normal users.

Discussion and Conclusion

This study was aimed at exploring two objectives. First, whether patterns (years of use and daily use hours of internet) of internet use influence the severity of PIU and second, to find out whether the preferred contents and purposes of internet use lay their impact on severity of PIU.

It was found in the current study that both the patterns of use and, preferred content and purposes of internet use influenced the severity of PIU as assessed by OCS. Findings (Tables 1, 2 and 3) revealed that morethan two years of internet use and higher than two hours of daily use of internet

Table-7: Comparison of internet users for preferred contents

		Normal users (n=240)		Problematic users (n=240)	
		f	%	f	%
Preferred content (Websites)	Facebook	120	50*	178	74.2*
	Google	218	90.8	221	92.1
	YouTube	150	62.5*	204	85*
	Chat sites	46	19.2*	103	42.9*
	Pornography sites	20	8.3*	48	20*
	Game sites	38	15.8*	54	22.5*
	Romantic sites	3	1.3*	20	8.3*

*Indicating problematic internet users are higher in % for corresponding contents

Table-8: Comparison of internet users for the purposes of use

		Normal users(n=240)		Problematic users (n=240)	
		F	%	F	%
Purposes of using internet	Entertainment	162	67.5*	193	80.4*
	Information	210	87.5	217	90.4
	Communicating	152	63.3*	173	72.1*
	Online marketing	70	29.2*	111	46.3*
	Online Relationship	42	17.5*	74	30.8*
	Pornography	20	8.3*	47	19.6*
	Online games	36	15*	49	20.4*
	Online romance	6	2.5*	11	4.6*

* Indicating problematic internet users are higher in % for corresponding purposes of internet use

(Tables 4, 5, and 6) significantly increased PIU in undergraduate students. Therefore, undergraduate students, who have been using internet for more than two years and those who use it daily more than two hours, must be screened for PIU. Although, there is a dearth of studies in this line of research, one study reported that more duration of use in terms of frequency and hours are likely to lead addiction to internet.[7]

In addition, one other interesting phenomenon was observedin the current study that problematic internet users (undergraduate students) are more inclined towards the contents and purposesof use of internet, which are related to entertainment, gaming, social networking, pornography and romance as compared to normal internet users. These findings suggest that contents and purposes of use of internet can be important factors leading to problematic internet use. However, for the exploration of impact of contents and purposes of internet use on severity of PIU, current study employed only qualitative analysis using percentage. It needs to be further explored using more robust quantitative methods such as random control trials to reach to a confident and reliable prediction about the impact of preferred contents and purposes on severity of PIU.

Moreover, it is a common understanding that individuals with PIU would be using internet more frequently than normal users. But this study is a unique effort to find out the impact of patterns of use on the severity of PIU and on other hand to find out the difference in contents and purposes of internet use between normal and problematic users.

Meta-analytic reviews report that for the treatment of PIU, pharmacological and psychological treatments are effective. It is seen that psychological treatment had large and durable effect as compared to medium-to-large short term effects of pharmacotherapy.[9] It is indicative from these studies that both form of treatment should be preferred for the treatment of PIU, yet, psychological treatment must be included and emphasized.

The findings of this study specially provide inputs for the management of PIU in affected undergraduates. It is advised that clinicians can emphasize (by modifying) upon the patterns, and contents and purposes of use of internet in order to reduce the severity of PIU. To reduce the severity of PIU,daily hour use of internet should be targeted in management plan. In addition, the content and purpose of use of internet should be gradually transferred from entertainment, leisure time, and mood modification to need based (searching information, education, banking, communication etc.) use of internet. Other authors also suggested that treatment goals for PIU should be targeted to gradual abstinence from excessive online activities or to encourage regulated use of internet than total abstinence from internet.[10]

Like other studies, with its strengths, it has shortcoming too. First, the participants could not be randomly selected and second, there were unequal participants in the categories of different years of internet use and daily hours of internet use.

Overall, patterns of internet use, preferred contents and purposes of using internet are quite relevant to be assessed in order to know the levels of severity of PIU. These issues further can help the clinicians in designing proper management plan for the undergraduate students with PIU.

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Original Article

To study the prevalence, pattern and psychopathology of Internet Addiction among Undergraduate students of different streams

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Abstract

Introduction *- In this 21st century, internet has worked as a boon to develop our society. But with the vast advantages, internet has also brought some dangers and internet addiction is one of those. The youngsters who are the prime users of the internet are its major victim. India having the highest number of young populations in the world is more prone for such a disorder.* ***Material and methods*** *- It is a cross-sectional study conducted in the metro city. The study included 1000 students from different streams and colleges. They were asked to fill three questionnaires that included Duke's General Health Questionnaire, Young's Internet Addiction Test and a semi structured proforma. The presence of internet addiction was assessed by the Young's Internet Addiction Test.* ***Results*** *- In this study, out of 1000 participants, 981 completed all the questionnaires. Out of these 981, 499 were males (50.8%) and 482 were females (49.1%). The data were analyzed based on Young's internet addiction test and respondents were distributed in 4 groups with 40.4% being average users,31.4% mild addicts, 27.01% as moderate addicts and 1.1% as true addicts whose life got affected due to this addiction. The addicts were mostly male and this relationship was statistically significant (P value < 0.0001).* ***Conclusions*** *- This is a public health issue which still hasn't caught the attention of our society, including family and policy making bodies, health institutions and the education sector. It is very important to develop strategies to bring internet usage and dependence under check.*

Keywords*: Internet addiction, Prevalence, Psychopathology, Undergraduate students*

Introduction

The turn of the century was marked by the development of the World Wide Web. The internet, while proving itself as an unparalleled tool of information exchange, has also invaded the lives of millions as an addictive menace. Affecting socio-demographic strata ranging from the urban to the rural, there is no denying that internet addiction has evolved into a serious threat.

Much like any other addiction, youth and adolescents are the most vulnerable group for internet addiction, being influenced by the surroundings and its psychosocial impact. Currently the world's population comprises of about 1.2 billion adolescents of which 243 million are in India.India boasts the second highest number of mobile subscribers of any country worldwide – testament to the technological transformation that has spread across Indian society over the past decade. The country is also now the world's second largest smartphone market, having overtaken the US in the first half of 2016.[2] It comes as no surprise that most of our internet users consist of the youth, their increasing numbers being attributed to many reasons

like free internet access, cheap smart phones, wide range of entertainment options available and so on. These factors lead to unorganized and excess use of the internet.

Owing to the increasing dependence on internet, Dr. Ivan Goldberg coined the term 'Internet Addiction' in 1996 where he defined it as pathological compulsive internet use.[3] Later in 1996, a psychologist – Miss Kimberly Young described it as an impulse control disorder, dividing it into 5 subtypes,

1. Cyber relationship addiction
2. Cyber-sex addiction
3. Net compulsions
4. Information overload
5. Computer addiction[4]

She also developed an internet addiction questionnaire with 8 questions which was later formulated to Internet addiction test with 20 questions. This is the most commonly used test, accepted by Mc Murran. There are several studies targeting internet addiction, but a formal consensus remains to be achieved; a common ground for its diagnostic criteria has eluded researchers worldwide.

When it comes to undergraduates undertaking various professional courses, the scenario may be different as these students may not have excess free hours. This study aims at contributing to the internet addiction prevalence, pattern and its psychopathology in college going students.

Aims and Objectives

To study the prevalence, pattern and psychopathology of Internet Addiction among undergraduate students pursuing various professional courses.

Materials and Methods

- **Study design:** This cross-sectional study was conducted in 4 different faculties of colleges between May and July (2018).
- **Sample size:** The sample students were selected randomly; sample size was restricted to 1000 students: 250 students from 4 different streams each, who have been using internet for last 10 months at least. A tentative lower bound for the sample size can be calculated using Cochran's formula:

$$n = Z^2 pq / d^2$$

where Z is the Z value (=1.96 at 95% confi-dence), p is the prevalence of internet addiction, q is simply 1-p, and d is the absolute allowable error.

- **Measurement tools and data collection**: Three questionnaires in straightforward and comprehensive English were used in the study. It was distributed in classrooms to students who volunteered and were given 20 minutes to fill it.

1. A Semi structured proforma: designed to seek details of educational course pursued, purpose of internet usage, device and time of the day preferred for internet access and the duration of use.

2. Duke's General Health Questionnaire (GHQ): which was used to screen for any psychiatric illnesses in non-clinical environment; it covered general aspects of the respondents such as stress, insomnia and depression in last one week.[5] It consists of 11 scales ranging from 0 to 100. Out of these 11 scales, 6 scales consist of physical health, mental health, general health, self-esteem, social and perceived health. These were used to define general functioning of an individual: high scores suggestive of good health. The remaining 5 scales consisted of anxiety, pain, disability and depression which provided measures of dysfunction (higher scores indicative of poor health).

3. Young's Internet Addiction Test (IAT): which is the most used test for gauging internet addiction and has been approved time and again for its psychometric properties. It consists of 20 questions with responses based on a 5-point Likert-like scale. At the end, results were grouped based on level of addictions corresponding to final scores, where 0-30 is normal, 31-49 is mild addiction, 50-79 is moderate and 80-100 was severe addiction. For our study group, this tool fits best because of its validity and reliability.[6] The presence and severity of Internet Addiction was assessed using this test, as it has not been included as a disorder in any of the currently used classification systems namely – ICD 10, DSM 5. Though the inclusion of Gaming Disorder in the ICD 11 marks the possibility of an upcoming disorder of Internet Addiction in future owing to increasing dependence of people on internet

usage.

- Institutional ethical committee (IEC) - IEC approval was sought for this study.
- Data analysis- descriptive statistics were used to analyze data and to bring out an association of various factors involved with internet addiction. Chi square values were calculated in all variables with significant p value between these variables.

Results

In this study, out of 1000 participants, 981 completed both the questionnaires. Out of these 981, 499 were males (50.8%) and 482 were females (49.1%). The data were analyzed based on Young's internet addiction test and respondents were distributed in 4 groups with 40.4% being average users, 31.4% mild addicts, 27.01% as moderate addicts and 1.1% as true addicts whose life got affected due to this addiction. There was clear male preponderance for the moderate and severe addicts.

Table-1: Distribution of internet users based on the age group –

Age group	Number of students	Percentage wise age distribution
16-19	203	20.6%
20-22	409	41.6%
23-26	369	37.6%

The mean age of the student was 20.82 years. Most of these students fell in the 19-22 age group.

Table-2: Distribution of the users based on the gender

Sex	Normal	Mild	Moderate	Severe	Total
Male	181	123	186	9	499
Female	216	186	79	1	482

Chi-square value - 65.2591
P value < 0.0001 → significant

Male gender had a greater number of internet addicts as compared to female gender.

Table-3: Preferred time of the day for internet access by the users–

Time of the day	Normal	Mild	Moderate	Severe
Morning	237	151	102	1
Night	160	158	163	9
Total	397	309	265	10

Chi-square value – 35.5336
p value - < 0.00001 '! significant

Users preferred night-time over the daytime as the severity of addiction increased.

Table-4: Association between Internet Addiction and various Internet Usage Options –

Usage options	Normal	Mild	Moderate	Severe
Gaming	70	56	88	6
Social networking	145	106	72	2
Web surfing	112	83	67	2
Education	70	64	38	0

Chi-square value – 36.784
P value - < 0.0003 '! significant

Table-5: Prevalence of Internet Addiction in different Professional Courses –

Professional course	Normal	Mild	Moderate	Severe
Medical	124	60	45	1
Physiotherapy	93	86	108	2
Engineering - Information Technology	82	98	50	2
Engineering – Civil	93	65	62	5

Chi-square value– 51.52
P value<0.0001 '! significant

Table-6: Significant scores on Duke's GHQ among the Internet Addicts assessed –

Variables	Mild	Moderate	Severe	F-ratio	P- value	Significance
Physical health score	75	74	54	3508.33	0.00001	Significant
Mental health score	70	70	60	313.73	0.00001	Significant
Self-esteem score	74	70	65	101.66	0.00001	Significant
Anxiety score	82	76	60	68.695	0.0001	Significant
Depression score	75	70	45	51.666	0.0001	Significant
Anxiety depression score	80	75	48	68.914	0.0001	Significant

As per the data collected, the initial levels of internet addiction were inclined to social networking and web surfing. As the severity of addiction increased it was found that gaming is the most addictive usage of internet while educational purpose being the least.

Data showed clear preponderance of engineering students over students from medical line.

Duke's GHQ suggested that severe addicts had mental and physical health problems like poor concentration, lack of sleep,anxiety,depression,low self-esteem. This observation was statistically significant.

Those students who got the significant scores on the items used here, were psycho-educated about their situation and were advised to consult the OPD services where they were considered for pharmacotherapy, psychotherapy or both.

Discussion

Many studies conducted worldwide show different trends of internet addiction. This variation was attributed to the local factors such as socio-demographics, education status, internet availability, etc. Our study was focused on learning the internet addiction trend in our city among different age groups and streams of undergraduate students. This study showed clear predilection in male students for internet addiction. This observation was statistically significant. This finding was also seen in many studies such as Nalwa and Anand[7] where investigators observed that male school going students had more internet addiction than their female peers. Similar observation was made by Arvind et al.[8] This increased vulnerability of male students towards internet addiction may be because of their likely interest in gaming, pornography and gambling activities.[9] Mean age of the participants was 20.82 years. Some studies found that late 20s and early 30s have more internet addiction.[10,11] Our study showed that most users were in 19-22 age group. Similar study conducted by Surwase[12] showed 60.63% in 19-20 age group.

In our study most of the internet users put smart phone as their most preferred device, placing them above computer/laptops, may be because of the immense ease of access facilitated by smart-phones and the portability are unparalleled. This observation is like the results in studies conducted by Paul et al,[13] Surwase,[12] Krishnamurthy et al[14] and Dhoket al.[15]

In our study we found that engineering students have statistically proven to be more addicted as compared to other fields of study. Our study showed that 40.4% were average users while 31.4% had mild addiction,27.01% were moderate addicts which were prone to become true addicts and 1.01% were true addicts. Similar study showed 0.3 % true addicts in study conducted by Arvind et al.[8] Another study conducted by Vidya et al[16] in south India on MBBS students showed 18.88% prevalence of internet addiction including moderate and severe addiction. Wide prevalence rate was observed in the rest of the world such as 6.3% in Iran[17] and 16.25% in China.[18] The prevalence range was 0.9% to 38% in various studies involving different standards.[19] This wide variation can be due to the different standards used in different studies across the globe. It is of crucial importance that a consensus be reached and a universally accepted standard diagnostic scale for internet addiction be created. Variation can also be due to the different social structure of the population studied.

Our study also observed that most of the users and almost all addicts preferred night-time for internet usage. This may lead to the adverse repercussions on user's health, leading to less sleep and decline in physical and mental health. This finding corroborates with study conducted by Goel et al.[20]

In our study, the internet usage was found to be mainly directed to social networking and web surfing with few students involving in educational and gaming purposes at initial levels of internet addiction. As the severity of addiction increased it was found that gaming is the most addictive of internet, web surfing and social networking at equal prevalence while educational purpose being the least among the severe addicts. Our study thus clearly is following the importance gaming addiction is given in ICD-11 recently that it has been added as an independent disorder recently, as Gaming disorder. Other studies by Kormas et al,[21] Morrison and Gore[22] and Durkee et al,[23] on patterns of usage show social networking as the highest ranked online activity. Though our study found gaming as the most addictive online activity amongst students.

Several studies demonstrated significant correlation between stress, anxiety, depression and internet addiction. Carli et al[24] conducted a study which showed an association between depression and internet addiction. Some studies such as Fischer et al[25] and Yen et al[26] showed depression as an independent predictor for internet addiction. However, in this study the depression was an impelled action of internet addiction. The bi-directional association shows that these phenomena should not be viewed separately. Low self-esteem and loneliness may push a depressed person towards internet addiction. Sometimes, internet may work as a "therapeutic healer" in socially isolated people by providing an interactive platform online. Our study showed that internet addiction causes significant mental and physical health problems. One study conducted by Alpaslan et al[27] on Turkish medical students found that internet addicts had poor mental health that involved loneliness and increase chances of suicide.

Conclusion

Internet addiction is spreading and affecting an ever-increasing number of people. The main victim of this addiction is the youth. This has led to a negative impact on their mental and physical health and has thus declined their overall efficiency in each field. This is a public health issue which still hasn't caught the desired attention of our society, including family-policy making bodies, health institutions and the education sector. It is very important to develop strategies to bring internet usage and dependence under check. Spreading awareness is of paramount importance for students and their families; this can be effectively achieved by creative projects such as advertisements, dramas, short-films etc. Seminars and sessions should be considered and held in various colleges to inform the students regarding this addiction. Psychiatrists and physicians should also keep a lookout for internet addiction in cases of anxiety and depression. To ensure a healthy and productive future for the Indian youth, we need to address this issue with all the seriousness and urgency it deserves.

Limitations

· A matched control population was absent, making it difficult to compare the results with healthy students.

- Use of self-reporting tests is inferior to in-person interviews but it would have been tedious at this sample size so could not be done.
- Recall bias – as students were asked about their past usage of internet.
- Social- desirability bias – as the students may have attempted the questionnaires to present himself/herself as a normal user.

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Original Article

Metacognitions in patients with Generalized Anxiety Disorder (GAD) in a tertiary care center of North India

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Abstract

Background and Objective: *Involvement of the Metacognitions as the a vulnerability factor has a role in predicting development and maintenance of various psychological disorders including GAD. This study aimed to examine the metacognitions in patients with GAD in comparison to healthy controls.* ***Methods:*** *This was a cross- sectional study on 25 Subjects of GAD and equal number of healthy controls, assessed on Mini International Neuropsychiatric Interview (MINI), General Health Questionnaire (GHQ) and Metacognition Questionnaire (MCQ). Purposive sampling method was used and t-tests were conducted to determine the significant difference between metacognition of the GAD patient to the healthy controls.* ***Results:*** *Results revealed metacognitions of the GAD to be significantly different from the healthy controls on all sub domains of MCQ i.e positive belief about worry, negative beliefs about uncontrollability of thoughts and danger, beliefs about cognitive confidence, general negative beliefs about worry and cognitive self-consciousness.* ***Conclusion:*** *Finding of the study corroborate with the metacognitive model of anxiety disorder . The GAD patients have higher dysfunctional metacognition then the healthy controls.*

Keywords : *Metacognition, Worry, Generalized Anxiety Disorder.*

Introduction

Commonly characterized by 'free floating anxiety', Generalized Anxiety Disorder (GAD) is one of the most commonly occurring mental disorders in community and in the primary health care setting.[1,2] According to the major diagnostic classification schemes including the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) the essential feature of GAD is excessive anxiety and worry (apprehensive expectation) about a number of event or activities. Intensity, duration, or frequency of the anxiety and worry in individuals are out of proportion to the actual likelihood or impact of the anticipated events.[3]

Meta cognition refers to "psychological structures, knowledge, events, and processes that are involved in the control, modification, and interpretation of thinking".[4] The maintenance of pathological worrying in GAD can be linked to particular meta cognitions about worry[5] which have been indicated in Metacognitive models of psychological disorder and their treatments.[6,7] In his model, Wells[8] proposes that the perception of worrying as "uncontrollable" is a central theme that is causally involved in the maintenance of GAD.

The Metacognitive model given by Wells[5] views worry to be a relatively normal cognitive process, however in individuals with GAD, worry is viewed to be pathological. This pathological, repetitive and uncontrollable worry in GAD is

accompanying individual's metacognitive beliefs around worrying. The individuals with GAD are prone to have rigid beliefs about the advantages of using worry as a coping strategy. According to Wells[7] it was suggested that while people generally believe that worrying can be beneficial, adults with generalized anxiety disorder (GAD) tend to believe that worrying is "uncontrollable and dangerous".[8,9]

In a study by Leredana[10] worry is a cognitive process characterized by repetitive uncontrollable thought that anticipated negative outcomes and cause distress in individuals. Wells and Carte[11] found that compared to Type1 worry, the Type 2 worry is a stronger predictor of pathological worrying. Nassif[12] suggested the causal role of negative metacognitions in the development of GAD,[13] and found that negative 'beliefs about uncontrollability and danger' predicted the development of GAD 12–15 weeks later in non-patients. Purdon[14] examined the effects of in-vivo appraisals of worrying in non-patients. The model suggests that the use of worrying as a coping strategy can have problematic consequences for self-regulation, and these effects can contribute to the development of negative Metacognitions. A study also showed that participants with high levels of 'positive and negative metacognitive beliefs' about worry have higher psychopathology; and those with higher scores in 'positive beliefs' had the highest worry.[15]

In a recent study[16] the comparison of metacognitive beliefs and worry in depressed, anxious patients and controls was done. The results of the study indicated that compared to depressed patients and non-patient subjects, anxious patients had significantly higher levels of meta-cognitive beliefs and worry. Moreover, there was a positive significant correlation between meta-cognitive beliefs and worry in anxious patients and healthy subjects.

The existing body of research gives evidence for the involvement of the Metacognitions as the vulnerability factors in predicting development and maintenance of psychological worry in GAD. The role of metacognition in GAD has been studied in the west, there is scarcity of the research data in Indian population. The metacognitive parameters vary across the globe in due to cultural factors; and it have a role in the belief system. Hence there is a need to study metacognitions of GAD in Indian population. By identifying and understanding of different metacognitive beliefs and worries of patients with GAD in our population it will help us in planning better management of this condition. This project was set out to study Metacognitions in patients with Generalized Anxiety Disorder (GAD) in a tertiary care center of North India. It was hypothesized that the Metacognitions of GAD would be different from the healthy controls.

Material and Methods

Design and Sample

This is a cross sectional case control study conducted on 25 patients diagnosed with GAD and equal number of healthy controls. Purposive sampling was used for sample selection. we included the GAD diagnosed by the Psychiatrist meeting the selection criteria of our study, presenting to the Adult Psychiatry OPD, Department of Psychiatry, K.G. Medical University, UP, Lucknow.

Healthy individuals meeting the selection criteria, matched on (age, sex, education) were recruited from staff employees and healthy volunteer who were not first degree relatives of any other patient with psychiatric disorder.

Inclusion criteria for case group

- Willing to give informed consent.
- Patients aged between 18-60 years.
- Diagnosis of GAD as per ICD-10 DCR criteria.
- Minimum education of 5th std.
- Patients who were not receiving any psychotropic medications from at least past 2 days

Exclusion criteria for case group

- Those fulfilling ICD 10 DCR criteria of any other psychiatric disorder (except GAD).
- Those with a severe or chronic physical/ medical disorder or condition that require prior medical management.
- Those with family history (first degree relatives) of any psychiatric disorder as per ICD 10 DCR.

Inclusion criteria for healthy controls

- Willing to give informed consent.

- Patients aged between 18-60 years.
- Minimum education of 5th std.
- GHQ score less than or equal to 3.

Exclusion criteria for healthy controls

- Those fulfilling current or lifetime criteria of any psychiatric disorder on MINI
- Those with family history (first degree relatives) of any psychiatric disorder as per ICD 10 DCR criteria

Description of the tools:

The International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10): This is a coding system of diseases and signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or diseases, as classified by the World Health Organization.[17] The Diagnostic Criteria for Research accompanying the ICD-10 (DCR-10) are designed for use in research by WHO in 1992.

MINI International Neuropsychiatric Interview (M.I.N.I. 6.0): The M.I.N.I. International Neuropsychiatric Interview (M.I.N.I. 6.0) is a short, structured diagnostic interview developed by Sheehan et al.[18] MINI provides diagnoses according to DSM-IV and ICD-10 criteria psychiatric disorders.

General Health Questionnaire (GHQ): The GHQ[19,20] was designed to assess psychiatric distress related to general medical illness. The GHQ developed to evaluate the psychological component of ill health. GHQ-12 is a measure of current mental health. Transitory symptoms of that last less than 2 weeks are viewed as psychologically significant on GHQ. Hindi version is available.[21]

Metacognition Questionnaire (MCQ): The Metacognitions Questionnaire, developed by Cartwright and Wells[9] concerned with the beliefs people have about thinking. The MCQ is a 65-item questionnaire. It assesses individual differences in metacognitive beliefs, The Questionnaire has 5 subscales, measuring the following dimensions of metacognition:

1) Positive worry beliefs,
2) Beliefs about uncontrollability and danger of worry,
3) Meta-cognitive efficiency,
4) General negative beliefs, and
5) Cognitive self-consciousness.

Statistical analysis:

Statistical analyses were performed on SPSS version 20, Graph Pad InStat software. Discrete variables data were expressed in percentages, frequencies, and test of significance were calculated. Categorical data were compared by Chi-square test. For continuous variable t-test (independent samples Student t-test) was used for comparison between two group.

Results

Total number of the patients screened in the case group were 40 out of which 25 could be included in case group. Whereas in the control group total no of subjects screened were 28 out of which 25 could be included in the study as per the selection criteria. Most common exclusion criteria were presence of comorbid psychiatric illness and medications use from past 2 days in the case group.

Table 1: shows the means age of the case group was 30.28 ± 7.02 and range was 19-47 years, and the controls mean age and range was 32.61 ± 10.23 and 19-56 years. In terms of age , sex, gender education, employment status and family income there is no significant difference

As depicted in the table 2 clinical parameters revealed 76% of the study group had duration of illness between 0-5 years. Mean years of duration of illness was 3.35 years. The mean age of onset of illness was 25.52 years. 56% of the cases were in the 20-29 year-group.

Table 3 Shows Mean, S.D and t-test analysis computed to see the differences between cases and controls, it was seen that the Metacognition of the case group, was significantly different at the level of confidence ($p=<0.001$ and 0.01) from control group on total scores and all five sub domains of metacognition.

Discussion

The present study was conducted to examine metacognitions in patients with GAD in comparison to healthy controls in a tertiary care center of North India. The subjects were matched on age, sex and education. Moreover, the selection criteria of the study sample were made stringent to reduce the

Table-1: Socio demographic characteristics of the case and the control groups

Characteristics	Case group n=25 (%)	Control group n=25 (%)	Test of significance X^2, df, P-value
Age in year			
18-30	18 (72%)	18 (72%)	
31-45	5 (20%)	4 (16%)	0.31(2)
46-60	2 (8%)	3 (12%)	0.85
Mean age ± SD	30.28 ± 7.02	32.61 ± 10.23	
Sex			
Male	17 (68%)	15 (60%)	0.86 (1)
Female	8 (32%)	10 (40%)	0.076
Level of education			
Secondary level	6 (24%)	5 (20%)	
High school	3 (12%)	3 (12%)	
Intermediate	4 (16%)	5 (20%)	0.202(4)
Graduation	7 (28%)	7 (28%)	0.995
Post-graduation	5 (20%)	5 (20%)	
Employment Status	**Case group n=25 (%)**	**Control group n=25 (%)**	**Test of significance X^2, df,P-value**
Unemployed	3 (12%)	1 (4%)	3.16 (4), 0.53
Skilled	7 (28%)	6 (24%)	
Semi-skilled	2 (8%)	6 (24%)	
Student	7 (28%)	7 (28%)	
Housewife	6 (24%)	5 (20%)	
Marital Status			
Married	18 (72%)	13 (52%)	1.35 (1),024
Unmarried	7 (28%)	12 (48%)	
Muslim	9 (36%)	5 (20%)	
Family type			
Nuclear	7 (28%)	18 (72%)	8.0, (1), 0.0047**
Joint	18 (72%)	7 (28%)	
Family Income in Rupees/Months			
<5,000	9 (36%)	9 (36%)	4.50(2) 0.105
5,000-10,000	11 (44%)	5 (20%)	
>10,000	5 (20%)	11 (44%)	
Domicile			
Rural	15 (60%)	7 (28%)	3.97 (1) 0.046*
Urban	10 (40%)	18 (72%)	

* significant at < 0.05 level
** significant at < 0.001 level

effects of confounding variables on the metacognitions of subjects It has been emphasized by literature that it is essential to consider these aspects while studying metacognition.[22-24]

Our study results indicate higher total dysfunctional metacognitions in GAD compared to healthy controls on all five sub-domains of metacognition assessed on MCQ i.e. positive belief about worry, negative beliefs about uncontrollability of thoughts and danger, cognitive efficiency, general negative beliefs about worry and cognitive self-consciousness. These findings are consistent with conceptualization of GAD according to metacognitive theory and therapy models of anxiety

Table-2: Clinical Characteristics of the case group

Characteristics	(n=25) (%)
Duration of illness (in yrs.)	
0-5	**19 (76%)**
6-10	4 (16%)
11-15	2 (8%)
Mean ± SD	3.35 ± 3.54
Age of onset in (yrs.)	
10-19	3 (12%)
20-29	**14 (56%)**
30-39	8 (32%)
Mean ± SD	25.52 ± 6.35

worry' develops as worrying itself is appraised as dangerous and uncontrollable.

People with GAD share contradictory thoughts about worrying (i.e. both positive and negative beliefs co-exist) a manner to resolve this conflict is to attempt not to think about these thoughts. Unfortunately thought suppression strategies of this kind are rarely successful as indicated by suppression research[26,27] and their failure reinforces belief in uncontrollability.

Positive metacognitive beliefs refer to information individuals hold about coping strategies

Table-3 Comparision of Metacognitions (MCQ) between case group and control group

MCQ domains	Case group Mean ± SD(n=25)	Control group Mean ± SD(n=25)	t-valuedf=48	P-value
1. Positive worry beliefs	40.44 ±10.71	33.64 ± 8.07	4.01	0.0002**
2. Belief aboutUncontrollability and Danger	50.4 ± 6.22	32.72 ± 9.01	8.07	0.0001**
3. Meta cognitive efficiency	23.56 ± 8.09	17.92 ± 4.93	2.97	0.0046*
4. Gen negative belief	37.92 ± 8.20	26.56 ± 6.49	5.43	0.0001**
5. Cognitive self-consciousness	19.92 ± 2.81	17.24 ± 3.75	2.86	0.0063*
Total (Mean ± SD)	172.2 ± 22.41	127.68 ± 22.78	6.97	0.0001**

* significant at <0.05 level
** significant at <0.001 level

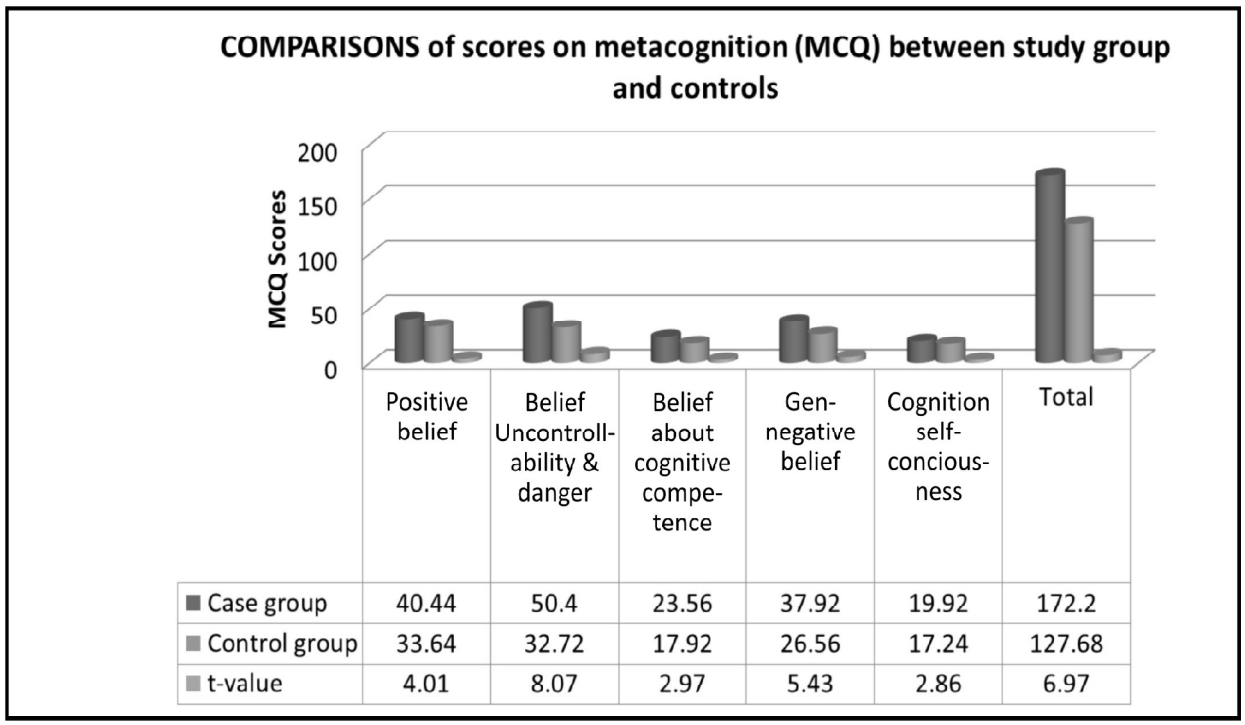

Figure-1

disorders.[25] According to which, worry becomes problematic when individual develops negative belief about worry at which point 'worry about that impact on cognition and internal states. These may include beliefs such as "Worrying will help me get things sorted out in my mind"[9] or

"Rumination will help me solve the problem"[28]. Such beliefs are understood as antecedent to the beginning of maladaptive coping and central to its strategic selection. Negative metacognitive beliefs relate to the meaning and consequences of engaging in a given form of coping and related intrusive thoughts and feelings. These may include beliefs such as "My worry is uncontrollable"[9] or "Ruminating will damage my mind".[28] Such beliefs are associated with an escalation of negative verbal activity that contributes to fixing attention on threat so that individuals have difficulty switching to normal threat-free condition.[7] The model postulates a sequential process with positive meta cognitions (i.e., "Worry helps me cope."), initiating Type 1 worries (worries about internal or external cues;), which in turn trigger negative metacognitions (i.e., "Worry is dangerous for me."), leading to Type 2 worry (meta-worry; i.e., "If I keep worrying, I will be mad."). Importantly, Type 2 worries are suggested to trigger negative emotions and futile efforts to stop worrying (i.e. thought suppression, reassurance-seeking or avoidance), both conditions contribute to worry being maintained.[29] This vicious circle of negative metacognitions is continuous and worry is then viewed by the individual as assertion for the belief that worry is uncontrollable.

Studies which assessed the relationship between metacognition and anxiety disorder show that GAD is characterized by negative beliefs about uncontrollability and danger and negative beliefs Individuals meeting criteria for GAD on DSMIII-R, DSM-5 report positive reasons for worrying[30], as do non-patients.[31] Proneness to pathological worry characteristic of GAD is positively associated with both negative and positive beliefs about worry.[9,32] An earlier study done by, Wells and Carter[11] demonstrated that patients meeting criteria for GAD in DSM-III-R[33] could be significantly distinguished from patients with panic disorder, social phobia, or non-patients by their elevated levels of negative beliefs about worry and meta-worry. Nassif (1999) examined the causal role of negative metacognitions in the development of GAD in DSM-III-R,[13] and found that negative beliefs about uncontrollability and danger predicted the development of GAD, 12–15 weeks later in non-patients. Other researchers[34] have reported similar findings. It was shown that GAD is characterized by beliefs about cognitive competence, negative beliefs about uncontrollability and danger and negative, while OCD was characterized by increased cognitive self-consciousness.[35]

The limitations of the study are that due to small sample size generalizability of the finding becomes limited, therefore studies need to be done on large samples, The biggest strength of this study is that till date only western data has been found to exploring the role of metacognition in patients with GAD. Although in Indian setting we could not find study on the role of metacognition patients with GAD and compare with that of healthy controls. Implications of comparing metacognitions with other anxiety disorders and compulsion related disorders. Negative metacognition should be targeted in the therapy before the positive belief, since these are closely linked to acute anxiety.

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Errata

The authors have updated the list of contributors in the following article published in 2018 issue and must be referenced as – "Shweta Singh, Fauzia Jawaid Kazi, Amit, Arya, Pawan Kumar Gupta, Suyash Dwivedi. A study of parenting style and coping strategies in mothers of children and adolescent with ADHD, 2018; 21(2) : 386–390."

