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Bhagavad Gita by Shri Krishna - A model for Psychiatrist

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Every day in life we have a choice – to do what is right and to uphold the truth or not. Each of us either consciously or unconsciously understands the difference. In this path, we often encounter several conflicts in our mind and heart and try to resolve them by making logical decisions. Krishna, in Bhagavad Gita[1] has explained that "it is our choices that help us to stay on the right path".

The relationship between Krishna and Arjuna can be considered like a mentor-mentee bond. A mentor's wisdom and experience can guide us to make the right decisions in our professional and personal life. A mentor is like an engine, pulling us through the tough situations of life that derail us. Without an engine, we would get back on track, but it would take longer. As individuals, we seek mentors not just for their experience, but also as a friend and guide who can be consulted on any occasion. The transformation of Arjuna, from someone who was confused and reluctant to fight against his kin to emerging victorious at the end of the war, can be attributed to these teachings.[2]

Kurukshetra war can be considered as a universal battlefield of good versus evil and of right versus wrong. We face this kind of battle in our everyday life when managing work issues and relationships, or even internally in our minds when we face ethical dilemmas.[3]

Every individual faces moral and ethical dilemmas in few situations. We look for proper guidance amid confusion between right and wrong or the mental agony arising from the urge to follow our basic instincts. The Gita also underlines the futility of worldly desires and pleasures that are fleeting and non-permanent in nature. It is in these areas of spiritual and moral conflict that the Bhagavad Gita continues to retain it's influence on the human race even after more than two millennia.

The battle between opposing forces of right and wrong offers each of us a choice. The Bhagavad Gita urges us to always make the right choice by following our duties and controlling our emotions. It focuses on the three main paths for leading a clean life - Karma Yoga or actions, Bhakti Yoga or devotion and Jnana Yoga or knowledge.[4]

These paths are essential as they tell us the relevance of performing our duties, following our faith and attaining knowledge. They are like the three branches of the same tree, to reach our ultimate goal. The Gita has given equal weightage to these three paths in achieving this goal.[5]

The relevance of Gita is not limited to any one religion or community – it speaks of values, principles and concepts that transcend time and govern the human race. It's values are based on virtue and righteousness. It teaches a person how being on the righteous path can lead one to attain enlightment, understanding the transient nature of life and eventually attaining moksha.[6]

Our decisions at the crossroads of life will define the role we see for ourselves on the path ahead like change of places, starting new business, change of jobs etc.,. These choices have consequences that determine the future version of ourselves. Lord Krishna enabled Arjuna to choose the right path to be taken to fulfill his duties. We should perform our duties without expectations.[7]

Lord Krishna in his Gita teachings helped us to understand importance of performing one's duties, understanding the nature of life, choosing the right path, believing in God, considering all creations as equal, attaining knowledge, working towards the betterment of life and attaining inner peace.

Lord Krishna helped in understanding that knowledge, action and devotion act as three pillars for every individual in making decisions and leading a right life.

In our everyday lives, we face lot of conflictual situations. In such situations Gita can be considered as torchbearer. It emphasizes that our rational thinking and awareness of our mental strength and our ability to make critical decisions efficiently are critical in achieving success.

Desires with the objective of sensory pleasure can sidetrack us from our goal. It highlights that one should refrain from worldly pleasures and cultivate an attitude of detachment or non attachment.[8] The sense of attachment leads us to perform activities only for our benefit, whereas a sense of detachment creates a sense of purpose towards serving our community or society.[9]

Few critics claim that Gita teaches violence, it encourages to fight with our own brothers. Few consider it as a religious book to be read by people following Hinduism[2]. But teachings of Lord Krishna should be viewed as a guide in the journey of life. It teaches us values such as righteousness, karma, devotion and detatchment which are common across all faiths regardless of their caste, creed or religious belief. Let us implement these teachings of Lord Krishna into our own lives, enriching ourselves with inner peace, better relationships and success.[4]

These are the core principles of various psychotherapy practices applied in East and West. These teachings from Gita can be interpreted and applied in daily psychiatry practice for both spiritually oriented clients and illiterate clients.

Conflict of interest

None.

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2019-2020

- I am honored and privileged to have been elected as The President.
- I would like to take this opportunity to acknowledge the great performance of our past leaders Dr. Korada, Dr. P Raghurami Reddy, Dr. Sridhar Raju, Dr. M Uma Shanker and Dr. Keshava Rao who are the pioneers in shaping the IPS TSB
- I have an opportunity to work with Dr. Jagannath President elect ; Dr. Minhaj Hon secretary; Dr. Vishal Treasurer; Dr. Sai Krishna Hon Editor; and Dr. Erra Sridhar Raju, Dr. Naresh Vadlamani, Dr. Anitha, Dr. Vivaswan, Dr. Bharath Irala, Dr. Shiva Kumar as Executive Committee members.
- Thank you all our fellow members who have shown their confidence in me and for the tremendous support.
- With the holistic efforts of senior psychiatrists and enthusiasm of younger members, let's work together in unity.
- I welcome all the delegates to the Annual Conference 2019 in this Historical city known for its food and culture.
- This venue is a place filled with memories for most of us.
- Let's all cherish our old days during these 2 days and enjoy the academic feast.

Let's Acknowledge

- Not going to bore you all with the numerical statistics, intricated neuro biological networks, mystery of medicines,
- Being the president of this august association, I would like to talk about the need of the hour in the contemporary society and also strive to make a change in it.
- Its high time that we take a bigger responsibility to bring in a change in our society.

Is it really that serious??

According to latest available data from the National Crime Records Bureau, a student commits suicide every hour in India.

India, the world's second most populous country of over 1 billion, has one of the highest suicide rates among those aged 15 to 29.

75,000 students committed suicides in India between 2007 and 2016.

Maharashtra reported the most - 1,350 - student suicides in 2016, or four every day, followed by West Bengal (1,147) and Tamil Nadu (981).

India has one of the world's highest suicide rates for youth aged from 15 to 29, according to a 2012 Lancet report.

With Over 9000 Student Suicides in 2016, India Is Facing an Epidemic.

As reported in Factchecker, and a reply in the Lok Sabha by HG Ahir, Minister of State for Home Affairs, on January 2, 2018, 9,474 students committed suicide in 2016 – or a student suicide occurred every 55 minutes. The same story reports that student suicides have increased 52% from a suicide every 84 minutes in 2007 to the current rate.

Students in India are killing themselves at a fast rate, with 26 suicides reported every 24 hours.

Going by the latest data, 9,474 students committed suicide in 2016 — at a rate of more than one every hour.

Maharashtra and Bengal recorded the most suicides, while there was none reported in Lakshadweep. Overall, an average of three years — 2014 to 2016 — shows that the trend was similar with at least one student committing suicide every hour. The three years together saw 26,476 students take their own lives in the country.