Original Article

Co-Morbidity of Attention Deficit Hyperactivity Disorder in Dyslexic School going Children in Jaipur

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Abstract

Introduction: *Attention Deficit Hyperactivity Disorder (ADHD) and Reading Disorder (RD) are two of the most frequent childhood developmental disorders. Dyslexia and ADHD co-occur more frequently than expected by chance, with 25–40% of children with one disorder meeting criteria for the other.* ***Material and methods:*** *This cross-sectional study included total of 800 children from a CBSE affiliated coeducational public school at Jaipur from the period between April 2013 to August 2014. Research tools used were - Specific Learning Disability -Screening Questionnaire (SLD-SQ), Malin's Intelligence Scale for Indian Children (MISIC), Diagnostic Test for Reading Disorder. (DTRD), ADHD Scale, Diagnostic criteria for Attention-Deficit/Hyperactivity Disorder (DSM-4 TR).All the statistical analysis was done with the help of MS excel and Premier of biostatistics.* ***Results:*** *The prevalence of dyslexia was 7.43% in the present study, being higher in male children. The study found statistically significant relation of dyslexia with family type, family history of psychiatric illness.14.52% of dyslexic children in the sample were found to have co-morbid ADHD.* ***Conclusions:*** *Children suffering from Dyslexia should be thoroughly assessed for Attention-Deficit/Hyperactivity Disorder and managed accordingly for better outcome.*

Keywords : *Dyslexia, Attention-Deficit/Hyperactivity Disorder, Malin's Intelligence Scale for Indian Children*

Introduction

Dyslexia is defined as difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity.[1] It is one of the common learning disability with a prevalence ranging from 5 to 17.5% among school age children.[2] Dyslexic people often have a natural talent for any of the arts (such as music, dance, drawing, or acting). They often possess capability to see patterns in noise, which helps them to pro-duce mundane into something more interesting and exciting.[3]

The most common childhood psychiatric disorders reported in dyslexia is Attention-Deficit Hyperactivity Disorder (ADHD); Up to 25% of children with dyslexia also have ADHD; 15-30% children with ADHD have reading disorder.[4]

Attention Deficit Hyperactivity Disorder (ADHD) and Reading Disorder (RD) are two of the most frequent childhood developmental disorders. Each of them affects between 6-9% of school going children, although these percentages decline to 5% when the DSM-IV-TR (2000) criteria is applied. Attention Deficit Hyperactivity Disorder (ADHD) is a common neurodevelopment disorder of childhood associated with substantial cognitive,

family, social, behavioral, and academic impairment. ADHD in childhood occurs in an estimated 3%–7% of school-aged children.[5] It is characterized by persistence of hyperactivity, impulsivity and attention deficit.[6] The worldwide prevalence rate of childhood ADHD has been estimated to 3.40–5.29% in meta-analyses.[7,8]

The co-morbidity between dyslexia and ADHD has been well established. Dyslexia and ADHD co-occur more frequently than expected by chance, with 25–40% of children with one disorder meeting criteria for the other.[9]

The causes of co-morbidity between Reading Disorder (RD) and ADHD remain uncertain. Some longitudinal studies suggest that attention deficits lead to reading problems later because they interfere with reading instruction[10] whereas others suggest that early reading difficulties also predict later attention problems.[11] A third possibility is that RD and ADHD may be due to a shared risk factor that increases risk for both disorders.

Aim and Objectives

- To find out the prevalence of dyslexia in school going children.
- To find out the relationship of socio-demographic factors with dyslexia.
- To find out the prevalence of ADHD as a co-morbidity, if any, with dyslexia.

Material and Methods

This study was carried out in Department of Psychiatry, Mahatma Gandhi Medical College and Hospital, Jaipur from April 2013 to August 2014. The study protocol was approved by the Ethics Committee of Mahatma Gandhi Medical College and Hospital. Permission from the Principal of the school and a written informed consent was taken from the parents before starting the study.

Sample size: A total of 800 children; 500 students from class 3rd and 4th and 300 in class 5th from a CBSE affiliated coeducational public school at Jaipur were enrolled in this study. The pre-tested, structured dyslexia screening questionnaire was used.

Methodology: Various research tools were used to conduct the study are –

A. Specific Learning Disability – Screening Questionnaire (SLD-SQ)[12]
   It is a 12 item brief screening instrument in which answers are to be given in either 'yes' or 'no' with cut of score 4 and any total score above the cut off score indicates possibility of SLD.
B. Malin's Intelligence Scale for Indian Children (MISIC)[13]
   It is an Indian adaptation of WISC (Wechsler's Intelligence Scale for children). The test consists of 11 subtest divided into verbal and performance group. These subtests maybe administered in any order convenient for rapport. Only 10 tests -5 from each group are required for complete scoring.
C. Diagnostic Test for Reading Disorder (DTRD)[14]
   It is an individually administered instrument for diagnosing the reading disorders in children aged 8 through 11 years. A child's performance on the items indicate the adequacy/inadequacy with regard to the functioning of his/her cognitive processes. The scored on individual items are interpreted in combination with the scores on the other items. It aims at measuring through 8 items at two levels.
D. ADHD Scale.[15]
   This scale has been developed on the basis of APA DSM IV. It has 3 subscales which reflect a conceptualization of relationship among three categories, namely, inattention, hyperactivity & impulsivity.
E. Diagnostic criteria for Attention-Deficit/ Hyperactivity Disorder (DSM-IV TR).

The study was conducted in three phases. The phase 1, which was a specially designed Performa, was given to the parents and data on Specific Learning Disability, a Screening Questionnaire (SLD-SQ) was obtained from the parents with the help of clinical psychologist. In phase 2, the children who scored four and above on SLD-SQ were further evaluated for Intelligence Quotient using Malin's Intelligence Scale (MISIC) by taking help of clinical psychologist and then they were assessed on Diagnostic Test for Reading Disorder (DTRD) to make a diagnosis of reading disorder. In Phase 3, those children who were found to have reading disorder were screened for co-morbidity of ADHD

through ADHD scale. Simultaneously, a confirm diagnosis of ADHD was made by DSM-4 TR criteria for children who were positive on ADHD scale.

Statistical analysis

Analysis of the result was done by calculating the frequencies and percentages of the variables relating to socio-demographic factors of the total sample. Data obtained with the help of screening questionnaires, IQ assessment, Diagnostic tests and co-morbidity were analyzed by calculating Chi-square, Mean and Standard Deviation. In order to find out the significance of difference on various scores in the two groups, student t-test was used. All the statistical analysis was done with the help of MS excel and Premier of biostatistics.

Results

Out of 800 children, parents of 42 children did not give their consent to participate in the study and 18 children in 3rd standard were found to be below the age of 8 years, so they were excluded from this study. Thus, the total sample consisted of 740 children out of which 478(63%) were males and 262(37%) females. The prevalence of reading disorder, i.e., Dyslexia was 7.43% in the present study. The prevalence of Dyslexia was higher in male children, i.e., 81% while only 19% female children were dyslexic. Out of 740 children 402 (59%) in non-dyslexic group were in the age group of 10-11 years, whereas in dyslexic group subjects were approximately equally distributed in all the four age groups (22%, 27%, 27% and 24% respectively).

Table-1: Distribution of the children in the non-dyslexic and dyslexic group according to their age

Age	Non-Dyslexic (N=685)	Dyslexic (N=55)
8 years	165 (24%)	12 (22%)
9 years	118 (17%)	15 (27%)
10 years	282 (41%)	15 (27%)
11 years	120 (18%)	13 (24%)

Table 1 shows that majority of the subjects i.e. 402 (59%) in Non-Dyslexic group were in the age group of 10-11 years, whereas in Dyslexic group, subjects were approximately equally distributed in all the four age groups (22%, 27%,27% and 24% respectively). It was found to be statistically non-significant.

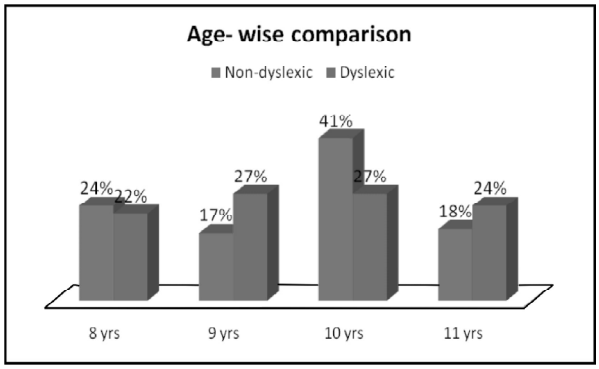

Table-2 : Comparison of birth order in non-dyslexic and dyslexic children

Birth Order	Non-Dyslexic (N=685)	Dyslexic (N=55)
Only child	64 (9%)	2 (3.6%)
First child	289 (42%)	33 (60%)
Last child	255 (37%)	15 (27.4%)
Other	77 (12%)	5 (9%)

It is evident from table 2 that 64 (9%) children in Non-Dyslexic group were only child of their parents followed by 289 (42%) first born, 255 (37%) were last born and 77 (12%) other in Non-Dyslexic group. In the Dyslexic group, 2 (3.6%) were only child followed by 33 (60%) first order, 15 (27.4%) last born and 5 (9%) other order children. The difference between the two groups was not statistically significant.

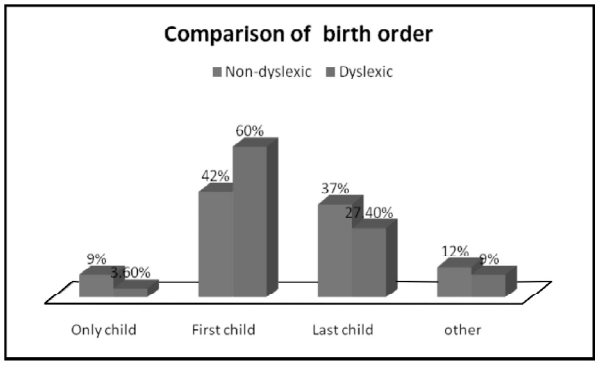

Table-3: Comparison of family type in non-dyslexic and dyslexic children

Family Type	Non-Dyslexic (N=685)	Dyslexic (N=55)
Joint family	461 (67%)	45 (82%)
Nuclear family	224 (33%)	10 (18%)

Table 3 shows comparison between the two groups with respect to family type. 461 (67%) children in non-dyslexic group belonged to joint family and 224 (33%) belonged to nuclear family whereas in dyslexic group 45 (82%) children were from joint families and 10 (18%) belonged to nuclear family. The difference was statistically significant between the two groups.

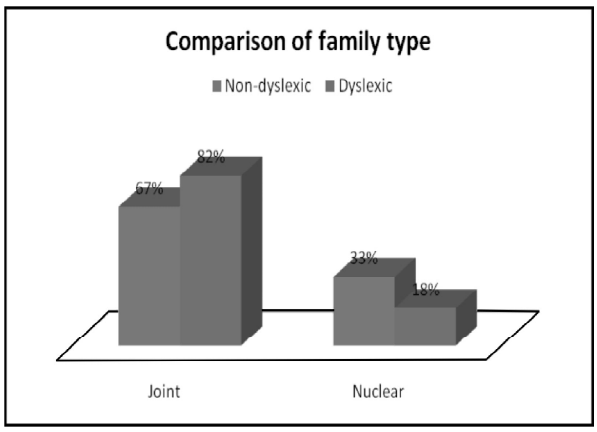

Table-4 : Comparison of family history of psychiatric illness in non-dyslexic and dyslexic children

H/O Psychiatric Illness in Family	Non-Dyslexic (N=685)	Dyslexic (N=55)
Absent	683 (99.7%)	52 (94.5%)
Present	2 (0.3%)	3 (5.5%)

Table 4 shows that in 683 (99.7%) Non-Dyslexic and 52 (94.5%) Dyslexic children, there was no family history of psychiatric illness whereas 2 (0.3%) Non-Dyslexic and 3 (5.5%) Dyslexic children had positive family history of psychiatric illness. The difference between the two groups was statistically highly significant.

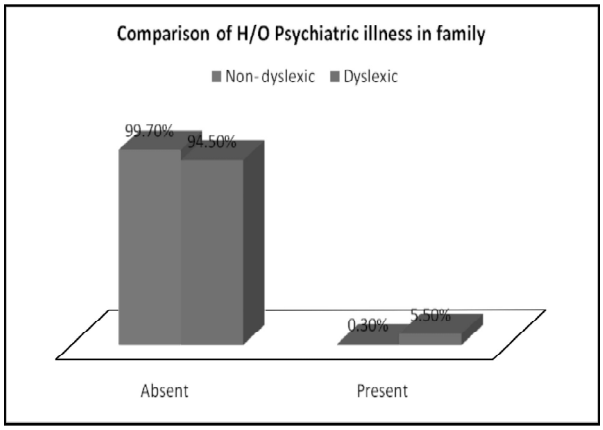

Table-5: Significance of difference in SLD-SQ scores in dyslexic children by parents and teachers

Screening Person	Total Score	Mean	SD
Parents	317	5.76	2.134
Teachers	411	7.47	1.73

Table 5 shows that there exists a highly significant difference in reporting of learning disabilities (which includes dyslexia) on SLD-SQ by parents and teachers as t-ratio is significant at 0.000 level. Mean scores indicate that teachers showed more accuracy in reporting reading disorder in comparison to parents. This indicates that reporting of teachers is more reliable.

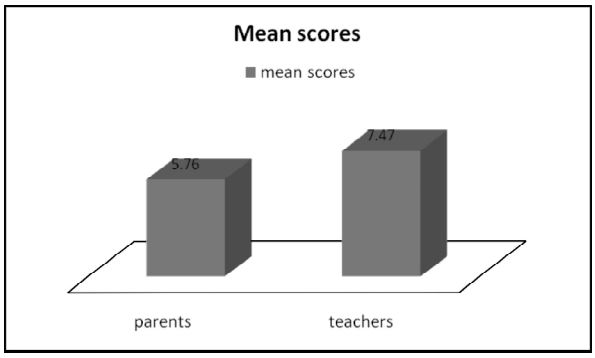

Table-6: Significance of difference in verbal and performance IQ on MISIC of dyslexic children

Intelligence Quotient	Total Score	Mean	SD
Verbal IQ	4731	86.02	4.9
Performance IQ	6330	115.09	3.85

Table 6 shows that there is highly significant difference in verbal and performance IQ on MISIC as t-ratio is significant at 0.000 level. Mean scores indicate that performance IQ is much higher than verbal IQ in dyslexic children.

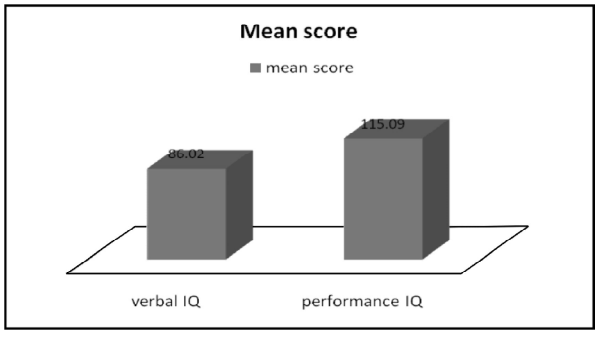

Table-7: Co-morbidity of ADHD in dyslexic children

Dyslexia Positive Cases	ADHD Co–Morbidity	Percentage
55	8	14.52%

Data from above table revealed that ADHD co-morbidity prevalence was found to be 14.52% in dyslexic children in the present study.

Discussion

Children have varied reading ages. Some read at their real age while others read far above their real ages and some will read lower than their real ages. In the present study, among the school children in Jaipur, the prevalence of dyslexia is found to be 7.43%. These findings are supported by the studies done by Shayawitzet al,[17] Mogasale et al,[18] Choudharyet al,[19] and Berger et al[20] who have reported the prevalence of dyslexia 11.2%, 7.47%, from 6.9% to 9.0%, 6.3%, around 7% and 9.9% respectively. However various other authors have reported a prevalence of dyslexia 2.26% in English medium schools and 3.36% in Hindi medium schools, 2.7%, 28.07%, 27.8% and 33% respectively.[21-25] These differences may be due to the difference in methods and tools used or sample taken from different geographical areas that varied with respect to age, language and size of the sample.

In this study, prevalence of dyslexia was observed more among males being 81% and only 19% females were dyslexic which is in consistent with other studies.[26-32] However Tomblin et al[33] and Cecila et al[34] reported a little difference in the prevalence of Dyslexia / SpLD (Specific Learning Difficulty) in boys and girls, there by indicate contradiction.

We found that dyslexic group were approximately equally distributed in the age groups of 8, 9, 10 and 11 years and there was no significant difference among different ages and presence of reading disorder which is in consistent with various authors who all have reported the prevalence of learning disabilities in age group of 8-11 years.[19,21,24]

We also found that 64 (9%) children in Non-Dyslexic group were the only child of their parents followed by 289 (42%) who were first born, 255 (37%) were last born and 77 (12%) were others, whereas in the Dyslexic group 2 (3.6%) were only child followed by 33 (60%) first order, 15 (27.4%) last born and 5 (9%) other order children. The difference between the two groups was not statistically significant. Our findings are consistent with several other studies.[19,22,27] However Dhanda and Jagawathave reported a significant difference in birth order of dyslexia and their total sample studied.[21] Therefore, these results are in contradiction to the present ones.

In this study we also did a comparison between the two groups with respect to family type. 461 (67%) children in Non-Dyslexic group belonged to Joint family and 224 (33%) belonged to Nuclear family; whereas in Dyslexic group 45 (82%) children were from Joint families and 10 (18%) belonged to Nuclear family. The difference was statistically significant between the two groups. This indicates that dyslexia and type of family are related. Our findings are in the accordance with the findings of study done by Saviour and Ramachandra who have also reported a preponderance of extended / joint family in their sample.[23] On the contrary, Dhanda and Jagawat[21] and Choudhary et al[19] have reported more number of dyslexia/ SpLD children in nuclear families.

We also found that in 683 (99.7%) Non-Dyslexic and 52 (94.5%) Dyslexic children, there was no family history of psychiatric illness whereas 2 (0.3%) Non-Dyslexic and 3 (5.5%) Dyslexic children had positive family history of psychiatric illness. The difference between the two groups was statistically highly significant. These results are supported by the results of the study done by Choudhary et al who has also reported presence of psychiatric illness in the families of SpLD children.[19] These findings have the indirect support (though in the present study family history of dyslexia has not been included) of the studies done by others who have reported impact of family history of dyslexia/ SpLD on development of dyslexia/SpLD in children.[23,35]

We observed that there is a highly significant difference in reporting of learning disabilities (which includes dyslexia) on SLD-SQ by parents and teachers as t-ratio is significant at 0.000 levels. Mean scores indicate that teachers showed more accuracy in reporting reading disorder (dyslexia) in comparison to parents. This indicates that reporting of teachers is more dependable. This proves the hypothesis

2(R).Our findings are strongly supported by the studies done by other authors who has also reported that sensitivity of the teachers in screening of dyslexia/ SpLD is more useful than parents in screening children for dyslexia/SpLD though one cannot solely rely on them.[17,36] This can be considered as a caution. Use of diagnostic tool should be strongly recommended after screening.

In this study, the significance of difference in verbal and performance IQ on MISIC was found. The t-ratio indicates significance at 0.000 levels. Mean scores indicate that performance IQ is much higher than verbal IQ in dyslexic children. Hence hypothesis 2 (S) is proved and correlates with the studies done by other authors who have also indicated a difference in verbal and performance IQ.[23,36]

Our study reveals ADHD co-morbidity in dyslexic children. Prevalence of ADHD co-morbidity was found to be 14.52% in dyslexic children in the present study. Therefore, the hypothesis 3 stating ADHD will be present as co-morbid illness with dyslexia is proved. These findings are supported by majority of the studies Gilger et al. (1992) done in past in which prevalence of ADHD co-morbidity is reported to be between 11-40%.[4,27]

Conclusion

Reading disorder and ADHD are chronic conditions that have a significant impact on academic development and educational outcome. Because most of the children with these difficulties spend a significant proportion of time in both special education and regular classroom environment, educators in both settings should receive specific training on the characteristics and causes of both disorders their long term implications and the interventions most likely to be effective.

Limitations

- The sample was taken from only one school; therefore, the findings cannot be generalized.
- The study would have been more informative if it was extended to secondary and senior secondary levels.

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Original Article

Management of different domains of Aggressive Behaviour of Persons with Mental Illness (PMI) by Caregivers in both hospital and home settings

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Abstract

Background : *Anger is a normal human emotion which, if handled appropriately and expressed assertively, can provide an individual with a positive strength to solve problems and take decisions concerning life situations. Anger becomes aggression when it is not expressed appropriately. Aggressive behaviour can lead to so many harmful behaviour including violence thus represents most challenging phenomenon in psychiatric in-patient care. It also further intensifies stigma towards patient with mental illness.So it is important to reduce the impact of aggression and help the person with mental illness to live a better and productive life.* ***Aim:*** *To assess the effectiveness of brief intervention package among caregivers in reducing aggressive episodes of Person with mental illness (PMI) in psychiatric unit of a tertiary care hospital, Chandigarh.* ***Material and Methods:*** *The research approach used was quantitative and design was pre experimental. Total enumeration sampling technique was used for this study. Total 48 caregivers who were willing to participate were registered for this study. The tool used for data collection was interview schedule. Data collected was analyzed by using descriptive and inferential statistics.* ***Results:****Out of 48 caregivers, 50% samples were from the age group of 41-60 years with mean ± SD= 44.35 ± 13.737 and range 20-79. Among them 58.3% were female and 87.5% were married. Modified Overt Aggression Scale (MOAS) was applied to assess changes in aggression score after intervention. The result showed that there was significant improvement in post interventional MOAS score ($p<0.05$). 18.7% patients had severe aggression in pre intervention assessment but in post test no one reported of having severe aggression.* ***Conclusion:*** *Findings revealed that improving knowledge and skills of caregivers can reduce the episodes of aggressive behaviour among person with mental illness. It is recommended that study need to be conducted on large scale among persons with mental illness to know the current incidence of aggressive episodes.*

Keywords : *Aggressive behaviour, Persons with mental illness (PMI), Caregivers.*

Introduction

Aggression means a feeling of anger or antipathy which can result in hostile or violent behaviour.[1] Aggressive behaviour is most common among psychiatric patients because they are having aggressive personality trait as well as inability to control anger because of illness.[2] Aggression is broadly divided into two aspects-affective (or reactive aggression) and instrumental aggression. Affective or reactive aggression means a kind of aggression which is associated with doing or showing some negative affect (like anger). Instrumental aggression means aggressive behaviour which are intended to achieve goal.[3] In most of the cases patient himself,care givers and health care professionals becomes victim of patient's

aggressive behaviour.

Aggressive behaviour in the hospitals can occurin any form like using physical strength deliberately, doing verbal and physical abuse to caregivers and other staff which sometimes can results in physical or psychological harm towards self or others. Literature on causes of aggressive behaviour among psychiatric patients showed some conflicting information where few factors are mostly associated with patient's aggressive personality trait or innate tendency for aggression. and others showed that socio-demographic factorssuch as age, sex, marital status, diagnosis, psychopathologyassociated with crime behaviour are linked with patient's aggressive behaviour.[4]

Aggression if not resolved it can turn into violence. Aggression can be in different forms like verbal aggression, aggression against property, auto aggression and physical aggression. Though verbal aggression is milder form of aggression, it is important to mention that emotional impact of continuous exposure to verbal aggression is equally distressing as a single exposure to physical aggression.[5]

Loughland et al revealed in their study that almost 80% caregivers of psychiatric patient had experienced moderate and severe level of aggressive behaviour from their patient with psychosis. And most of the time it was in verbal aggression form. It has also been reported that one in five psychiatric patients have fear for their own lives and became concern about re occurring of violence again.[6]

Caregivers have very little knowledge and awareness about how to manage violent behaviour of psychiatric patient. Mental illness has become stigmatized in most of the countries. In maximum cases, people with this illness are often subjected to be tortured. Sometimes, the caregivers feel burdened because of their patient's behaviour. They feel afraid too. A study was conducted on caregiver's attitude towards patient with mental illness and their perceived stigma. It reported that interventions targeting for these high-risk populations/communities might be beneficial as it helps to build a positive attitude and overcome perceived social stigma.[7]

The consequences of aggressive incident have some negative impact on caregivers and other family members and it also further intensifies stigma towards patient with mental illness. Sometimes even it can compromise care required and available for those patients. So it is important to analyze factors responsible for origin of violent behaviour and to teach care givers regarding necessary skills and strategies to reduce the impact of violent behaviour and help the persons with mental illness to live a better and productive life.

Material and Methods

Research approach used in this study was quantitative and design was pre experimental. Total enumeration sampling technique was used. The sample population was caregivers of person with mental illness registered in psychiatry unit (both ward and OPD) of Tertiary care hospital of Chandigarh. Sample size were 48. Inclusive sampling criterion of the study was participants who were willing to take part in study. Exclusion criteria were caregivers who had previous psychotic illness. Tools used for study were prepared after extensive literature review and validation from experts. Tools selected and used for data collection were (1) Subject's socio demographic profile (2) Clinical profile of patients 3) Modified Overt Aggression Scale (MOAS) for assessing severity of aggression. All subjects in the study were explained about research protocol. Permission was taken from Institutes ethics committee and written informed consent was taken from each subject. Confidentiality and privacy of each subject was maintained. Full autonomy was given to participant to be withdrawn from study at any time. Pre interventional assessment was done for 15-20 minutes for each participant. Intervention was given through "brief intervention package" prepared by extensive literature review. One protocol was made which contained definition of violent behaviour, causes of aggressive behaviour, sign and symptoms of aggressive behaviour, management and prevention of aggressive incident in both hospital and home settings. And intervention was given by information booklet in both Punjabi and Hindi language. After 15 days of intervention, again post test was conducted by using same criteria of pre intervention assessment. Scoring was done according to selected criteria. The analysis was done by using SPSS version 20.0.

Results

Table 1 depicts that half of the subjects were in age group of 41- 60 years (50%). Mean age of participants was 44.35 ± 13.7 37.5 8.3% subjects were female. Out of 48 participants 33.3% were mothers, 41.7% were having high school education followed by 27% having graduation and above and 41.7% participants were house wives. Per capita income of subjects were within range Rs 500-3000 with mean per capita income 7671.94 ± 7339.38. 50% subjects had 1-5 year of duration of stay with the patient.

Table-1: Socio-demographic variables of care-givers

S. No.	Variable	N= 48 n (%)
1.	**Age (in years)***	
	a) 21-40	20 (41.7)
	b) 41-60	**24 (50.0)**
	c) 61-80	4 (08.3)
2.	**Sex**	
	a) Male 20 (41.7)	
	b) Female	**28 (58.3)**
3.	**Relationship status**	
	a) Mother	**16 (33.3)**
	b) Spouse	10(20.8)
	c) Siblings	9 (18.8)
	d) Father	7 (14.6)
	e) Son	4 (08.3)
	f) Uncle	2 (04.2)
4.	**Educational status**	
	a) No formal education	2 (04.2)
	b) Primary school	6 (12.5)
	c) Middle school	13 (27.1)
	d) High school	**20 (41.7)**
	e) Graduation and above	13 (27.0)
5.	**Occupational status**	
	a) Professional	03 (06.3)
	b) Skilled worker	06 (12.5)
	c) Unskilled worker	13 (27.1)
	d) Housewife	**20 (41.7)**
	e) Unemployed	04 (08.3)
	f) Others (Retired)	02 (04.1)
9.	**Per capita income****	
	a) <985 3 (06.2)	
	b) 986-1971	8 (16.7)
	c) 1972-3286	6 (12.6)
	d) 3287-6573	10 (20.7)
	e) >6574	**21 (43.8)**
10.	**Duration of stay with the patient (year)*****	
	a) < 1	12 (25.0)
	b) 1-5	**24 (50.0)**
	c) 6-10	8 (16.7)
	d) 11-15	2 (04.2)
	e) >16 2	(04.1)

*** Mean ± SD** = 44.35 ± 13.737, **Range**: 20-79
**** Mean ± SD**= 7671.94 ± 7339.38**, Range:** 500-30000
*****Mean ± SD**= 48.85± 56.173

Table No 2 describes the clinical profile of patients. According to care givers, patients were in the age group of 20-80 years with mean age 34.17 ± 12.72. Most of the patients were in the age group of 20-40 years (68.7%). In case of gender (sex), 54.2% were female. According to diagnosis of patient, neurosis and psychosis found equal as 50% for each. Caregivers reported that 33% patients had occurrence of violent behaviour almost every day followed by 20.8% had several times a week. On asking about reasons related to violence, 50% caregivers reported that there were other reasons (altercation between family members, discord family relationship, not obeying command) for violence.

Table -2: Clinical variable of patients

S. No.	Variables	N=48 n (%)
1.	**Age (in years)***	
	a) 20-40	**33 (68.7)**
	b) 41-60	13 (27.1)
	c) 61-80	2 (04.2)
2.	**Sex**	
	a) Female	**26 (54.2)**
	b) Male	22 (45.8)
3.	**Diagnosis of patient**	
	a) Psychotic	24 (50.0)
	b) Neurotic	24 (50.0)
4.	**Frequency of occurring violent behaviour**	
	a) Everyday	**16 (33.3)**
	b) Several times a week	10 (20.8)
	c) Once a week	9 (18.8)
	d) Once a month	5 (10.4)
	e) 15 days a month	8 (16.7)
5.	**Duration of violent behaviour****	
	a) 1- 5 min	**46 (95.8)**
	b) 6-10 min	2 (04.2)
6.	**Reason for violent behaviour:**	
	a) Auditory hallucination	04 (08.3)
	b) Panic attack	03 (06.3)
	c) Generalized anxiety disorder	09 (18.7)
	d) Phobia	08 (16.7)
	e) Others#	**24 (50.0)**

***Mean ± SD** = 34.17 ± 12.72**, Range:** 19-67
**** Mean ± SD** = 2.77±1.859**, Range**: 1-10
# Altercation between family members, discord family relationship, not obeying command

Table No 3 depicts changes in pre and post intervention assessment of the Modified Overt Aggression Scale (MOAS) among the patients. The MOAS scale is divided into four domains verbal

aggression, aggression against property, auto aggression and physical aggression. The comparisons of the pre test and post intervention test scores of these four domains were done using pared t test. The result showed that total MOAS mean score in the pre test was 14.15 ± 13.381 and after intervention it was 5.83 ± 6.663 at <0.001 level of significance. It shows significant improvement in the MOAS score of the subjects after intervention. Further in various domains of MOAS, in verbal aggression domain mean pre test score and range was 2.40 ± 2.36 and 0-10 respectively. And after intervention mean post test score and range was 1.42 ± 1.127 and 0-5 at 0.006 level of significance which shows significant improvement after intervention. In case of second domain aggression against property, mean pre test score and range was 2.96 ± 4.063 and 0-12 and after intervention mean post test score and range was 2.10 ± 2.595 and 0-12 at 0.153 level of significance which shows there was no such difference in score of before and after intervention. In the third domain auto aggression, pre test mean score and range was 5.69 ± 6.926 and 0-24 respectively and in post test the mean score and range became 1.81 ± 3.20 and 0-9 at <.001 level of significance which shows significant improvement was seen before and after giving intervention. In case of physical aggression domain, pre test mean score and range was 3.25 ± 5.452 and 0-24 respectively and after intervention post test mean score and range was .50 ± 1.571 and 0-8. So there is also significant improvement seen in pre intervention and post intervention score with level of significance .001.

As per MAOS score 1-13 refers to mild aggression, 14-26 refers to moderate aggression and > 26 refers to severe aggression. Majority of the participants (58.3%) had score between 1-13 in pre test and 83.3% had same score in post test. 22.9% patients had moderate aggression in pre test and in post test 16.7% patient had moderate aggression. Only 18.7% participants had severe aggression in pre test. And in post test no one had severe aggression. So after intervention severity of aggressive episodes were reduced.

Table-3: Pre and post interventional Modified Overt Aggression Score (MOAS) among subjects

Domain	Pre test Mean ± SD range	Post test Mean ± SD range	#Paired t df p value
Verbal aggression	2.40±2.32 0-10	1.42 ± 1.127 0-5	2.868 47 **0.006***
Aggression against property	2.96 ± 4.063 0-12	2.10 ± 2.595 0-12	1.451 47 0.153
Auto aggression	5.69± 6.926 0-24	1.81 ± 3.20 0-9	4.137 47 **<0.001***
Physical aggression	3.25 ± 5.452 0-24	.50 ± 1.571 0-8	3.556 47 **0.001***
Total	14.15±13.381 0-51	5.83 ± 6.663 0-26	4.806 47 **<0.001***

*p value= <0.05
#paired t test

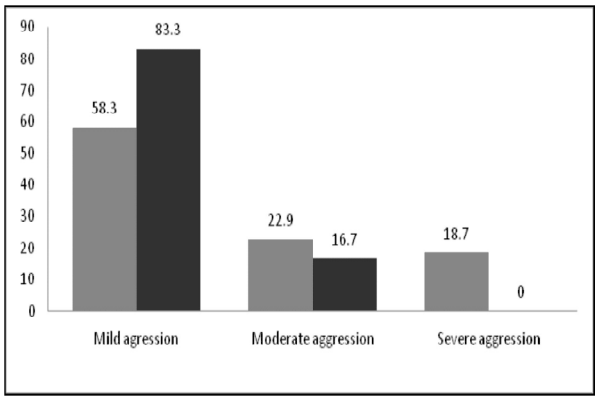

Figure-1: Pre intervention and post intervention MAOS score

Discussion

Present study was undertaken with an objective to find out impact of brief intervention package on aggression for caregivers to reduce the episodes of aggression among persons with mental illness (PMI) of psychiatry unit, PGIMER, Chandigarh and to assess knowledge, practice and incidence regarding aggression and violent behaviour of psychiatric patient.

Present study showed that 50% individuals had psychosis and 50% individuals had neurosis as a diagnosis and reason for their violent behaviour were mainly altercation between family members, discord family relationship etc. But episodes of violent behaviour were same in both psychosis and neurosis. A similar study was conducted in Chicago to observe relationship between psychotic symptoms and subsequent physically aggressive

behaviourfound that Disease condition for occurring aggressive behaviour among psychiatric patients may be psychosis or neurosis. Psychosis conditions like schizophrenia, delusional disorder. Neurosis conditions like OCD, phobia, panic anxiety disorder, generalized anxiety disorder etc. Precipitating factors may be impaired family relationship, aggressive personality trait, environmental problem, existing condition etc.[8]

The present study revealed that among total patient 81% patient showed verbal aggression, 56% patient showed auto aggression and 37.5% patient showed physical aggression. So numbers of patients with verbal aggression were more than other category. Similar study was conducted which reported that prevalence of mild aggression in control group (91.66%) was more than that of patient with experimental group (schizophrenia) (85%). Prevalence of physical aggression against self was 18.33%, aggression towards object was 48.33% and others were 63.33%.[9]

In present study 87.5% patient had no earlier hospitalization because of violence and 6.5% had single hospitalization due to violence. A Same study was conducted by Iversen C et al on incidence of violent behaviour among in patients of psychiatric intensive care unit in 2016 reported that patients who have single hospitalization history become less violent than who had history of two hospitalization episodes.[10]

Conclusion

In the present study brief intervention package for management of aggression was found effective in reducing the episodes of aggression among persons with mental illness (PMI) as there was statistically significant difference in MOAS score ($p<0.05$) between pre intervention and post intervention assessment.Aggressive behaviour mainly occurs in that time, when a person is not treated fairly by others. So if the caregivers can be taught about skills to manage aggressive behaviour of person with mental illness, episodes of aggression and stigma would be less.[11]

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Original Article

Assessment of hostility, suicidality and co-morbid psychiatric disorders in patients presenting with deliberate self-harm

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Abstract

Background: *Deliberate self-harm (DSH) is one of the top five causes of acute medical admissions for men and women. In India, every minute there is a suicide attempt and completed suicide every 7th minute with a suicide rate of 12 per lakh. In view of which the study was planned to explore the various factors and associated comorbid illness with the suicidal attempts.* ***Materials and methods:*** *The study included 125 patients presenting with DSH in D.M.C. and Hospital, Ludhiana. Cases were drawn from psychiatry, casualty and referred inter departments. Excluding those who didn't give consent and those who were too seriously ill. Cases were evaluated by using Buss Durkee Hostility Inventory (BDHI), Overt aggression scale – modified (OSA-M), Pierce suicide intent scale (PSSI). Chi square test and correlation coefficient was used to calculate and compute the results.* ***Aims and Objectives:*** *To assess the hostility and suicidality in patients presenting with deliberate self-harm and its association with any co-morbid psychiatric illness and various other factors.* ***Results:*** *Majority of subjects were from 20-29 years of age group which was found to be statistically significant. Majority of subjects (70.4%) presented with OPC ingestion which was found to be statistically significant. Majority of the subjects (84.0%) presented with 1st attempt which was found to be significant. Irritability, verbal hostility (BDHI), irritability, aggression and suicidality (PSISS) were significantly associated with severity of intent of suicide.* ***Conclusion****: Early identification of suicidality, hostility among adolescents could be one of the preventive measures of DSH and treating the co morbid psychiatry illness associated with DSH will improve overall quality of the life of the subjects.*

Key Words: *Co morbid illness, Deliberate self-harm, Hostility, Suicidality.*

Introduction

Delibrate self-harm is 'An act with non-fatal outcome in which an individual deliberately initiates a non-habitual behaviour, that without intervention from others will cause self-harm, or deliberately ingest a substance in excess of the prescribed or generally recognized dosage, and which is aimed at realizing changes that the person desires via the actual or expected physical consequences.[1] About 8,00,000 people die by suicide worldwide every year, of these 1,35,000 (17%) are residents of India, a nation with 17.5% of world population. Between 1987 and 2007, the suicide rate increased from 7.9 to 10.3 per 100,000, with higher suicide rates in southern and eastern states of India.[2-4] Deliberate self-harm is one of the top five causes of acute medical admissions for both men and women.[5]

Hostility in DSH

Several studies have reported a relationship between violence and suicide. In one study[6] by Mann et. al. the persons who attempted suicide had significantly higher scores for lifetime aggression than those who did not. Longitudinal investigations have demonstrated associations between suicide and self-reported aggression and between suicide and hostility. However, in the developmental literature, suicidal and violent behaviours have often been associated with two different types of underlying psychopathology: internalizing problems and externalizing behaviours. Internalizing problems, such as anxiety, depressions, and somatization, are strongly associated with suicide. These actions stand in contrast to externalizing behaviours, which include violent and antisocial behaviours.