Why adolescents

- Adolescence = To grow (Latin Adoloscere) To emerge, To achieve identity.
- Time of growing up from childhood to adulthood.
- Period of physical growth, time for maturing mind and behaviors as well.
- Independence from adult controls
- Exploration of social issues
- Increased focus on activities with peer group.
- Establishment of a basic sense of self identity
- The teen years are often very stressful, with a transition from carefree child to responsible adult.
- They are facing new social situations, which might include bullying, their first serious relationships, an exploration of sexuality, rejection, changes in friendships, and upheavals with family members.
- Add in constantly changing hormones, which might spark depression or similar issues, and they have a few tough years.
- Some teens might suffer from even more tenuous situations. This might include those who are dealing with the issues of body image, changes in social

circles, low self-esteem, and introductions to drugs or alcohol
- An immense pressure is put upon children by their parents to pursue a career that guarantees their financial future
- This constant and consistent pressure on kids to take up careers without considering the capacity and inherent ability of the child itself is causing students to feel completely out of place with their own needs and aspirations in life.
- Pressure from parents to perform well in exams can affect a child's mental health.
- Being bullied by other kids can act as a trigger.
- And the real reason behind a student's difficulties with concentration and learning may be ADHD.
- Mental concerns often manifest themselves as poor academic performance, lack of motivation, social interaction issues with peers or teachers, and even self-harm.
- And then, they have to contend with the beast of stigma attached to mental issues.
- In a world obsessed with material progress and economic success, the overall importance of personal choice and self-exploration neglected over the constant need to prove oneself in exams.
- These pressures will affect most of us to some extent, but for those struggling with mental health - they become debilitating.
- 'Many young people find it hard to even recognize or know that they have a difficulty they could get help for; others feel ashamed or stigmatized and so don't seek help."

Risk factors
- The causes of suicide vary widely, but there are some risk factors that tend to be common among those who attempt suicide.
- According to the Center for Disease Control and Prevention and the American Foundation for Suicide Prevention, mental illness is often a major factor; specifically, depression is a major risk factor for suicide. Other major risk factors or causes include:

Immediate risk
- Some behaviors may indicate that a person is at immediate risk for suicide.
- The following three should prompt you to immediately consult a mental health professional.
  1. Talking about wanting to die or to kill oneself
  2. Looking for a way to kill oneself, such as searching online
  3. Talking about feeling hopeless or having no reason to live

Serious risk
- Other behaviors may also indicate a serious risk—especially if the behavior is new; has increased; and/or seems related to a painful event, loss, or change.
- Talking about feeling trapped or in unbearable pain
- Talking about being a burden to others
- Increasing the use of alcohol or drugs
- Acting anxious or agitated; behaving recklessly
- Sleeping too little or too much
- Withdrawing or feeling isolated
- Showing rage or talking about seeking revenge
- Displaying extreme mood swings

Feeling alone
Feelings of rejection or loneliness can increase the risk of suicide. This might be especially true after a serious breakup of a friendship or relationship, when feelings of isolation and loneliness can be combined with emotional upheaval.

Physical illness
Chronic and severe physical issues with no end in sight can be conducive to suicide. This might be especially true among those who have been diagnosed with a terminal illness, have dealt with a chronic illness that is progressively becoming worse, or are faced with chronic pain.

Exposure to those who have attempted or completed suicide
Imitative behavior plays a role in suicide. This might be true for those who have lost a close friend or family member to suicide. There has also been much discussion in recent years about how much the media might play a role in "copycat" suicides.

Suffering from substance abuse
A significant portion of those who die by suicide are suffering from substance abuse. In 30 percent of all suicides, alcoholism is a factor; the rate might be higher among those using illicit drugs.

A prior suicide attempt
If someone has tried to die by suicide before and they weren't just doing it for attention, they'll probably try again. Those who have tried to die by suicide in the past should be watched very closely if there is any concern about their mental well-being.

Family history of suicide
Exposure to someone who has tried or succeeded in death by suicide makes it more likely someone will do so to imitate behavior. There might also be a genetic component involved.

Family history of mental illness or substance abuse
Since mental illness and substance abuse are commonly found in those who die by suicide, and some mental illnesses and forms of substance abuse are genetic, a family history of suicide can create a higher risk of suicide in future generations.

Suffering from mental illness
The majority of those who die by suicide are suffering from mental illness. In fact, 90 percent of those who do are suffering from a diagnosable psychiatric disorder.

Victim of family violence and/or abuse
Victims of abuse often face isolation, depression, feelings of despair, and much more. Extreme pain, stress or anxiety with a feeling of hopelessness increases one's risk of suicide.

Being the victim of bullying
Being uncertain of sexual orientation

Warning signs
Talks about suicide
Whether it's explicit "I'm going to go kill myself," implicit "I don't deserve to live," or more subtle "I'm constantly in pain," any discussion about suicide is a warning sign.

Drastic change in personality
Increased aggression, irritability, anxiety or feelings of sadness that are out of the ordinary for the person.

Pursuit of dangerous objects or supplies
An attempt to acquire items that could be used to end one's life (without an alternate explanation), such as poison, firearms or knives.

Apathy to the future
An abnormal level of indifference to the future, whether it be failing to plan ahead or lack of excitement for a pleasurable or positive future event.

Disposal of important possessions
Giving away, destroying or selling (for an unreasonably low price) objects that were once highly prized by the individual.

Increased or beginning use drugs or alcohol
A significant rise in the consumption of alcohol or drugs, or the use of such substances when the individual never took them before.

Reduced interest in activities commonly enjoyed
No longer engaging or participating in things once enjoyed. This can include ceasing long-term hobbies or other important causes.

Unusual level of calmness
An abnormal level of peace when one was usually or recently uptight, depressed, anxious or upset.

Isolation
Spending less time with friends, family, coworkers or other people whose company was previously enjoyed. New or increased desire to be left alone.

Organization and future planning of one's affairs
A sudden and unusual level of preparation of tasks such as writing a will, selling substantial assets or making arrangements for one's absence can be a signal of a potential suicide.

Increased reckless behavior
Taking risks that put themselves or others in danger, either at a higher frequency or in an uncharacteristic manner.

Change in sleeping habits
A substantial increase or decrease in sleeping patterns without a medical reason.

Saying goodbye
Telling friends, family and acquaintances goodbye for no apparent reason.

Previous suicide attempts
Depending on the reason and whether that reason still exists, a prior suicide attempt can be a strong indication that that the individual will try again.

Obsession with death or suicide
An unusual or increased level of fascination or respect for death or suicide. Can also include artistic expression of death, suicide or similar themes.

Self-hate
Unusual or unjustified feelings of low self-esteem, worthlessness, shame or guilt.
Pay attention not only to the overall behavior of the person, but to the "little things" that might be tell-tale signs of suicidal thoughts.