Risk Factors and Etiology

Potential risk factors for suicide attempts in adolescents include female gender, psychopathology especially a major depressive disorder, previous suicide attempts, hopelessness, recent stressful life events, suicide attempts by the family members or friends, chronic physical illness, family violence and dysfunction and lower academic achievement. west.[6] There may be many risk factors behind deliberate self-harm, which may include many psychiatric co-morbidities in form of depression, alcoholism, generalized anxiety disorders and adjustment disorders. Commonly females present morewith deliberateself-harmthan males. The relationships of younger adults are generally less stable and more prone to violence than those of older adults and this may be vulnerable factor for deliberate self-harm. The probable reason behind this may be due to academic related problems and family issues.[7] The most common method of intentional self-harm in children and adolescents is by consumption of insecticides usually precipitated by familial interpersonal problems.[8] Poisoning (36.6%), hanging (32.1%), and self-immolation (7.9%) were the common methods used to commit suicide and poisoning is the commonest mode of attempt by the Indian population.[9]

Violence in women appears to confer greater risk for suicide than violence in men. Roy reported a similar phenomenon with respect to alcohol use disorders in women. In a meta-analysis, they calculated higher relative risks for suicide associated with alcohol use disorders in women than men.[10]

Homicide and Suicide in DSH

A homicide/suicide cluster was defined as one or more homicides with the subsequent suicide of the perpetrator that occurred in Allen study from 1985 through 1990. Of 67 homicide/suicide clusters identified 63 (94%) were found through matching death certificates by the last name of the homicide victim(s) and the perpetrator or by county of occurrence for homicides and suicides that occurred on the same day (n=53) or through computer searches of two newspapers with state wide coverage (n=40); 30 homicide/suicide clusters were from both sources.[11]

It seems that many studies had compared deliberate self-harm with hostile and impulsive behaviour. Many studies had favoured direct correlation of deliberate self-harm with impulsive and violent episodes in DSH patients.Moreover, seriousness of DSH is also associated positively with hostile and violence incidences. In India, there is hardly any study to compare hostility and violence in Deliberate self-harm patients and their significance in future DSH. Hence, we planned this study as initial attempt to explore further on these areas in Indian set up. We also tried to assess recent socio demographic factors effecting deliberate self-harm.

Aims and Objectives

- To assess the hostility and suicidality in patients presenting with deliberate self-harm.
- To study the association between hostility and suicidality and any co morbid psychiatric disorder in patients presenting with DSH.
- To assess correlation between hostility and suicidality.

Material and Methods

Sample:

The study included 125 patients presented with deliberating self-harm in multispecialty hospital in urban region (D.M.C. & Hospital, Ludhiana). The

study period was from November 2006 to November 2008 after obtaining the ethical clearance.

Inclusion Criteria

Cases of deliberate self-harm drawn from psychiatry, casualty department and referred from other departments in the hospital.

Exclusion Criteria

Those who were not willing to give the consent and those who were too physically ill to undergo detailed interview. Statistical Analysis was done by using Chi square test and correlation coefficient between hostility and suicidality was calculated.

Scales

1. **Socio-Demographic Proforma:**
   Included the name, age, gender, marital status, education, locality status of the subject as well as any co morbid psychiatric illness.
2. **Buss Durkee Hospitality Inventory (BDHI):**[12]
   The BDHI developed by AH Buss and A Durkee in 1957. It is perhaps the best known inventory with 75 item anger and hostility questionnaire with a true false format. It is self-rated scale with eight subscales assault, indirect hostility, irritability, negativity, resentment, suspicion, verbal hostility and guilt. The BDHI was developed as a tool for clinical assessment and to help in clinical research in the area of anger and hostility.
3. **Overt Aggression Scale - Modified (OAS-M):**[13]
   It was developed by Coccaro and collaborators in 1991 to assess aggressive behaviour in the patients including 25 items semi structured interview with nine subscales. It is an observer rated scale. Aggression (verbal aggression, aggression object, aggression against others, auto aggression)
   Irritability (global irritability, subjective irritability), Suicidality (suicidal tendencies (ideation and behaviour), intent of attempt, lethality of attempt. Two different ways of scoring are used in this scale, each one of the aggression subscales has 7 different behaviour which are listed in order of severity Scored separately by frequency and multiplied by weight assigned (1 for verbal aggression, 2 aggression against objects, 3 aggression against others). OAS-M is short instrument relatively easy to administer, and was developed from work with aggressive patients.
4. **Pierce Suicide Intent Scale (PSISS)**[14]**:**
   This scale devised by Pierce in 1971, is clinician rated scale, to assess the intent for suicide. The scale was designed, bearing in mind the need to be as objective as possible. Item 1-6 are same as on Beck rating scale of suicidal intent and are scored in a way as recommended by Beck. Item 7-10 are more of subjective in character and 8 is included the beck. Item 10 was different in than other, dealing not with self-injury itself but with the patient reaction to it at the time interview. It will clearly be influenced by the event occurring after the self-injury. But this was minimized by interviewing the patient as soon as possible after the admission. Item 11-12 deal with the medical risk assessing self-injury. Variables are rated as 3- point scale, 0- low intent and less severity, 1- moderate intent and moderate severity and 2 severe intent and severity. Scoring is done as, low (0-3), moderate (4-10) and high (>11).

Results

Table 1 Majority of subjects belongs to age group of 20-29, which was found to be statistically significant with age parameter (p value < 0.01 highly significant). Out of 125 cases 72 (57.6%) were males and 53 (42.4%) were females. According to the marital status of the sample 46 were married and 26 unmarried among male population, 37 were married and 16 were unmarried among female population. Among males 27.8% businessmen presented with DSH which was highest among all other occupation and similarly among females homeworkers presented with DSH more frequently than any other occupation (p value (> 0.001) highly significant. The distribution of

Table-1. Socio-demographic profile of the subjects

Character	Category	Males N(%)	Females N(%)	P value
Age	10-19	7 (9.7)	8 (15.1)	**0.002**
	20-29	37(51.4)	27 (50.9)	
	30-39	16 (22.2)	10 (18.9)	
	40-49	8 (11.1)	6 (11.3)	
	50-59	3 (4.2)	1 (1.9)	
	60-69	1 (1.4)	1 (1.9)	
Gender		72 (57.6)	53 (42.4)	0.293
Marital Status	Married	46 (63.9)	37 (69.8)	0.488
	Unmarried	26 (36.1)	16 (30.2)	
Occupation	Business	20 (27.8)	1 (1.9)	
	Student	9 (12.50	13 (24.5)	
	Household	0 (0)	30 (56.6)	
	Skilled	15 (20.8)	5 (9.4)	
	Unemployed	10 (13.9)	1 (1.9)	
	Others	18 (25)	3 (5.7)	
Education	Postgraduate	1 (1.4)	1 (1.9)	0.548
	Graduate	6 (8.3)	6 (11.3)	
	Higher Secondary	26 (36.1)	13 (24.5)	
	Matric	27 (37.5)	19 (35.8)	
	Below Matric	12 (16.7)	14 (26.4)	
Locality	Rural	48 (66.7)	25 (58.4)	0.29
	Urban	24 (33.3)	28 (41.6)	

subjects as per their education status did not reveal a significant result. As more number of subjects from rural were found to be more prone to DSH but the finding was not significant.

Table 2 shows methods used by subjects for DSH. OPC ingestion being significant and most frequently used method for deliberate self harm than any other methods.

Table 3 shows distribution of cases according to the no. of attempts made. Majority presented with 1st attempt which was significantly more common than 2nd or multiple attempts.

Table 4 shows the distribution of the subjects according to the severity of suicidal intent. Out of whole population, majority had moderate intent (62.4%). About 18.4 % had mild intent and 19.2% had severe intent. It was found statistically insignificant.

Table 5 The distribution of the subjects according to the psychiatric disorders was done. The psychiatric co morbidity commonly seen in the patients presenting with DSH were depression, bipolar mood disorder, substance dependence, adjustment disorder and many more psychiatric disorders. None of the females presented with substance dependence. It was found that majority

Table-2: Various methods used for DSH by the subjects

Method used for DSH	N (%)
OPC (organophosphate)	88 (70.4*)
Celphos	6 (4.8)
Wrist slashing	1 (0.8)
Benzodiazepines	9 (7.2)
Head Banging	10 (8)
Other	11 (8.8)

Table 3. Showing distribution of cases according to the no. of attempts (total subjects)

No. of Attempt	N	%age
Single Attempt	105	84.0*
Two Attempts	14	11.2
Multiple Attempt	6	4.8
Total	125	100.0

Table-4: shows the distribution of cases according to the severity of intent on PSISS

PSISS	N(%)	P value
		0.897
Mild	23 (18.4)	
Moderate	78 (62.4)	
Severe	24 (19.2)	
Total	125 (100)	

Table-5: Distribution of cases according to the different psychiatric disorders

Disorders	Total N (%)	p value
Depression	45 (36)	0.002*
Alcohol dependence	18 (14.4)	0.004*
Opioid dependence	15 (12.0)	0.74
Adjustment disorder	22 (17.6)	0.63
Bipolar mood disorder	21 (16.8)	0.008*
Others	4 (3.2)	0.24

of the subjects presenting with DSH were suffering from depression followed by adjustment disorder, bipolar disorder and alcohol dependence.Statistical significant association was seen with depression, alcohol dependence and bipolar disorder.

Table 6 the analysis of the results between different parameters of BDHI and with co morbid psychiatric illness in patients presenting with DSH was done. The mean score between the different parameters of BDHI (assault, indirect hostility, irritability, negativism, resentment, suspicion, verbal) and different psychiatric co morbidity (depression, bipolar mood disorder, alcohol, opioid dependence, adjustment disorders and many more) was calculated. The p value was calculated ($p>0.05$) which reflects that the patients can even present with DSH without having any co morbid psychiatric illness.

Table 7 The analysis of the results between different parameters (aggression, irritability and suicidality) of OAS-M with the subjects presenting with DSH having co morbid psychiatric illness was done. The mean score between the different parameters of OAS-M and different psychiatric co morbidity (depression, bipolar mood disorder, alcohol, opioid dependence, adjustment disorders and many more) was calculated. The p value was calculated ($p>0.05$) was not found to be statistically significant. This reflects that the patients presenting with DSH who scores high on aggression, irritability parameter of OAS-m might not be suffering from psychiatric disorder.

Table 8 the distribution of the subjects presenting with DSH having co morbid psychiatric illness were done according to the severity of suicidal intent (PSISS) was done. It was found that among the subjects having mild intent, 26.08% were suffering from depression. 13.4%, 4.34% presented with alcohol and opioid dependence respectively. 17.39 had adjustment problem, 13.04% had bipolar

Table-6: Analysis between different parameters on BDHI and psychiatric disorders in patients presenting with DSH.

Disorders	Assault	Indirect hostility	Irritability	Negativism	Resentment	Suspicion	Verbal
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Depression	4.26 ± 1.38	5.13 ± 0.87	4.74 ± 1.81	2.11 ± 0.72	2.03 ± 0.91	3.13 ± 1.77	2.44 ± 1.09
Alcohol dependence	3.77 ± 1.23	5.00 ± 1.08	5.69 ± 2.35	2.69 ± 0.94	2.15 ± 1.34	2.92 ± 1.65	2.36 ± 0.67
Opioid dependence	4.50 ± 1.06	5.2 ± 0.70	4.38 ± 1.18	2.31 ± 1.18	2.38 ± 0.74	3.75 ± 1.28	2.41 ± 0.76
Adjustment disorder	3.83 ± 1.58	5.11 ± 1.13	4.83 ± 1.82	2.44 ± 1.09	2.06 ± 1.05	3.28 ± 1.90	2.34 ± 0.85
Bipolar mood disorder	4.09 ± 0.70	5.00 ± 1.26	4.73 ± 2.49	2.36 ± 0.67	1.91 ± 0.83	3.36 ± 1.80	2.03 ± .91
Others	3.92 ± 1.01	5.11 ± 1.09	4.78 ± 1.37	2.41 ± 0.76	2.41 ± 1.09	3.24 ± 1.34	2.15 ± 1.34
p value	0.57	0.99	0.60	0.35	0.55	0.91	0.84

Table-7: Analysis between different parameters on OAS and psychiatric disorders in patients presenting with DSH

Disorders	Aggression	Irritability	Suicidality
	Mean ± SD	Mean ± SD	Mean ± SD
Depression	80.26 ± 16.14	6.00 ± 1.37	5.58 ± 1.26
Alcohol dependence	74.38 ± 12.99	6.31 ± 1.31	5.00 ± 1.68
Opioid dependence	72.88 ± 15.74	6.25 ± 1.28	5.75 ± 1.66
Adjustment disorder	73.56 ± 14.79	6.44 ± 1.24	5.22 ± 1.26
Bipolar mood disorder	78.64 ± 12.16	6.00 ± 1.54	5.45 ± 1.36
Others	70.11 ± 11.23	6.16 ± 1.25	5.21 ± 1.32
p value	0.50	0.87	0.77

Table-8: Distribution of subjects with psychiatric diagnosis on PSISS scale according to the severity of intent

Psychiatric Disorders	PSISS		
	Mild Intent N (%)	Moderate intent N (%)	Severe intent N (%)
Depression	6 (26.08)	25 (32.05)	7 (29.16)
Alcohol dependence	3 (13.04)	7 (8.97)	3 (12.5)
Opioid dependence	1 (4.34)	5 (6.41)	2 (8.33)
Adjustment disorder	4 (17.39)	9 (11.53)	1 (4.16)
Bipolar mood disorder	3 (13.04)	6 (7.69)	3 (12.5)
Others	1 (4.34)	1 (1.28)	2 (8.33)
Total	23 (100)	78 (100)	24 (100)

mood disorder. 4.34% were categorized in the group having other psychiatric diagnosis. 21.73% were not having any active psychiatric illness. Among the subjects with moderate intent, majority of the subjects (32.5%) were suffering from depressive disorder. 8.97%, 6.41% presented with alcohol, opioid dependence respectively. 11.53% had adjustment disorder. 7.69% were suffering from bipolar mood disorder. 1.28 % were categorized in the group of others. 32.05 % subjects presented with no active psychiatric illness. Among the subjects with severe suicidal intent, majority of the subjects 29.26% were suffering from depressive disorder and 12.5% from bipolar mood disorder. 12.5%, 8.3% were cases of alcohol, opioid dependence respectively. 4.16% were cases of adjustment disorder. 25% of the subjects with severe suicidal intent were not diagnosed to have any active psychiatric disorder.

This reflects that the majority of the subjects who presented with DSH were suffering from depressive disorder. Followed by the subjects having no active psychiatric illness. The p value calculated was $p>0.05$ found to be statistically non-significant reflects that the severity of intent does not vary significantly with co morbid psychiatric disorders. Majority of subjects have moderate intent.

Table 9 shows relationship between the different parameters on Buss Durke Hostility Index (BDHI) (assault, indirect, irritability, negativism, resentment, suspicion and verbal) with severity of suicidal intent on Pierce Suicide Intent Scale. The

Table-9: Association among parameters of BDHI and PSISS

BDHI	PSISS	N	Mean ± SD	p-value
Assault	Mild	23	3.29 ± 1.27	0.626
	Moderate	78	4.03 ± 1.21	
	Severe	24	4.25 ± 1.26	
Indirect	Mild	23	5.14 ± 1.28	.055
	Moderate	78	5.23 ± .911	
	Severe	24	4.67 ± .963	
Irritability	Mild	23	4.17 ± 1.23	.014*
	Moderate	78	4.78 ± 1.92	
	Severe	24	5.67 ± 1.49	
Negativism	Mild	23	2.48 ± .947	.453
	Moderate	78	2.27 ± .893	
	Severe	24	2.46 ± .588	
Resentment	Mild	23	1.74 ± .915	.071
	Moderate	78	2.29 ± 1.05	
	Severe	24	2.17 ± .917	
Suspicion	Mild	23	3.96 ± 1.79	.054
	Moderate	78	3.05 ± 1.57	
	Severe	24	3.08 ± 1.41	
Verbal	Mild	23	5.91 ± 1.23	.768
	Moderate	78	7.15 ± 9.27	
	Severe	24	7.25 ± .989	

relationship between the parameter irritability on (BDHI) and severity of suicidal intent was found that irritability was statistically significantly related with the severity of suicidal intent in patients presenting with DSH.

Table 10 show relationship between the parameters aggression, Irritability and suicidality on Overt Aggression Scale (OAS-M) and severity of suicidal intent. It was found that all three parameters were highly statistically significantly related with the severity of suicidal intent in patients presenting with DSH.

Table 11 the analysis of the correlation was done between the different parameters of Buss Durkee hostility scale, Overt aggression scale modified and pierce suicide intent scale. Multiple positive and negative correlations are seen between different parameters. The positive correlation was also seen between irritability (BDHI) and suicidal intent. (r value – 0.257) and similarly the verbal domain (BDHI) was also seen directly related with the suicide intent (r value – 0.303). The aggression domain of overt aggression was positively related to the suicide intent seen on pierce suicide intent scale (r value -0.361), Similarly seen with irritability and suicidality domain of overt aggression was also found to be directly related with suicide intent. The analysis showed direct (weak) correlation between irritability (BDHI) and aggression on (OAS-M) (r value 0.191) and similarly seen with irritability (BDHI) and irritability (OAS-M) (r value – 0.216). The inverse correlation was seen between the indirect and suspicion parameters of (BDHI) (r value- -0.198) and similarly inverse correlation was seen in the indirect (BDHI) and suicidality of (OAS-M) (r value- -0.273) and too with resentment (BDHI) and suicidality (OAS-M) (r value- -0.288).

Discussion

The present study was carried out to assess the hostility and suicidality in patients presenting with deliberate self-harm, while analysing the socio demographic profile of the 125 cases who presented with DSH out of which 53.6% were males and 46.4% were females, as in this study more no. of males presented with DSH than females which is in concordance with other Indian studies, In one study of attempted suicide[5] in Madurai, found male

Table-10: Association among parameters of OAS-M and PSISS

OAS-M	PSISS	N	Mean ± SD	p-value
Aggression	Mild	23	70.13 ± 10.81	0.000
	Moderate	78	76.82 ± 15.39	
	Severe	24	87.13 ± 8.93	
Irritability	Mild	23	5.22 ± 1.23	0.000
	Moderate	78	6.03 ± 1.21	
	Severe	24	7.17 ± 0.917	
Sucidality	Mild	23	4.61 ± 0.988	0.000
	Moderate	78	5.14 ± 1.24	
	Severe	24	7.04 ± 0.75	

Table-11: Shows correlation coefficient (r) among different parameters on BDHI, OAS-M, PSISS

	OAS-M aggression	OAS-M irritability	OAS-M suicidality	PSISS
BDHI (Assault)	-.002	-.035	.102	.085
BDHI (indirect)	-.079	.000	-.273(**)	-.145
BDHI (irritability)	.191(*)	.216(*)	-.055	257(**)
BDHI (negativism)	-.129	-.130	.010	-.005
BDHI (resentment)	-.109	.172	-.288(**)	.126
BDHI (suspicion)	-.132	-.091	.132	-.164
BDHI (verbal)	.031	.149	-.013	.303(**)
PSISS	.361(**)	.399(**)	.544(**)	1

predominance of 108 males as compared to 90 females who presented with deliberate self-harm. Similarly Ponnudurai[15] reported in the study conducted, in which male to female predominance was 2.3:1 in a sample of 208 patients presenting with DSH. In Indian set up, the reason for greater proneness of males to deliberate self-harm could be easy access to poisonous chemicals due to their increasing household use, unemployment among the young, increasing social and financial burden and increasing substance use. Other reasons could be that due to male dominance in Indian families, more stress on males, with more responsibilities towards family and hence they are more prone to stress and deliberate self-harm.

In our study, prominent age group of deliberate self-harm was 20 -29.Venkoba Rao et. al.[5] studied in India and found male dominance in their studies. General consensus is that 50% of the attempters are under 30 years of age and reported an increase in male attempters of this age group. There is a good deal of research showing that suicidal behaviour increases markedly during adolescence.

In our study 58.4 patients belong to rural community and 41.6% belongs to urban community. This is in contrast to the study by Hegde et.al.[16] who found no significant difference in DSH in rural community as compared to the urban. The reason for more number of rural subjects could be easy access to poisonous substances. As our study also reported poisoning as most common cause of DSH so this could be the best explanation for more number of rural predominance in our sample.

Our study has shown that more number of household 24.8%) and students (17.6%) presented with deliberate self-harm. This is in concordance with the study conducted by Venkoba Rao et.al.[5], who found that students accounted for majority of suicide attempters. The reason could be more stressful life events and more competitive approach with high aspirations and easy accessibility to substance of abuse. As women are not socialized to express violence externally and when confronted with the vast rage, women tend to vent on themselves and many present with deliberate harm self. Banerjee et. al.[17] Out of 58 who committed suicide there were 46 (79.3%) women. The commonest cause of suicides was quarrel with husband and commonest method used was poisoning with insecticides.

In our study among the cases, (89.8%) of subjects to present with DSH had educational status up to tenth and below. The possible reason might be higher level of stress of low education in this more competitive world and their keen desire for growth that lead to higher level of stress and they present with deliberate self-harm. This was seen in accordance with the study conducted by Shukla et al.[18] in which 46% males and 42% females who presented with deliberate self-harm were educated up to matriculation but this is opposite with the study by Lal and Sethi et al[19] that had 42% subjects with education level above matriculation, Gupta and Singh et al[20] had 47% of subjects were educated above higher secondary. This reflects that deliberate self-harm is more common in these subjects as this is the period of increasing stress as it is the stage of competition and struggle in life in academics to set up a career.

Our results show, that majority of patients (70%) belong to high socio economic group and only 4% belongs to low socio economic group. This is in contrast with study by Lal and Sethi et al,[19] who observed 38.3% subjects falling into low socio economic group. The reason could be tertiary care and private set up of our hospital as more of subjects belonging to high socio-economic status can afford to come to this private set up for care.

In present study 52% patient were married and 48% were unmarried. This is in contrast to other studies where predominance of unmarried subjects was observed for deliberate self-harm, 66% of unmarried presented with suicidal attempt by Venkoba et al,[5] 65.3% by Sethi et al[21] 62% of subjects were unmarried who presented with deliberate self-harm by Gupta and Singh et al,[20] as compared to married persons predominance 51.9% by Lal and Sethi et al.[19] The reason could be more social support available to married people to present in hospital. More over disturbed interpersonal relationships and adjustment problems may be one of the precipitating factor which can lead to more number of subjects to present with deliberate self-harm.

We have found that, most common method of deliberate self-harm was poisoning (42%), including 30% OPC, 12% Celphos. Out of this majority were males (30%) as compared to females

(12%). Other studies vary in their results as regard attempted suicide by poisoning as 47% poisoning was found by Badrinaraynan et al,[22] 33% of subjects presented with the ingestion of OPC, in the study conducted by Hegde et al,[16] similar results were seen in the study conducted by 20.0% males and 20.5% females by Shukla et al.[18] 77.70% males and 76.99% females too presented with the self-harm with the poisoning seen in the study conducted by, Sudhir et al.[23] The reasons for more number of cases by poisoning are that there is easy access to these chemicals due to their wider and common use in homes and other places and they can be procured without any prescription from retail outlets.

Our results on BDHI scale showed that parameter like irritability was found to be significantly related with the intent on PSISS. But assault, indirect, negativism, resentment, suspicion was not found to be statistically significantly related with the intent to harm self-harm. Similarly, Silver et al[24] studied the relation of impulsive behaviour and violence to attempted suicide. Results showed that 30% of the attempted suicide showed moderate impulsivity scores on Buss Durkee inventory. One more study by Hull et al[25] studied positive relationship between suicidal ideations/or attempts in patients with substance abuse, impulsivity and aggression. In our study the different parameters (aggression, irritability, suicidality) of Overt Aggression Scale-Modified were also correlated with the severity of intent on PSISS. Statistically significant relation was seen between aggression, irritability, suicidality, as it was found that all the three parameters were significantly positively related with high suicidal intent.

In past Hull et al[25] studied positive relationship between suicidal ideations/or attempts in patients with substance abuse, impulsivity, aggression, and irritability Stanley et al[26] studied Trait impulsivity and hostility assessed among 52 DSM-IV bipolar subjects with and without histories of suicide attempts. Impulsivity and hostility were correlated among attempters but not non-attempters. As compared to non-attempters, attempters had significantly higher levels of overall hostility, more extensive subcomponents of hostility, and a trend toward higher overall impulsivity. Accordingly, Doihara et al[27] investigated aggression in medically serious suicide attempters at an emergency department. Trait aggression was evaluated in 55 suicide attempters and 71 healthy individuals as a control group using the Japanese version of the Buss-Perry Aggression Questionnaire (BAQ). Total BAQ scores ($t = 2.782$, $P = 0.006$) and the hostility scores ($t = 3.735$, $P < 0.001$) were significantly higher in the suicide attempters than the controls. In one more study, Brittlebank et al[28] examined sixty-one consecutive patients who presented following an episode of deliberate self-harm (DSH) were assessed on a number of variables, including measures of hopelessness and hostility. Those who were known to have had a further episode of DSH had significantly higher levels of hopelessness and intropunitive hostility after the index episode than those who did not repeat.

In this present study it was seen that among the subjects, 33.9% females presented with adjustment disorder which was significant more than in males. This reflects that females with adjustment disorder were found to be vulnerable to DSH but no significant difference among males and females for other psychiatric disorders. 26.4% of males presenting with deliberate self-harm were substance dependence which was found to be statistically significant among males and females. As in our culture less number of females present with substance dependence. Though majority of the subjects (36%) presented with depressive disorder, followed by (28.8%) of subjects presented with DSH but no active psychiatric illness.

Our results show that there is no significant relation between the patients of deliberate self-harm with and without psychiatric illness on the parameters of violence and assault as assessed on BDHI. Similar results were seen in the study conducted by Krakowski et al.[29]

In the present study females who were suffering from adjustment disorder were found to more prone to DSH. Similar results were quoted by Portzky et al[30] of 19 suicide victims' by means of a semi-structured interview schedule which showed that the suicidal attempts was significantly more in females (48%) diagnosed with adjustment disorder compared with suicide cases diagnosed with other disorders.

The findings were in contrast with the study conducted by Takaoet et al[31] which revealed that schizoaffective and depressive disorder in

psychiatric patients with completed suicide and schizophrenia, depressive disorder and adjustment disorders in patients with attempted suicide were significantly more frequent than in 312 controls. In the end it appears important that early identification of hostility in patients presenting with various psychiatric disorders could be one of the preventive measure for deliberate self-harm.

Hence from the study it can be seen significant that most of the hostile behaviour including irritability, aggression and violence vary significantly in direct proportion with the severity of suicide intent. More over among psychiatric disorders, adjustment disorder appears to be significant risk factor in females as compared to males as far as risk for DSH is concerned. However hostile behaviour in different psychiatric does not seem to vary significantly. In the end it appears important that early identification of hostility in patients presenting with various psychiatric disorders could be one of the preventive measure for deliberate self-harm.

Haw et al,[32] studied 150 patients presenting with DSH at a general hospital. Out of which 40 patients of alcohol dependence were compared with the remaining sample. Compared with other DSH patients, those with an alcohol diagnosis were older and more often male, living alone, unemployed, sick, disabled, or with a past history of DSH. They also had higher scores on measures of anger, aggression, and impulsivity. Depression as a comorbid psychiatric disorder was present in 37 (92.5%) patients In our study it was observed that out of 125 cases, 18 (14.4%) were of alcohol dependent syndrome. Irritability on BDHI Scale was seen high among them as compared with other co morbid disorders but on OAS Scale, aggression was high in mood disorder cases.

The common method employed to execute self-harm was corrosive poisoning and insecticide poisoning. Similar findings have been reported from elsewhere in India and other low- and middle-income countries.[33,34]

Hayashi et al[33] studied 155 suicidal patients admitted consecutively during a 20-month period in psychiatry center. In this study 68 were males and 87 were females and their average age (SD) was 36.5 (11.9) years old. 49 subjects (31.6%) started to exhibit SB at an age of 20 years or younger. The common diagnoses among suicidal patients were affective disorders 62%, anxiety disorders 56% and substance-related disorders 38%. 56% of the subjects were diagnosed as having borderline PD. Commonly used suicidal behaviour prior to admission were self-cutting 41%, overdosing 32%, self-strangulation 15%, jumping from a height 12% and attempting traffic death 10%. The studied sample showed the high prevalence of affective disorders, anxiety disorders and borderline PD, a variety of SB methods used prior to admission and frequent SB repetition in the lifetime history. Gender and age appeared to have an influence on SB method selection and SB-preceding processes. The findings have important implications for assessment and treatment of psychiatric suicidal patients.

As mood largely plays major role in suicidal intent so usually individuals suffering from affective symptoms may present with suicidal attempts. Even under the effect of the substance too, individuals they do deliberate harm to themselves. Commonly used method for deliberate self-harm was OPC, probable reason is the easily availability of this chemical as maximum cases were from rural background.

Ghimire et al[35] did retrospective observational study on 200 cases of deliberate self-harm in the tertiary centre in Eastern Nepal, data collected from the medical records of these patients. Various socio-demographic data and any psychiatric comorbidities in them were studied. Majority (77%)of cases presented with deliberate self-harm were less than 35 years of age. Majority (73.5%) were married. 72.5% of cases had consumed organophosphates/-chlorides. 37% of cases had psychiatric disorders and 20 % had premorbid personality problems The most common was adjustment disorder (13.5%) followed by mood disorder (11%). In our study majority (51.2%) of the cases were from age group of 20 – 29 years. Majority (66.4 %) were married. 70.4% consumed OPC, which was most common method used for deliberate self-harm. The most common comorbidity seen among our cases was mood disorder (36%) followed by adjustment disorder (17.6%). So almost similar results were observed.

Conclusion

More number of males presented with deliberate self-harm than females. Majority of the subjects presented with DSH were from age group of 20-29 years of age. Most common method of DSH used was poisoning (Organophosphorus). Majority of the subjects presented with DSH attempted once. Females suffering from adjustment disorder presented with DSH more than males. On BDHI scale irritability parameter was found to statistically significant in relation with severity of suicide intent on PSISS. On BDHI males express more verbal hostility than females which was statistically significant. On OAS-M all the three parameters (irritability, aggression and suicidality) were significantly associated with severity of intent of suicide on PSISS.

Limitations

As patients presenting with the deliberate self-harm in the emergency were shifted to medicine department for maintaining medical stability, so many of them were missed and follow up in psychiatry OPD was not done. Due to fear of hustles in their future life refused to participate.

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Original Article

A Study of Suicidal Ideation and Suicidal Attempt in Patients with Obsessive Compulsive Disorder

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Abstract

Background: *Suicide is among the top three causes of death among youth worldwide. Suicidal ideation and suicide attempts (suicidality) are important indicators of extreme emotional distress. Obsessive-compulsive disorder (OCD) is a chronic, distressing, disorder associated with a significant functional impairment. This present study aims to understand the prevalence of suicidal ideation and attempts in patients of Obsessive-Compulsive Disorder and their socio demographic characteristics.* ***Methodology:*** *Patient who fulfilled the selection criteria were enrolled in the study. A total of 50 patients participated in study.Diagnosis of OCD was done using ICD 10. Sociodemographic data was evaluated using structured proforma designed especially for the study. The severity of OCD was measured using YBOCS scale. Suicidal ideations were evaluated using Beck's Scale for Suicidal Ideation. Past history of suicide attempt was noted. All the data was evaluated using appropriate statistical methods.* ***Results:*** *Suicidal Ideations were present in 46% of the OCD patients while 12% of patients had attempted suicide.* ***Conclusion:*** *This study concludes that patient of OCD can have significant suicidal ideations and attempts. Early identification of suicidal ideations in OCD patients can potentially be lifesaving.*

Keywords: *Obsessive compulsive disorder, Suicidal ideation, Suicidal attempt*

Introduction

Suicide is among the top three causes of death among youth worldwide. According to the WHO, every year, almost one million people die from suicide and 20 times more people attempt suicide; a global mortality rate of 16 per 1,00,000 or one death every 40 seconds and one attempt every 3 seconds, on average. Suicide worldwide was estimated to represent 1.8% of the total global burden of disease in 1998; in 2020, this figure is projected to be 2.4% in countries with market and former socialist economies. According to the most recent World Health Organization (WHO) data that was available as of 2011,[1] India ranks 43rd in descending order of rates of suicide with a rate of 10.6/100,000.[1]

Suicidal ideation and suicide attempts (suicidality) are important indicators of extreme emotional distress[2] Attempted suicide is one of the strongest risk factors for death by suicide, and 60% of planned first attempts occur within the first year of ideation onset.[3-5] Mental disorders are strongly associated with completed suicides, with studies mainly from Western populations showing that approximately 9 out of every 10 individuals appear to have had a psychiatric disorder at the time of their death.[6] Serious Suicidal ideation is not uncommon in the general population, with studies consistently noting

lifetime prevalence rates of up to 16.5%.[3,7,8,9,10]

Suicidal behavior – suicidal ideation, suicide attempt and completed suicide – probably represents a continuum of self-harming behaviors. Suicidal behavior as a concept includes the tendency, thoughts or acts of self-harming behavior or life-threatening risks. Suicidal behavior can be direct – suicidal ideation, suicide attempt or completed suicide, or indirect – such as risky driving, high-risk hobbies, hazardous alcohol drinking, drug misuse or neglecting the management of physical illness.[8]

Obsessive-compulsive disorder (OCD) is a chronic, distressing, anxiety disorder associated with a significant functional impairment. OCD has emerged to be one of the most prominent and disabling mental disorders. OCD is an anxiety disorder characterized by recurrent obsession or compulsions that are recognized as excessive or unreasonable causing a marked distress, are time-consuming (>1 h/day), interfere with normal function, and are ego dystonic. It is the fourth most common psychiatric disorder.[11-14] There is a reasonable probability that the patients of OCD have suicidal thoughts, plans, or actually attempt suicide. Suicidal behavior is the result of a complex interaction of biological, genetic, psychological, sociological, and environmental factors.[15-21]

This present study aims to understand the prevalence of suicidal ideation and attempts in patients of Obsessive-Compulsive Disorder and their socio demographic characteristics.

Materials and Methods

Study Design:

It is cross-sectional type of study.

Study Area:

The Study was conducted in Tertiary Hospital, Jaipur, Rajasthan.

Study Period:

1st January 2018 to 30th June 2018

Selection Criteria of Patients

Inclusion Criteria:

1. All patients diagnosed as Obsessive-Compulsive Disorder as per ICD 10 classification in the age group of 18-45 years attending psychiatry outpatient department.
2. Patients who gave written informed consent to participate in the study.

Exclusion Criteria:

1. Patients who were aged below 18 years or above 45 years were not included in the study.
2. Patients who did not give written consent were not included in the study.
3. Patients having other psychiatric illness than Obsessive Compulsive Disorder.
4. Patients having any significant medical or surgical co-morbidity.

Methodology

After taking permission from Scientific and Ethical committee of Institute and on the basis of inclusion and exclusion criteria patients were included in the study. A total number of 50 patients participated in the study. Diagnosis of Obsessive Compulsive Disorder was made according to *ICD-10 Classification.*[22] A written consent from the patient was obtained after explaining the study to the patient. Patient was given a Semi Structured Proforma designed especially for the study. Patient's socio-economic status was evaluated using *B.G. Prasad's Socio Economic Scale.*[23] Suicidal Ideations were evaluated using *Beck's Scale for Suicidal Ideation.*[24] Patients past history of suicidal attempt was taken. The severity of Obsessive-Compulsive Disorder was measured using *Yale-Brown Obsessive Compulsive Scale (Y-BOCS)*.[25] After collecting all the data proper statistical methods were applied under supervision of statistician.

Technique

1. All Psychiatric diagnosis were made according to ICD-10 criteria.
2. Semi Structured Proforma designed especially for the study.
3. B. G. Prasad's socioeconomic scale.[23]
4. Becks Scale for Suicidal Ideation.[24]
5. Yale-Brown Obsessive Compulsive Scale(Y- BOCS) for severity of Obsessive-Compulsive disorder.[25]

Results

Table-1: Socio-demography of Patients having OCD enrolled in the study

Age Group	Number of Patients with OCD	Percentage (%)
18-30 yrs	43	86%
31-45 yrs	7	14%
Total	50	100%
Sex		
Male	33	66%
Female	17	34%
Total	50	100%
Marital Status		
Married	29	58%
Single	21	42%
Total	50	100%
Domicile		
Rural	35	70%
Urban	15	30%
Total	50	100%
Religion		
Hindu	41	82%
Muslim	9	18%
Total	50	100%
Socioeconomic Status		
Upper	0	0%
Upper Middle	7	14%
Middle	4	8%
Lower Middle	26	52%
Lower	13	26%
Total	50	100%
Education		
Illiterate	16	32%
Primary	10	20%
Secondary	8	16%
Higher Secondary	6	12%
Graduate/Post Graduate	10	20%
Total	50	100%
Occupation		
Unemployed	9	18%
Unskilled	5	10%
Skilled	7	14%
Service	9	18%
Student	10	20%
Housewife	10	20%
Total	50	100%

Table 1 shows the socio-demography of the patients having OCD enrolled in our study. A total number of 50 patients were enrolled in the study. Majority of our patients (86%) were below the age of 31 years. Most of the patients enrolled were males (66%). Majority of the patients were single (62%). Patients were mostly from the rural area (70%). Majority of the patients followed Hindu religion (82%). Most of patients belonged to lower middle class (52%). Most of the patients were illiterate (32%) followed by primary educated (20%). Students, Housewife and Unemployed made the majority of the sample.