Why in todays world

- We are more estranged from each other with quick texts and social media messages replacing honest and good conversations.
- Our relationships are shakier and
- our close friendships are fewer.
- Sharing a filtered version of our lives has become integral to our social existence, particularly for students, who have grown up with this technology.
- We are a generation obsessed by the self-fashioned ego; i.e. we're too busy updating our Snapchat story to live in the moment.
- Unsurprisingly, there are endless studies which show how social media usage can worsen our overall mental wellbeing
- Influence of educational institutions also playing a role.

- They essentially look to exemplify a few professional choices over others due to overwhelming degree of economic stability associated with these professions.
- While certain environmental pressures have always existed for students - debt, exams, navigating a new social sphere - today there are arguably more than ever before.
- Once you've solved the existential riddle of deciding what you want to do with your life, you have to scavenge your way into a highly competitive job market,
- Evidently, the environment for students - and young people in general - has never felt so fractured.

How to handle

The solution lies in students, teachers and parents – all 3 playing an active part in ensuring mental well-being.

In India, parents often go into denial mode when it comes to their child's mental health, resorting to statements like, "My child has no such problems!".

This attitude must go. Parents must understand how fragile their children's mental well-being is and be proactive in assessing it.

What parents need to know

- Don't wait for your teen to come to you.
- If your teen is sad, anxious or appears to be struggling — ask what's wrong and offer your help.
- Pay attention.
- If your teen is thinking about suicide, he or she is likely displaying warning signs.
- Listen to what your child is saying and watch how he or she is acting.
- Never shrug off threats of suicide as teen melodrama.
- Encourage your teen to spend time with supportive friends and family.
- Encourage a healthy lifestyle. Help your teen eat well, exercise and get regular sleep.
- Also, encourage your teen to participate in activities that will help him or her rebuild confidence.
- Safely store firearms, alcohol and medications. Access to means can play a role if a teen is already suicidal.
- Parents also need to play their part by analyzing, closely, the behavior of their child and their likes, dislikes, opinions etc that they form over the years.
- All these parameters are closely linked to the upbringing of the child, where parents play a pivotal part.
- A deeper interaction between children and parents is the need of the hour.
- Remember, teen suicide is preventable. If you're worried about your teen, talk to him or her and seek help right away.

Role of teachers

- Teachers certainly need to be trained in identifying symptoms and patterns of mental issues.
- For example, before scolding a child for disruptive behavior, they could use these skills to analyze the reason for such behavior.
- Teachers also need to play their part and their motive should transform from merely imparting knowledge to rekindling the flame within every student.
- Once a student starts liking learning, he is destined to succeed.
- It is worrisome that many students share beliefs like the following: that revealing depression could negatively affect their professional advancement (Wimsatt et al., 2015);
- That if they were depressed their opinions would be respected less;
- That they would be considered unable to handle their responsibilities, and "less intelligent" (Schwenk et al., 2010).
- These issues need to be addressed carefully and extend assurance of academics etc would not be effected by opening up.

Role of students/ seniors

- Step in to prevent bullying.
- If your friend is being bullied, report it to parents and teachers, and to the authorities if necessary.
- Bullying is a serious problem that must be nipped in the bud before it is allowed to become any worse.
- Show support to each other
- Teenagers need support groups, to spend time with others, and to not be alone too often.
- Facilitate this by engaging in physical activity or sports with them, spend time talking to them, and engage in the things they like to do.

Work for change

- Yes it's brilliant, if not a little predictable, that we're seeing a surge of public interest surrounding mental health at the moment.
- But this is merely a small step in a marathon that lies ahead.
- Let's just hope that mental health awareness isn't the trend that falls out of fashion.

3 levels before the new arrives

1. Individual Attitudinal change.
2. Organizational structural change.
3. Societal value change.

Individual attitudinal change

- We will have to recognize that we do not function in isolation, that we have an impact on society and are in turn, impacted by it.
- Human kind has not woven the web of life. We are but a part of it.
- Whatever we do to the web, we do to ourselves,
- All things are bound together.

- All the things are connected.

Changes at School/ College

- First aid for mental health
- Several Awareness activities
- Incorporating Mentor-Mentee Program.
- Having a student counsellor.
- Display of Helpline numbers, Center names etc if students intend to seek help anonymously.

First aid for mental health

- First aid for mental health should also become a part of the curriculum in schools and colleges.
- It is crucial that the youth, our change-makers, become the torchbearers in emphasizing its importance and indispensability in this age of sweeping reforms.
- Research shows that 50 per cent of mental, behavioral and psychological issues have their onset during adolescence.
- We need to therefore empower educators, parents and other primary care givers, who are regularly engaged with young people to be able to provide guidance in times of need.
- This will allow for timely help and intervention to anyone developing a mental issue, or experiencing aggravation of an existing concern.
- Knowledge of first aid for mental health can help red-flag common concerns like: depression, anxiety, eating disorders, substance abuse and psychosis.
- It can also help in crisis situations involving: suicide, self-harm, trauma and aggressive behaviors.
- And since it inherently creates awareness, first aid for mental health can also alleviate the stigma attached to mental health concerns.
- Fighting stigma is, after all, half the battle in a country like ours.

Awareness activities

- Creating awareness among various stakeholders like parents, school students, etc through innovative mediums like
- Nukkad naatak (street plays)
- Drama
- Short films
- Advertisements on annual gathering in schools like Sports Meet, Annual Function, etc.
- At regular intervals, and especially when a student suicide takes place in school, schools can show 5-minute documentaries showcasing case studies of people who emerged successful after initially having suicidal thoughts.
- The list of such personalities is long, including Martin Luther King Jr. Further
- Workshops and conferences can be organized especially in the aftermath of a tragedy.
- Such preventive methods will go a long way in solving this hazard.

School curriculum

- Attempt to include a topic in the school curriculum about increasing suicidal tendencies in students, how it is morally wrong, a cowardly step, and how talking and sharing problems with parents, teachers, and friends can help in coming out of depression.
- If we could overcome the taboo of speaking about sex and having sex education in school, talking about good touch and bad touch, Overcoming stigma of mental illness is also possible.

Community level change

- Self Help and Support Groups
- Increasing Awareness programs
- Training initiatives.
- SPARK Talks.

At the community level

- Discussions of healthy living are super-important.
- You don't have to study all the time.
- You don't want to get caught in the cycle of unabated and excessive substance use.
- Exercise is easy to go to the wayside but is hugely neuroprotective.
- All of these tidbits will be heard and internalized by students as they prepare to head to high school/ college.

Self help and support groups

- They are an integral and indispensable part of the recovery process.
- Support groups rely on the concept of self-disclosure, which acts as a catharsis.
- Telling your stories and listening to others' can hasten the healing process
- They also insist on confidentiality, which allows for familiarity and mutual help without intrusion.
- Listening to others tell their stories of trauma and triumph, working together in an environment of mutual support, and forming definitive supportive relationships can be extremely therapeutic.
- Support groups can be very beneficial for not only for those who are suffering but for their caregivers as well.
- When someone suffers from a mental disorder, it's not only that person but the entire family that gets affected. Most of all, it takes a toll on the life and emotions of the primary caregiver - a parent, a child or a spouse.
- Support groups act as catalysts that can empower the caregivers and assist their well-being while they provide care.
- It is time for society to become one big support group.