Table-2: Patient Distribution on the basis of severity of OCD (Y-BOCS scale)

Parameter(Y-BOCS)	No. of Patients	Percentage
Subclinical (0-7)	20	40%
Mild (8-15)	9	18%
Moderate (16-23)	12	24%
Severe (24-31)	5	10%
Extreme (32-40)	4	8%
Total	50	100%

Table 2 shows the patient distribution according to the severity of OCD as measured by the YBOCS scale. Most of the patients were subclinical cases(40%).

Table-3: Distribution of Compulsion & Obsession in enrolled patients

Variables	Number of Patients (N=50)
Obsessions	
Contamination	28 (56%)
Pathological doubt	12 (24%)
Sexual	5 (10%)
Religious	2 (4%)
Aggressive	2 (4%)
Symmetry	1 (2%)
Compulsions	
Cleaning	28 (56%)
Checking	12 (24%)
Arranging	1 (2%)
Repeating	1 (2%)
No compulsion	8 (16%)

Table 3 shows the common presentations of the obsessions and compulsions in the enrolled patients. Most of the patients showed obsessive thoughts of contamination which was followed by compulsion of cleaning. Second most common obsession was pathological doubt followed by compulsion of checking.

Table-4: Distribution of Suicidal Ideators and Attempters in total number of patients

Total Number of Patients	Patients without Suicidal Ideation	Patients with Suicidal Ideation	Patients with Suicidal Attempt
50	27 (54%)	23 (46%)	6(12%)

Table 4: shows that out of total sample enrolled in the study 46% of the patients with OCD had current suicidal ideations while 12% had a previous suicide attempt.

Table-5: Correlation between Age group and Suicidal Ideations and Attempts

Age Group	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
18-30(N=43)	19 (82.60%)	24 (88.88%)	5 (83.33%)
31-45 (N=7)	4 (17.39%)	3 (11.11%)	1 (16.66%)
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 1.6695. The *p*-value is .43399. The result is *not* significant at $p < .05$

Table 5 shows Majority of patients having suicidal ideation (82.60%) belonged to age group of 18-30 years, similarly suicidal attempt (83.33%) was mostly seen in 18-30 years age group.

Table-6: Correlation between Sex and Suicidal Ideations and Attempts

Gender	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Male (N=33)	16 (69.56%)	17 (62.96%)	5 (83.33%)
Female (N=17)	7 (30.43%)	10 (37.03%)	1 (16.66%)
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 1.1809. The *p*-value is .554074. The result is *not* significant at $p < .05$.

Table 6 shows Suicidal ideations and attempts were more common in male gender with 69.56% & 83.33% respectively.

Table-7: Correlation of Marital Status and Suicidal Ideations and Attempt

Marital Status	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Married (N=29)	16 (69.56%)	13 (48.14%)	4 (66.66%)
Single (N=21)	7 (30.43%)	14 (51.85%)	2 (33.33%)
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 7.4519. The *p*-value is .02409. The result is significant at $p < .05$.

Table 7 shows majority of patients with suicidal ideations (69.56%) were married and majority of suicide attempters (66.66%) were also married.

Table-8: Correlation of Domicile and Suicidal Ideations and Attempt

Domicile	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Rural (N=35)	15 (65.21%)	20 (74.07%)	2 (33.33%)
Urban (N=15)	8 (34.78%)	7 (25.92%)	4 (66.66%)
Total (N=50)	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 3.6475. The *p*-value is .16142. The result is *not* significant at $p < .05$.

Table 8 shows that patient having more suicidal ideations (65.21%) belonged to the rural area while patient having more suicide attempt (66.66%) belonged to urban area.

Table 9: Correlation between Religion and Suicidal Ideations and Attempt

Religion	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Hindu (N=41)	20 (86.95%)	21 (77.77%)	5 (83.33%)
Muslim(N=9)	3 (23.04%)	6 (22.22%)	1 (16.66%)
Total N =50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 0.7198. The *p*-value is .697729. The result is *not* significant at $p < .05$

Table 9 shows majority of patients with suicidal ideations (86.95%) and suicide attempts (83.33%) were Hindu.

Table-10: Correlation between socioeconomic class and suicidal ideations and attempts

Socio-Economic Status	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Upper Middle (N=7)	4 (17.39%)	3 (11.11%)	2 (33.33%)
Middle (N=4)	2 (8.69%)	2 (7.40%)	1 (16.66%)
Lower Middle (N=26)	8 (34.78%)	18 (66.66%)	2 (33.33%)
Lower (N=13)	9 (39.13%)	4 (14.81%)	1 (16.66%)
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 19.7577. The *p*-value is .003058. The result is significant at $p < .05$.

Table 10 shows majority of suicidal ideations were present in lower (39.13%) and lower middle (34.78%) class. While suicide attempt was more common in lower middle and upper middle class with 33.33% respectively.

Table-11: Correlation between Education and Suicidal Ideations and Attempt

Education	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Illiterate (N=16)	8 (34.78%)	8 (29.62%)	0
Primary (N=20)	3 (13.04%)	17 (62.96%)	0
Secondary (N=8)	4 (17.39%)	4 (14.81%)	0
Higher Secondary (N=6)	4 (17.39%)	2 (7.40%)	3 (50%)
Graduate/Post Graduate (N=10)	4 (17.39%)	6 (22.22%)	3 (50%)
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 8.0376. The *p*-value is .09021. The result is *not* significant at $p < .05$.

Table 11 shows that suicidal ideations are more common in illiterate with 34.78% while suicide attempts are common in educated patients.

Table-12: Correlation Between Occupation and Suicidal Ideations and Attempt

Occupation	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Unemployed (N=9)	3 (13.04%)	6 (22.22%)	0
Unskilled (N=5)	1 (4.34%)	4 (14.81%)	0
Skilled (N=7)	6 (26.08%)	1 (4.34%)	2 (33.33%)
Service (N=9)	3 (13.04%)	6 (22.22%)	1 (16.66%)
Student (N=10)	4 (17.39%)	6 (22.22%)	3 (50%)
Housewife (N=10)	6 (26.08%)	4 (14.81%)	0
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 7.672. The *p*-value is .104361. The result is *not* significant at $p < .05$.

Table 12 shows suicidal ideations are common in Housewife (26.08%) and students (26.08%) while suicide attempts are more common in students (50%)

Table-13: Correlation between Severity of OCD and Suicidal Ideations

Correlation between	Pearson Correlation Coefficient (r)
Y-BOCS & SSI	0.9301

Table 13 shows a strong positive correlation between the Y-BOCS and SSI

Y-BOCS & SSI score P-Value is < .00001. The result is significant at p < .05.

Table-14: Correlation between Type of Obsession and Suicidal Ideations and Attempt

Type of Obsession	Sucidal Ideation Present	Sucidal Ideation Absent	Sucidal Attempt
Contamination (N=28)	9 (39.13%)	19 (70.37%)	3 (50%)
Pathological doubt (N=12)	7 (30.43%)	5 (18.51%)	3 (50%)
Sexual (N=5)	4 (17.39%)	1 (3.70%)	0
Misc (N=5)	3 (13.04%)	2 (7.40%)	0
Total N=50	23 (46%)	27 (54%)	6 (12%)

The chi-square statistic is 5.6207. The *p*-value is .131593. The result is *not* significant at $p < .05$.

Table 14 shows majority of suicidal ideations were present in patients having obsession of Contamination (39.13%) which was closely followed by Obsession of Pathological doubt (30.43%) while suicide attempts were equally divided between patients with Obsession of Contamination and Doubt.

Discussion

A total of 50 patients diagnosed with OCD were enrolled in the study. Out of our total sample 23 patients that is 46% of the patients had current suicidal ideations. 6 of the patients had a past history of suicide attempt that is 12% of the patients had attempted suicide. This finding is comparable to other study conducted by Chaudhary et al[18] that found 56% of the patients with OCD had suicidal ideations while 16% had actual attempt of suicide. Dhyani et al[17] found 55.76% suicidal ideations in OCD patients while 19.23% had history of the attempt. This data suggests that OCD possess a significant risk of developing suicidal ideations due to distress and finally may lead to suicide. Early diagnosis and intervention can therefore be lifesaving for the patient.

In present study we found majority of patients having suicidal ideation (82.60%) belonged to age group of 18-30 years, similarly suicidal attempt (83.33%) was mostly seen in 18-30 years age group.This is a relevant finding since the onset of this disorder is in young population. These findings are similar to the study done by Maina et al[26] and Dhyani et al[17] in which mean age of patients was 31.8 years and age group of 26-35years respectively. These studies had also shown similar age strati-

fication. While comparing the age groups and suicidal ideations and attempt we found no statistically significant relation.

In our study we found Suicidal ideations and attempts were more common in male gender with 69.56% & 83.33% respectively. A contrary finding to our study was reported by Gupta et al.[27] and Chaudhary et al.[18] who observed higher proportion of patients with OCD with current Suicidal ideations were females 66.7% and 70% respectively. They have indicated a female predominance. Many reasons can be possible for male majority of patients. One of them can be rural background has a male dominance and females having psychiatric symptoms are not seen at the hospital due to stigma. Overall the outpatients seen in our department is also male dominated. On running the statistical analysis, we did not find statistical significance between gender and suicidal ideations and attempts.

In current study majority of patients with suicidal ideations (69.56%) were married and majority of suicide attempters (66.66%) were also married. In our study most of the patients belonged to rural population and it is cultural to get married in younger age. Radhakrishnan et al. who reported that Marriage is not a strong protective factor for suicide attempts in developing countries. 70.4% of all suicide victims in India were married and 21.9% were unmarried.[28] The data was also statistically significant. This means that Marital status can influence the suicidal ideations and attempts. Since married people put distress on their spouse and family which in turn puts more distress on the patient. This vicious cycle may be the reason for higher suicidal ideations.

In our study majority of patients with suicidal ideations (86.95%) and suicide attempts (83.33%) were Hindu. Other study by Gupta et al. reported most of the patients who attempted suicide were Hindus.[29] This can be a result of the local population surrounding the hospital region where majority of the people follow Hindu religion. Statistically Religion is not significant factor that influences the suicidal ideations and attempts.

In present study majority of suicidal ideations were present in lower (39.13%) and lower middle (34.78%) class. While suicide attempt was more common in lower middle and upper middle class with 33.33% respectively. Kodali et almade observation that maximum number of suicide attempters belonged to low socioeconomic status (62%).[30] This data is statistically significant meaning that a person's socio-economic class can influence the suicidal ideations and lead to attempt of suicide. Poverty in itself is distressing while the disease adding to the distress only adds up to suicidal ideations.

Our study shows that suicidal ideations are more common in illiterate with 34.78% while suicide attempts are common in educated patients. Gupta et al showed that according to years of education, the results of their study shows that both low and high educational status confers risk of suicide.[29] Since many of these patients belonged to lower and lower middle socioeconomic class, they had no sufficient financial support to further study. Education was not statistically significant to have suicidal ideations and attempts.

The present study shows suicidal ideations are common in Housewife (26.08%) and students (26.08%) while suicide attempts are more common in students (50%). Kodali reported majority (61%) of the subjects were employed, working in the agricultural sector.[30] Different results were shown in study done by Dhyani et al 2013, reported majority of patients were unemployed (50%).[17] Since most of our patients are young, they are either studying or married. Statistically the Employment status is also not significant to induce suicidal ideations and attempts.

In our study, we used Pearson's correlation to examine the relationship between the severity of OCD and Suicidal ideations and we found a positive and strong correlation between them. It was also statistically significant which means that as the severity of OCD increase the suicidal ideations also increases.

In our current study majority of suicidal ideations were present in patients having obsession of Contamination (39.13%) which was closely followed by Obsession of Pathological doubt (30.43%) while suicide attempts were equally divided between patients with Obsession of Contamination and Doubt. Literature is in line with these findings. Similar findings are reported by Dhyani et al.[17] However the type of obsession or compulsion is not statistically related to the suicidal ideations and attempt.

Limitations

1. Hospital based study.
2. Small sample size.
3. Only Out patients were selected.
4. Psychiatric co-morbidity was not accounted.

Conclusion

This study concludes that Obsessive Compulsive Disorder patients do have significant suicidal ideations and if not treated can lead to suicide attempt. Early recognition of suicidal ideations and management can potentially be lifesaving for the patient.

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Original Article

The pattern of behavioral and psychological symptoms in patients with Major Neurocognitive Disorder attending Psychogeriatric OPD in a tertiary care teaching hospital

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Abstract

Background: *Major Neurocognitive Disorder is a growing public health problem that results from population aging. While behavioral disturbances are a distressing problem in these patients and their attendants, the lifetime risk of behavioral disturbances are nearly 100%. So we conducted this study to know the demographic and behavioral disturbances pattern in patients with Major Neurocognitive Disorder.* ***Methods:*** *A cross-sectional study was conducted at the psycho-geriatric OPD, Jawaharlal Nehru Medical College, AMU Aligarh. A total of 93 patients with Major Neurocognitive Disorder were included in the study. A semi-structured proforma containing patient's particulars and BEHAVE-AD scale was used for measuring behavioral disturbances. Data were analyzed using the SPSS version 20.0., keeping significance at $p<0.05$.* ***Results:*** *Major Neurocognitive Disorder is common among the patients who are divorced, illiterate, belonging to low and middle-income groups, and living in an urban area. Among the total 93 patients, the majority were having Major Neurocognitive Disorder due to Alzheimer's disease (71%) while Major Vascular Neurocognitive Disorder was seen in 29%. Behavioral disturbances were seen in every patient and activity disturbance was the most common problem on BEHAVE-AD assessment.* ***Conclusion:*** *We concluded that all the patients with Major Neurocognitive Disorder have behavioral disturbances in the course of illness. These findings stress the need for evaluation of behavioral and psychological symptoms in every patient with Major Neurocognitive Disorder.*

Introduction

The term "Major Neurocognitive Disorder" was used in DSM 5 for the first time and this subsumes the previously popular term "dementia".[1] This refers to an acquired disorder of the brain, designating an impairment of established mental functions due to various etiologies, representing a decline from the premorbid level which is severe enough to impair normal daily functioning. Dementias are a growing public health problem that results from population aging.The hallmarks of dementia are cognitive, functional, and behavioral manifestations. Among the first manifestations of dementing disorders are behavioral symptoms which might appear before cognitive alterations, at some time during the course of the illness and vary according to dementia severity.[2] Behavioral and Psychological symptoms of dementia (BPSD) are non-cognitive symptoms associated with Major NCDs.[3] Early detection of BPSD is extremely important because these symptoms not only induce noticeable disability in demented patients but also

increase the caregivers' stress and they are potentially treatable.[4] BPSD increases impairment in daily living activities, accelerates cognitive decline and worsens patient's quality of life. Behavioral disturbances are one of the main reason for increasing cost of dementia care and lead to early patient institutionalization, therefore, increasing the overall financial cost.[5] In cross-sectional studies, the reported prevalence of BPSD ranges from 50% to 100%.[6–8] The lifetime risk of behavioral disturbances is nearly 100%.[9] In a study assessing severity, BPSD were severe in 36.6% of the patients, moderate in 49.3%, and mild in 14.1% of patients.[10] Different types of BPSD have been reported in varying frequencies considering the type and degree of dementia, number of BPSD studied environmental parameters and the instruments used. As per best of our knowledge, there is no study done in India so far, in which BPSD pattern has been evaluated in the clinical sample of dementia. To bridge this gap in literature we planned this study with the objective of studying the pattern of behavioral and psychological symptoms among the patients with Major Neurocognitive Disorder attending Psychogeriatric OPD.

Material and Methods

We conducted a cross-sectional study over a period of 12 months from January to December 2016. The study population included all the patients with Major Neurocognitive Disorder who visited the Psychogeriatric OPD of Department of Psychiatry, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh, Uttar Pradesh, India. The study was approved by Institutional Ethics and Research Advisory Committee, Jawaharlal Nehru Medical College, AMU, Aligarh. Written informed consent was taken from all of the patient or their caregiver. Before the start of the interview, individual rapport-building sessions were held explaining the purpose of the research and its implications and ensuring confidentiality.

All the patients aged more than 60 years and of either sex, who fulfilled DSM 5 criteria of Major Neurocognitive Disorder, were eligible for the study. Patients with delirium, with intellectual disability and patients' caregivers who did not gave consent for the study, are excluded from the study. All the eligible population during the entire study period was taken for the study.

We recorded the socio-demographic and clinical factors using the semi-structured pro-forma. For the assessment of cognitive functions, we used Hindi Mental State Examination.[11] This scale is used for an objective assessment of cognitive deficits and is a modified version of the Mini-mental State Examination,[12] which has been standardized for the Indian population. It is a brief assessment of an individual's orientation to time and place, recall ability, arithmetic ability, language, and praxis. For the assessment of behavioral and psychological symptoms, Behavioural Pathology in Alzheimer's disease Rating Scale (BEHAVE-AD) was employed. This scale is specifically designed to assess the presence and rate the severity of BPSD in AD patient.[13]The first part of scale concentrates on sympto-matology and the second requires a global rating of symptoms on a 4 point scale of severity. It focuses on 7 behavioral domains; (1) Paranoid and delusional ideation, (2) Hallucinations, (3) Activity disturbances (4) Aggressiveness (5) Diurnal rhythm disturbances (6) Affective disturbances (7) Anxieties and phobias. Each point is scored on a 4 point scale of severity where 0= not present, 1=present, 2=present with an emotional component and 3=present, generally with an emotional and physical component.

The data was entered and analysed in Statistical Package for Social Sciences[14] Version 20. Descriptive statistics (Mean, SD); was used for an overall measure of Major Neurocognitive Disorder scale. Group differences between two variables were analysed with student sample independent t-test. All p-values were two-tailed and values of $p < 0.05$ were considered statistically significant. All confidence interval were calculated at the 95% level.

Results

During the study period, a total of 96 patients with Major Neurocognitive Disorder who visited Psychogeriatric OPD, were recruited for the study. Out of these, 3 patients were excluded from the study owing to multiple diagnoses. Finally, 93 patients with Major Neurocognitive Disorder were studied.

Table-1: Socio-demographic characteristics of the patients

Demographic characteristics		Frequency	Percentage
Age	60-70	55	59.1
	71-80	27	29.0
	>80	11	11.8
Sex	Male	43	46.2
	Female	50	53.8
Religion	Hindu	53	57.0
	Muslim	39	41.9
	Others	1	1.1
Residence	Urban	57	61.3
	Rural	36	38.7
Marital Status	Married	55	59.1
	Divorced	1	1.1
	Widower	37	39.8
Education	Illiterate	46	49.5
	Primary	32	34.4
	Secondary	10	10.8
	Graduation and above	5	5.4
Present occupation	Unemployed	54	58.1
	Employed	39	41.9
Type of family	Nuclear	22	77.3
	Joint	71	23.7
Family income	<5000	09	9.7
	5001-10000	42	45.2
	10001-15000	16	17.2
	>15000	26	28.0

Socio-demographic and clinical characteristics

Among the total of 93 patients, 46.2% were males and remaining 53.8% females. Majority of them were in 60-70 year age group. About three-fifths were married, two-fifth were widow and a very small percentage of the patients were separated. The literacy rate was quite low with just half being literate, and rates of higher education being about 5% of total patients studied. Majority of them were resident of the urban area and belonging to joint family and were Hindu by religion. 58.1 % of the total patients were currently unemployed. Major chunk (77.3%) of the patients was living in a nuclear family and rest were living in joint family. The total income of the family was <5000 in 9.7%, 5001-10000 in 45.2%, 10001-15000 in 17.2% and >15000 in 28% of the patients (Table 1).

Clinical characteristics

Among the total 93 patients, 66 patients were diagnosed as Major Neurocognitive Disorder due to Alzheimer's disease while 27 as Major Vascular Neurocognitive Disorder (Table 2). Sixty-eight percent of the patients with Major Neurocognitive Disorder scored below 17 on the HMSE scale while the remaining 32% scored between 17 to 23. Our data suggest that mean HMSE scores of the total study population was found to be 15.06±4.88, while the mean of HMSE score among AD and VD was 15.48±4.62 and 14.03±5.40 respectively. This relationship was not found to be statistically significant in independent t-test analysis (Table 2).

Among the patients; paranoid and delusional ideations were present in 18.27% of the patients, hallucinations were present in 11.82% of the patients, activity disturbances were present in 60.21%, aggressiveness was present in 38.70% of patients, diurnal rhythm disturbance was present in 52.68% of the patients, affective disturbances were found in 21.50%, and 11.82% of the MNCD patients had anxiety and phobias. Among the AD patients, paranoid and delusional ideations were present in 13.63% of the patients. Hallucinations were present in 7.57%; Activity disturbances, aggressiveness, diurnal rhythm disturbances, affective disturbances, anxiety and phobias were present in 59.09%, 42.42%, 45.45%, 18.18%, and 12.12% of the total AD patients respectively. In VD patients, 29.62% had paranoid and delusional ideations, 22.22% had hallucinations. Activity disturbances, aggressiveness, diurnal rhythm disturbances, affective disturbances and anxieties and phobias were present in 62.96%, 29.62%, 70.37%, 29.62% and 11.11% of the total VD patients respectively (Figure 1).

Table 2: Relationship between cognitive status and clinical diagnosis

Diagnosis	Frequency	Mean	SD	t	P
AD	66 (71%)	15.48	4.62	1.30	0.196
VD	27 (29%)	14.03	5.40		
Total	93	15.06	4.88		

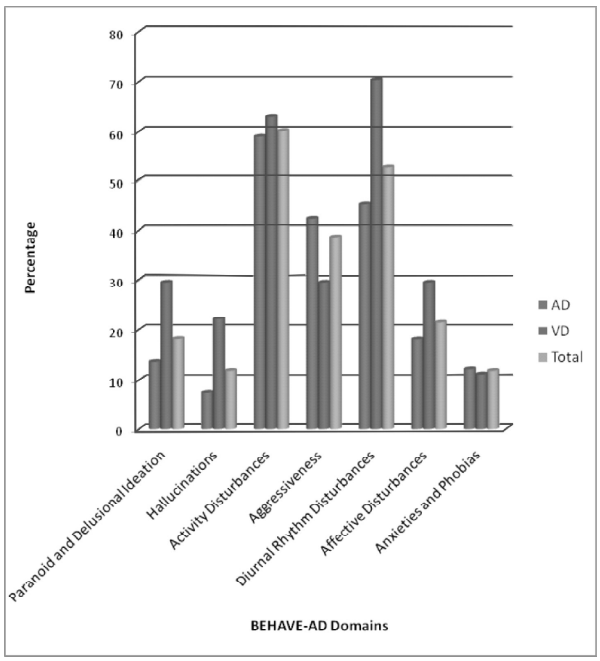

Figure 1: Distribution of patients according to behavioral domains

Discussion

We conducted this study with the objective of studying the pattern of behavioral and psychological symptoms in patients with Major Neurocognitive Disorder attending Psychogeriatric OPD in a tertiary care hospital

In the socio-demographic variables of our sample, we found that most of the patients with Major NCD (59.1%) were aged between 60 to 70 years, consistent with many studies in India and other developing countries,[15–20] but it is younger than that reported from the developed countries. This may be related to the socio-demographic profile of India characterized by lower life expectancy and a larger proportion of patients with VD due to a high prevalence of cardiovascular disease burden.[21] We also found that Major Neurocognitive Disorder was more common in women than men (53.8% in women *vs* 46.2% in men). Our finding is supported by a study which concluded that in India, Latin America, and China are at the greater risk of having Major NCD.[22] Similar rates were reported in studies conducted in Europe.[23,24] A number of reasons may be contributing to this result in developing countries, like the women's limited access to primary care and their low educational level. The lack of primary health care can predispose these individuals to suffer from dementia caused by controllable diseases, such as hypertension or diabetes mellitus. The study concludes that most of the patients (59.1%) were married. Our findings are in contrast to the previous study results from western countries, showing a beneficial effect of marriage on dementia.[25–28] Our study reveals a negative relationship between educational status and prevalence of Major NCD. A major proportion of our sample consisted of illiterate subjects (49.5%). The predominant finding reported in earlier studies examining the relationship between education and dementia is that education appears to protect against dementia. These results have been typically explained in the context of how early life advantages conferred by schooling contribute to cognitive reserve.[29–33] In the Indian context, an epidemiological study from rural and urban areas in the state of Uttar Pradesh observed a continuous pattern of decrease in dementia prevalence with increase in educational level.[34] Low educational levels have been consistently linked to high dementia rates, whereas individuals with higher educational levels tend to have a cognitive reserve that delays the emergence of clinical signs of dementia.[35]

In our study sample, 53.8% of the cases were housewives. Our finding is in unison with a systemic review of scientific publications dated between 1990 and 2014 which concluded that those who have a predominantly manual occupation throughout life have an increased risk of cognitive impairment and/or dementia than those with occupations with higher intellectual requirement.[36] Moreover, our sample consists of more number of women and hence this finding is justifiable owing to the cultural background of the patients.

In the context of religion distribution, the study sample consisted of the maximum percentage of Hindus (57%) followed by Muslims (41.9%). This finding attributes to the religious distribution of the local community visiting our center. 61.3% of the total patients with Major NCD were the residents of the urban area and rest 38.7% were from rural areas. Our findings are supported by a study in north India by Tripathi et al in 2012 which found similar results and concluded that 65% of people with

dementia were residing in urban areas. As per that study diabetes, depression, hyperhomocysteinemia, hyperlipidemia, APOE ε4 gene, body mass index (BMI), use of saturated fatty acids, pickles in diet, urban living, and lack of exercise were associated with independent risk of dementia.[37] A population-based, cross-sectional survey conducted in Latin America, India, and China have arrived at crude prevalence rate ranging from 0.8% in rural India to 4.6% in urban Latin America.[38]

Our finding is supported by one sociological study suggesting that overall educational status and health of the members of the joint family are poorer than that of nuclear families.[39] However, our result is opposed by a study of Letenneur L and Gilleron et al., 1999 which suggested that traditional joint families allow for diffusion of burden in families caring for the mentally ill and could be responsible for mediating the good course and outcome of major mental disorders.[40] In India, the number of joint families and the dependency ratio in such families is still high and this explains the poor health of the members.

Our data suggest that mean HMSE scores were 15.48 ± 4.62. According to the mean scores in HMSE, the severity of dementia might be considered moderate, which might also have influenced the results since moderate AD patients might exhibit global cognitive impairment.

We also found that mean of HMSE score among AD (15.48 ± 4.62) was higher than the means of HMSE score among VD (14.03 ± 5.40) suggesting better cognitive function among the AD patients in our study population. However, this relationship was not found to be statistically significant.

In regard to behavioral disturbance as assessed by the BEHAVE-AD scale, every patient of our sample had one or more kind of behavioral disturbance. This finding is consistent with the previous study by Lyketsos et al., which concluded that the lifetime risk of neuropsychiatric disturbances is nearly 100%.[41] Our study demonstrated that behavioral disturbances are very common, regardless of the dementia type. After analysis of BPSD on BEHAVE-AD subscales we found that activity disturbances were the most prevalent symptom, present in 60.21% of patients with Major NCD; followed by diurnal rhythm disturbance (52.68%). Aggressiveness was the third most common symptom present in 38.70% of patients. Different affective disturbances were found in 21.50% of patients. In the previous study also activity disturbances, diurnal rhythm distur-bance, and aggression were among the most commonly seen BPSD, and it has been suggested that patients with AD have a higher frequency of aggression.[42] Likewise, in our study too, activity disturbance was the most commonly seen BPSD symptom in both AD and VD patients, followed by diurnal rhythm disturbance and aggression. We found no significant difference in the rates of activity disturbances, diurnal rhythm disturbances, and aggression between two types of dementia.

Our study has some limitations. Firstly, it was a cross-sectional study done in a hospital setting, restricting its generalizability. Secondly, the selection bias may have occurred as we recruited only the patients who reported to the OPD. BEHAVE-AD has its own limitation of being scored by the examiner based only upon the impressions gathered during a single interview with the patient and caregiver; thus the examiner might be influenced by his or her snapshot impression of the patient at the time of the interview, which may not be a representative of the patient's behavior during his or her typical daily routine.

Conclusion

We concluded that the Major Neurocognitive Disorder is common among patients who were divorced, illiterate, belonging to low and middle-income groups, and living in an urban area. There was some kind of behavioral disturbance in every patient we studied. These findings stress the need for evaluation of behavioral and psychological symptoms in every patient with Major Neurocognitive Disorder.

Conflict of interest

None declared

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Original Article

Impact of Mindfulness Meditation on Caregivers of Epilepsy and Intellectual Disability

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Abstract

Introduction: *Mindfulness meditation is an emerging therapeutic technique that intends to prevent various psychosocial problems while focusing on the present-moment.* ***Aim:*** *The present study aims to see the impact of mindfulness meditation on family burden, anxiety, aggression and quality of life among caregivers of patients with epilepsy and intellectual disability.* ***Objectives:*** *The main objective of present study is to assess the level of family burden, anxiety, aggression and quality of life among the caregivers and to see the impact of mindfulness meditation on the said aspects.* ***Procedure:*** *Through purposive sampling method60 female caregivers were selected from Psychiatry OPD of JNMCH, AMU in which 30 caregivers were of epilepsy and 30 caregivers of intellectually disabled.* ***Tools used:*** *The study used General Health Questionnaire-12, Family Burden Interview Schedule, Hamilton Anxiety Rating Scale, Aggression Scale, WHO Quality of Life andFive Facet Mindfulness Questionnaire.* ***Result:*** *Result of the study explains that mindfulness has positive effect in improving psychosocial factors of caregivers.*

Keyword: *Mindfulness meditation; Family burden; Anxiety; Aggression; Quality of life; Caregivers*

Introduction

Birthing and raising a child is considered one of the most important jobs of an individual. But caring for a sick child, mental or physical, could not only be challenging but it could also prove to put strain on individuals. If a child is diagnosed with any form of disability, parent's world turns upside down, especially in cases of epilepsy and intellectual disability.

According to The American Association on Intellectual and Developmental Disability, intellectual disability is characterized by significant limitations in both intellectual functioning (reasoning, problem solving) and adaptive behaviour (conceptual, social) that manifests before the age of 18 years.[1] AAIDD views intellectual disability as a functional interaction between individual and environment.

In the Diagnosis and Statistical Manual of Mental Disorders, Fifth Edition level of severity of intellectual disability are determined by adaptive behaviour and not just on level of IQ (intelligence quotient).[2] Assessment of functioning involves conceptual areas (academic skills), social areas (relationships) and practical areas (personal hygiene).

According to International League Against Epilepsy,[3] epilepsy is a disease of brain characterized by an enduring predisposition to generate epileptic seizures and by the neurobiological, cognitive, psychological and social consequences of this condition.In diagnosis of epilepsy, EEG helps in distinguishing type of seizure or syndrome present in an individual. Caregiver of patients with such conditions goes through a lot of difficulty in bringing up their children, especially for mothers

who have to look after them all the time. Anxiety and aggression are common reactions in such cases. The quality of life of caregivers also reduces because of the burden faced by parents in the form of child's disability.

Family burden usually refers to psychological, social and financial burden faced by family/ caregivers whilst caring for patients. Family burden can put strains on interpersonal relationships, careers, social life, etc. Family members/caregivers consider psychiatric and behavioural problems to be an extra burden and find it difficult to manage such children, compelling them to seek help outside (rehab centres). The burden of caring for a family member across the lifespan has a largely negative and pervasive impact. In order to reduce the anxiety and aggression levels among caregivers, and increasing their quality of life, mindfulness meditation is considered to be quite useful.

According to the World Health Organisation,[4] in pyramid of mental health services, caregivers (informal care) occupies second position as the most important care, self-care being the first one. A study conducted in Kenya 2011, it was found that about 79% of caregivers were at risk for developing clinical depression.[5]

Mindfulness meditation has been proven to be quite an effective technique to address the issues related to caregiving and its burden. In a systematic review conducted in 2016, mindfulness meditation has been seen as an attempt to treat the problems associated with caregivers of patients with various conditions.[6]

Various mindfulness-based intervention techniques are in use these days but the most prominent one is mindfulness-based stress reduction technique.Mindfulness meditation has been considered quite effective in reducing the levels of anxiety, depression and providing good quality of life to different individuals. The aim of present study was to see the efficacy of mindfulness-based stress reduction (MBSR) program on caregivers of patients with epilepsy and intellectual disability.

Objectives

1. To assess and compare family burden, anxiety, aggression and quality of life and level of mindfulness of caregivers of patients withepilepsy and intellectual disability along with people belonging from normal population.
2. To asses and compare the effect of mindfulness meditation on psychosocial factors ofcaregivers of patients with epilepsy and intellectual disability

Methodology

Sample - 30 female caregivers of epilepsy patients and 30 female caregivers of intellectual disability patients were randomly selected from the Psychiatry OPD of JNMCH, AMU. Patients falling under inclusion criteria were taken.Caregivers falling under inclusion and exclusion criteria were selected. 30 people from normal population were also selected.

Inclusion Criteria for Epilepsy Patients

1. On the basis of ICD-10, abnormal EEG report
2. Age 8-16 years

Inclusion Criteria for Intellectually Disabled Patients

1. According to ICD-10, IQ moderate-to-severe level
2. Age 8-16 years

Inclusion Criteria for Caregivers

- Age 30-50 years
- Caregivers with no psychiatric illness or severe medical condition
- Caregivers showing mild-to-moderate levels of family burden anxiety, aggression and reduced quality of life
- Caregivers showing low level of mind-fulness
- Caregivers having no physical disability

Exclusion Criteria for Caregivers

- Caregivers not falling under age range
- Having psychiatric illness or severe medical condition
- Caregivers who showed no family burden, anxiety, aggression and increased quality of life
- Caregivers showing high level of mind-fulness
- Caregivers having physical disability

Inclusion Criteria for Normal Population

- Age 30-50 years (Caregivers)
- Children of 8-16 years of age
- Children with IQ more than 90

Exclusion Criteria for Normal Population

- Caregivers not falling under age range
- Children not of 8-16 years of age
- Children with IQ less than 90

Tools Used

1. ***General Health Questionnaire-12-*** is used to assess the general mental health of individuals.[7]
2. ***Raven's Coloured Progressive Matrices:*** It is a nonverbal group test of intelligence consisting of 36-items. Designed for children aged 5 through 11 years-of-age, the elderly, and mentally and physically impaired individuals.[8]
3. ***Vineland Social Maturity Scale:*** This scale was adapted to the Indian scenario by Malin.It is a semi-structured assessment based on an interview of the caregiver and evaluates the social ability of the child.[9]
4. ***Family Burden Interview Schedule-*** is a semi-structured interview schedule comprising of 24 items, grouped under 6 dimensions, i.e. financial burden, disruption of routine family activities, family leisure and family interaction, effect on physical and mental health of others. Burden is rated on 3-point, i.e. severe burden, moderate burden and no burden.[10]
5. ***Hamilton Anxiety Rating Scale (HAM-A)-*** is a 14 item scale rated on 5-points. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe.[11]
6. ***Aggression Scale-*** It consists of 55 statements, describing different forms of human aggression. 30 statements are in positive form while 25 are in negative form. It is a Likert type 5-point scale. Maximum score is 275 and minimum is 55. Below 154 indicates low aggression, 155-204 indicates average aggression and 205 and above indicates high level of aggression.[12]
7. ***WHO Quality of Life-BREF-***consists of 26 items among them 24 items are based on a 4 domain structure that is Physical, health, Psychological, Social Relationships and Environment, in addition 2 items are from the Overall Quality of Life and General Health facet. The items are based on 5 point Likert Scale ranging from very poor, poor, neither poor nor good, good and very good. The higher the score, the higher is the quality of life.[13]
8. ***Five Facet Mindfulness Questionnaire (FFMQ)-*** is a 24 item scale, with 5-point rating. The higher the score, the higher is the mindfulness.[14]

Table 1 indicates that most of the caregivers belonged within the age-range 30-40, epilepsy (60%) and intellectual disability (50%) and of normal population (50%). More than 87% of the participants were married and about 13% were widows.Majority of the female caregivers of epilepsy and of intellectually disabled belonged to rural area (60%) and were housewives (approx. 92%). Most of the caregivers came from joint/ extended family, epilepsy (66.6%) and intellectual disability (33.34%). Almost all the participants of the study belonged from 10,000-25,000 income bracket, i.e. approximately 70%. No significant difference was among the three groups (analysis not shown). The socio-demographic details are also explained by the following graph (*Graph 1*)

The graph (*Graph 1*) illustrates the socio-demographic details of all the participants of the study. The graph shows that maximum number of caregivers is housewives, belonging from rural area and middle income bracket.

Procedure-77caregivers of patients with epilepsy and intellectual disability were selected from Psychiatry OPD of JNMCH, AMU, 30 females caregivers of epilepsy patients and 30 of intellectual disability were retained on the basis of inclusion-exclusion criteria.

For the selection of patients, Raven's Coloured Progressive Matrices was used to assess the level of intellectual disability. Those showing moderate-to-severe levels of IQ were included in the study. Patients with mild IQ level were excluded as previous studies showed that caregivers of such

Table-1: showing socio-demographic details of Caregivers of Epilepsy, Intellectual Disability and Normal Population

Variables	Characteristics	Caregivers of Epilepsy (n=30), %	Caregivers of Intellectual Disability (n=30), %	Normal Population (n=30), %
Age	30-40	(18) 60	(15) 50	(15) 50
	40-50	(12) 40	(15) 50	(15) 50
Marital status	Married	(25) 83.33	(27) 90	(27) 90
	Widow	(5) 16.66	(3) 10	(3) 10
Occupation	Housewife	(28) 93.33	(27) 90	(27) 90
	Working	(2) 6.66	(3) 10	(3) 10
Residence	Rural	(18) 60	(18) 60	(18) 60
	Urban	(12) 40	(12) 40	(12) 40
Family Type	Nuclear	(10) 33.34	(12) 40	(11) 36.66
	Joint/Extended	(20) 66.66	(18) 60	(19) 63.34
Socio-economic status	>10,000	(9) 30	(9) 30	(9) 30
	10,000-25,000	(20) 67	(20) 67	(20) 67
	< 25,000	(1) 3	(1) 3	(1) 3

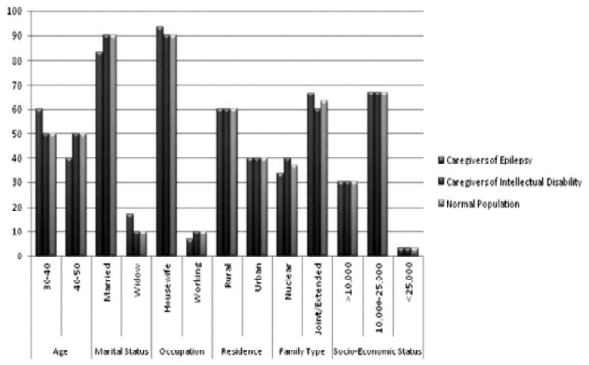

Figure 1 shows socio-demographic details ofthe participants

patients have low family burden, anxiety, etc. The patients of epilepsy were selected on the basis of abnormal presentation from EEG report.

The caregivers were administered with GHQ-12, Family Burden Scale, HAM-A, Aggression Scale, WHO-QOL and FFMQ.The level of mindfulness was assessed on all the three groups. For normal population, their level of family burden, anxiety, aggression was low and quality of life was good,and on FFMQ their mindfulness level was found high, therefore no mindfulness intervention was given. Only pre and post assessment was done.

Intervention **-** Caregivers meeting the inclusion and exclusion criteria were retain and explained

Table-2: shows the content of intervention for caregivers

Sessions	Mindfulness Meditation	Content of Intervention
1	Detailed Assessment; Pre Intervention	Psycho-education given, rapport was build, purpose of intervention was explained, Assessment of psychosocial factors done
2	Mindfulness Body Scan	Psycho-education given, Mindfulness Body Scan was introduced, daily practice as part of Homework was given
3	Mindfulness Breathing	Psycho-education given, previous session discussed, Mindfulness Breathing was introduced, Homework for daily practice was given
4	Mindfulness Acceptance	Psycho-education given, previous session discussed, Mindfulness Acceptance was introduced, daily practice as part of Homework was given
5	Mindfulness Sleeping	Psycho-education given, previous session discussed, Mindfulness Sleeping was explained, daily practice as part of Homework
6	Mindfulness Sitting	Psycho-education given, previous session discussed, Mindfulness Sitting was introduced, daily practice as part of Homework
7	Mindfulness Eating	Psycho-education given, previous session discussed, Mindfulness Eating was explained, daily practice as part of Homework
8	Assessment Post Intervention	Psycho-education given, previous session discussed, assessment was done, daily practice without supervision of therapist was emphasized

about the therapy i.e. mindfulness meditation. They were given training once a week, up to 8 sessions for 2 months. After the completion of therapy, they were asked to daily practice at home, park, garden, etc. After the 2 months of therapy, the above mentioned scales were applied again on caregivers of epilepsy and intellectual disability to see whether mindfulness has effect on reduction of family burden, anxiety and aggression, and increment in quality of life among the caregivers. The level of mindfulness was also assessed after every session. The mindfulness package included mindfulness body scan, breathing, sitting, eating, sleeping andacceptance.

Statistical Analysis

Using Statistical Package for Social Sciences (SPSS) version 20, t-test was used to see the effect of mindfulness meditation from pre-to-post-intervention. Column graph was used to show the socio-demographic details of the caregivers and normal population and bar graphs were to represent theeffect of mindfulness meditation from pre-to-post-intervention among caregivers of epilepsy and intellectual disability patients and of normal population. To represent the level of mindfulness after each intervention, column graph was used.

Results

Table 1 shows sociodemographic profile whereas Table 2 shows the content of intervention for caregivers.

Table 3 shows M, SD and t-scores of caregivers of epilepsy patients. Table indicates that mindfulness meditation reduces family burden, anxiety and aggression ofthe caregivers of epilepsy patients, as well as it increases their quality of life. The t-test was used for comparing the effect of mindfulness meditation (pre-post-follow-up) on different psychological domains. The table shows Mean, SD and t-values. The results indicated that there has been a significant reduction of family burden from pre-intervention (M=1.06, SD=0.81) to post-intervention (M=0.26, SD=0.44), indicating the significant difference (t=10.29, sig. <0.05). Anxiety reduced from M=15.68, SD=6.63 (pre-intervention) to M=7.08, SD=1.49 (post-intervention), explaining the significant difference, i.e. t=13.36, sig. <0.05. Reduction in aggression was noticed, M=148.09, SD=43.65 (pre-intervention) to M=127.48, SD=11.34 (post-intervention). t-value (4.61) is found significant at <0.05 level.Quality of life has also improved from pre-intervention (M=218.91, SD=97.08) to post-intervention (M=333.87, SD=19.34). It is found significant at <0.05 level with t=11.94. The obtained result is explained through following graphical representation (Graph 2).

Table 4 shows M, SD and t-scores of caregivers of intellectually disabled patients. Table indicates that mindfulness meditation reduces family burden, anxiety and aggression of the caregivers of intellectually disabled patients as well as it increases their quality of life. The t-test was used for comparing the effect of mindfulness meditation (pre-post-follow-up) on different psychological domains. The table shows Mean, SD and t-values. The results indicated that there has been a significant reduction of family burden from pre-intervention (M=1.50, SD=0.57) to post-intervention (M=0.40, SD=0.49), indicating the significant difference (t=11, sig. <0.05). Anxiety

Table-3: shows effect of mindfulness meditation on psychosocial factors of Caregivers of Epilepsy

Assessment	Variable	M	SD	t	Sig.
Pre Intervention	Family Burden	1.06	0.81	10.29	<0.05*
Post Intervention		0.26	0.44		
Pre Intervention	Anxiety	15.6	6.63	13.36	<0.05*
Post Intervention		7.08	1.49		
Pre Intervention	Aggression	149.09	43.65	4.61	<0.05*
Post Intervention		127.48	11.34		
Pre Intervention	Quality of Life	218.91	97.08	11.94	<0.05*
Post Intervention		338.87	19.34		

*sig. at 0.05 level

Table-4: shows effect of mindfulness meditation on psychosocial factors of Caregivers of Intellectually Disabled

Assessment	Variable	M	SD	T	Sig.
Pre Intervention	Family Burden	1.50	0.57	11	<0.05*
Post Intervention		0.40	0.49		
Pre Intervention	Anxiety	20.33	1.89	28.13	<0.05*
Post Intervention		7.40	1.75		
Pre Intervention	Aggression	208.87	3.04	47.77	<0.05*
Post Intervention		131.8	8.63		
Pre Intervention	Quality of Life	131.77	39.23	24.25	<0.05*
Post Intervention		331.1	21.43		

*sig. at 0.05 level

Table-5: shows level of mindfulness after every intervention of caregivers of epilepsy and intellectual disability patients

Group Intervention		Epilepsy Caregivers	Intellectual Disability Caregivers
Pre Intervention	t	0.46	
	SD	1.71	1.62
	M	13.4	13.2
First Intervention	t	2.15	
	SD	1.96	1.86
	M	15.16	14.1
Second Intervention	t	1.57	
	SD	1.9	2.47
	M	17.46	16.56
Third Intervention	t	4.32	
	SD	2.04	1.82
	M	19.5	17.33
Fourth Intervention	t	3.56	
	SD	2.26	2
	M	21.3	19.33
Fifth Intervention	t	4.55	
	SD	2.17	3.32
	M	24.03	20.73
Sixth Intervention	t	3.23	
	SD	1.85	3.49
	M	25.83	23.5
Seventh Intervention	t	4.5	
	SD	1.74	3.34
	M	27.73	24.63
Post Intervention	t	4.85	
	SD	2.26	3.55
	M	28.7	24.96

reduced from M=20.33, SD=1.89 (pre-intervention) to M=7.40, SD=1.75 (post-intervention), explaining the significant difference, i.e. t= 28.13, sig. <0.05. Reduction in aggression was noticed, M=208.87, SD=3.04 (pre-intervention) to M=131.8, SD=8.63 (post-intervention). t-value (47.77) is found significant at <0.05 level. Quality of life has also improved from pre-intervention (M=131.77, SD=39.23) to post-intervention (M=331.1, SD=21.43). It is found significant at <0.05 level with t=24.25. The results are explained through graphical representation (*Graph 3*), explaining that mindfulness meditation helps in improving various psychosocial factors of female caregivers.

Table 5 explainsthe level of mindfulness among the caregivers of epilepsy and intellectual disability.

The level of mindfulness at baseline level (pre-intervention) showed no significant difference between both groups of caregivers. From the pre-intervention to post-intervention, the mean values of epilepsy caregivers changed, i.e. M=13.4 to M=28.7. Similar result was obtained for caregivers of intellectual disability from pre-intervention M=13.2 to post-intervention M=24.96, indicating how level of mindfulness increased gradually for both groups. Both the groups differ significantlypost-intervention, which could be attributed to intellectual disability caregivers and their everyday challenge with their child's disability.

Graph 2 shows how with every intervention, caregivers level of mindfulness is increasing. The graphical representation also explains that among the caregivers, epilepsy caregivers showed increased level of mindfulness in comparison to caregivers of intellectual disability.

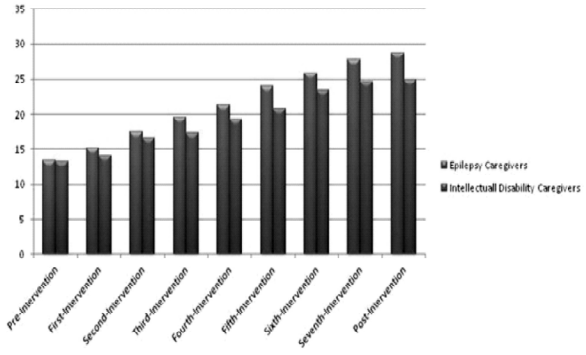

Figure 2 showscaregiver's level of mindfulness

Table 6 indicates effect of mindfulness meditation on the level of mindfulness on caregivers of epilepsy and intellectually disabled patients. The level of mindfulness of epilepsy caregivers increased from pre-intervention (M=13.4, SD=1.71) to post-intervention (M=28.7, SD=2.26) significant at <0.05 level. The level of mindfulness of caregivers of intellectually disabled enhanced from M=13.2, SD=1.62 (pre-intervention) to M=24.96, SD=3.55 (post-intervention).It is also depicted how for normal population, level of mindfulness remained static, whatever the difference was found (not significant enough) could be attributed to environmental factor. Graphical representation (*Graph 4*) also shows the effect of mindfulness meditation on level of mindfulness on caregivers both of epilepsy and intellectual disability.

Graph 3 indicates how level of mindfulness has increased after the intervention of mindfulness meditation. Bar graph also shows comparison

Table-6: shows level of mindfulness of caregivers of epilepsy and intellectual disability patients and of normal population (pre-post)

Caregivers	Intervention	M	SD	t	Sig.
Epilepsy(n=30)	Pre-Mindfulness	13.4	1.71	36.56	<0.05
	Post-Mindfulness	28.7	2.26		
Intellectual Disability(n=30)	Pre-Mindfulness	13.2	1.62	19.6	<0.05
	Post-Mindfulness	24.96	3.55		
Normal Population (n=30)	Pre-Mindfulness	28.3	1.95	2.45	No difference
	Post-Mindfulness	28.63	1.81		

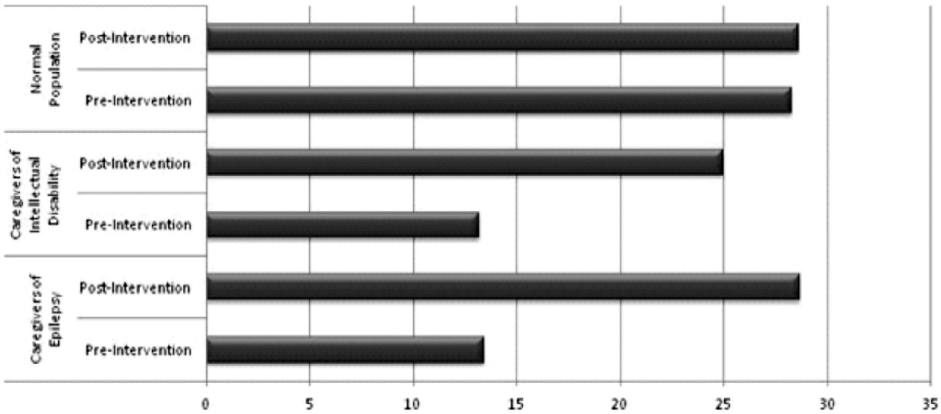

Figure 3 shows level of mindfulness from pre-intervention-to-post-intervention

between the caregivers and normal population.

Discussion

Diagnosed intellectual disability and epilepsy affects not only the patient but also the members of family, community and society. Caregiver's quality of life and life satisfactionis often negatively affected by frequent seizures, co-morbid behavioural and sleep disorders. Furthermore, the negative effects can be magnified by individual coping styles and resources available to them. Most of the literature views family burden in negative manner, directly or indirectly influencing caregiver's life, may also be causing anxiety, depression, decreased life satisfaction and quality of life. Low level of social support provided to caregivers also accounts for anxiety, burden and low quality of life.Present study indicates positive influence of mindfulness meditation on reduction of family burden, anxiety, aggression and increasing quality of life of caregivers.

The results of present study show that mindfulness has positive effect in reducing family burden, anxiety, aggression and increases quality of life, which further supports the previous study conducted by Minor et al[15] to evaluate mindfulness based stress reduction (MBSR) for caregivers of children with chronic conditions. Caregivers of such children often experience high levels of chronic stress and MBSR was found to be quite effective reducing the substantial amount of stress symptoms and mood disturbances in caregivers of chronically ill children.The present study also indicates the same result, i.e. mindfulness meditation has positive effect on caregivers of children with various conditions.

In 2017, Tkatch et al[16] also conducted a study using mindfulness to reduce perceived stress, caregiver burden, anxiety and loneliness and found significant effect of mindfulness on various psychological factors. Present study supports previous finding that mindfulness has positive impact on various psychosocial domains of life (anxiety, family burden, aggression etc.).

Conclusion

The results of the present study makes us conclude that mindfulness meditation is one of the effective methods of treatment that helps in reducing family burden, anxiety and aggression of caregivers and increasing their quality of life. The result of the study also indicates that after mindfulness intervention the level of mindfulness increases gradually (after each session) in an individual.

Limitations

1. Since the sample size of present study is small, result cannot be generalized to a larger population.
2. Male caregivers were not included in the study.
3. Patients of profound level of intellectual disability were avoided.
4. Patients showing co-morbidity with epilepsy and intellectual disability were also avoided.

Future Plans

1. There is a need to conduct this study on larger sample.
2. Effect of mindfulness meditation could also be seen on caregivers of other disorders.
3. Mindfulness could also be used to assess psychological variables other than the ones used here.

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Original Article

Factors affecting Rehospitalization in psychiatric patients – an exploratory study

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Abstract

Background: *Resilience is the ability to bounce back to normal after adversity and has been a marker of recovery and prognosis for psychiatric disorders. It is in fact a personality factor and a psychobiological construct as well. The following study aims to look at the association between key factors and rehospitalization in a group of patients admitted to a psychiatric facility.* ***Methodology:*** *78 patients admitted to a psychiatric facility were assessed using sociodemographic proforma and rating scales like the Brief Psychiatric Rating Scale (BPRS), Hamilton Depression Rating Scale (HDRS), Connor-Davidson Resilience Scale (CD-RISC) and the Scale for impact of Suicidality – Management, Assessment and Planning (SISMAP). The data was analyzed statistically. The data was compared on the basis of resilience scores and number of rehospitalizations.* ***Results:*** *The mean age of the sample was 42.8 ± 15.2 years. The mean duration of illness of the sample was 12.6 ± 12.7 years. 33 (42.3%) had more than one hospitalization in the past. Significantly greater patients with lower resilience scores had higher scores on the SISMAP scale while depression scores on the HDRS and BPRS scores were unaffected by resilience scores.When patients were compared on the basis of 1 or more rehospitalizations it was noted that significantly greater patients with male gender had rehospitalizations and higher resilience scores indicated fewer rehospitalizations.* ***Conclusion:*** *Resilience is a protective factor against development of mental disorder and a risk factor for a number of clinical conditions, e.g. suicide. Early identification of vulnerable candidates and effectiveness of resilience based intervention may offer more clarity in possibility of prevention of relapse and rehospitalization.*

Key words: *Resilience, Rehospitalization, Suicidality, Psychiatric disorders*

Introduction

Despite revolutionary advances in understanding and treatment of mental disorders, treatment outcome of patients is far from satisfactory. The reason for poor outcome has been cited as the number of repeated hospitalizations amongst other causes which continues to happen as patient's relapse.[1] Psychiatric rehospitalization continues to be most challenging area of mental health with repeated hospitalization leading to poor outcome, high cost of treatment and a major part of health resources.[2]

It has been demonstrated across studies that more than 50% of patients with severe mental disorder recover poorly and about 40% are hospitalized again within 6 months of discharge.[3] The causes of rehospitalization can be classified into 4 different groups viz. (1) those related to individual patient characteristics, e.g. personality traits, acceptance of treatment, attitude towards management, stigma and discrimination, resilience and coping ability; (2) those that are illness related e.g. early onset of illness, prolonged duration of untreated illness, severe psychopathology and

treatment resistance, comorbidities and suicide attempt or frequent episodes with deteriorating course; (3) those that are treatment related, e.g. delayed intervention, poor access to care, inadequate and lack of maintenance treatment, presence of side effects and lack of specialized treatments and (4) systemic factors e.g. lack of human resource, modern treatment facilities, training and competency of professional staff.[4-5]

Other common factors which have been described leading to relapse and rehospitalization are non-compliance, comorbidity, history of past hesitation, duration of illness, severity age at onset of illness.[6-7] The nature and quality of treatment access to care and availability for inpatients as well as community care has also contributed to repeated hospitalization.[8] Local conditions, manpower resources, clinical practices and effective networking with a range of mental health professionals that can influence the way we treat.[9] Identifying the potential risk factors for repeated hospitalization, interrelationships between risk factors, and vulnerability will help us take the appropriate measures to prevent hospitalization and promote care in the community.[10]

Resilience is a term used to describe the personal characteristics that enable one to adapt to environmental challenges and to overcome adversities or stressors. It comprises the ability to cope with stress as well as other protective factors, and has been shown to protect development of psychopathology. A number of psychiatric disorders have been linked to resilience.[11-12]

There are specific patient related factors which can prevent rehospitalization such individual characteristics like resilience and its constituent factors are closely linked with prevention of good outcome and a state of wellness. Since there are a number of other factors responsible for hospitalization, level of resilience does not indicate overall cause of rehospitalization. However, it does represent a major patientrelated factor which can be targeted for treatment.[13]

Keeping these factors in mind, the primary objective of this study is to find out differences among the clinical characteristics of patients who have been hospitalized more than once in past one year and those who have been hospitalized only once during previous one year. The study also looks at resilience as a probable factor in preventing rehospitalization in patients.

Methodology

This study was carried out at the regional mental health care facility, Canada. The sample consisted of 78 patients who have been recently discharged from assessment program which admits acute psychiatric patients in a tertiary psychiatric facility. The patients discharged from the ward for acutely ill patients were screened for presence of at least one hospitalization during immediate previous one year. The patients who gave consent were recruited for the study as per inclusion and exclusion criteria.A total of 117 patients were screened and 78 that met criteria were selected for the study.

The inclusion criteria were age between 20-60 years, history of hospitalization within the previous one year from the time of assessment and the presence of an Axis I and/or Axis II diagnosis as per DSM IV-TR criteria.[14] The exclusion criteria were presence of serious medical and or neurological conditions, any recent head trauma within previous one year, absence of any of the inclusion criteria, pregnancy and acutely ill patients with current risk of suicide or harm to self, harm to others or serious physical impairment.

Assessment Tools

Demographic and clinical information was collected from the history available using a semi-structured proforma. of the illness. We used standard assessment tools in the evaluation of patients like

1. **Brief Psychiatric rating scale (BPRS):** The 18-item BPRS was used to evaluate disorganized speech and other psychiatric symptoms in the subjects. All the BPRS items were scored on a 7-point scale from 'not present' to 'very severe'. Many studies have confirmed its psychometric properties including reliability, validity and sensitivity. As mentioned earlier, the conceptual items of the BPRS have been previously used to evaluate disorganized speech or formal thought disorder in patients with schizophrenia.[15-16]
2. **Hamilton Depression rating scale**

(HDRS): The HDRS (also known as the Ham-D) is the most widely used clinician-administered depression assessment scale. The original version contains 17 items (HDRS-17) pertaining to symptoms of depression experienced over the past week. Although the scale was designed for completion after an unstructured clinical interview, there are now semi-structured interview guides available. The HDRS was originally developed for hospital inpatients, thus the emphasis on melancholic and physical symptoms of depression. A later 21-item version (HDRS-21) included 4 items intended to subtype the depression, but which are sometimes, incorrectly, used to rate severity.[17-18]

3. **Connor-Davidson Resilience Scale (CD-RISC):** The Connor-Davidson Resilience Scale (CD-RISC) is a 25-item scale using a 5-point likert type response scale from not true at all (0) to true nearly all of the time (4). Participants rated each item with reference to the past month. Total scores range from 0 to 100, with higher scores corresponding to higher levels of resilience.[19-20]
4. **Scale for impact of Suicidality – Management, Assessment and Planning (SISMAP):** This scale was used for the assessment of the risk of suicide in psychiatric patients. The scale is based on concept of 'trait' and 'state' risk. The scale has been assessed in studies and demonstrates a specificity of 78.1% while the sensitivity of the scale has been shown as 66.7%.[21-22]

Primary outcome criteria were presence of statistically significant difference on clinical and psychopathological parameters between the groups of patients admitted only once and the group of patients admitted more than once during immediately preceding duration measured from the time of assessment.The secondary outcome criteria was considered as presence of statistically significant difference in parameters measured by individual items of the scale of resilience (assessed by CD-RISC) and suicidality (assessed by SISMAP) between the patients group of those (1) admitted only once and more than once and (2) those scoring CD-RISC more and less than 60 (cut-off point for significance of adequate resilience).

Assessment was carried out within 3 weeks of discharge from the hospital, either at the time of being discharge or at the time of first follow up, the recruited patients were assessed by trained research assistants. Assessment was carried out in one to two sessions. Data was collected on semi structured proforma which contained demographic, clinical and structured assessment tools. Data was entered in the computer database within the hospital system. The data was analyzed using the Graph Pad computerized statistical software. The entire study was approved by the Institutional Ethics Committee. Written informed valid consent was taken from each patient.

Results

The mean age of the sample was 42.8 ± 15.2 years. 20 (25.64%) of the sample was married and 48 (61.53%) were male. All subjects had completed high school education and 32 (41.02%) were graduates. The mean duration of illness of the sample was 12.6 ± 12.7 years. 33 (42.3%) had more than one hospitalization in the past. The length of the current hospitalization of the sample was 11.3 ± 28.3 days. The mean score on the CD-RISC scale for the sample was 52.7 ± 17.7 and 56 (71.79%) had a score of > 60. When the sample was assessed on the SISMAP scale, 44 (56.41%) had score of severe suicidal risk. 55 (70.51%) patients had more than one psychiatric disorder. The commonest diagnosis was schizophrenia (n=29), major depressive disorder (n=21) and personality disorders (n=17).

The sample was divided into two groups based on the CD-RISC scores of 60 or more. Significantly greater patients with lower resilience scores had higher scores on the SISMAP scale (p=0.0001) while depression scores on the HDRS and BPRS scores were unaffected by resilience scores (Table 1).

When patients were compared on the basis of 1 or more rehospitalizations it was noted that significantly greater patients with male gender had rehospitalizations (p=0.0015) as were scores on the CD-RISC scale (p=0.004) (Table 2).

Discussion

Resilience is an important psychobiological

Table-1: Resilienceand Suicidality

Psychopathology Scales	CD-RISC scores			
	> 60 (n=56)	≤ 60 (n=22)	Chi square / t value	p value
SISMAP Severe scores	7 (31.8%)	15 (68.18%)	21.1	0.0001*[a]
HDRS	18.6 ± 6.1	20.2 ± 6.9	1.0044	0.318[b]
BPRS	53.9 ± 13.5	57.1 ± 20.7	0.8024	0.424[b]

*significant ($p < 0.05$), [a]Chi square test, [b]Unpaired t test

Table-2: Parameters based on hospitalizations

Parameter studied	1st hospitalisation (n=45)	Rehospitalisation (n=33)	X^2 value	p value
Married	11 (24.44%)	4 (12.12%)	1.153	0.283[a]
Male gender	18 (40%)	26 (78.78%)	10.13	0.0015*[a]
CD–RISC (≤ 60)	23 (51.12%)	28 (84.82%)	8.142	0.004*[a]
BPRS scores	59.6 ± 16.9	51.6 ± 19.1	1.9545	0.054[b]

*significant ($p < 0.05$), [a]Chi square test, [b]Unpaired t test

marker for psychiatric illness and has been elucidated vividly in many reviews on the subject. It is the inherent tendency of an individual to bounce back to normalcy after adversity and is a marker of prognosis and recovery in psychiatric disorders.[23] The level of resilience in our study had a direct impact on suicidality scores on the SISMAP. Suicidal behavior and resilience have been studied and resilience acts as a buffering agent in preventing a suicidal act. In a study where 77 studies were reviewed, it has been demonstrated that a range of psychological factors may confer resilience to suicidality including resilience as a personality trait. The identification of moderators may improve estimates of suicide risk and that the development of buffering factors could be a key focus of suicide prevention interventions.[24] Higher resilience scores in our study has been linked to low suicide risk. Resilience is also a marker for the re-emergence of psychopathology after recovery and probably the risk for re-admission of patients. In our study resilience was a protective factor against hospitalization. Of late, there has been a paradigm shift in the understanding of resilience in context of stress risk vulnerability dimension. It is a neurobiological construct with significant neurobehavioral and emotional features which playsimportant role in deconstructing mechanism of biopsychosocial model of mental disorders.[25] Resilience is a protectivefactor against development of mental disorder and a risk factor for a number of clinical conditions, e.g. suicide. Available information from scientific studies points out that resilience is modifiable factor which opens up avenues for a numberof newer psychosocial as well as biological therapies.In our study patients with severe psychopathology were excluded and this is a limitation of the study. Resilience and suicidality were the main factors considered while duration of psychiatric illness was not taken into consideration which is also a limitation of the study. Early identification of vulnerable candidates and effectiveness of resilience based intervention may offer more clarity in possibility of prevention.[26] There is a need for resilience building as an intervention in in-patient psychiatric programs to prevent relapse and rehospitalization of psychiatric patients. Future research in this arena is warranted.

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Original Article

Knowledge, awareness and utilization of telepsychiatry services among health care professionals

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Abstract

Background and objectives: *Telepsychiatry is the application of telemedicine to the specialty field of psychiatry. It also termed as "tele-mental health" or "e-health". Videoconferencing is the main tool for providing telepsychiatry services through video-calling. The main objectives of this study is to assess the awareness utilization and barriers related to use of telepsychiatry services among health care professionals and caregivers of patients attending psychiatry unit of tertiary hospital of Chandigarh.* ***Material and Method:*** *A descriptive study was conducted on 50 health care professionals who work in Department of Psychiatry between April 10th, 2019-April 26th, 2019. The data was collected by interview method and through questionnaires. Questions related to the knowledge, attitude, perception, benefits, limitation and barriers of telepsychiatry were asked. The data was encoded and analyzed by using SPSS version: 20.* ***Result****: The mean age of health care professionals was 33.40 ± 8.07. The study revealed that 70% health care professionalknew about the telepsychiatry services. 72% health care professionals (HCP) agreed that it also improves the access to care. 78% health care professionalsbelieved firmly that telepsychiatry services required the understanding of software programs. 95% health care professionals revealed that it reduces the trips to the emergency room and 96% health care professional felt that it reduces delay in patient's care. The main barrier among health care professionals reported that patients are not satisfied through video calling treatment.*

Keywords*: Telepsychiatry, Videoconferencing, Health care professionals, Caregivers, Barriers.*

Introduction

Telemedicine is the delivery of health care services in far away places like preventive, curative, health assessments or consultations, over the tele communications infrastructure. It allows health care providers to examine, diagnose and treat patients using communication technology, such as video conferencing and smartphones, without the need for an in person visit.[1]

In same way, telepsychiatry is known as "telemental health or e –health". First time telepsychiatry services were used during 1950 for group therapy, long term treatment, consultation and training of students in Norfolk.[2]

For providing telepsychiatry services video-conferencing is the main tool. Videoconferencing is examined as the real time transmission of digital video images between multiple sites.[3] There are two main types of telepsychiatry services, first is synchronous and other one is asynchronous.

Synchronous telepsychiatry services can provide real time consultation, monitoring, assessment and interactions through video connections which transmit information in both directions

during the same time period.

An asychronous telepsychiatry services does not require presence of both parties at same time. It sends data from one site to another through the use of a camera or similar device that records and stores an image that is sent (forword) via telecommunication to another site for consultation. It is also known as "Store and Forward" technique.

Video based telepsychiatry make consultations within reach, cheap and attainable to all.[4] It has number of advantages for the patients and the health care providers and many problems for proper use of telepsychiatry services but there are many other important benefits for health system being time saving and less expensive.

The utilization of telepsychiatry for patients runs the risks of leaving a "Digital Paper trail", allowing unwanted people access personal information and also hackers who can break the security of transcribed medical information. Although, many issues for effective use of telepsychiatry services are present that could save time, save expenses which occurred on traveling and curb daily issues of the client. Thus, telepsychiatry services can be greatest promise to remote areas and removing geographical disparities in providing mental health care services.

Telepsychiatry services are implementable directly in counseling, control, prevention and also in follow-up. There is lack of awareness and knowledge which prevents implementation of telepsychiatry services in remote rural areas. This study would improve awareness regarding telepsychiatry services among caregivers and Health Care Professionals. It assessed their attitude and perception regarding telepsychiatry services. The study would be helpful in exploring the other barriers and implementing telepsychiatry services.

A study was conducted by Myers et al to examine the utilization and satisfaction of telepsychiatry among children and adolescent in Washington on March, 2008. Telepsychiatry provides opportunity to give needed services to child and youth by using interactive videoteleconferencing. 387 telepsychiatry visits were given to 172 youth between the age of 2-21 years. Parents supported high gratification among their school aged children's telepsychiatric care and lower pleasure with their adolescents. Telepsychiatry services was used appropriately and parents were highly pleased with their children's care which was offered by Regional children hospital.[5]

A randomized clinical trial study by Cuevas et al was conducted in Canary Island, Spain which examined the efficacy in the treatment of mental disorders that was provided through telepsychiatry by means of video-conferencing and also compared the video-conferencing with face-to-face conventional treatment.Results revealed that the effectiveness of telepsychiatry treatment through videoconference was parallel to face to face interactions. Telepsychiatry proved to be a productive way to give psychiatric consultation and mental health services to outpatients who are living in far away areas with limited resources.[6]

A pilot study was conducted by Yeung et al in Boston to assess the viability and productiveness of telepsychiatry services provided to Chinese immigrants and their families in the nursing home. This study enrolled 8 Chinese immigrants between the age of 54 to 88 years who had mood and behavioral problems. Out of the 8 subjects, 6 were transferred for psychiatric intervention, 01 for differential diagnosis and 01 for suicidal assessment. This study showed that the nursing staffs were greatly pleased with the telepsychiatry services and appreciable improvement among the participants and other families who were given intervention.[7]

Yellowlees et al (2008) reviewed a study to assess acceptability of telepsychiatry for managing psychiatrist consultations. 60 consultations were done among English speaking adults' patients through asynchronous telepsychiatry. Psychiatrists recommended short term medication changes for 95% of the patients and they recommended that it should not replace face to face interview but it may be very helpful additional process that improves access to care and expertise.[8]

Ye et al did a pilot study in Atlanta to explore the cultural and language barriers in Asian American population who were seeking mental health treatment. All of them were from Korea. They were 26 in number. They completed a questionnaire which assessed their acceptability of telepsychiatry services. Result showed that high level of acceptance of telepsychiatry services among Korean

clients. They also faced technical issues and difficulty in establishing rapport which affected the quality of clinical interaction.[9]

An experimental study was done by Parekh et al in 2005 in district of Pudukottai which pioneered the delivery of telepsychiatry services on a mobile platform. The mobile service covers 156 villages with a population of about 30000 and services focused only on those with serious mental disorder. Results obtained and showed mobile services has been extremely positiveand it encourages us to broaden the reach of the program.[10]

A retrospective study was done by Gowda et al in the year 2013 to 2017 on collaborative telepsychiatric consultations to outpatients of district hospitals of Karnataka, India. Total 139 consultations were provided at the telemedicine center, NIMHANS over 4 years and 6 months. It was seen that consultation to district Hospitals from tertiary care Hospitals were feasible and beneficial for rural areas.[11]

Advances in technology and research are expected to overcome many of the current obstacles. Increased awareness and a more realistic appreciation of telepsychiatry potential as well as limitation may contribute to better acceptance among users.

Objective

To assess the awareness, utilization and barriers related to use of telepsychiatry services among Health Care Professionals of psychiatry unit of PGIMER, Chandigarh.

Methodology

It was a descriptive study with quantitative approach. Study was conducted at Department of Psychiatry in tertiary care hospital of Chandigarh. A total of 50 health care professionalswere enrolled in the study using total enumeration technique. The study was approved by the ethics committee of the institute. The written informed consent was obtained from each subject and the purpose of study was explained to them. Questionnaire and interview method was used to collect the data from health care professionals. Questionnaires contain knowledge, attitude, perception, benefits, limitations and barriers regarding telepsychiatry services among health care professionals.The subjects were duly explained about the purpose of study and they were given liberty to clarify any doubts before rating the items on scale. The data was collected in psychiatry settings. The analysis was done using SPSS version 20. The frequencies, means and standard deviations were computed. The findings of the study are presented in the forms of tables.

Results

Table 1 depicts the distribution of subjects as per their socio demographic profile. About 46% of the subjects were in the age group of 28-36 years with mean ± SD as 33.40 ± 8.08 years and range

Table-1: Socio demographic variables of health care professionals

N=50

Sr. No.	Variables	n (%)
1.	**Age (in year)**	
	18-27	13 (26)
	28-36	23 (46)
	37-45	08 (16)
	46-54	01(02)
	55-64	05(10)
2.	**Sex**	
	Male	24 (48)
	Female	26 (52)
3.	**Marital status**	
	Married	32 (64)
	Unmarried	18 (36)
4.	**Designation**	
	Consultant	04 (08)
	Senior resident	08 (16)
	Junior resident	13 (26)
	Senior nursing officer	08 (16)
	Nursing officer	09 (18)
	Social worker	01 (02)
	Technician	01 (02)
	Play therapist	01 (02)
	Therapist	02 (04)
	M.Sc. Nursing student	03 (06)
5.	**Education**	
	MBBS	11 (22)
	MD	13 (26)
	Ph.D.	02 (04)
	M.Sc Nursing	05 (10)
	M.A. Sociology	01 (02)
	M.A. Psychology	03 (06)
	B.Sc. Nursing	15 (30)
6.	**Working experience in psychiatry (in years)**	
	1-10	41 (82)
	11-20	06 (12)
	Above 21	03 (06)
7.	**Duration of working in PGIMER (in years)**	
	1-5	33 (66)
	6-10	05 (10)
	>10 years	12 (24)

23-65 years. Half of the subjects (52%) were females and majority of the subjects (64%) were married. About 26% of the subjects were junior residents. Almost 30% of the subjects were having educational qualification of B.Sc. Nursing. Majority of the subjects 82% were having working experience within 1-10 years with mean ± SD as 1.46 ± 1.82 years and range 1-24 years. Most of the subjects 66% had 1-5 years duration of working in psychiatry unit with mean ± SD as 6.52 ± 5.06 years and range as 1-20 years.

Table 2 depicts the knowledge of health care professionals related to telepsychiatry services. Majority of the subjects 70% had knowledge about telepsychiatry services, about 30% of the subjects were getting information from interaction with others HCP and about 16% of the subjects were getting information from seminars and about 10% of the subjects were getting information from journals. Only 8% and 6% of subjects were getting information from self study and workshops respectively. Almost 30% of the subjects knew that telepsychiatry is consultation of patients through internet. Majority of the subject 82% did not have any knowledge about telepsychiatry guidelines. Most of the subject 72% did not have knowledge about health data security and privacy act for telepsychiatry services.