Role of primary care physicians

- Patients who attempt suicide are more likely to have contact with their primary care provider than a mental health provider in the month before attempting suicide (Lake, 2008).
- Hence, it will often be up to medical personnel, beyond psychiatrists, to encounter suicide attempters.
- Regrettably, depression and the related risk for suicide are still largely underrecognized in primary care settings and emergency rooms (Lake, 2008).
- To improve diagnostic skills and competency in suicide ideation (SI) assessment, specific training is needed because it could greatly contribute to suicide prevention (Palmieri et al., 2008).
- Educational strategies to increase SI assessment performance should be available to all professions involved in general and psychosocial patient care.

Training sessions for different groups

Aim is to Increase knowledge in the following core competencies:

- Maintaining an effective attitude and approach,
- Collecting accurate assessment information,
- Formulating risk,
- Developing a treatment and services plan, and
- Managing care.

Benefits of training

- Increased willingness, confidence, and clarity in working with individuals at risk for suicide.
- Increased ability to identify how they can better care for individuals at risk for suicide.

Spark talks

- SPARK Talks are Short, Provocative, Action-oriented, Realistic, and Knowledgeable videos of leaders in suicide prevention.
- Each describes a new development or direction in the field that can have an impact on suicide and issues a call to action.

Suicide due to academic failure

- Suicide due to examination failure needs concerted efforts from not merely the students but also the teachers and parents.
- Students need to be taught that the first step to solve a problem is knowing that there exists one, and the examination system is a firm reminder that there exists a problem which is solvable.
- Bernard Branson said that "Rejection is an opportunity for your selection" and after a student fails, a counselling session can be arranged by the school for students, which needs to be mandatorily attended by parents and teachers – in the aftermath of which a re-examination provision could be adopted.

Thank You

Let's create ripples of change with each ripple strengthening than attenuating.

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Transcranial direct current stimulation in psychiatry: Clinical neurobiology & translational implications

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Transcranial direct current stimulation (tDCS) is a safe, well-tolerated, non-invasive, neuromodulation technique that applies direct current (in the range of 1-2 mA) using bio-conducting electrodes; tDCS causes polarity-specific neuromodulation of underlying brain regions.[1,2] tDCS is attracting increasing interest for interventional & investigative applications in psychiatry.

The mechanistic basis of tDCS involves several components.[2] It is important to note that tDCS does not evoke an action potential; relative depolarization (at the anodal electrode) or relative hyperpolarization (at the cathodal electrode) is one of components of mechanistic effect of tDCS.[1] tDCS also causes alteration of neurotransmitters (glutamate, GABA and several others). In addition, alteration of brain-derived neurotrophic factor as well as involvement of glial cell also are postulated to mediate the effects of tDCS. [summarized in 2] In addition, tDCS results persisting after-effects on neuroplasticity that might last up to about a day after stimulation; such effects of tDCS are likely to be mediated through glutamate synapses that are influenced by gama-aminobutyric acid (GABA)through calcium-dependent interactions.[1] Furthermore, repeated sessions of tDCS is likely to cause longer-lasting alterations of cortical excitability and activity that resemble long-term potentiation or depression.[1] The genesis of psychiatric disorders like schizophrenia and depression are postulated to be due to abnormalities in calcium-dependent synaptic plasticity processes amongst several other mechanisms.[3] It is possible that long-lasting neuroplasticity modulation following repeated sessions of tDCS underlies the ameliorative treatment effects in these disorders.[3]

Extensive research studies have been conducted to assess the safety and tolerability of tDCS. A systematic review that collated data on repeated sessions of tDCS in 4130 participants across 158 studies. Verum tDCS was comparable with sham tDCS in terms of adverse effects.[4] This offers robust support to the safety & tolerability of tDCS.[4] Data from several ongoing tDCS studies at NIMHANS also support the safety of tDCS.

While the safety and tolerance of this technique is well-established, the clinical efficacy of tDCS in psychiatric disorders is yet to be definitively established. Controlled studies have support for efficacy of tDCS in treatment of non-treatment resistant depression,[5] addiction/craving (alcohol, nicotine, cocaine)[3] and auditory verbal hallucinations in schizophrenia.[6] There is emerging evidence from several studies which support the utility of tDCS in treatment of obsessive-compulsive disorder and attention deficit hyperactivity disorder.[3] Nonetheless, evidence for therapeutic application of tDCS in psychiatric disorders needs further systematic work since some studies did not show significant result; in addition, it needs to be noted that most of the positive studies are of small sample size. Hence, large-scale, preferable multi-site studies are required for comprehensive and systematic evaluation of the effects of tDCS in several psychiatric disorders.[3]

In a study done at NIMHANS, using a randomized, double-blind, sham-controlled design (RCT), we examined the "effect of add-on tDCS [anode corresponding to left dorsolateral prefrontal cortex and cathode to left temporo-parietal junction; 2-mA, twice-daily sessions for 5-days] to treat refractory AVH in schizophrenia patients (N=25); following this RCT phase, schizophrenia patients who had less than 30% reduction in AVH severity were treated with an open-label extension (OLE) active stimulation to evaluate the effect of cross-over to verum tDCS. In the RCT phase, greater reduction of AVH score was observed in active tDCS group as compared to sham group. In the OLE phase, sham-to-verum crossed over patients (N=13) showed significantly greater reduction in AVH severity than their corresponding change during RCT phase. Together, these observations added further support to the beneficial effects of add-on tDCS to treat refractory AVH schizophrenia".[7]

There are certain aspects of tDCS that needs to be clarified; for example, it has been questioned that whether 2-mA current is strong enough to reach the brain to result neuronal modulation,[8] and inconsistent reports from treatment as well investigative studies.[9] While these doubts are being addressed, for example – Contextually, it needs to be acknowledged that there are reports that demonstrate this current strength of 2 mA delivered at the scalp is indeed capable of generating biologically relevant electrical field in certain deeper brain structures like thalamus or subthalamus.[10] It has been recommended that systematic research is required to unravel the biological underpinnings of neuromodulatory effects of tDCS as well potential parameters that might influence the inter-individual variability in response.[11] Recent advances in the form of availability of high-definition tDCS with improved focality, concurrent application of computational neuromodelling with neuronavigation to minimise inter-individual variations due brain structural differences have the immense potential to facilitate personalized neuromodulation.[12] tDCS has the advantage to offer safe, cost-effective, scalable, home-based application procedures that needs further systematic research.[13]

Another domain of increasing concern pertains to regulatory, legal & ethical aspects of tDCS especially due to the access of "over-the-counter (OTC)" tDCS devices. Contextually, it is important to note that the International Federation of Clinical Neurophysiology "*warns against the use of DIY devices and methods unless they have shown both efficacy and safety and recommends that any use of tDCS / related techniques in the treatment of a medical indication (at home or in the clinic) should be done with a medical grade device or consumer device and under supervision of medical provider and trained personnel*" (https://goo.gl/uZsXAb).[14] In conclusion, as summarized in a recent commentary by this author [2] – "tDCS is a simple, low-cost, technique that has robust safety and tolerance with an emerging evidence base for its efficacy in select psychiatric conditions. Systematic, large-sample, multi-site studies need to replicate these preliminary evidence leads; concurrently, studies should address neuroethical (eg, safety of long-term use, application for cognitive enhancement in healthy population, use in vulnerable populations like children, pregnant women) and regulatory challenges associated with tDCS to evolve best practice guidelines. Together, this might facilitate translation of tDCS to clinical services in psychiatry".

Conflict of interest

There are no potential conflicts of interest to report.

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Social Psychiatry – Why is it important in clinical practice?

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Introduction

"Man is the only animal for whom, his own existence is a problem, which he has to solve".

- Eric Fromm

There have been rapid advances in neurosciences today, leading to higher expectations for Psychiatry to "cure" mental illnesses. The new psychopharmacological agents were often seen as the answer to many mental illnesses and breakthroughs were believed to be imminent, which unfortunately, has not happened so far. Hence there is renewed interest in social psychiatry and its relevance to clinical practice.

Social Psychiatry is that of branch of psychiatry concerned with effects of the social environment on the mental health of the individual and with the effects of the mentally ill person on his/her social environment. The multifaceted nature of the word social often makes it difficult to encompass what social psychiatry is. Man is a social animal and the social circumstances and the society as a whole figure in the pathogenesis of not only mental illness but also physical illness.

The roots of social medicine can be found in the ancient civilisations. Adding a social paradigm to the conceptualisation of health, made it more holistic and comprehensive. The origin of social medicine can be traced back to ancient Greek, Chinese and literature of Ayurveda. The W.H.O in its definition of health talks about "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". It is important for the modern day physician to identify and understand the social paradigm of health and this will go a long way in the curative, preventive and promotive aspects of managing health.

The earliest roots of social medicine can be found in the ancient texts of Ayurveda.[1] The focus of the physician in Ayurveda is on the patient's health rather than the disease. There is often a stipulated harmonious frame work for health and life. There is a greater emphasis on quality of life rather than just the curative aspect of disease. The treatment approach in Ayurveda is person centered and often takes into consideration the man as a whole. The same would apply to ancient Greek philosophy. Socrates, Plato, Aristotle and Hippocrates talked about the importance of the social paradigm of health. The concept is summarized in Socrates' quote, "If the whole is not well, it is impossible for the part to be well".

The insights from the ancient philosophy gained further momentum in the early 1920s, with the Mental Hygiene Movement in the United States. This has had a major impact on the western psychiatry. There was increased social orientation to the approaches in behavioural sciences following this movement. If one views the history of psychiatry in a very broad sense, one might even state that, with the evolution of civil society and the engagement of a psychiatric discourse since around the mid-18th century, the psychiatry that was developing was also social in nature: social in the sense that the state had an obligation to care for people in need, including in cases of existing illness, and on the contrary to protect society.[2]

Why is there a need for social psychiatry/social medicine?

For centuries, psychiatry was known for its treatments aimed at making patients behave in a way acceptable to society since society generally defined behavioural deviance. Patients were often locked away in distant institutions away from the so called civilised society. Although there has always been an emphasis on aetiology and biological aspects of mental illness, there is an increasing need to focus more on social determinants and consequences of such illnesses, according to the bio-psychosocial model. The social aspects remain an essential component in understanding the genesis and management of psychiatric disorders, but are often ignored due to too much emphasis on pharmacological treatments in contemporary psychiatry. A closer look at the research in mental disorders in the last few decades reveals allocation of massive resources toward biological research, whereas hardly any funded research has been carried out into the psychosocial domains, which are important not only in psychiatry but also in other fields of medicine.[3] The limitations of drug therapy also provide a strong case for investing more to learn about the social domains in the aetiopathogenesis of mental illness.

There is increasing evidence that social determinants of health play a major role in the genesis of both physical and mental illness.[4] Human beings grow up and develop within society and specific cultures and their upbringing and learnt interactions define their behaviours that in turn affect brain structures leading to dysfunctions.

The earlier definitions of health by the W.H.O, focussing on just the 'absence of diseases', has been criticised arguing that it does not include the social domain and individuals' ability to manage one's life by fulfilling

their potential and obligations with a degree of independence.[5] This becomes very important now, since people are living longer, sometimes with co morbidities. People can be well at times, but can be unwell at other times, sometimes battling several co morbidities. It can be argued that health is a dynamic balance between opportunities and limitations, directly affected by social and environmental conditions. In addition, the social domain is highly pertinent in our understanding and management of psychiatric disorders, and can be seen as a crucial aetiological factor.[6] Current advances such as mirror neuron systems reflect the importance of social cognition that governs human social interactions.

During the development of a child, the psychosocial interactions and social environment, and difficulties at these levels can lead to psychopathological and behavioural dysfunctions in many domains. The theory of stress diathesis often points to a change in the brain homeostasis with mounting social stressors. According to Virchow illness (of any kind) was an indictment of the political system and that politics was nothing other than medicine on a large scale.[7]

There is a key role that the patient- doctor relationship has on the therapeutic outcome in every medical speciality, more so in psychiatry. The outcome of a treatment can be influenced by patients understanding, expectation and explanation of the illness. It is important that the doctor takes into account these factors for a successful outcome of treatment. Social factors are important at every stage of human development starting from the prenatal stage or even earlier when wider environmental factors are considered. Importantly, they may provide us with clues towards more preventive public strategies in reducing psychiatric morbidities.[8]

Challenges and the road ahead

There are multiple reasons why social psychiatry has not been part of main stream medicine, despite the relevance it holds in the current era. The growing influence of pharmaceutical industry on the practice of psychiatry is a major hurdle. This makes main stream research to be largely biological. Despite having path breaking evidence to look at the relevance of social and cultural context we continue to look for biological reasons to explain aetiology and pathogenesis. This also makes way for an overreliance on drugs despite having evidence for psychosocial interventions which are very effective. There are also attacks on social psychiatry from within and outside the fraternity.

Modern medicine often fails to acknowledge, the important role of social determinants of health. The over reliance on disease and cure, often leads to neglect of the preventive and promotive aspects of health. It has also led to super specialisation and fragmentation of medicine, ignoring the totality of the person being cared for.

The way ahead is to focus on the social paradigms of positive health and positive psychology. There is also a need for a paradigm shift in terms of protective and preventive medicine rather than just curative care. The focus has to shift back to resilience, quality of life and support systems, most of which are ignored in the current medical practice. Shared understanding, shared decision making and fostering partnerships with various stake holders have to be integral parts of clinical practice.