Table 3 delineates the attitude of the healthcare professionals towards telepsychiatry services. Majority of the subjects (72%) strongly agreed that telepsychiatry services improved access to care of

Table-2: Knowledge of telepsychiatry services among health care professionals

N= 50

Sr. No.	Variables	Yes n (%)	No n (%)
1.	Knowledge about telepsychiatry	35 (70)	15 (30.0)
2.	If yes, source of information		
	• Interaction	15 (30)	
	• Seminar	08 (16)	
	• Workshop	03 (6)	
	• Self Study	04 (8)	
	• Journals	05 (10)	
	• Other specify	—	
3.	Telepsychiatry is		
	• Consultation through Internet	15 (30)	
	• Report communication	05 (10)	
	• Management with drugs	06 (12)	
	• Electronic medical and mental records	04 (8)	
	• Follow up	05 (10)	
4.	Knowledge of telepsychiatry guidelines	09 (18)	41 (82)
5.	Knowledge about Health data security and privacy and in telepsychiatry services	14 (28)	36 (72)

Table-3: Attitude of the health care professionals towards telepsychiatry services

N=50

Sr. No.	Variables	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
1.	Improve access to care	36 (72)	11 (22)	03 (6)	—	—
2.	Improve the continuity of care	38 (76)	10 (20)	02 (4)	—	—
3.	Reduce the travel time	17 (34)	16 (32)	17 (34)	—	—
4.	Patients prefer to see their psychiatrist in real	01 (2)	17 (34)	17 (34)	03 (6)	01 (2)
5.	Health care providers are likely to be sued for malpractice	27 (54)	18 (36)	05 (10)	—	
6.	More research on the telepsychiatry is needed	7 (14)	19 (38)	09 (18)	11 (22)	04 (8)
7.	Psychiatrist uses it for practice for initial follow-up care	7 (14)	22 (44)	16 (32)	5 (10)	01 (2)
8.	Improve interpersonal relations	11 (22)	20 (40)	08 (16)	11 (22)	01 (2)
9.	Less time consuming	16 (32)	22 (44)	09 (18)	03 (6)	—
10.	Help in monitoring of therapy and treatment	15 (30)	13 (26)	37 (74)	19 (38)	15 (30)

the patient. Majority of the subject (76%) strongly agreed with that telepsychiatry services improved the continuity of care of the patient. About 34% of the subjects strongly agreed that with telepsychiatry services reduced the amount of time of patient traveling to receive care. Among 34% of the subjects agreed that patients preferred to see their psychiatrist in real not in telecommunication devices. Most of the subjects (54%) strongly agreed that healthcare professionals were likely to be sued for malpractice if they provide poor telepsychiatry services. About 38% of the subjects agreed that more researches on the telepsychiatry are needed. Almost 44% of the subjects agreed that psychiatrist used telepsychiatry for initial follow-up care. About 40% of the subjects agreed that telepsychiatry services would improve interpersonal relations with patients. About 44% of the subjects agreed that telepsychiatry services are less time consuming. Majority of the subject (74%) had neutral point of view that telepsychiatry services would help in the monitoring of therapy and treatment.

Table 4 delineates the perception of the healthcare professionals towards telepsychiatry services. Nearly 52% of the subjects perceived that telepsychiatry services required a "formulated and clear framework to access psychiatry information". Majority of the subjects (78%) perceived that understanding of software programs made it easy for clinicians to use telepsychiatry services. Most of the subjects (66%) perceived that the telepsychiatry must be strictly secured. About 56% of the subjects perceived that telepsychiatry services required legal clarification for patients. About 36% of the subjects perceived that national standards were essential for telepsyciatry technology implementation. Nearly 42% of the subjects perceived that telepsychiatry services can assist the psychiatrist for diagnosing the patient's disease. Majority of the subjects (80%) perceived that telepsychiatry services did not help to provide specialised care to the patients.

Table 5 is showing the barriers of telepsychiatry services in health care professionals. Most of the subjects that is 40% agreed about the health care professional need formal training in computer. Almost 36 % subjects were agreeing with that language was a barrier in telepsychiatry services because it is difficult to understand by the health care professionals. Nearly 44% subjects were

Table-4: Perception of the health care professionals towards telepsyhiatry services

N=50

S. No.	Variables	None n (%)	Some n (%)	Quite a bit n (%)	Extermely n (%)
1.	Requires a formulated and clear framework	—	07 (14)	17 (34)	26 (52)
2.	Understanding of software programs	—	04 (8)	7 (14)	39 (78)
3.	Security policies and guidelines necessary for the use of telepsychiatry	01 (2)	05 (10)	11 (22)	33 (66)
4.	Legal clarification for patients	—	6 (12)	16 (32)	28 (56)
5.	National standard are essential	08 (16)	18 (36)	15 (30)	9 (18)
6.	Assist the psychiatrist for diagnosing the patient's disease	05 (10)	13 (26)	21 (42)	11 (22)
7.	Help to provide specialized care to the patients	40 (80)	04 (8)	04 (8)	02 (4)

Table-5: Barriers related to telepsychiatry services in health care professionals

N= 50

S. No.	Barriers	Agree n (%)	Neutral n (%)	Disagree n (%)
1.	Need a formal training	20 (40)	18 (36)	12 (24)
2.	Difficulty to understand the language	18 (36)	25 (50)	07 (14)
3.	Patient is not satisfied with video-calling treatment	22 (44)	20 (40)	08 (16)
4.	Quality of care will be affected by telepsychiatry	30 (60)	17 (34)	03 (6)
5.	Battery backup will affect the services	40 (80)	09 (18)	01 (2)
6.	Technical barriers affect the services	36 (72)	11 (22)	03 (6)
7.	Ethical and legal issues obstacles in service	03 (6)	42 (84)	05 (10)

agreeing that patient did not feel satisfied with video-calling treatment. Mostly 60% subjects were agreeing about the quality of care affected by telepsychiatry services. Majority of the subjects (80%) agreed that battery backup affected telepsychiatry services. Most of the subjects (72%) agreed that the technical barriers affect the telepsychiatry services. Majority of the subjects (84%) were neutral about the ethical and legal issues being obstacles in telepsychiatry services.

Discussion

Telepsychiatry services are contemporary healthcare innovation which addresses patient satisfaction, care quality and cost effectiveness. In contrast to other delivery methods of psychiatry services telepsychiatry services is blessing for the patients in remote access area. Although telepsychiatry services provides many benefits but its application is not an easy work. There are many obstacles in its application e.g. less knowledge regarding use of computer/Smartphone/any telecommunication devices which operate in telepsychiatry services among patient and their caregivers, ethical and legal issues are obstacles in services among health care professionals. Hence effective utilization of telepsychiatry services dramatically changes care of the remote areas patients.

The present study showed that only 35 out of 50 health care professionals had knowledge towards telepsychiatry services and 41 healthcare professionals did not know its guidelines.

Present study showed that 15 out of 50 health care professional considered that telepsychiatry services in monitoring of therapy and treatment. Another study done by Munezenmaier et al(2018) which assessed 143 physician's belief , attitude and use of telepsychiatry services found that telepsychiatry use was most common among (62%) of emergency physicians and (61.5%) of psychiatrists. (82.3%) physicians felt that it improved access to care and (50.8%) felt that it reduced patients travel time. (71.4%) reported concern regarding potential loss of personal contact associated with telepsychiatry.[12]

Our study showed results of the perception of telepsychiatry services among health care professionals. 52% health care professionals showed that telepsychiatry services required a formulated and clear framework.78% felt that implementation of software program will make it easy. 66% felt that it required security policies.56% perceived that legal clarification for patients was required. 18% felt that national standards are essential. 22% perceived that it assisted the psychiatrist for diagnosing the patients and 24% perceived that it provided specialist care to the patients.

The present study identified the barriers of telepsychiatry services among Health Care Professionals. Barriers of telepsychiatry services among 50 healthcare professionals were as follows: 40% of health care professional felt that there was a need for formal training, 36% felt that there was a difficulty to understanding language of patients. 44% felt that patients did not feel satisfied with video-calling treatment. A study done by Hailey et al 2016 which reported that difficulties incorporating telepsychiatry into their practice include difficulty in assessing training for telepsychiatry and lack of resources.[13] Similarly McGinty et al conducted a study on potential for improving access to mental health care via telepsychiatry and e-mental health services. This study showed that the potential barriers for implementation of telepsychiatry services for reimbursement, license, impacting practice behavior, privacy and security and main barriers are cost associated with infrastructure development and maintenance.[14]

Conclusion

Telepsychiatry is the implementation of psychiatric evaluation and care by video calling to distant people. It is a boon for the health care professionals. Although telepsychiatry services are useful to provide preventive and promotive mental health services and education of care providers in remote area and it also saves the time of patient and as well as of care providers. Patient satisfaction depends upon the quality and regularity of care provided by the psychiatrists.

The recommendation of the study can be reproduced on a large number of sample to prove and generalize its result, a chapter on telepsychiatry should be incorporated in medical professionals curriculum.

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Original Article

Prevalence of Internet addiction and psychiatric distress among young adults: A gender-based cross-sectional comparative study

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Abstract

Background: *Young adults are at the increased risk of Internet Addiction (IA) and psychiatric distress.* ***Objective:*** *To assess and compare the prevalence of IA and Psychiatric distress between male and female young adult college going students.* ***Methods:*** *A cross-sectional comparative study was conducted in Varanasi District in Uttar Pradesh, in the period between June 2019 to July 2019. Total 150 (75 male and 75 female) college going students were interviewed using a semi-structured questionnaire including socio-demographic variables, Internet Addiction Test (IAT) and GHQ-12. The data was entered in MS Excel and statistical analysis was done in IBM SPSS 20 version.* ***Result:*** *Findings revealed that 57.3% male and 40% female respondents were found with psychiatric distress (GHQ-12 Score>3). Majority of the male respondents (36%) were found with moderate internet addiction. On the other hands, in female respondents majority of them (28%) were found with mild addiction. Gender of the respondent was found significantly associated with IA (P<0.01) and psychiatric distress (P<0.05). Prevalence of IA and psychiatric distress was found significantly higher among male compared to female respondents. The mean of daily internet use (in hours) among respondents was found* ***4.77 ± 2.63*** *hours. There was a significant positive correlation found between daily internet use (in hour), IA, and psychiatric distress.* ***Conclusion:*** *The prevalence of IA and psychiatric distress was found more common among male compared to female. Awareness program related to Internet Addiction and psychiatric distress are needed in college and universities.*

Keywords: *Young adults, Gender differences, Internet addiction, Psychiatric distress, Mental health.*

Introduction

In the recent few decades, technology has been more developed all over the world. Especially after the discovery of the internet, it has brought revolutionary changes in every area not only in communication but in business, education, research, and health, etc. There are about 4.31 billion internet users all over the world, only in India; there are about 700 million internet users. India stood third after China and America in the ranking of internet users.[1-2] And the number of internet users is very high especially in young age groups not only in India but all over the world.

Internet Addiction (IA) can be defined as excessive or poorly-controlled preoccupations, urges or behavior related to internet use that increase distress or impairment.[3] It is associated with mental health issues such as anxiety, depression, and suicidal behaviors.[4] It affects both men and women in all age groups.[5] It has become a global phenomenon especially among adolescents and young adults, which has brought a serious negative

effect on their physical-mental health, social behavior, and academic performance. According to a recently done Meta-analysis in South East-Asia the prevalence of IA ranged from 7.4% to 46.4% among students.[6] In another Meta-analysis on gender differences in the prevalence of IA had been reported that males have a relatively higher tendency to experience internet addiction than do females.[7]

In India, according to previously done studies, the prevalence of IA has been found very high among young adults compared to other age groups.[8] But very few studies have focused on the gender differences in the prevalence of IA and the correlation between IA and psychiatric distress in young adults. The objective of the present study was to assess and compare the prevalence of internet addiction and psychiatric distress among male and female young adults.

Material and Methods

A cross-sectional comparative study was carried out to assess the prevalence of internet addiction and it's correlation with psychiatric distress among college-going students in Varanasi district in Uttar Pradesh during the period of May 2019 to June 2019. A total of 150 (75 males and 75 females) college going students aged between 18-29 years from Banaras Hindu University were selected through convenient sampling for the present study.

Inclusion Criteria

- University students.
- Aged 18-29 years.
- Both female and male.
- Knowing Hindi & English language.
- Using internet from past 1 year or more.
- Willing to participate and giving consent.

Exclusion Criteria

- Not using internet or a history of using internet less than 1 year.
- Neither willing to participate nor giving consent.

Tools

- A semi-structured questionnaire consisting of socio-demographic characteristics; age, gender, marital status, education, religion, category, family income, family type, and residence.
- ***Internet Addiction Test (IAT):*** It is a reliable and the most frequently used scale to assess the IA.[9] It was developed by Kimberly Young in 1998.[10] It consists of 20 items based on the five-point Likert scale with scores ranging 0 to 5 for each items. The respondents are expected to choose one of the best responses from the given options that determine the degree to which the internet uses affects their daily life. The total score of IAT was calculated by adding the responses of all 20 items ranging from 0 to 100. A score of 0-19 was considered as normal user, 20-49 as average user or mild addiction, 50-79 as moderate addiction and 80-100 as severe addiction.[13, 16]
- ***General Health Questionnaire (GHQ) 12:*** It was used for the determination of the presence or absence of psychological distress among respondents. It was developed by Goldberg et al (1978).[11] It consists of 12 items in which six questions are positively phrased and six negatively phrased. Each item was rated on a four-point scale including less than usual, no more than usual, rather more than usual, or much more than usual. The binary scoring method (0-0-1-1) was used in the present study; a higher score indicates a higher degree of psychological distress.

Procedure

The respondents who fulfilled the inclusion and exclusion criteria were selected from the selected study area. They were informed about the purpose of the presents study by the interviewer. They were interviewed using the prepared questionnaire; first, they were asked about their socio-demographic profile and interviewed for internet addiction (through IAT). Then were screened using the GHQ-12 questionnaire, the respondent who scored more than 3 was taken as with psychiatric distress. The each interview was done in approximately 30 minutes.

Statistical Analysis

The data collected from the respondents was entered in MS Excel sheet and then exported to the

software IBM SPSS version 20 for analysis. The descriptive analysis was done using frequency, percentage, mean and standard deviation (SD). The association was assessed using the chi-squire test. The student's independent t-test was applied to compare the study groups. The correlation between variables was assessed using Pearson Correlation test. The significant value for the study results has been set at P<0.05.

Results

Out of the total 150 respondents, 75 respondents were male and 75 respondents were female. The mean age of the respondents was approximately 23 years in both study groups and majority of them were belong to age group 22-25 years. Most of the respondents among male 42 (56%) and in female 35 (46.7%) were graduate students. Majority of them (60%) were belong to nuclear family and total 57 (38%) of the respondents belong to high socioeconomic status. Most of the respondents about 75% were from urban area. (Table 1)

In screening (GHQ-12 score >3); 43 (57.3%) male and 30 (40%) female respondents were found with psychiatric distress. Majority of the male respondents 27 (36%) were found with a moderate level of internet addiction. But in female respondents, most of them 41(54.7%) were found without internet addiction. Result also indicates that gender was associated with psychiatric distress and internet addiction. (Table 2)

The mean of daily use of internet (in hours)among the respondents especially male was

Table: 1 Socio-demographic characteristics of the respondents

	Male N=75, F (%)	Female N=75, F (%)	Total N=150, F (%)
Age (years)			
18-21	16 (21.3)	20 (26.7)	36 (24.0)
22-25	51 (68.0)	45 (60.0)	96 (64.0)
26-29	8 (10.7)	10 (13.3)	18 (12.0)
Mean and SD	23.4 ± 2.41	22.9 ± 2.42	23.1 ± 2.45
Education			
Graduation	42 (56.0)	35 (46.7)	77 (51.3)
Post Graduation	27 (36.0)	33 (44.0)	60 (40.0)
Ph.D.	6 (8.0)	7 (9.3)	13 (8.7)
Family Type			
Joint	27 (36.0)	33 (44.0)	60 (40.0)
Nuclear	48 (64.0)	42 (56.0)	90 (60.0)
Socioeconomic Status			
Lower	6 (8.0)	16 (21.3)	22 (14.7)
Lower middle	9 (12.0)	12 (16.0)	21 (14.0)
Upper middle	22 (29.3)	28 (37.3)	50 (33.3)
Upper	38 (50.7)	19 (25.3)	57 (38.0)
Residence			
Rural	15 (20.0)	23 (30.7)	38 (25.3)
Urban	60 (80.0)	52 (69.3)	112 (74.7)

Table: 2 Distribution of psychiatric distress and internet addiction among the respondents

	Male N=75, F (%)	Female N=75, F (%)	Total N=150, F (%)	Chi squire Value	df	P Value
Psychiatric Distress						
Absent	32 (42.7)	45 (60.0)	77 (51.3)	4.510	1	0.034*
Present	43 (57.3)	30 (40.0)	74 (48.7)			
Internet Addiction						
Not present	18 (24.0)	41 (54.7)	59 (39.3)	21.061	3	0.000**
Mild	20 (26.7)	21 (28.0)	41 (27.3)			
Moderate	27 (36.0)	11 (14.7)	38 (25.3)			
Severe	10 (13.3)	2 (2.7)	12 (8.0)			

Significant at: *0.05, **0.01

5.25 hours that is higher than female 4.28 hours. Majority of the respondents about 45% (both male and female) use internet about 4-6 hours daily. Majority of the male respondents 33 (44%) use internet for social networking. In other hands most of the female respondents 31 (41.3%) use internet for academic purpose. (Table 3)

Table-3: Internet uses among the respondents

		Male N=75, F (%)	Female N=75, F (%)	Total N=150, F (%)
Daily Uses (in hours)	1-3	26 (34.7)	26 (34.7)	52 (34.7)
	4-6	38 (50.7)	29 (38.7)	67 (44.7)
	>7	11 (14.7)	20 (26.7)	31 (20.7)
	Mean and SD	**5.25 ± 1.94**	**4.28 ± 3.1**	**4.77 ± 2.63**
Purpose	Academic	12 (16.0)	31 (41.3)	43 (28.7)
	Media	13 (17.3)	14 (18.7)	27 (18.0)
	Online games	17 (22.7)	7 (9.3)	24 (16.0)
	Social Networking	33 (44.0)	23 (30.7)	56 (37.3)

On applying student independent t-test, there was a significant difference found in the score of Internet Addiction Test ($P < 0.01$) between male and female respondents. Internet addiction was found more prevalent among male respondents compared to female respondents. There was also a significant difference in GHQ-12 score ($P < 0.05$) between male and female respondents. Psychiatric distress was found more prevalent among male respondents compared to female respondents, (Table 4)

Pearson correlation was applied to assess the correlation among time spent (in hours) in daily internet uses, internet addiction and psychiatric distress. There was a significant positive correlation found among internet use daily (in hours), internet addiction and psychiatric distress. (Table 5)

Discussion

The present study was conducted to assess and compare the prevalence of internet addiction and psychiatric distress among male and female college-going students in Varanasi district in Uttar Pradesh and the correlation between psychiatric distress and internet addiction. In the present study, findings indicate that the prevalence of psychiatric distress ($P<0.05$) and internet addiction ($P<0.01$) were found significantly associated with the gender of the respondents. These findings were similar to a previous study conducted in south India and Iran.[11-14] In contrast the present finding, a study conducted by Gupta et al in Delhi, they found no significant relationship between internet addiction and

Table-4: Gender differences in IAT and GHQ-12

		N	Mean	SD	t value	P
IAT						
	Male	75	50.16	19.52	5.043	0.000**
	Female	75	32.71	22.75		
GHQ-12						
	Male	75	4.87	3.43	3.159	0.002*
	Female	75	3.27	2.73		

Significant at: *0.05, **0.01

Table-5: Pearson Correlation between Internet use daily in hours, IAT and GHQ-12

	Internet use (in hours)	IAT	GHQ-12
Internet use (in hours)	1	.754**	.358**
IAT	.754**	1	.465**
GHQ-12	.358**	.465**	1

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

gender.[15]

And the average time of daily internet use (in hours) among male was found comparatively higher than female respondents. And the majority of the respondents were using the internet for social networking in both genders, but the majority of the girls were using the internet for academic purpose. In another study conducted by Srijampana et al conducted in Andhra Pradesh reported a similar finding to the present study.[16]

Findings of the presents study indicate that there was a significant difference in the prevalence of psychiatric distress and internet addiction between male and female young adults. Psychiatric distress and internet addiction were found more prevalent among male compared to female. The studies conducted by Srijampana et al,[17] Kawa and Shafi,[18] Subhashini and Praveen,[19] and Alhajjar[20] had reported similar findings in their studies.[16-19]

Findings of the present study also indicate that time spent on internet use, psychiatric distress and internet addiction have a significant positive correlation. More time spent in using the internet daily (in hours) will increase the prevalence rate of internet addiction and psychiatric distress among students. Similar to the present findings a study conducted by Alhajjar B. in Gaza-Palestine found that internet addiction and psychiatric distress are positively correlated to each other. In another study conducted in Jordan found that internet addiction was significantly associated with the mental distressamong the students.[21] ElSalhy et al found their study that internet addiction was significantly positively associated with time serpent in the internet use, social networking and psychiatric distress among students and had a significant negative correlation with using internet for academic purpose.[22]

Limitations

There are some limitations in the present study;

- The sample size was too small.
- The data collected from only a small study area.
- There was a lack of randomization in sampling methods.
- Uneducated young adults were not included in the present study.

Therefore the results of the present study may not be generalized for the whole population.

Conclusion

Despite the noted limitations, the present study has provided some important information regarding the prevalence of internet addiction (IA) and psychiatric distress among Indian college going young adults. Findings indicate that IA and psychiatric distress has a significant association with the gender of the students. Male students have more risk of getting affected by IA and psychiatric distress compared to female students. The study also indicates that daily time spent (in hours) has a positive relationship with IA and psychiatric distress. And IA and psychiatric distress also positively correlated with each other. Therefore, there should some awareness programs be conducted to aware them about IA and psychiatric distress to prevent them from other major psychiatric disorders.

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Original Article

Cognitive advantage of second-generation anti-psychotics against combination of first-generation anti-psychotic and anti-cholinergic drugs

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Abstract

Introduction: *Cognitive deficits are core features of schizophrenia and determine functional outcome and quality of life. The cognitive benefit a drug produces becomes important in choosing the antipsychotic.* ***Objective:*** *To compare the cognitive benefits of typical and atypical antipsychotics in stable patients of schizophrenia.* ***Method:*** *On obtaining ethical clearance we enrolled stable patients of schizophrenia into two groups based on the medication they were taking. It was a case control design. Only one antipsychotic must have been used through majority of the course of treatment. After screening by GHQ and assessing remission by PANSS, different tests of neurocognition were applied. Information obtained was analyzed by appropriate statistical methods. Mann-Whitney U test was applied to compare the significance of difference of means between groups.* ***Results:*** *Patients on atypical antipsychotics performed better in all domains of neuro-cognition except executive function.* ***Conclusion:*** *Atypical antipsychotics as a class offer distinct neuro-cognitive advantages which should be considered in choice of drug for schizophrenia.*

Key Words: *Schizophrenia, Dopaminergic, Prefrontal, Working memory, Attention.*

Introduction

Cognition is the sum total of mental processes that makes us acquire knowledge and keeps us aware of our surroundings and thus enables us to arrive at appropriate judgments.[1] Cognitive deficits are core features of schizophrenia. Cognitive deficits are the key factors determining functional outcome and quality of life.[2] Bleuler explained delusions and hallucinations were secondary to cognitive changes. There is an increased need for a precognitive drug with robust improvement in neurocognitive biomarkers for improved functional outcome. Improved understanding of the pharmaco-dynamics shall help in drug development.

In meta-analytic studies, Antipsychotics not only showed improvement of improve positive and negative symptoms, but improvements in cognitive deficits have also been noted, though varying.[3] Typical antipsychotics otherwise known as first-generation antipsychotic medications reduce hallucinations, delusions, behavior problems and risk for relapse. Predominantly acting on D_2 receptors, they also bind to histamine H_1 receptors, muscarinic M_1 receptors, and α adrenergic $NE\alpha_1$ receptors.[4-5] These fail to adequately ameliorate negative and cognitive symptoms.[5,6] Second-generation antipsychotics or atypicals benefit negative and cognitive symptoms.[7] A possible explanation for this could be a blockade of 5-HT2a and a weaker blockade of D2 relative to typical.[8,9]

Speed of processing has been noted to be most significantly impaired in patients of schizo-

phrenia.[10] It is determined by visual scanning, motor scanning, and co-ordination. The variation in the pharmacokinetics of different anti-psychotics causes a varying impact on the speed of processing.

Cognitive deficits as a principle feature of schizophrenia render individuals deficient in acquiring a new skill and making them socially isolated even in remission.[11] This raises the search for measures to address cognitive impairments. Substantial cognitive improvement was reported to be produced by atypical antipsychotics in a meta-analysis of 12 studies.[12] In a study patients treated with typicals continued to show low p50 suppression, while those on a typicals had improved.[13] In rodents, learning and memory impairments that were produced by stress and neurotoxin were attenuated by atypical antipsychotic drugs.[14] These have been explained by augmented synaptic plasticity in hippocampal-prefrontal pathway and modulation of muscarinic and glutaminergic transmission.[15] Olanzapine has produced improved memory relative to haloperidol and risperidone.[16] Again, risperidone was found to improve working memory.[17,18] Clozapine impaired working memory but improved semantic memory.[19,20] Clozapine is a partial agonist at D1 and potent antagonist of D4, both of which are present in the prefrontal cortex, the area implicated in neurocognition. In another meta-analysis, it was shown that except for large doses benefit produced by haloperidol was similar to others. This raises the need for comparing the neuro-cognitive benefits of typical and atypical., proceeding with the hypothesis that atypical antipsychotics have a cognitive advantage over typical antipsychotics.The null hypothesis that no significant difference exists between groups was formulated.

Methodology

It was a cross-sectional tertiary hospital-based study by purposive sampling. Subjects were assigned to groups based on their history of drug used. Each group had 30 patients.

Sampling

We enrolled all successive patients as per inclusion and exclusion criteria who consented to participate. The study was conducted at Nilratan Sircar Medical College, Kolkata. Ethical clearance was provided by the institutional ethical clearance committee. All patients of schizophrenia in remission (stable) attending Psychiatry OPD and patients admitted in the psychiatry ward were included in the study.

Inclusion and Exclusion criteria

Samples included people between 18-50 years, who were educated in English up to at least 10th and consented to participate in the study. We used tests standardized on Indian Population, that were available in English, hence only subjects educated in English were chosen.[20] As use of multiple antipsychotic may interfere with the objective of the study, so subjects whose treatment records showed use of only one antipsychotic through the majority of the course of treatment were included. Patients who had co-morbid conditions such as drug abuse except for nicotine dependence, affective disorders, dementia, mental retardation, history of head injury and seizure within one-year duration were excluded. Those receiving benzodiazepines within one month and ECT within the last 6 months were also excluded. Any patient who was on atypical antipsychotic along with anticholinergic were also excluded.

Screening and Assessment

A specially prepared proforma was used to collect the patient's socio-demographic data which included age, gender, educational status, residential status, socio-economic status, past history, family history, personal history, general physical examination, systemic examination, and mental status examination. The International Classification of Diseases(ICD-10 DCR) 10th edition diagnostic criteria for Psychiatric Illnesses by WHO was used to diagnose each patient (World Health Organization, 1993). Mental retardation was ruled out by screening all subjects by Raven's Colored Progressive Matrices. All subjects were screened by the Positive and Negative Syndrome Scale (PANSS) for assessing the severity of illness in schizophrenia.[22] The accepted criteria for remission as in literature was PANSS score of < 3 for all items in the last 6 months.[22] GHQ-28 was used for checking the presence of any psychiatric comorbidity.

Speed of Processing was accessed by digit symbol substitution test.[21] In it the time taken to

perform the task was measured. Verbal working memory was tested by N-Back test and visual working by Visual N-Back.[21] Verbal learning was tested by the paired association test. In it the number of pairs correctly reproduced forms the score.[23] Visual learning was tested by PGI-visual recognition test.[24] In it a correctly identified and naming of the object is given 1 mark while a correct identification but wrongly naming fetched ½ mark. Attention and concentration were tested by digit forward, digit backward and serial subtraction test.[25] Animal name and design fluency tests were used for assessment of executive function. In it the number of items generated is the score.[21]

Data Analysis

Data obtained weretabulated, means, standard deviation, and percentages were calculated. Mann-Whitney U test was applied to compare the significance of the difference of means between groups. The critical value of U was calculated to be 119. $P<0.05$ was considered significant. The null hypothesis that no significant difference exists between groups was formulated.We used Epi Info 7 for analysis of data.

Results

the two groups as criteria for remission is based on each individual item, where the score in each should be less than three.[22]

In most cases, patients on typical antipsychotics require the administration of a centrally acting anticholinergic while atypical drugs are known by the rarity of such side effects. Anticholinergic drugs are known to affect muscarinic transmission and impact cognitive pathways. In practical circumstances as typical drugs are combined with anticholinergic drugs studying the effect of this drug, the combination would be of clinical relevance. It created a real-life scenario in a naturalistic study.

Reduced speed of processing is enduring features in schizophrenia.[23] Speed of processing was measured by the digit symbol substitution test that measures the amount of work done in the fixed time. Patients on atypicals fared better significantly. Improvements with large effect size have been reported to be produced by atypical drugs in various meta-analysis.[26] Digit symbol substitution is determined by visual scanning, motor scanning, and co-ordination. The greater propensity of extrapyramidal effects of typical antipsychotics has been hypothesized by many for this difference. The effects on motor system like extrapyramidal

Table-1: Demographic Variables

Variable		Typicals + Anti-cholinergic n=30	Atypicals n=30	P
Sex (Male)		20 (67%)	18 (59%)	0.01
Age (years)		30.28 ± 7.24	30.27 ± 7.17	0.50
Education	School	11(35.5%)	6 (21.6%)	0.76
	High School	5(17.6%)	4 (13.5%)	
	Graduate	6 (20.6%)	7 (24.3%)	
	Post Grad	2 (5.9%)	2 (5.4%)	
	Professional	6(20.6%)	11 (35.1%)	
GHQ Score		6.03 ± 1.14	2.00 ± 0.81	< 0.001

Discussion

The present study intended to compare the cognitive functions of patients with respect to drugs used. Patients on atypical antipsychotics fared better in all domains of neuro-cognition except for executive function. Comparison of the demographic characteristics shows samples were matched with respect to age and duration of illness. There is a significant difference in the total PANSS scores of syndrome that typical antipsychotics often produce has been suggested as the reason for this difference. Dickinson had observed a direct relationship between the dose of anti-psychotic and the amount of impairment inspeed of processing.[12]

Working memory includes verbal memory and visual memory. N-Back test was used for verbal working memory assessment. Visual N-Back is similar to verbal N-Back test where unlike in the

Table-2: Comparison between two groups of patients in remission

	Typicals + Anti-cholinergic n=30	Atypicals n=30	p
Age of Patients	31.67 (6.46)	30.70 (7.81)	0.68
Duration of Illness	3.85 (2.43)	4.11 (1.93)	0.70
GHQ Score	0.7 (0.67)	0.61 (0.0)	0.69
PANSS Total	18.36 (1.30)	15.95 (1.23)	<0.001
Speed of Processing			
Digit Symbol Substitution Test	240.79 (19.7)	261.75 (19.33)	0.001
Working Memory			
N-Back-1-Hit - Verbal	5.4 (1.21)	7.1 (1.04)	<0.001
N-Back-1-Eror - Verbal	4.74 (1.48)	3.00 (0.92)	<0.001
N-Back-2-Hit - Verbal	4.6 (2.11)	4.27 (1.17)	0.98
N-Back-2-Eror - Verbal	7.37 (1.54)	5.25 (1.74)	<0.001
N-Back-1-Hit - Visual	5.37 (1.21)	7.10 (1.02)	<0.05
N-Back-1-Eror - Visual	6.16 (1.21)	4.50 (0.69)	<0.05
N-Back-2-Hit - Visual	2.68 (0.48)	4.75 (0.44)	<0.001
N-Back-2-Eror - Visual	6.63 (1.42)	4.70 (0.92)	<0.001
Verbal Learning -			
Paired Assoc -Similar Pair	3.68 (067)	5.54 (1.43)	<0.001
Paired Assoc Dis-Similar Pair	3.00 (0.82)	4.8 (1.51)	<0.001
Visual Learning			
PGI- Visual repetitive Card	5.21 (0.98)	6.35 (0.75)	<0.001
Attention & Vigilance			
Digit Forward	3.16 (1.12)	5.25 (1.77)	<0.001
Digit Backward	2.79 (0.63)	4.75 (1.16)	<0.001
Serial Subtraction– 7	1.16 (0.37)	1.45 (0.51)	0.04
Executive Function Tests			
Animal Name Test	11.42 (0.69)	11.50 (0.61)	0.70
Design Fluency- Free	8.32 (1.06)	8.25 (0.97)	0.65
Design Fluency- Fixed	3.37 (0.96)	3.45 (0.60)	0.75

previous one in which the task is to identify words heard, here the subject has to identify the position of a dot in a card and compare it with the previous one. Patients on atypical had significantly better working memory.[21] Deficiency of dopamine in prefrontal cortex is postulated to cause deficits of working memory.[27] Atypicals improve working memory by increasing dopamine in frontal cortex.[28] Risperidone has been reported to improve working memory as a whole.[28,29]

Learning involves obtaining information and retrieving it later. Dopamine has an important effect on learning from experiences. The improved memory by atypicals may be explained by better availability of dopamine that atypicals produce. Atypical antipsychotics improve the availability of dopamine, which in turn may improve learning. Moreover, typicals tend to affect cholinergic systems through their muscarinic effects. Clozapine and olanzapine have been reported to produce improvement in verbal learning.[28,2927,28]

Patients on atypicals showed significant better attention span. In studies, 5-HT_2 antagonists have been found to benefit attention. Atypical antipsychotics exhibit 5-HT_2 antagonistic actions.

Patients on atypicals did not exhibit any advantage with respect to typical on executive function. Executive function involves multiple networks like

prefrontal-striate-thalamic, prefrontal-parietal, and prefrontal-temporal neural networks, hence the difference. The effects that the drugs might have on these pathways would be a complicated one to predict. Probably executive function would involve pathways different from other domains.[30]

This study shows atypical antipsychotics to be having distinct cognitive advantages over typical except for executive functions.

Strengths: 1. Tests standardized for Indian population was applied.[21]

2. Groups were matched with respect to education, age, and IQ which affect cognition.

3. Criteria of remission were PANSS score of < 3 each individual item.

Weakness: In general hospital-based study sample size remained a constraint.

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Original Article

A study of Socio-demographic and Psychosexual dysfunctions in female patients with Depression and Anxiety disorder

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Abstract

Background: *Psychosexual disorders are common all over the world, but very few studies are done which are related with female sexual dysfunctions. Most of the studies are done on male sexual dysfunctions. It is very important to understand that how sexual beliefs, values and attitudes act and effect these problems.* ***Aim and Objectives:*** *To find out the pattern of sexual problems among female patients with Anxiety and Depression.* ***Material and Methods:*** *The study conducted in department of psychiatry of National Institute of Medical Sciences Research and Hospital, Jaipur. The duration of the study was for 6 months.The Study consisted of 147 consecutive female subject with diagnosis of anxiety and depression according to ICD10.Hamilton rating scale for anxiety (HAM-A) used in study on subject to know the severity of anxiety , Hamilton rating scale for depression (HAM-D) applied for measuring the severity depression and Arizona Sexual Experience Scale (ASEX) for assessing the sexual dysfunctions. Subjects were assessed by using ICD-10 criteria.* ***Results:*** *Total 147 female subjects were taken out of which 78 were of anxiety and 69 were of depression. Total 46 female subjects were having sexual dysfunctions out of 147 subjects .Out of 46 subjects 26 were having depression and remaining 20 were having anxiety. Most common age group of depressive subjects with sexual dysfunction were 18-28 years 46.2% , 50.1% subjects were illiterate and 53.8% were having loss of sexual desire and 46.2%% were complaint of orgasmic dysfunction. And most common age groupof subjects with anxiety disorder associated with sexual dysfunctions were 18-28 years 55%and. while60% of patients belongs to nuclear family while 45% patients were Hindu and 50% subjects were illiterate and lack of sexual desire was 50 %, sexual aversion 35%, lack of sexual enjoyment 15%.* ***Conclusion:*** *The study focusses on the psychosexual dysfunctions associated with psychiatric disorders and need for careful identification of sexual dysfunctions.*

Key words: *Depression, Anxiety and Female sexual dysfunctions.*

Introduction

Women's sexual problems were cast as technical problems to be understood in terms of social phenomena and resolved through education regarding the profound physical, emotional and spiritual differences between men and women.[1] Normal sexual behavior brings pleasure to his or her along with partner that involves in stimulation of the primary sex organs including coitus; it is free from the feeling of anxiety or guilt and is not compulsive.[2] So the disturbance in normal sexual response cycle is related with many psychosexual disorder.[3] As the female sexual dysfunctions are taboo subject for the discussion in many places

which ultimately creates the negative effects which may include familial conflict and even divorce.[4] So it is very important to create awareness about female sexual dysfunctions which may help in early diagnosis and management of sexual dysfunctions.[5] The epidemiological studies done on female sexual dysfunctions are very less due to which there are less data available on prevalence of sexual problems associated with female.[6] So it is difficult to know the exact number of patients suffering from sexual problems.[7] It may be due negligence of medical practitioner or hesitancy of female patients in discussing sexual problems.[8] So there is a need for research on female sexual dysfunctions.[9]

Female Sexual Response Cycle[2]

Normal sexual response cycle was first described by Master and Johnson in 1966 and consists of phases: Desire, Excitement, Plateau, Orgasm, Resolution.[3]

Psychosexual Dysfunctions According to ICD - 10:[10]

F 52.0 Lack or Loss of Sexual Desire
F 52.1 Sexual Aversion and Lack of Sexual Enjoyment
F 52.1 -0 Sexual Aversion
F 52.1 -1 Lack of Sexual Enjoyment
F 52.2 Failure of Genital Response
F 52.3 Orgasmic Dysfunction
F 52.5 Nonorganic Vaginismus
F 52.6 Nonorganic Dyspareunia
F 52.8 Other Sexual Dysfunctions, not caused by organic disorder or disease
F 52.9 Unspecified sexual dysfunction, not caused by organic disorder

Aims & Objectives

The specific objectives of study were to study:

1. The pattern of psychosexual problems among female patients.
2. The socio-demographic correlates of various psychosexual disorders.
3. The clinical correlates of various psycho-sexual disorders.