What is needed is, to study what happens between people rather than what is wrong with an individual, wholly detached from a social context. This should happen without ignoring the existing neuro-biological and psychological dimensions. There is an increasing need to link them to social phenomena in the patient's life and in treatment. This focus on social psychiatry in training and practice has a potential to strengthen our identity, give psychiatrists more societal relevance and make psychiatry more attractive as a profession.

There is also a need to shift from over reliance on technology to "high touch" medicine, where the individual is seen as a whole and clinical examination gets the importance it deserves. Social approaches to mental health promote, comprehensive care regardless of diagnosis and chronicity, seeing patients in the setting of their family and home and through eclecticism in psychiatry. In times of psycho-social adversity, and especially when mental health resources are inadequate, social psychiatry offers a ray of hope and it should be integrated in the practice of medicine and psychiatry.

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The gut-brain connection: A qualitative review of the conceptualisation and implications of the gut-brain-microbiome axis

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Abstract
Current research shows that the gastro-intestinal and central nervous systems are linked by multiple interconnecting layers and have been known to continually influence each other's actions. The enteric nervous system, vagus, hypothalamic pituitary axis, and the local endocrine system are few of the components of this complex system, forming neurological, immunological as well as endocrine bridges through which information relay occurs. In addition, the gut microbiota exerts overarching influence on all these components, directly and indirectly affecting the brain and impacting human behaviour. This, in effect, creates a gut-brain-microbiotal (GBM) axis, which has a potential role in various physiological functions. It is also implicated in pathological processes as well, and is found to have a role in many psychiatric conditions such as autism spectrum disorders, schizophrenia, mood disorders, substance use and neurodegenerative disorders. The mechanisms involved in each disorder, as well as psychological correlates of the GBM axis, along with potential treatment implications involving microbiota and possible strategies to modulate microbiota to affect changes in psychiatric symptoms are explored in this article.

Keywords: Gut-Brain Axis, Gut microbiota, Gut-Brain Microbiota Axis in psychiatric disorders, Psychobiotics.

Introduction
The human gastro-intestinal system contains the enteric nervous system, which consists of the myenteric and mucosal plexuses which are acted upon by the sympathetic and parasympathetic limbs of the autonomic nervous system, with the hypothalamic-pituitary-adrenal axis playing a major role. The vagus is the major parasympathetic supply and effects changes in the central nervous system (CNS) in response to changes in the gut environment. It is also influenced by the local endocrine system which produces various hormones which act on the gut wall, as well as cross the blood brain barrier (BBB) and modulate CNS functioning. Physiologically, these involve pathways between cognitive and emotional centres of the brain and peripheral intestinal functions. The state of the gut influences the state of the mind, and much evidence points to behavioural alterations brought about by this gut brain axis.[1] The human gut also contains various commensals, termed the microbiota, which share a symbiotic relationship with the host. The human gut microbiota has been referred to as the 'forgotten organ', owing to the different effects it exerts on the host, and humans as Super-organisms, whose metabolism represents an amalgamation of the efforts of both host and microbiota.[2] The microbiota thus interact with various physiological systems and result in modification of many biological functions as well as outward behaviour, forming a Gut-Brain Microbiotal (GBM) axis, which has been found to be involved in the pathophysiology of multiple psychiatric illnesses.

Historical perspectives
Hippocrates, in 460 BC, put forth the idea that all disease begins in the gut.[3] William Beaumont, an American Army Surgeon, made various observations of the functioning of the GI system in vivo, which earned him the title, Father of Gastric Physiology. He observed that there were changes in the composition of gastric secretions and bile associated with emotions like anger or fear.[4] Around the same time, interest in the effects human microbiota have on human health and disease began, and the term 'intestinal toxemia' were used to describe a process whereby intestinally derived toxins could influence systemic health. Ilya Miecznikov theorised that ageing is a consequence of toxic bacteria in the gut, in his work, *The Prolongation of Life: Optimistic Studies*, where he wrote of the potential life lengthening effects of the lactic acid, proposing a diet containing fermented milk, which contained bacilli which produced a large amount of lactic acid.[5] Dr. George Porter Philips, in the early 1900s, described melancholia as a condition of auto-intoxication, where there was defective alimentation, constipation and an overall clogging of the metabolic processes. He reported that consuming a gelatine-whey formula containing live lactic acid bacteria improved depressive symptoms in adults with melancholia.[6] Dr. Henry Cotton, an American psychiatrist postulated that mental illness was a consequence of infection, based on the observation that patients with high fever sometimes developed odd behaviours and started hallucinating. He believed that teeth were the most likely location of infection, conducting thousands of tooth extractions, and when this did not work, he resorted to removing tonsils, sinuses, gall bladders, testicles, ovaries, stomachs and colons, all of which were suspected to house infections, calling this, *'Surgical Bacteriology'*, and most had high mortality rates, considering this was in the pre-antibiotic era.[7]

More recently, research on microbiota in influencing brain and behaviour has created an offshoot of interest. That

the microbiota may form part of the gut-brain-axis as an intermediate or a distinct nodal entity by extension of the axis needs further exploration. Nonetheless, its involvement is undeniable, and presently, research is being conducted at a furious pace to delineate and better conceptualise these effects in detail.

Components of the gut-brain axis

The neural connections

This consists of the enteric nervous system (ENS), vagus, spinal nerves and HPA axis. The ENS formed by the myenteric and submucosal plexus constitutes the largest nervous system outside the CNS, often referred to as a 'second brain', as it is capable of functioning after complete autonomic denervation, but is usually under tight control of the autonomic nervous systems.[8] The vagus is the principal component of the parasympathetic nervous system with afferents distributed to all layers of the digestive wall, but not crossing the epithelial layer and not in direct contact with luminal content. Its activation depends on chemical signals such as peptide hormones, cytokines, metabolites and neuroactive molecules. Information travels through the vagus to the cortex through relay stations, like the nucleus tractus solitarius (NTS), nodose ganglion, then to hypothalamus and the limbic system. Descending projections subsequently take the same pathway to reach the gut wall layers.[1,8] [Fig. 1]

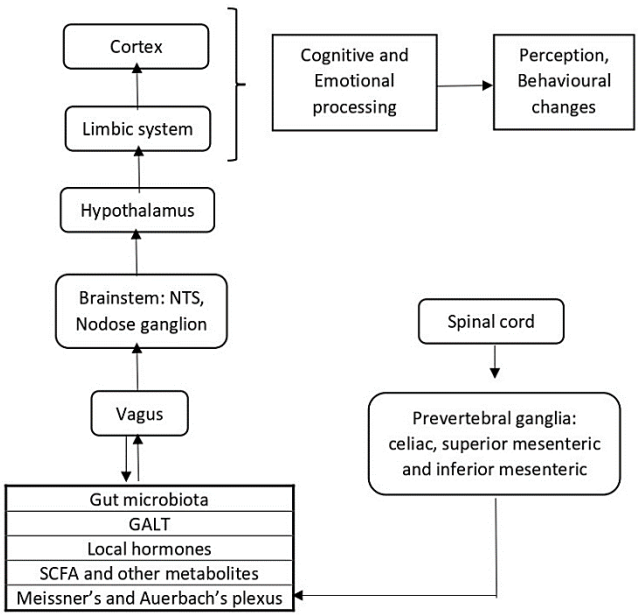

Fig. 1: Neural pathways in the GBM axis

The endocrine system

Stressors, both physical and psychological, can act on amygdala and hippocampus, thus activating the hypothalamus to produce corticotrophin releasing factor (CRF). The CRF acts on anterior pituitary adrenocorticotrophs to stimulate production of adrenocorticotrophic hormone (ACTH), which brings about cortisol production.[9] The ENS contains CRF ligands and receptors, with CRFR1 widespread in colon and CRFR2 prevalent in upper GI tract, and implicated in ion secretion causing paracellular permeability dysfunction leading to microbial invasion and mucosal inflammation, the stress-induced nature of recruitment of receptors leading to heightened stress susceptibility.[10]

Locally, there are a set of specialised endocrine cells called Entero-Endocrine cells (EECs). They sense fermented bacterial products, which act on the G-protein coupled receptor expressed on the luminal surface, which activates the cell to produce peptide YY (PYY), neuropeptide Y (NPY), cholecystokinin, glucagon-like peptide (GLP)-1 and 2, and substance P, which act on gut as well as CNS.[11] [Fig. 2]

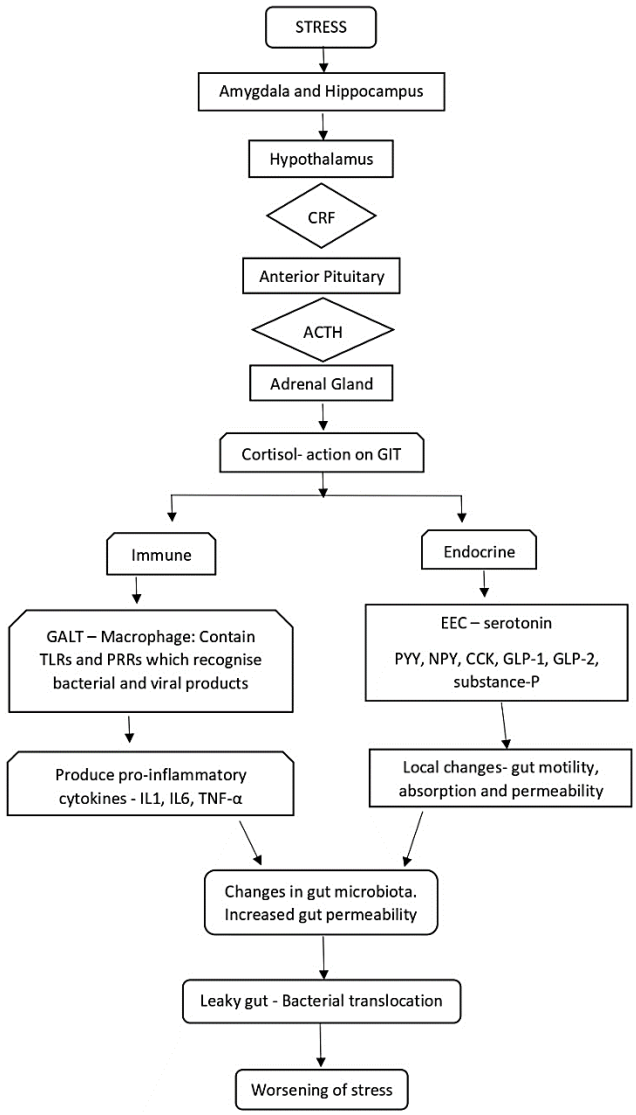

Fig. 2: Endocrine and immune pathways in the GBM axis

The immune system

The Gut Associated Lymphoid Tissue comprises 70% of the body's immune system. The Toll Like Receptors (TLR) recognise bacterial and viral components and mount

immune responses through pro-inflammatory cytokines, and are even found on neurons, which respond to microbial products.[12] Depression is associated with increase in inflammatory markers like IL-6, tumour necrosis factor (TNF) - α, and C-reactive protein (CRP), which activate the Immune Inflammatory Oxidative and Nitrosative (IONS) pathway, leading to lipid, protein and DNA damage, increasing gut permeability. The increased nitric oxide and inducible nitric oxide synthase products cross the blood brain barrier (BBB) and cause neuroinflammation associated with major depressive disorder.[13] [Fig. 2]

The leaky gut hypothesis

Depression has been associated with low grade inflammation, causing loss of integrity of tight junctions, which increases permeability and lead to bacterial translocation and peripheral immune activation.[14]

Short chain fatty acids (SCFA)

SCFAs namely acetic acid, butyric acid and propionic acid have been implicated in regulating the sympathetic nervous system, histone acetylation and methylation, mucosal serotonin release and secretion of intestinal peptides like GLP-1, PYY and CCK, decrease BBB permeability, promote CNS angiogenesis and neurogenesis, therefore influencing host metabolism, nutrition and emotional regulation.[15] G-protein receptor-41 (GPR41) is expressed in ENS as well as in sympathetic ganglia, vagal, dorsal root and trigeminal ganglia and is used by SCFAs to bring about these effects.[16]

The gut microbiota

The human gastro-intestinal tract alone contains around 10^{14} microorganisms, which includes around 1000 species and >7000 strains of bacteria, the most predominant phyla being bacteriodes and fermicutes.[17] Others like proteobacteria, fusobacteria and actinobacteria are present in relatively lower abundance.[18] Human beings have a variation of three distinct patterns of gut microbial composition, called enterotypes. Enterotype-1 has a majority of Bacteriodes, with Prevotella and Ruminococcus similarly constituting enterotypes 2 and 3 respectively. This composition was thought to be at least partially genetically mediated, but it has been found that there are similarities in gut microbial composition in unrelated individuals sharing a household, thus pointing to the role of diet and environment.[19] The genome of these microbes is called the Microbiome, and the human gut microbiome contains 150 times more genes than the human genome.[17] However, there is an extensive identifiable Core Microbiome, at the genetic rather than the organisational level, and deviations are associated with different physiological states. The Human Microbiome Project is helming further research into delineating the transcriptome (genes involved in protein production), the proteome (the set of proteins produced by the microbiota) as well as the metabolome (the group of metabolic substances produced) of the microbiota.[20]

The gut-brain-microbiota axis

Germ free (GF) animals have been found to have impaired development of ENS and CNS, with neurotransmitter expression altered in both systems, all this reversed with microbial colonisation.[21]