Material and Methods

This study was done in out-patient department (OPD) of psychiatry in National Institute of Medical Sciences and Research, Medical College and Hospital, Jaipur. Study population consisted of the subjects who have fulfilled the inclusion and exclusion criteria. The privacy and confidentiality of the subjects were ensured and maintained. The duration of study was for 6 months. The Study consisted of 147 female subjects with depression and anxiety disorder diagnosed on the basis of ICD 10 criteria out of which 46 female subjects were having sexual dysfunctions along with depression and anxiety disorder. The Severity was assessed by Hamilton rating scale for anxiety (HAM-A), Hamilton rating scale for depression (HAM-D) applied for measuring the severity of depression and Arizona Sexual Experience Scale (ASEX) for assessing the sexual dysfunctions.

Inclusion Criteria

1. All female patients with age group of 18 years to 50 years who attended psychiatry OPD of NIMS Hospital, Jaipur.
2. Healthy, married and sexually active females.
3. Who gave a written informed consent for participating in the study.
4. Meeting the criteria for Depression and Anxiety disorder according to ICD-10.

Exclusion Criteria

1. The cases below 18 years and above 50 years of age.
2. Women who were not living with their husbands in the previous six months.
3. The cases with preexisting significant medical, gynecology, genitourinary, surgical, organic brain disorders and mental retardation, psychosis, bipolar disorder and substance use disorder.
4. Postmenopausal women were excluded.

Results

The sample comprised of 147 female subjects with diagnosis of depression and anxiety disorder. Out of 147 female subjects 46 were having sexual dysfunction associated with depression and of anxiety disorder and out of 46 subjects 26 (56.5%) subjects were of depression and 20 (43.5%) were of anxiety disorder.

The Table 1 shows that most common age group of depression with sexual dysfunctions were of 18-28 years 46.2% and most of the subjects were

illiterate 50.1%,muslim 36.8% were living in nuclear family 42.4%.

Table-1: Socio-demographic profile of patients with Depression

Age group	Patient with depression N=26	(%)
18-28 year	12	46.2
29-39 year	9	34.6
40-50 year	5	19.2
Family type		
Nuclear	11	42.4
Joint	15	57.6
Religion		
Hindu	8	30.7
Muslim	10	38.6
Sikh	8	**30.7**
Education		
Illiterate	13	50.1
Primary	6	23.1
Middle	3	11.6
Secondary	2	7.6
College	2	7.6

Table-2: Clinical profile of Depression patients

Referred	Patient with depression N=26	(%)
Direct	12	46.2
Medicine	9	34.6
Skin	**5**	**19.2**
Years of marriage		(%)
0-5 years	15	57.6
6-10 years	**11**	**42.4**
No of sexual dysfunctions		
One	**8**	**30.7**
Two	10	38.6
Three or more	8	30.7
Psychosexual dysfunction According to ICD-10	Number of dysfunction N=26 (Depression)	**(%)**
F 52.0	14	53.8
F 52.3	12	46.2

The Table 2 shows that most of the subjects came directly to the psychiatry OPD were 46.2% while 34.6% were referred by medicine department .Most of the subjects complains of lack of sexual desire 53.8% and years of marriage (0-5) associated with sexual dysfunctions were 57.6%

The Table 3 shows that most common age group of Anxiety disorder with sexual dysfunctions were of 18-28 years 55% and most of the subjects were illiterate 50%, Hindu 45 % were living in joint family 60%.

Table-3: Socio-demographic profile of patients with Anxiety disorder

Age group	Patient with Anxiety disorder N=20	(%)
18-28 year	11	55
29-39 year	6	30
40-50 year	3	15
Family type		**(%)**
Nuclear	8	40
Joint	12	60
Religion		**(%)**
Hindu	9	45
Sikh	4	20
Muslim	7	35
Education		**(%)**
Illitrate	10	50
Primary	6	30
Middle	3	15
Secondary	1	5
College		

Table-4: Clinical profile of patients with Anxiety disorder

Reference	Patient with Anxiety disorder N=20	(%)
Direct	15	75
Medicine	5	25
Year of marriage		**(%)**
0-5 years	8	40
6-10 years	12	60
No of sexual dysfunctions		
Single	13	65
Two	**7**	**35**
Three or more	0	
Psychosexual dysfunction According to ICD-10		**(%)**
F52.0	10	50
F52.1	**7**	**35**
F52.1-1	3	15

The Table 4 shows that most of the subjects came directly to the psychiatry OPD were 75% while 25% were referred by medicine department .Most of the subjects complains of lack of sexual desire 50% and years of marriage (6-10) associated with sexual dysfunctions were 60%.

Discussion

The current study was done in department of psychiatry, National Institute of Medical Sciences and Research Hospital and Medical College, Jaipur. The sample comprised of 147 female subjects with diagnosis of Depression and anxiety disorder. Out

of 147 female subjects 46 were having sexual dysfunction associated with Depression and of anxiety disorder. And out of 46 subjects 26 (56.5%) subjects were of depression and 20 (43.5%) were of anxiety disorder. In current study, we found different sexual dysfunctions associated with depression and anxiety. 53.8% were having lack of sexual desire and 46.2% were having orgasmic dysfunction was found in patients with depression. While in study doneon 904 female subjects by Fabreetal., 17.7% female subjects were having lack of sexual desire, sexual aversion 3.2% and orgasmic dysfunction was 7.5%.[11] The reason for higher percentage of sexual dysfunction in our study may to due difference in sample size as compare to other studies. And study done by Pereria et al, 2013, on 155 female subjects of both anxiety and depression and found that anxiety was 36.1%, depression was 21.9% and lack of sexual desire 52.9%, orgasmic dysfunction was 39.4%.[8]

Conclusion

The psychosexual dysfunctions are commonly associated with psychiatric disorders in women and there is a need for careful identification of sexual dysfunctions comorbid in patients with depression and anxiety disorders.

Limitations

1. Hospital based study.
2. Small sample size.
3. Only took females with active menstrual cycle.

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Original Article

Sexual Health Related Issues among Indian Unmarried Undergraduate Male Students: A Survey

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Abstract

Introduction: *In a psychosexual clinic patients do not merely turn up with problems described in classificatory systems in psychiatry. Rather, they also present with numerous issues regarding a variety of aspects of sexual life.* ***Aims and Objectives:*** *The issues regarding sexual life are mostly raised by young unmarried patients hence the survey was designed to be carried out among undergraduate youngsters.* ***Materials and Method:*** *A questionnaire was formulated with 30 items which were written to correspond with recurrent themes in sexual issues and myths regarding various aspects of it. The format of the items was a conventional questionnaire with items presented as brief descriptive elements to which the respondents rate their level of agreement/disagreement on a 3-point rating scale. The sample population for this survey was sexually inexperienced undergraduate male included after stratified random sampling those who were studying in the various colleges of the University.* ***Results:*** *32.0% and 48.9% participants were opted incorrect (myth) and correct (truth) responses regarding sex life issues, respectively. 19.1% of the participants were not sure of the sex life issues.* ***Conclusions:*** *Young and sexually inexperienced males are highly vulnerable to have psycho-sexual problems in their future due to lack of factual knowledge regarding the sex life related issues.*

Keywords: *Sexual myths, Undergraduate, Unmarried male.*

Introduction

Sex is a widely discussed topic everywhere in the world. Since the beginning ofour education and until we become young adults, the knowledge of sex are very restricted, particularly in young males. The lack of formal sex education predisposes us to falling into the trap of various myths regarding sex and sexuality which has shown a high prevalence in studies.[1-5] Instead of true facts what we're taught is an amalgamation of falsities and other culture bound myths especially regarding topics such as masturbation, penis size, importance of semen, and phenomenon such as nightfall, premature ejaculation, impotence and erectile dysfunction. A good scientific knowledge about these topics is important so that actual medical issues don't get dismissed as personal problems.[6]

This is a bigger issue among educated young adult males in society. It is of utmost importance for this specific population group as they are in the age where they will be/are sexually active, for their sexual health and mental well being of them and their partners. Young males have been found to believe that masturbation or excessive sex is harmful and can lead to mental/physical illness.[7] Researchers suggest that the person having these myths and misconceptions is typically more likely to be married or recently married, of average or low socioeconomic status, of a more rural background and belonging to a family with conservative

ideas about sex, which can in part be attributed to exposure (or lack thereof) to Western literature.[1,8]

One of the most culture bound of these is the complaint of dhat also known as Dhat syndrome. A typical patient presents with complaints like impotence, premature ejaculation and loss of semen through urine (whitish discharge in the urine) and at night. This loss of semen is accompanied by symptoms like feelings of guilt, anxiety, loss of appetite and physical weakness.[2,9,10] According to a study done on Dhat syndrome, it was noted that the most common psychiatric comorbidities associated were neurotic depression and anxiety neurosis, and a third of them did not have an associated psychiatric diagnosable problem.[11]

Rather than reading from scientific sources, most young males have heard it from their elders and friends that semen is a vital fluid in the human body and it needs to be preserved. Loss of semen by activities such as excessive masturbation and sex will lead to the afore mentioned complaints.[3,12] These people are of the view that there is only a finite quantity of semen in the human body and that it cannot be wasted. These beliefs are compounded by the omnipresence of quacks who swear by the fact that they can make all sexual problems so away. A phenomenon like nocturnal discharge of semen which is absolutely normal has been made out to be this huge sexual disorder called nightfall which needs immediate treatment.[13,14]

In a culture like ours where open discussion about sex is taboo, fears are bound to creep in. The urogenital system is always a focus of preoccupation. Thus under stressful conditions, people are likely to misdirect their somatic symptoms and health anxieties into symptoms of sexual dysfunction like turbidity of urine and tiredness due to loss of semen.[15] Other myths prevalent are that size of penis is important during sexual intercourse. In an internet survey, it was found that 12% men rated their penis as small while 66% men rated it as average and 22% large.[16]

Such misconceptions among men are multiplied manifold when the topic is the female. Myths regarding pregnancy, virginity, menstrual blood being impure, female masturbation, orgasm and oral sex are extremely common. Prevalent myths are regarding the hymen, namely that it's presence is the proof of virginity, it should be intact until marriage and that the first sexual encounter should be painful for a woman.[17] Misconceptions like a man need to have sex very often to be regarded as macho, female virginity is more important than male virginity and activities like kissing can lead to pregnancy or AIDS are still prevalent among youngsters.[18,19]

Hence, in the view of above discussion we conducted a survey to find out the understanding of the sex life issues among sexually inexperienced young males and discussed the evidence based facts.

Methodology

1. *Questionnaire development:* A questionnaire had been formulated with the consensus of psychiatrists and clinical psychologist as per their clinical experience and information gathered from unstructured interviews of few undergraduate students. In this questionnaire 30 items were written to correspond with recurrent themes in sexual education and myths regarding various aspects of it e.g. related to masturbation, semen, pregnancy, sex positions, STD, etc., including few questions pertaining to demography. (Table -1 and 2) The format of the items was a conventional questionnaire with items presented as brief descriptive elements to which the respondents rate their level of agreement/disagreement on a 3-point rating scale. Scale interval anchors were 'Yes', 'No' and 'I Don't Know' or 'True', 'False' and 'I Don't Know'. Prior to conducting the survey this questionnaire was tested on 10 randomly selected students to rectify its applicability.
2. *Sample selection:* The population for this survey was undergraduate students studying in the various colleges of Swami Vivekanand Subharti University, Meerut. Target population was sexually inexperienced unmarried male undergraduate students. Stratified random sampling was done to select sample of the survey. Subjects fulfilling the inclusion criteria were included in the study. The included subjects were screened for exclusion criteria and those who were not befitted were excluded.
3. *Survey conduction:* After sample selection, on the basis of the size of classrooms of their respective colleges, 10-15 students were handed over the questionnaire for their response.

Adequate space was provided to each participant to maximize privacy.

Participants were informed that if they experience discomfort during the study, they can withdraw their participation which will not incur any academic penalty or loss of credit.

Results:

In this study the total number of participants was 205. The average age of participants was 20 years. Majority of participants were belonged to Bachelor of Physiotherapy (BPT) followed by Bachelor of Medicine and Bachelor of Surgery (MBBS), Bachelor of Naturopathy and Yogic Science (BNYS) and Bachelor of Technology (B-TECH). (Table - 1)

The response of participants on questionnaire regarding sex life issues can be observed in Table – 2.

Table-1: Demographic details of the sample

Age	**20.0 ± 2.2 years**
Course	**N (205)**
BNYS	49
BPT	66
B-TECH	41
MBBS	49

Table-3: Average of the responses by participants for myths, truths and neutral responses regarding sexual life issues

Myths (n%)	**Truths (n%)**	**Unaware of the issues (n%)**
65.5 (32.0)	100.3 (48.9)	39.2 (19.1)

Table-2: Response of the participants for sexual life issues

S.No.	**Issue**	**Yes / True N (n%)**	**No / False N (n%)**	**I do not Know N (n%)**
1.	Is masturbation harmful for health?	107 (52.2)	73 (35.6)	25 (12.2)
2.	Is the stock of semen in the body limited and if you waste it by masturbating, you will soon run out of it?	45 (22)	129 (63.9)	31 (15.1)
3.	Loss of semen through masturbation/night-fall causes physical weakness or harm to the body?	118 (57.5)	60 (29.3)	27 (13.2)
4.	Too much masturbation may make the penis shrink in size?	45 (22)	105 (51.2)	55 (26.8)
5.	Pre-cum coming out through penis during sexual arousal is a normal biological phenomenon?	136 (66.3)	29 (14.1)	40 (19.6)
6.	Pre-cum coming out through penis during sexual arousal is semen?	116 (56.6)	61 (29.8)	28 (13.6)
7.	Is this possible that semen can come along with urine during urination?	67 (32.7)	111 (54.1)	27 (13.2)
8.	In your opinion *dhat* may be a cause of physical weakness?	122 (59.5)	21 (10.2)	62 (30.3)
9.	Every drop of semen is formed out of forty and more drops of blood?	87 (42.4)	44 (21.5)	74 (36.1)
10.	Less viscosity of semen has an adverse affect on sexual pleasure?	87 (42.4)	66 (32.2)	52 (25.4)
11.	A female cannot get pregnant if semen of her partner is less viscose?	75 (36.6)	81 (39.5)	49 (23.9)
12.	Vasectomycan lead to impotence?	90 (43.9)	85 (41.5)	30 (14.6)
13.	A man should be able to achieve an erection whenever he wants to?	129 (62.9)	56 (27.3)	20 (9.8)
14.	Wet dreams/Nightfall is actually a type of biological disease?	96 (46.8)	88 (42.9)	21 (10.3)
15.	Some special foods/drugs and exercise can increase the size of the penis?	101 (49.3)	62 (30.2)	42 (20.5)
16.	A female cannot get pregnant if her partner has small length and width of penis?	28 (13.7)	147 (71.7)	30 (14.6)
17.	A woman becomes ‘impure’ during menstruation and bad blood is thrown out through the menstrual flow?	110 (53.7)	56 (27.3)	39 (19)
18.	Woman ejaculates during orgasm as man does?	127 (62)	21 (10.2)	57 (27.8)
19.	Females don’t ever masturbate?	30 (14.6)	148 (72.2)	27 (13.2)
20.	Can a female get pregnant the first time she has sex?	128 (62.4)	50 (24.4)	27 (13.2)
21.	Only males have medical issues with sexual dysfunction?	19 (9.3)	172 (83.9)	14 (6.8)
22.	Menopause is the end of a woman’s sex life?	41 (20)	122 (59.5)	42 (20.5)
23.	Females can only orgasm through penetrative sex?	57 (27.8)	77 (37.6)	71 (34.6)
24.	Can a female only get pregnant having sex lying down?	41 (20)	115 (56.1)	48 (23.9)
25.	Can a female get pregnant through oral sex?	13 (6.3)	167 (81.4)	25 (12.3)
26.	Does the ‘withdrawal method’ work to prevent pregnancy?	120 (58.5)	53 (25.9)	32 (15.6)
27.	A female cannot get pregnant when she is on her period/menstruating?	84 (41)	79 (38.5)	42 (20.5)
28.	A woman can’t get pregnant if the intercourse is done in a standing position?	51 (24.9)	106 (51.7)	48 (23.4)
29.	Whether a specific kind of sex position can ascertain gender of the expected child?	26 (12.7)	140 (68.3)	39 (19)
30.	Having intercourse with a virgin will cure a man of his venereal disease (sexually transmitted disease/infection)?	27 (13.2)	127 (61.9)	51 (24.9)

Discussion

In a true sense psychosexual behavior of an individual is a complex phenomenon. The problems related to sexual behavior go beyond the boundaries of psychosexual factors such as sexual identity, gender identity, gender role and sexual orientation, particularly in young inexperienced males. In a psychosexual clinic a young inexperienced male may turn up with a lot of curiosity and queries regarding sexual aspects in which the majority of themes revolve around *dhat* (a fear of leakage of semen), quality and quantity of semen, nocturnal emesis (nightfall), size and shape of external genitalia, vague somatic associations, etc.Young males who recently became sexually active may blame their in competence to perform sexual activity to these misconceptions and may develop anxiety/depressive features. To the extent such misconceptions are inculcate through misleading hoardings, internet, and hearsay information. For the longest time, problems like passage of semen in urine,[20] anticipatory anxiety about potency,[21] guilt associated with masturbation,[19,22] harmful concerns of loss of semen,[22] anxiety due to nocturnal emission,[23,26] small size of penis,[19] abnormal sensation in the genitals,[19] conversion of semen from blood and its loss during sexual activity[23] have been reported. In the recent studies which evaluated the pattern of psychosexual disorders in hospital setting reveals that *dhat* syndrome is consistently tops the list e.g. 39.2%,[4] 62%[5] and 32.39%.[24] In the present study, if the issues related to masturbation, semen and *dhat* (point No. 1 to 11, Table-2) are clubbed together, the percentage of students gave response in favor of myths were 39.8%. 20.8% were unsure of the fact and 39.4% responded in favor of truth. This means, quite a good number of students (i.e. 60.6%) in the sample required to be psycho-educated regarding the concerned facts. Similarly, when average of total responses was calculate for different responses then it was observed that almost half of the participants (51.9%) were either misinformed or unaware of the factual position of the concerned issue. (Table-3) Further, the notion regarding the pre-ejaculatory fluid which is considered as semen is the secretion of Cowper's gland has physiological explanations, which are described as it functions as lubricant for semen and penis and also neutralizes the acidity in urethra and vagina.[25] In this way the pre-ejaculatory fluid is useful against the notion.

Similarly, nocturnal emission (NE) is the body's way of relieving sexual tension, which becomes particularly high at the adolescent age.[26] These emissions characteristically begin when a boy is 11 to 16 years of age.[26] A high percentage of all males do experience nocturnal emissions at some time in their lives. Ultimately, about 83% of all males have wet dreams.[27] Despite of high prevalence of nocturnal emission we don't know the exact mechanism of it. The speculations regarding functionality of nocturnal emission are that it occurs to either relieve sexual tension, misuse of inhibitory neural control system during drowsiness and sleep, related to higher testosteronergic activity, it is related to low frequency of masturbatory/sexual activity or it improves the quality of next fresh semen naturally.[28] A study done sampling standard XI and XII students were found that 67% of the boys were had a notion that NE is a natural phenomenon. Weakness and tiredness were reported as physical symptoms by 18.6% and 16.6% of the boys and rest problems were more of psychological in nature.[29] A study shown that after 10 days of daily ejaculates when the 11th sample of semen were studied after 3-5 days of abstinence showed increment in progressive and total spermatozoa motility[30] which may have role in achieving fatherhood as shown in the study done on patients having low sperm counts.[31]

Further, a common misconception regarding vasectomy is that it causes impotence later in the life. A study done to seek the fact of impotence imposed by vasectomy concluded that amotivation to undergo the procedure and female dominance between the couples may be the probable cause of sexual dysfunction, after excluding somatic erectile dysfunctions.[32] Another study found that there is no change in frequency of sexual activity between vasectomized and non-vasectomized samples.[33]

For a long time, masculinity has been equated with size, shape and appearance of the penis which is also the concern in young males attending the psychosexual clinic. Frequently, it has also been observed in clinics that the patients turn up with their guess or comparative observation of penises with their colleague or porn actors. When they had been asked that ever they had measured their penis

length or girth accurately with measuring scale, the answer come up to be "NO". As far as penis length and circumference are concerned in India it came out to be mean flaccid length 8.21 cm (3.23 inches), mean stretched length 10.88 cm (4.28 inches) and circumference 9.14 cm (3.60 inches) in a group of 301 physically normal men. Out of 301, in 93 of the subjects erected length and circumference were found to be 13.01 cm (5.12 inches) and 11.46 cm (4.51 inches), respectively.[34] When women's preferences for penis size and circumference were studied, a few interesting facts surfaced. It is not always that a female gives preference for penis size either for one-time or long-term partners as 15 women indicated 'No' in their answer' and also neither does a woman always end a relationship due to small penis but sometimes does so due to too large a penis as well, as 5 out of 75 were ended relationship due to too large penis.[35] In comparison of long term relationship slightly larger size and circumference were preferred in one-time partners.[35] In many males negative correlates such as shorter height, obesity and older age also play role in reporting smaller/average penis size by self.[16] In the similar study despite of 55% of men satisfied with their penis size 84% women satisfied with the penis size of their partner's.[16] Further, most of the patients seeking penile lengthening procedures also found to be having normal penile length.[36]

As far as the female's ejaculation during orgasm is concerned an anatomically, histo-chemically and histo-pathologically similar tissues has been found located in paraurethral part in females.[37] These tissues containing prostatic glands, ducts and smooth muscles officially termed as 'Skene's paraurethral glands and ducts' which is commonly referred as "female prostate". Now the question arises whether these tissues contribute to female ejaculate and whether females do ejaculate during orgasm? The suggestions has been made on basis of positivity of acid phosphatase test on female secretions that these secretions are present via an ejaculatory mechanism and also in resting secretions. The urethral expulsion in females has been reported during sexual arousal with or without orgasm.[37] Apart from the ejaculation and expulsion described in context of females there are two more phenomenon i.e. vaginal lubrication and coital incontinence which should be discussed here. Vaginal lubrication consists of plasma transudate activated by peptides and thought to be discharged by contraction of perivaginal muscles and it is described as discharge rather than a gush.[38,39] Regarding female masturbation contrary to the belief that females do not masturbate, the literature reported that masturbation in females is a common practice.[40,41]

"Coitus interruptus, or withdrawal, requires that the penis be removed from the vagina and directed away from the external genitalia of the woman before ejaculation to prevent sperm from entering the upper reproductive tract and fertilizing an ovum."[42] Coitus interruptus/withdrawal sometimes considered as preferred method of contraception for various reasons like having confidence in the success of this method, fear of infertility with medical practices, husband unwillingness to use other methods.[43] Although this method has been proven successful in preventing pregnancy to considerable extent with failure rate approximately 4%[42] Curiosity regarding failure of this method lead to the idea that pre-ejaculatory fluid may contain spermatozoa leading to studies which showed mixed results. Killick et al. reported that 11 of 27 subjects (41%) produced pre-ejaculate with spermatozoa and 10 of the cases had some motile spermatozoa[44] while Zukerman et al. reported that none of the pre-ejaculatory samples contained sperm, all patients had sperm in routine sperm analysis.[45] Further, the fact regarding failure of any type of contraceptive cannot be ignored as in the case of withdrawal method also.

There are reports that 70-90% of females cannot achieve orgasm through penetrative sexual play. It has also been said that the distance between a woman's clitoris and her urinary opening has major role in achieving orgasm during peno-vaginal sex. 90% of those who achieves orgasm via penetrative sex say that the position of female partner used to be on top in that condition.[46] The researcher also does not rule out the role of penis size, skill and intensity of desire to achieve orgasm in females.[47]

In short, on the issue of post-menopausal sex life, researcher concluded that "…….. The findings suggest that framing sex around menopausal changes misses important cultural and social issues. …….. Instead, women emphasize

issues such as status and quality of relationships, health, and sexual history, which are social factors relevant for all women.

An important finding of this study is the connection between sexual orientation, relationship quality, and cultural ideas about sex. ……. Many heterosexual and lesbian women similarly describe satisfying sexual relationships as well as no sex with a partner." [47]

Hence, there are lot many misconception that prevail in the mind of young males which can be explained on the basis of the evidences as the discussion above.

Conclusions

In this study we had observed that quite a good number of participants were unaware or mis-informed regarding facts of sexual life issues. Participants were also chosen the incorrect option for the issues which are the known facts for obvious reasons such as role of sexual position in conception and intercourse with virgin female can cure STDs. From this survey it may be concluded that youngster males are highly vulnerable to have psycho-sexual problems in their future due to lack of factual knowledge regarding the sex life related issues. They are highly in need of to be psycho-educated regarding the same.

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Disclaimer

None

Conflicts of Interest

None

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Original Article

Quality of Life and Caregiver burden in Chronic Kidney Disease – Case for a paradigm shift in holistic management

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Abstract

Introduction*:End-stage renal disease (ESRD) represents the final stage of chronic kidney disease (CKD). Quality of Life and as well as Caregiver burden are important determinants of treatment outcome in a complex manner.* ***Objectives****: to study Quality of Life in patients of ESRD and correlate with caregiver burden with respect to the type of dialysis being given-hemodialysis or peritoneal dialysis.* ***Methodology****: Between January 2018 and June 2018, all patients with ESRD reporting to the nephrology OPD of a tertiary care hospital of eastern India with a specialized nephrology unit were offered to be included in the study. Of these 56 patients on hemodialysis, 50 patients on peritoneal dialysis and 32 patients of ESRD not on dialysis were enrolled. The study assessed patients' demographic characteristics and noted biochemical and hematological variables from the medical record. We diagnosed ESRD based on CKD-EPI formula and a GFR of < 15ml/min/1.78 m^2 BSA was diagnosed as ESRD. We used the brief version of the WHO's QOL scale (WHOQOL-BREF) in this study. For CG burden assessment Family Scale for Caregiver Burden, a well validated scale in this population was used.* ***Results:*** *The significant difference in mean scores between HD and PD group Mean QOL was significantly higher for PD.* ***Conclusion****: The study brought out the advantages in QoL as well as caregiver burden in the peritoneal dialysis group as compared to the hemodialysis group, even though majority of ESRD patients in India are on hemodialysis. There appears to be a direct correlation between all domains of quality of life and caregiver burden in this group of patients. In the Indian context, certain modifiable sociodemographic factors are also at play. Close cooperation between nephrologist and psychiatrist is called for in holistic management of these patients.*

Key words*: Hemodialysis, Peritoneal dialysis, Caregiver burden, Quality of Life*

Introduction

Among the various chronic illnesses, chronic kidney disease (CKD) is a big culprit and ever increasing. Unfortunately, from India there is no longitudinal study and limited data on the prevalence of CKD. Of the few studies available, a prevalence of CKD upto 17.2% has been found.[1] Even in apparently healthy adult population a prevalence of CKD is reported as high as 13–15%.[2]

Western research indicates that there has been 30% increase in prevalence of chronic kidney disease (CKD) over last 10 years[3-5] and there is reason to believe that actual Indian figures are not only similar but continuously increasing due to lifestyle diseases and increased longevity.[4] End-stage renal disease (ESRD) represents the final stage

of chronic kidney disease (CKD). While, CKD is present in as many as 20 million Americans and this number is likely to increase with the growing burden of diabetes mellitus and hypertension, ESRD affects approximately 500,000 patients in the United States.[5]

In the Indian context, a rough estimate of the magnitude of the problem can be had from the results of an Indian study which found incidence of ESRD to be 229/million population.[6]

There are 2 major modalities of treatment for ESRD patients - hemodialysis and peritoneal dialysis. Among the ESRD patients on dialysis, majority (upto 90%) are on hemodialysis and the rest on Peritoneal dialysis.[7] As per US CDC control data, by 2013, 63.7 percent of all prevalent ESRD cases were receiving hemodialysis therapy and 6.8 percent were being treated with peritoneal dialysis.[8]

A key determinant in assessment of CKD patients is the quality of life (QoL). According to the WHO, QoL is defined as "individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". It is a broad ranging concept affected by the person's complex physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment.[9] The core components of QOL are physical, functional, psychological/emotional, and work/occupational.[10]

Patients with end-stage renal disease (ESRD) whether or not on maintenance dialysis experience significant impairments in quality of life (QOL).[11]

The question arises as to what causes this deterioration in the quality of Life in patients of CKD? The obvious sources appear to be problems with physical health, psychological state, level of independence, social support, personal beliefs and their relationship to salient features of their environment.[12] Findings have shown that lower scores on QoL were strongly associated with higher risk of death and hospitalization, than clinical parameters in cases of ESRD patients.[13,14] There are very few studies looking at this domain in Indian context and even fewer studies of QoL in CKD patients who are on peritoneal dialysis[15] and we could find no recent attempts at comparing these physical and psychological burden in PD and HD population.

Caregiver Burden - Caregiver burden (CG) is "the physical, financial, and psycho-social hardships of caring for a loved one, usually a family member, struggling with a medical condition".[16] Family care-givers are those individuals who provide the majo-rity of the patient's physical, emotional, financial, and social care needs throughout the continuum of care, from being hospitalized to providing care at home, without receiving any remuneration.[17]

Family caregivers may develop caregiver burden, when the stress of care exceeds the resources available to cope with the demands of care.[18] The substantial amount of caregiving required by patients with ESRD may increase family caregiver's vulnerability to emotional, physical and psychological consequences.[19,20]

As family caregivers often bear the burden of caregiving alone, their physical, social, emotional, and financial life are negatively impacted, leading to caregiver burden[21] there is a stark paucity of research regarding caregiver burden among family caregivers of ESRD patients and this also means that there appears to be a lack of support for these family members. Any management plan which does not take into consideration the caregiver dimension, is incomplete to say the least and completely misses the understanding of such chronic illnesses and such a misunderstanding is bound to negatively impact the overall outcome of treatment.[22]

Apart from being an important determinant of outcome in CKD patient on maintenance dialysis (hemodialysis (HD) or peritoneal dialysis (PD)–[23] considerably less is known about these health-related domains in caregivers of patients with ESRD who are not on dialysis. Understanding the degree to which impaired QOL and the Caregiver burden affect this group of patients is also important in appreciating how such health-related domains may change when advanced CKD progresses to ESRD and onto renal replacement modality (hemodialysis) as well as help in planning effective and comprehensive long-term management plan for these patients. In this background we decided to study the prevalence of QOL in ESRD patients on dialysis (HD as well as PD) and we also used a comparative control arm of patients of ESRD who are not on dialysis. We looked at Caregiver burden in the family caregivers of these patients and compared

the same between these 3 groups (ESRD on HD, ESRD on PD and a control ESRD not on dialysis). To our knowledge this is a one of its kind of study on Indian population which compares these domains together in these 3 groups of patient samples.

Material and Methods

This study was a part of a larger study of mental health and kidney disease by the authors where we studied depression and QoL in patients with advanced CKD and subjects undergoing chronic peritoneal dialysis and twice/thrice-weekly in-center hemodialysis. Institutional ethical committee clearance was taken and all participants provided informed consent.

Between Jan 2018 and June 2018, all patients with ESRD reporting to the nephrology OPD of a tertiary care hospital of eastern India with a specialized nephrology unit were offered to be included in the study. Of these 56 pts on hemodialysis, 50 pts on peritoneal dialysis and 32 pts of ESRD not on dialysis were enrolled after due consent. Exclusion criteria included age <18 yr or >70 year, active malignancy, active infection (pneumonia), active coronary artery disease (*e.g.*, unstable angina, myocardial infarction) within the last 6 months, bed bound patients, advanced cirrhosis, advanced dementia, substance use disorder, presence of schizophrenia, bipolar mood disorder, past history for treatment for any syndromal psychiatric illness, past h/o head injury, stroke in the last 6 months, Patients without exclusion criteria were approached at the time of their initial or routine CKD clinic visit. This study was conducted in accordance with the principles of the Declaration of Helsinki. We assessed patients' demographic characteristics and noted biochemical and hematological variables from the medical record. We diagnosed ESRD based on CKD-EPI formula and a GFR of < 15ml/min/1.78 m^2 BSA was diagnosed as ESRD. We used the brief version of the WHO's QOL scale (WHOQOL-BREF) in this study. This instrument derived from the WHOQOL-100. The WHOQOL-BREF questionnaire contains two items from the Overall QoL and General Health and 24 items of satisfaction that divided into four domains: Physical health with 7 items (DOM1), psychological health with 6 items (DOM2), social relationships with 3 items (DOM3) and environmental health with 8 items (DOM4)[24] Domain scores are scaled in a positive direction (i.e., higher scores denote higher QoL). The mean score of items within each domain is used to calculate the domain score. For CG burden assessment we used the Family Scale for Caregiver Burden which is a well validated scale in this population.[25]

For our analyses, we first took hemodialysis and peritoneal dialysis patients as one group (referred to as the dialysis group). These patients were compared with ESRD patients who were not on dialysis (controls). Then an intra group comparison was done between HD and PD patients. Differences between the groups in demographic characteristics, clinical variables, QoL scores and CG Burden score were assessed using ANOVA for continuous variables, and the χ^2 statistic or Fisher's exact test for categorical variables.

To assess the impact of demographic and clinical variables on group differences we used linear regression, logistic regression, or the Wilcoxon-Mann-Whitney rank sum test, as appropriate. Variables included in these analyses were those that demonstrated statistically significant differences between the study groups in univariate analyses. We assessed correlations in each patient group using Spearman's correlation coefficient, and evaluated the internal consistency reliability using Cronbach's coefficient alpha. A *p*-value of <0.05 was considered to represent statistical significance in all analysis. All data handling and in-depth analyses was done by one of the authors who is a qualified statistician too, using the SPSS version 20.

Results

Among the samples there are 3 subgroups - Hemodialysis (HD), Peritoneal dialysis (PD) and controls (CKD patients not on dialysis). We compared the following parameters between these 3 major groups.

1. Sociodemographic variables
2. Quality of Life of the patients
3. Caregiver burden

Sociodemographic variables: We found that there was significant difference in mean age of three groups. HD cases were younger than PD samples and control. There was no difference with respect

to gender, education or socioeconomic status between the 3 groups. Mean duration of dialysis in HD group was 38.18 months. For PD, this avg was 27.5 months ($p< 0.05$).

QoL score: there is significant difference in mean scores between HD and PD group. Mean QoL is significantly higher for PD. (Table 1 and Table 2)

Satisfaction score: there is significant difference in mean scores between HD and PD group as well as between Control and HD - HD has significantly lower mean values compared to control and PD (Table 2)

CG Burden: The caregiver burden score was significantly higher in hemodialysis group as compared to the peritoneal dialysis and control group which did not differ significantly between themselves. The QoL domains are significantly correlated with caregiver burden on family (Table 3)

Table-1: Comparison of mean scores between the groups

		N	Mean	Std. Deviation
QOL score (Q 1)	Control	19	3.32	1.003
	HD	50	2.90	.931
	PD	**53**	**3.85**	1.199
	Total	122	3.38	1.145
Satisfaction score (Q 2)	Control	19	3.89	.809
	HD	**50**	**3.16**	.866
	PD	53	3.81	.982
	Total	122	3.56	.963
DOM 1 (PHYSICAL HLTH)	Control	19	3.34	.676
	HD	50	3.72	.648
	PD	52	3.48	.840
	Total	121	3.56	.749
DOM 2(PSY HLTH)	Control	19	3.39	.838
	HD	50	3.22	.777
	PD	52	3.33	.776
	Total	121	3.29	.783
DOM 3 (SOCIAL HLTH)	Control	19	3.47	.630
	HD	50	3.65	.622
	PD	52	3.73	.735
	Total	121	3.66	.675
DOM 4 (ENV HLTH)	Control	19	3.66	.661
	HD	50	3.63	.814
	PD	52	3.67	.835
	Total	121	3.65	.795
CAREGIVER BURDEN SCORE	Control	19	9.63	8.275
	HD	**50**	**26.60**	17.299
	PD	53	11.91	9.676
	Total	122	17.57	15.141

Table 2: Statistical Comparison of means between the 3 groups

	p-value for the comparison between		
Parameter	**Control & HD**	**Control & PD**	**HD & PD**
QoL score (Q 1)	0.321	0.152	0.000*
Satisfaction score (Q 2)	0.009	0.937	0.001*
DOM 1 (PHYSICAL HLTH)	0.140	0.757	0.235
DOM 2 (PSY HLTH)	0.693	0.962	0.732
DOM 3 (SOCIAL HLTH)	0.568	0.317	0.829
DOM 4 (ENV HLTH)	0.991	0.997	0.963
Caregiver Burden Score	0.000*	0.796	0.000*

* statistically significant p value

Table-3: Correlation coefficients are significant between all the pairs of parameters except for the pair Caregiver burden and physical health (DOM 1)

		Caregiver Burden Score
QOL score (Q 1)	Correlation Coeff	-.499**
	p-value	**.000**
satisf score (Q 2)	Correlation Coeff	-.454**
	p-value	**.000**
DOM 1 (PHYSICAL HLTH)	Correlation Coeff	-.109
	p-value	.233
DOM 2 (PSY HLTH)	Correlation Coeff	-.430**
	p-value	**.000**
DOM 3 (SOCIAL HLTH)	Correlation Coeff	-.269**
	p-value	**.003**
DOM 4 (ENV HLTH)	Correlation Coeff	-.301**
	p-value	**.001**

Discussion

Previous studies have found poorer QoL in CKD patients in general and ESRD patients on dialysis in particular.[26] In our study in Indian population we found that even though the scores on the 4 different various domains of QoL was not statistically different between the 3 groups, there was significant difference in the overall perception of QoL (assessed by Q1) as well as overall satisfaction levels (assessed by Q2). The satisfaction levels and the overall QoL perception by patients was found to be better in the peritoneal dialysis and non dialysis patients as compared to the hemo-dialysis group. In other words those on hemodialysis were less satisfied and felt that they had poor quality of life than those on peritoneal dialysis and in a complex manner because when we compare the 3 groups in terms of the 4 specific domains of QoL (physical health, psychological health, social and environmental health) they appeared to be comparable. At the same time, we also found that the CG burden was significantly more in the hemodialysis group as compared to peritoneal dialysis group which was similar to the non dialysis group. This assumes importance given that only 10% of ESRD are on PD and the majority are on HD.[27]

It perhaps can be understood in terms of the fact that that PD patients stay home and are in more control of their illness/treatment as compared to HD patients who have to come 2-3 times a week for hemodialysis to the hospital. Apart from any inherent effect of the hemodialysis process itself, In Indian and rural/semi urban context we also need to consider psychosocial factors like travel, poor modes of communication, stay, need for an attendant caregiver to accompany, financial burden as well as mental and physical labor involved.[28]

The most important difference between the PD (and control) on one side and the HD group on the other is the frequent visits to the hospital (dependency) in the latter and its attendant social and psychological factors. From a biopsychosocial point of view, it appears that when a patient has to visit the hospital 2-3 times a week for hemodialysis then the gains of therapy (in the form of tight control of renal pathology/parameters) is offset or frittered away by the psychological impact of dependency and other socioeconomic factors like stay, finances, need for an accompanying person, difficulties in conveyance and communication, disruption of social commitments/involvement etc. This is also indirectly inferred from the finding that HD group has significantly higher caregiver burden than the PD and control group. It can be argued that perhaps there is a selection bias in the beginning in that patients with less severe illness or less comorbid conditions are prescribed peritoneal dialysis and hence they have better QoL as well as lesser caregiver burden in the peritoneal dialysis patient. However, in terms of potency and efficacy both PD and HD are comparable.[27] the KDIGO guidelines do recommend that PD should be started first in non-oliguric young ESRD pts but only if other

clinical factors are favorable like for e.g. those patients where vascular access is not possible or AV fistula fails (usually happens in pts with other systemic comorbid conditions), those with severe cardiac compromise, vascular risk factors like recent ICH etc. other bleeding disorders etc. These are all poor risk factors and these patients are assigned peritoneal dialysis. So it cannot be inferred readily that it is the good prognosis patients who are assigned peritoneal dialysis in the first place. This is also bailed out by the fact that at 5 years survival rate for both PD and HD were found to be comparable.[27] In the light of the present findings, nephrologists will do well to involve the patient more in their treatment regimen. After all what is a treatment if our patients are not happy and satisfied at the end of it. Afterall we are not treating the diseased kidney but the person with the diseased kidney. There is evidence to show that psychological distress, depression[29] and psychosocial factors including poor social support[30] appears to influence QoL in CKD as seen in our study too and poor QoL has direct impact on outcome morbidity and morbidity independent of physical parameters.[31] In fact, differences in social support between groups has been suggested to underlie differences in mortality of dialysis patients between units.[32]

Coming to the other important parameter measured in the study, we found high caregiver burden on family caregivers across the spectrum. Again, we found that caregivers of peritoneal dialysis patients as well as of those who were not yet on any dialysis, were less burdened than those of pts on hemodialysis. There also appears to be a significant relationship in the negative direction between all the domains of the QoL with the caregiver burden except domain 1 (physical health) – poorer QoL correlated with higher caregiver burden across physical, social, psychological and health related domains of QoL. We infer that perhaps the family caregivers are less burdened by the physical health of their patients than the psychological health, social constraints, financial issues and the logistics of taking the patient for hemodialysis 2-3 times a week to the centre. Expectedly, that is quite understandable and logical inference – a patient who has poor social support, is low on confidence and money and is far away from the dialysis centre/hospital is likely to have less subjective satisfaction and is likely to rate his QoL as poor. On the other hand, the reverse is also true – a patient with good psychological health and good social support etc will have higher subjective wellbeing and higher QoL when we talk of burden on the caregivers, evidence suggests that even the healthcare workers attending these chronically ill patients get burdened enough to get their QoL affected.[33]

Conclusion

Based on our finding from this study, we recommend that a holistic approach to patients of CKD with/without dialysis, would entail assessment of detailed psychosocial factors which affect over all outcome. Management approach should take these into account as well. Care of the caregivers also should be a part of the management protocol. Addressing the social factors, environmental factors, psychological issues through our counseling and psychoeducation (of the patient and the caregivers alike) is as important as physical health in these patients. Perhaps there is a need for the services of mental health professionals in close liaison with the nephrology team, as underlined by the findings of our study.

Limitations of the study

One of the major limitations is the fact that this is a cross sectional design study and despite it's strength of adequate sample size, strict inclusion criteria and inclusion of controls (in the form of end stage renal disease patients not yet on dialysis), a cross sectional design in itself is handicapped to comment on causality.

Future directions

In future we recommend a similar study with prospective follow up cohort design and preferably to include the domains of severity of renal illness as well as psychopathology and its correlation, if any, in the patients being cared for. Such a study design has been planned by the authors and the study is underway.

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Original Article

Correlates of Dyadic Adjustment in Schizophrenia

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Abstract

Introduction: *Mental illness and marriage are interconnected. Various factors related to the mentally ill spouse, the demographics and illness related factors have been found to have a bearing on the marital relations.* ***Objective:*** *This study aims at assessing marital adjustment in the spouses of patients with schizophrenia and its relation with different contributory factors.* ***Method:*** *It was a cross-sectional study, including 100 consecutive participants, 20-60 years of age, who were spouse of patients diagnosed with Schizophrenia(according to DSM-5) and had minimum illness duration of 5 years and spouses are the primary caregivers. A sociodemographic proforma, Dyadic adjustment scale (DAS)and Positive and negative syndrome scale (PANSS) were used to assess different variables.* ***Results:*** *Of the subscales, mean score of the subscale 'consensus on matters of importance to marital functioning' (3.07) was the highest and that of 'affection expression' was the lowest (1.66). Onset of illness before marriage, multiple number of relapses and hospital admissions and poor compliance was associated with poor dyadic adjustment.* ***Conclusion:*** *Spouses, as caregivers, have some distinct issues and concerns, which on discussion and exploration in routine clinical practice may help in identifying caregiver's stress.*

Keywords*: Marriage, Schizophrenia, Dyadic adjustment.*

Introduction

Schizophrenia is a severe mental disorder that is often referred to as loss of contact from reality. It includes cognitive, emotional, and perceptual disturbances, that distort reality, and can result in transformation of a person's self.[1] The expression of these manifestations varies across patients and over time, but the effect of illness is always severe and is usually long-lasting. Schizophrenia manifests as a relapsing and remitting illness. More than 50% have a poor outcome, with repeated exacerbations and hospitalizations.[2]

With the deinstitutionalization process and government policies for rehabilitation of mentally ill, the responsibility of care shifted to the family and society. Parents and spouses are the people most likely taking up the caregiving role. During this course, the caregivers experience considerable financial, emotional, and practical burdens.

Studies have reported lower rates of marriage or stable partnership in patients with schizophrenia.[3-5] However, a few Indian studies have found fairy high rates of the same.[6,7] Marriage is essentially a social process in which two individuals relate on a personal and intimate basis, pledging to share a life together. In several societies including India, it is sanctified and glorified and is still largely a commitment for life. Marital responsibilities require certain social abilities for it to be successful. Schizophrenia is associated with a number of behaviouralchanges andimpairment of social and cognitive abilities, probably leading to a low marital rate and maladjustments in the marriage.[7]

Marriage has a bearing on mental health and

mental illness; and the reverse is also true.[7] However, it is noted that patients with mental illness permanently living with a spouse have better social outcome and prognosis.[8] Earlier research has found differences in perceived burden and caregiving between spouse and other caregivers.[9] The experience of objective burden may be similar for both parents and spouses, but they differed in their experience of subjective emotional burden.[10] Various factors including those related to the mentally ill spouse, the demographics and illness related factors have been found to have a bearing on the marital relations. This study aims at assessing marital adjustment in the spouses of patients with schizophrenia along with its relationship with different contributory factors.

Methods

Study participants

Hundred consecutive participants, who were spouse of patients diagnosed with Schizophrenia, according to DSM-5 and had minimum illness duration of 5 years were included in the study. Participants were required to be between 20-60 years of age, primary caregiver of the patient and willing to give informed consent. Those spouses who had any chronic physical or mental illness and those whose schizophrenic spouse had any associated mental or chronic physical illnesses, were excluded from the study. The diagnosis was also based on MINI (Mini International Neuropsychiatric Interview), a structured interview tool with a high validity and reliability, and it was also used to rule out other coexistent psychiatric disorder in both spouse and the patient.[11]

Study design

It was a cross-sectional study done in the psychiatry department of a tertiary care teaching hospital after approval from Institutional Ethics Committee. A written informed consent was obtained from the participants before their enrollment in the study.

Assessment Measures

A semi-structured proforma was used to gather socio-demographic and illness related details. In addition, following scales were used:

Dyadic adjustment scale (DAS) – It was created by Spanier in 1976. It is a 32 item scale in Likert form which encompasses different dimensions of marital adjustment. These are: (a) consensus on matters of importance to marital functioning, (b) dyadic satisfaction, (c) dyadic cohesion, and (d) affection expression.Coefficient alpha r for total score of Dyadic Adjustment Scale is 0.93. Convergent validity was established with Locke Wallis marital adjustment Scale (r is 0.87) and divergent validity by evidence of an inverse relationship with the Marital Dissatisfaction scale (r is -0.79). Internal consistency of DAS score is high. Traditionally, a total score of 102 or more would indicate that the couple is non-distressed, however as outlined in recent revisions, a cut-off of 97 was indicated for the above, and same cut-off is used in our study.[12-14]

Positive and Negative Syndrome Scale (PANSS) - The PANSS by Stanley R. Kay and colleagues is a 30-item symptom rating scale that was designed to measure core positive and negative symptoms of schizophrenia. Symptoms are rated along a seven-point continuum of severity on the basis of a semi-structured interview with the patient as well as observations of the patient's behaviour, during the past seven days by informants. Each of the items making up the Positive and Negative Scales correlated very strongly with the scale total ($p < .001$), and the mean item total correlations of 0.62 and 0.70, respectively.[15-16]

Statistical analysis:

It was done by SPSS version 20. Results obtained for quantitative data was presented using mean, range and standard deviation. Data was normally distributed. Chi-square test was done for categorical variables, and t-test for continuous variables.

Results

Demographic profile

Out of the 100 spouses included in the study, 72 were male and rest female. Their mean age was 47 years (standard deviation SD = 9.25 years). Range was 25 years minimum age to maximum 59 years. 61% lived in nuclear family and others in joint family system. Considering their education, 2% were illiterate, 22% had primary education and 76% had education of higher secondary and above.

The mean age of spouse at the time of marriage was 25.97 years (SD = 5.8 years), ranging from 9 to 41 years.

Illness related variables

Among illness related variables, mean duration of illness of the patients was 14 years, minimum being 5 years (as per the inclusion criteria) and maximum 38 years. In 89% of the cases, patient had developed the illness (schizophrenia) after marriage, and in 11% before the marriage. Patient's current symptoms were assessed using PANSS (Positive and negative syndrome scale), which showed mean positive subscale score 17.02 (SD = 7.075), negative subscale score 15.35 (SD = 4.998), general psychopathology subscale score 32.26 (SD = 10.072) and total score 64.63 (SD = 19.209). Out of the 100 patients, 57% had minimal or residual symptoms while 43% were actively symptomatic at the time of interview. The number of hospital admissions ranged from minimum of 0 to a maximum of 7 admissions. Based on subjective questioning about adherence to treatment, 59% were adherent to treatment.

Dyadic Adjustment

The assessment tool for studying marital adjustment in this study was DAS (Dyadic Adjustment Scale). It has a minimum score of 31 and maximum of 146 and a cut-off score of 97. Based on this, 56% couples in our study had scores above 97 suggesting good marital adjustment and rest 44% had poor marital adjustment. Among its 4 subscales, mean average score on scale 'consensus on matters of importance to marital functioning' was highest i.e. 3.307, for 'dyadic satisfaction' was 3.171, for 'dyadic cohesion' was 3.188, and for 'affect expression' was 1.66, the lowest.

Correlates of dyadic adjustment

Based on DAS scores, two groups emerged-one with good and the other with poor marital adjustment. The difference in the two groups based on age, gender, education and family type was not statistically significant.Illness related variables were also studied in context of dyadic adjustment (Table 1 and 2). Analysing the onset of illness, we found 94.6% of patients in the well-adjusted group and 81.8% in the poorly adjusted group had their illness

Table-1: Comparison of various variables in good and poor adjustment groups

Poor marital adjustment	Good marital adjustment		Unpaired T-test		
	Mean	**SD**	**Mean**	**SD**	**p-value**
Age	46.18	8.822	47.77	9.595	0.397
Duration of illness	14.59	8.136	13.55	8.104	0.527
Number of hospitalizations	2.23	1.52	1.41	0.96	0.002*
PANSS Total score	79.57	14.598	52.89	13.373	0.000*

* - Significant

Table-2: Comparison of variables in the good and poor adjustment groups

	Poor marital adjustment N (%)	**Good marital adjustment N (%)**	**Pearson's chi square (p-value)**
ONSET OF ILLNESS			0.042*
Before marriage	8 (18.2)	3 (5.4)	
After marriage	36 (81.8)	53 (94.6)	
RELAPSE			0.000*
More than 5	17 (38.6)	5 (8.9)	
Less than 5	27 (61.4)	51 (91.1)	
COMPLIANCE			0.000*
Poor	35 (79.5)	6 (10.7)	
Good	9 (20.5)	50 (89.3)	
ACTIVE SYMPTOMS			0.000*
Present	36 (81.8)	7 (12.5)	
Absent	8 (18.2)	49 (87.5)	

* - Significant

onset after the marriage, and the difference was significant (p=0.042). The difference in duration of illness in the two groups was not significant. Enquiry about the patient's current illness status and PANSS assessment revealed that there was significant difference in the symptom profile of the patients in the two groups; having more number of relatively asymptomatic patients and having lower scores on PANSS in the well-adjusted group as compared to the poorly adjusted group. Number of relapses and hospitalizations was significantly higher in the poorly adjusted group as well as poor adherence to treatment, when subjectively enquired from the patient's spouses.

Discussion

On DAS, mean average score of 'consensus on matters of importance to marital functioning' sub-scale was highest (3.307) and affect expression was the lowest (1.66), which suggests that most of the patients and their spouses agreed on routine life issues like handling family finances, ways of dealing with parents or in-laws, making major decisions or household tasks. However, the affect expression of patients was less, probably due to effect of illness on patients' social cognition, negative symptoms and due to effect of antipsychotics reducing the emotional expressivity, which can thereby reduce the same in spouse. Also, the spouse in most cases, were taking on some extra responsibilities, due to which they were mostly busy, tired and fatigued.

Dividing the entire subjects, on the basis of DAS, two groups were identified - one having good adjustment and other, poor. There was no significant difference between the mean age of spouses having poor adjustment and good marital adjustment, which is in keeping with the findings of an Indian based study.[17] Difference on gender, education and family structure in two groups was also not significant. However, certain studies showed that female caregiver spouses had more problematic adjustment.[13]

Considering the onset of illness, dyadic adjustment was better in cases where illness developed after marriage compared to ones before marriage. According to a study, this was a factor responsible for better marital outcome, in a 10-years follow-up study.[7] This might be because firstly, if there was a period after marriage, where the person was normally carrying out the responsibilities expected of a marriage, the emotional bond between the two gets strengthened and more of positive appraisal is found in caregiving. For the same reason, there seems to be more consensus between them even in the later phases. Secondly, Indians have more of a fatalistic attitude, and for them, marriage is a one-time event. So, anything that happens after marriage is considered as destiny by the spouse and caring for their ill spouse becomes a duty for them, which has its social recognition and reinforcement. However, when illness is present before marriage, in most cases, spouse is not aware of it, probably due to fear of disengagement and also stigma related to illness. In such cases, there is often an element of being cheated in the spouse's mind and may not necessarily be aware of the risk of a renewed acute illness phase and cannot anticipate the burdens connected with it. It is found in previous studies that caregiver appraisal and functioning is better when the choice of being a caregiver is made by the spouse himself.[18] Further, the impaired social perception and cognition of the schizophrenic spouse makes it difficult to establish the intimacy and attachment at any point of time in the relationship, and thus leads to a comparatively poor adjustment even in the later years of life.

There was no significant difference between the duration of illness of the patients in the two groups, which is consistent with findings of Kumar and Mohanty.[19] In our study, the results could be due to the fact that we included only those spouses where the duration of illness is minimum 5 years. Generally, the initial years after onset of illness are crucial when spouse as a caregiver, has to face lot of changes in terms of their role transition, responsibilities, expectations from the ill spouse and other family members and difficult and unexpected behaviour of the patient. They even have to understand the nature and course of the illness and manage with the upcoming alterations in their marital relations. During this time, they learn to cope with the situations, and therefore have frequent adjustment issues. But with passing years, they probably become more perceptive and develop acceptance to it, and the illness also stabilizes with time.

In this study, it was evident that presence and

severity of symptoms is related to marital adjustment. PANSS scores (suggesting the current severity of symptoms of the patient), were higher in poorly adjusted group. A study by Kate et al[20] found that caregivers report more positive experience when the caregiver had fewer daily hours of responsibility towards the ill relative,which is possible only when the behaviour (in terms of positive symptoms) of the patient is manageable and the emotional expressivity, attachment and social cognition is not much affected (due to negative symptomatology). However another study indicated that it is not the patient's symptoms but ability to perform expected roles that matters.[21]

We also found that the number of relapses and hospital admissions were significantly more in the group having poor adjustment, which is consistent with findings of an Indian study,[7]who found these as predictors of poor marital outcome at 10 years follow-up.With every relapse, the entire functioning of the spouse gets disrupted, starting from household routine to care of children, from caring of the patient to safety responsibilities, and taking care of self. Hospitalizing the patient brings upon additional financial burden to the spouse. And usually, every relapse takes a toll over the patient and the spouse in form of leaving some residual symptoms, thereby worsening their overall functioning and leading to a worse outcome. According to another study, more symptomatic the patient and more number of relapses was related to negative caregiving experiences as well in the spouses.[22]

Considering compliance, it was found to be good in the well-adjusted group, which seems quite obvious, as the spouses who are having good marital adjustment would be having more positive caregiving and thus would take more care of their ill relative in all respect, including compliance, which is an important factor responsible for health and good outcome.

Conclusion

This study shows that onset of illness after marriage and less severe symptoms were related to good marital adjustment and onset of illness before marriage, more number of relapses and hospitalizations were related to poor adjustment. Gender and education of spouse and duration of illness did not appear to have any significant effect.

As mental health professionals, the spouses of the patients with schizophrenia can be encouraged to discuss various aspects of marriage and related issues like change in the roles and responsibilities of the carer spouse, parenting issues, and concerns regarding intimacy and sexuality, which are rarely put forth, especially in Indian settings.

The cross-sectional nature and small sample size were the limitations of this study. A larger sample size which is community based would provide more generalizable results. In addition, qualitative approach would have yielded more meaningful and probably some untouched factors in the subject.

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Original Article

Depression among elderly people living separately from their children: a cross-sectional comparative study

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Abstract

Background: *Prevalence of depression is increasing day by day today especially among elderly people. It has been observed a large amount of decline in joint family system in India. Due to this decline in family system most of the elderly people have to live separately from their children without any proper support and care at home.* ***Objective:*** *this study was to assess the level of depression among elderly people living with their children and elderly people living separately from their children.* ***Materials and Methods:*** *A cross sectional study was conducted in some selected area in Varanasi district in Uttar Pradesh. Total sixty (30 elderly people living separately from their children and 30 elderly people living with their children) were selected through purposive sampling method. All of them assessed by a semi structured questionnaire including socio-demographic variables and Hamilton Depression Rating Scale (HDRS).* ***Result:*** *The mean age of respondent was 68.20 (±7.14) years. Out of 60 respondents 34(56.7%) were female and 33(55%) were widow/widower. Majority of the respondent were illiterate and belonged to Other Backward Class and Hindu religion. Marital status, education, religion, and living condition were found significantly associated with depression. Depression was found significantly more prevalent among elderly people living separately from their children compared to elderly people living with their children or other family members.* ***Conclusion:*** *Findings of the present study revealed that elderly people living separately from their children without any proper care and support at their home, used to easily become target of depression.*

Keywords: *Aging, Older Adults, Mental Health, Left Behind, Living Arrangement*

Introduction

Population of older adults or elderly people is increasing day by day in all over the world and this increase in the population of older adults has been seen between the years 2001 to 2011.[1] According to Population Census 2011, there are about 104 million elderly people (aged 60 years or above) in India.[2,3] And there are about 15 million of the elderly people living alone or with spouse only in India, and most of them are females.[4] In National Family Health Survey (NFHS) 2005-06, it was found that living arrangement of the elderly in India is getting changed day by day. There are about three fourths of elderly people living either alone or with their spouse in India.[5] Due to this change in living arrangement most the elderly people are being left behind at their own home without any proper care and support especially in developing countries like India.

World Health Organization (WHO) has described that elderly living alone in their late life increase the risk of the decline in their quality of life. When elderly living alone or separately in their late life is often taken as an undesirable state of

risk for their health and require a special attention.[5,6,8] Depression has become a major issue in all over the world today. In the various types psychiatric disorders, depression is the most common type of disorder found worldwide, with more than 300 million people affected.[7] The prevalence of depressive disorder is very high in the elderly people. According to an estimation done by the WHO the prevalence of depression in older adults generally varies between 10% and 20% depending upon social and cultural situations.[9,10] According to a previous study, the median prevalence rate of depression in elderly population in the world was determined to be 10.3%. But in India the median prevalence of depressive disorder in elderly people was determined to be 21.9% (IQR, 11.6%–31.1%).[11]

Some previous studies have found significant relationship between mental health and living arrangement of elderly people. But very few researchers have studied about the prevalence of depression among elderly people living separately from their children or family members without any proper care and support at their home in the community. Hence, the present study was planned to assess and compare the prevalence of depression among elderly people living separately from their children and elderly people living with their children or other family members in the community.

Objectives:

- To assess and compare the level of depression among elderly people living with their children and elderly people living separately from their children.
- To assess the relationship between socio-demographic variables and level of depression.

Hypothesis:

- There will be no significant difference between the level of the depression among elderly people living separately from their children and elderly living with their children or other family members.
- There will be no significant relationship between the socio-demographic variables and depression.

Materials and Methods

Study Design: A Cross Sectional Study was carried out in some selected areas. ***Study Area:*** The study was conducted in some selected areas in Varanasi district in Uttar Pradesh. ***Period of the study:*** The study was conducted for period of 3 months (October 2017 to December 2017). The field data collection was carried twice (every Thursday and Saturday) in a week. Ethical clearance for the present study was taken from the ethical committee of Institute of Medical Sciences (IMS), Banaras Hindu University, Varanasi, Uttar Pradesh.

Sample size calculation: For the calculation of sample size, first we take average of prevalence of depression among elderly people from findings of some previous studies =11.25 (approximately 11).[11,14,21,22,28] Considering this, the sample size of the present study was calculated. Hence, Z=95% confidence Interval=1.96. The prevalence was taken p=11, the allowed error (d) is taken 8%.

The sample size was calculated with the formula:

$$N = \frac{Z^2 p(1-P)}{d^2}$$

$$= \frac{(1.96)^2 \times 0.11 \times 0.89}{(0.08)^2}$$

= **58.76 (Approximately 60)**

Sample Size and Sampling Method: Total 60 elderly person (30 elderly people living separately from their children and 30 elderly people living with their children) aged 60 or above were selected through random sampling method for the study.

Inclusion criteria:

- Elderly people aged 60 years and above.
- Those who gave the informed consent.
- Elderly people living with their children and family members and Elderly living separately from their children.

Exclusion criteria:

- Having any hearing or visual impairment and other physical or mental illness.

Tools used:

Semi Structured Interview Schedule (SSIS): A semi structured interview schedule incorporating

socio demographic variables like age, sex, marital status, occupation, education, religion, category, family income, residential area, etc. and psychiatric history and mental status examination was prepared by the research scholar.

Hamilton depression Rating Scale (HDRS): It is a gold standard clinical rating scale to assess the severity of, and change in symptoms of depression. It is also named as HAM-D, the most widely used tool by the clinician and in the research area. It was developed by Max Hamilton in 1960.[12] The original version of HDRS scale contains 17 items, later a 21 items version was developed. A limitation of this scale is that atypical symptoms of depression (Hypomania and Hyperphagia) are not assessed. A score between 0-7 accepted as normal (or clinical remission), 8-17 indicate mild depression; 18-23 indicate moderate depression and score 24 or above indicate severe depression. The validity of the scale has been reported between 0.65 to 0.90 and test retest value has been reported as high as 0.81.

Sampling Procedure: First a list of elderly people living in selected study area was prepared with help of regional booth level officer (BLO) and Parshad. Then the respondents who fulfilled the inclusion and exclusion criteria were selected. They interviewed individually using the semi structured questionnaire by the research scholar. The respondents who have any depressive symptoms they referred to department of psychiatry for the assessment. They were assessed and diagnosed (Using diagnostic criteria of International Statistical Classification of Diseases and Related Health Problems (ICD-10) for depression) by the psychiatrist and then the severity of depression was assessed using Hamilton Depression Rating Scale.

Statistical Analysis: The data were entered in the MS Excel after the competition of data collection. The qualitative data were presented in the form of frequency and percentage. The analysis was performed using IBM SPSS Statistics software (Version-20). The significant association of socio-demographic variables with depression was tested by Chi squire test or Fisher's exact test at a 5% level of significance. Significance difference of depression was assessed using students independent-samples t-test.

Results

Table-1 Presents the distribution of the respondents by socio-demographic characteristics and other study variables. Majority of the respondents 42 (70%) were between age group 60-75 with a mean age of 68.20 (±7.14) years and rest of them 18 (30%) were between age group 76-85 years. Out of the 60 respondents 34 (56.7%) were female and 26 (43.3%) were male. Majority of the respondents 33 (55%) were widow or widower and 27 (45%) were married. Most of the respondents (56.7) were Literate and other (43.3%) were illiterate. There were majority 49 (81.7) of the respondents belonged to Hindu religion. Approximately (45%) half of the respondents were belong to Other Backward Class (OBC) category followed by (28.3%) General, (16.7%) Scheduled Class (SC) and (10%) Scheduled Tribes (ST). Most of the respondents 38 (76.7) were living in urban area. Out of the 60 respondents, majority of the respondents 46 (76.7%) were unemployed/house wife/retired. Most of them (58.3%) were belong to low socio economic status due to low family income below Rs 5000. Out of the 60 the respondents 30 (50%) were living with their children and 30 (50%) were living separately from their children without any proper support and care.

Table-2 Shows the association of the socio-demographic characteristics with depression. Majority of the respondents 31 (73.8%) between age group 60-75 years found suffering with depression. Female were found highly 27 (79.4%) affected with depression. A significantly higher prevalence of depression was found in the respondents who were widow or widower 29 (87.9%) than the respondent who were married 14 (51.9%). The prevalence of depression was high among illiterate 28 (82.4%) than literate 15(57.7%), this difference was statistically significant. The depression status among Hindu respondent was high 32 (65.3%) than Muslim respondents which was found statistically significant. The prevalence of depression was higher among the respondent who belonged to scheduled caste. Most of the respondents 17 (77.3%) were found affected with depression than rural area. The prevalence of depression found higher among unemployed/house wife/retired 35(76.1%) than employed/business/

Table-1: Socio-Demographic Characteristics of the Respondents

	Variables	Frequency	Percentage (%)
Age (years)	60-75	42	70.0
	76-85	18	30.0
Gender	Male	26	43.3
	Female	34	56.7
Marital status	Married	27	45.0
	Widow/widower	33	55.0
Eduacation	Literate	34	56.7
	Illiterate	26	43.3
Religion	Hindu	49	81.7
	Muslim	11	18.3
Category	General	17	28.3
	Other Backward Class	27	45.0
	Scheduled Class	10	16.7
	Scheduled Tribes	6	10.0
Residence	Rural	22	36.7
	Urban	38	63.3
Occupation	Employed/business/shop owner	14	23.3
	Unemployed/housewife/retired	46	76.7
Monthly income	Below 5000	35	58.3
	5001-15000	11	18.3
	15001-25000	7	11.7
	25001-35000	33	5.0
	Above 35000	4	6.7
Living with	Living with their children	30	50.0
	Living separately from children	30	50.0

shop owner 8(57.1%). Majority of the respondents 29 (82.9%) who were economically poor found depressed. The respondents who were living separately from their children found more 25 (83.3%) depressed than the respondents living with their children 18 (60%).There was statistically significant association found between living condition and depression.

Table-3 Shows that 43 (71.67%) out of the 60 respondents were found with depression. Most of the (40%) elderly people living with their children were found normal followed by 23.3% found with mild depression, 30% with moderate depression and 6.7% with severe depression. In other hand most of the 10 (33.3%) elderly people living separately from their children were found with moderate depression followed by 26.7% with severe depression, 6.7% with very severe depression, 16.7% with mild depression, and 16.7% were found normal.

Table-4 This table presented that there was a statistically significant difference between the mean of HAM-D score of elderly people living with their children (10.87 ± 5.18) and elderly people living separately from their children (15.27 ± 5.56).

Discussion

The present study aimed to assess the presence and the severity of the depression among elderly people living with their children and elderly people living separately from their children without any proper support and care in the community. In the present study the prevalence of depression among elderly people was found 71.67 % almost consistent with other studies.[13-20] Depression was found high among elderly belonging to age group 60-75 years than aged group 76-85 years or above, similar result was found in a previous study.[21] In contrast to result of present study some studies have found rate of depression increased with increase age of individuals.[22-25]

The severity of the depressionwas found to be highamong females in study consistent with some other studies conducted India and other developing countries.[18,23,24,27-31] Present study found a higher significant relationship with marital status and depression among elderly people, and severity of the depression were found high among elderly who were widow or widower.[18,19,24,25,27] The presents study revealed that there is a significant relationship

Table-2: Association of Socio-Demographic Variables with Depression

Socio Demographic Variables	STATUS OF DEPRESION			Chi-square value	df	p-value
	Depression Present f (%)	Depression Absent f (%)	Total N=60 f (%)			
Age (Years)						
60-75	31 (73.8)	11 (26.2)	42 (70.0)	0.317	1	0.574
76-85	12 (66.7)	6 (33.3)	18 (30.0)			
Gender						
Male	16 (61.5)	10 (38.5)	26 (43.3)	2.318		0.128
Female	27 (79.4)	7 (20.6)	34 (56.7)			
Marital Status						
Married	14 (51.9)	13 (48.1)	27 (45.0)	9.492	1	0.002
Widow/widower	29 (87.9)	4 (12.1)	33 (55.0)			
Education						
Literate	15 (57.7)	11 (42.3)	26 (43.3)	4.413	1	0.036
Illiterate	28 (82.4)	6 (17.6)	34 (56.7)			
Religion						
Hindu	32 (65.3)	17 (34.7)	49 (81.7)	5.325	1	0.021
Muslim	11(100)	0 (0)	11 (18.3)			
Category						
General	12 (70.6)	5 (29.4)	17 (28.3)	5.044	3	0.169
Other backward class	17 (63.0)	10 (37.0)	27 (45.0)			
Scheduled class	10 (100.0)	0 (0)	10 (16.7)			
Scheduled tribes	4 (66.7)	2 (33.3)	6 (10.0)			
Residence						
Rural	17 (77.3)	5 (22.7)	22 (36.7)	0.538	1	0.463
Urban	26 (68.4)	12 (31.6)	38 (63.3)			
Occupation						
Employed/business/shop owner	8 (57.1)	6 (42.9)	14 (23.3)	1.897	1	0.168
Unemployed/housewife/retired	35 (76.1)	11 (23.9)	46(76.7)			
Monthly Income						
Below 5000	29 (82.9)	6 (17.1)	35 (58.3)	6.667	4	0.155
5001-15000	6 (54.5)	5 (45.5)	11 (18.3)			
15001-25000	3 (42.9)	4 (57.1)	7 (11.7)			
25001-35000	2 (66.7)	1 (33.3)	3 (5.0)			
Above 35000	3 (75.0)	1 (25.0)	4 (6.7)			
Living With						
Living with their Children	18 (60.0)	12 (40.0)	30 (50.0)	4.022	1	0.045
Living Separately from their children	25 (83.3)	5 (16.7)	30 (50.0)			

$p \leq 0.05$=Statistically significant

Table-3: Severity of the Depression found among elderly people

Groups	Severity of Depression n (%)					
	Normal f (%)	Mild f (%)	Moderate f (%)	Severe f (%)	Very Severe f (%)	Total N=60 f (%)
Living with their Children	12 (40.0)	7 (23.3)	9 (30.0)	2 (6.7)	0 (0)	30 (50.0)
Living Separately from their children	5 (16.7)	5 (16.7)	10 (33.3)	8 (26.7)	2 (6.7)	30 (50.0)

Table-4: Comparison of HDRS Score among elderly people living in different conditions

Variable	N=60	Mean	SD	P value	Significance
Living with their Children	30	10.87	5.18	.002	Significant
Living Separately from their children	30	15.27	5.56		

$p \leq 0.05$=Statistically significant

with education and depression, there prevalence of the depression was found high among illiterate as compare to literate respondent, consistent with some previous studies.[17-19,23,32]

The depression status among Hindu respondent was high (65.3%) than Muslim respondents which was found statistically significant, this finding is similar to a previous study conducted in India.[29] The Prevalence of depression was found high among elderly living in urban area than elderly people living in rural area. Similar findings were also reported in other studies.[19,20,23,28,29,33]

Depression was found common in those respondents who were unemployed, housewife, and retired as compared to those respondents who were employed. Some previous studies also found similar result to the present study.[21,23]And the prevalence of depression was found higher among respondent belonging to low or poor socioeconomic status than those belonging to middle or upper socioeconomic status consistent to some previous studies.[21,24,25-27]

In the present study the most of elderly people were found normal (more than one third) and others were found mild to very severe depression. The severity of the depression was found high in elderly people living separately from their children, and similar findings were found in some previous studies.[30,31]

There was significant association found between living arrangement of elderly people and depression. Also there was a significant difference found between the mean of HDRS score of elderly people living separately and elderly people living with their children. In the present study the prevalence of depression was high among elderly living separately from their children than those living with their children. This might have occurred due to lack proper social and financial support and care of the family members. Similarly some previous studies conducted in India, China and Korea have revealed that elderly people living separately from their children or left behind have high prevalence of depression than those living with their children or grandchildren or other family members.[32-34] In contrast to present findings a study conducted by Sharma et al[35], in which the result was found that the prevalence of depression was high among elderly people living with their spouse and children than those living with spouse or alone.

Limitations

The generalization of the findings of the present study is limited due to the less number of sample size. It was a cross sectional study and the respondent were not followed up. It was also difficult to find the related study sample. The respondent may not have been representative for the study.

Conclusion

The present study was conducted to assess the comparison of the status of the depression among elderly people living separately from their children. The present study revealed that depression was significantly associated with marital status, education, religion, and living condition of elderly people. And depression was found more prevalent among elderly those are living separately from their children without any proper emotion, social and financial support than those living with their children and other family members. Findings of the present study suggests that elderly people need emotional, financial and social support and care from their family members especially their son or daughter and grandchildren. There is also need of some further studies in this area to find out the other physical and mental health related problems among elderly people in India.

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