Gut microbiota can regulate circulating pro-inflammatory and anti-inflammatory cytokines and maintain homeostasis at the intestinal epithelium, and certain probiotics have been found to restore tight junction integrity in animal stress models, along with attenuating HPA axis and autonomic nervous system activities. Dysbiosis (imbalance in the gut microbial community associated with disease) may increase the production of proteases and lead to increased immune responses resulting in chronic gut inflammation.[22] Hsiao and colleagues noted that Bacteroides fragilis corrected intestinal permeability defects in mouse models, by altering tight junction expression, cytokine production and correction of dysbiosis noted in GF mice.[23]

Tryptophan is converted to serotonin and kynurenine, and microbiota can modify the kynurenine arm of tryptophan metabolism. Tryptophan 2, 3- dioxygenase (TDO) and Indoleamine 2, 3-doixygenase (IDO) catalyse the rate limiting step in the production of kynurenine and these enzymes can be induced by inflammatory cytokines and microbes, by modifying this have been found to alter the concentration of kynurenine thereby decreasing the availability of circulating tryptophan.[24] Gut derived serotonin cannot cross the BBB, and therefore, reduction in the amount of tryptophan available for crossing the BBB will result in decreased concentration of serotonin in CNS, leading to depressive symptoms. Amino acid transporters are present in bacterial cell wall, through which histidine and glutamate enter and are converted to histamine and GABA. Microbiota also modulate the endocannabinoid receptor concentration in gut epithelium. Serotonin, melatonin, acetylcholine, nitric oxide, nor-epinephrine and dopamine are also synthesised by different strains. [Table 1] [25-27]

Enterochromaffin cells (ECC) act as an important hub in the bidirectional GBM transmission. In addition to producing around 95% of the body's serotonin, they are polymodal chemo sensors, containing receptors responsive to inflammatory and bacterial metabolites (SCFA, bile acids, taste receptors, TLRs) on the luminal side, and are synaptically connected to vagal afferents and postganglionic sympathetic nerves, besides having a close association with immune cells in the gut wall. This results in the ECCs being a pivotal interconnecting entity within the CNS- ENS-HPA-immune-microbiotal network.[28]

Table 1: Neurotransmiters produced by gut microbiota.[35-37]

Gut Bacteria	Neurotransmitters produced
Lactobacillus and Bifidobacterium	GABA from monosodium glutamate
Escherichia coli, Bacillus and Saccharomyces	Norepinephrine
Streptococcus, Escherichia and Enterococcus	Serotonin
Escherichia, Serratia, Lactococcus	Dopamine
Lactobacillus acidophilus	Increases the expression of cannabinoid receptors in the brainstem
Numerous Strains	Short Chain Fatty Acids
Lactobacillus plantarum	Acetylcholine
Streptococcus, Lactobacillus, Citrobacter	Histamine

Table 2: Methods of investigating the GBM axis: Strategies utilised to delineate the effects of microbiota on the host functions, can be divided into five types.[39]

Method	Description
Germ free studies	1. GF mice are used to observe effects of absence of microbiota on CNS development and other host functions 2. Most studies use gnotobiotic mice (where the entire microbial palette is either known or excluded).
Infection studies	1. GF animals can be inoculated with specific strains individually or sequentially 2. To assess specific post inoculation changes in the host as well as microbe-microbe interactions.
Faecal transplantation studies	1. Observation of specific functions of human GBM system by transplanting human microbiota into GF mice
Probiotic and antibiotic studies	1. To study effects of microbiota altering agents including prebiotic substances and even diet patterns.
Human studies	1. Intrapersonal variation in microbiotal composition is considerably lesser than interpersonal variation means that each individual would represent his or her own best control for assessing effects of perturbations in composition on body functions 2. Family or individuals living together would provide the next best controls.

Table 3: Questions pertinent to psychological correlates.

Social, cultural and Developmental psychology	1. What is the role of the gut microbiota in psychological development? 2. Are there critical windows or sensitive periods for development of microbiota similar to the development of psychological functions such as language? 3. Are psychological & microbial development impacted by similar perinatal factors? 4. How does the composition and function of the microbiota impact upon social behaviour? 5. Does social interaction impact upon the microbiota? 6. How does culture interact with the presentation and treatment of disorders of the brain–gut–microbiota axis?
Clinical psychology	1. Can interventions designed to target psychological well-being alter the microbiota? 2. Can interventions that ameliorate or reduce dysregulation of the microbiota improve psychological well-being? 3. Among the prevailing psychological interventions mindfulness-based therapies represents a promising intervention for tackling chronic stress especially in a near prototypical gut brain disorder such as IBS. Could MBSR or MBCT have an influence on Gut Microbiota?

Adapted and modified from Allen et al, 2016

GBM axis in stress

Stress increases sympathetic activity, which increases bacterial permeability, increases circulating IL-6 and monocyte chemotactic protein-1 (MCP-1) and intestinal IgA, as well as pro-inflammatory gene expression, leading to modification of microbial profile and increase virulent strains, leading to dysbiosis.[29] Maternal separation in rodents causes long lasting hyperactivity of HPA axis, anxiety like behaviour, visceral hypersensitivity, altered cholinergic activity in gut and increased intestinal permeability. GF maternally separated mice do not show any different behaviour compared to control GF mice, thereby necessitating the premise that gut microbiota are essential for expression of anxiety like behaviour.[30] Knowles et al investigated the impact of psychological stress on GI flora under everyday stressful conditions and found lactobacilli to be significantly low during the high stress conditions.[31]

Role of GBM in psychiatric illness

Autism spectrum disorders (ASD)

The presence of GI disturbances in children with ASD is well documented, with diarrhoea and constipation being the most common, in addition to belching/vomiting, abdominal discomfort, gastritis, gastro-oesophageal reflux disease, lactose intolerance, malabsorption.[32] A possible association of autism with celiac disease was considered as some studies have pointed to higher frequency or family history of celiac disease and elevated anti-gliadin antibodies in ASD. Lau et al tested for potential association of celiac disease or gluten sensitivity with autism. They compared IgG and IgA antibodies against gliadin in children with autism, unaffected siblings and unrelated unaffected controls. They found the IgG antibodies were significantly higher in autistic children as compared to the two control groups, with no difference observed in IgA levels. In addition, antibodies to deamidated gliadin and transglutaminase-2 did not differ, and association between increased IgG and HLA DQ2/DQ8 was not observed, and it was concluded that such individuals may have a non-celiac gluten sensitivity, and not celiac disease per se. Strikingly, this study had two control groups. It suggested the possibility of using these as biomarkers, and that the unique antibody response to particular gluten molecules would be associated with specific HLA genes.[33] Another link with autism and GI disease comes with zonulin, a haptoglobin-2 precursor protein which increases spaces between gut epithelial cells. Zonulin has been implicated in increasing gut permeability and dysbiosis. The gene for zonulin is present on chromosome-16, which is the high risk ASD chromosome. One study found that zonulin was increased in ASD. It may provide a link between autism and gut dysbiosis as well as a possible role as a potential biomarker in a set of ASD patients.[34] It has also been noted that children with ASD have had a history of using significantly more antibiotics than healthy controls. They have also been found to have abnormal colonisation, possibly due to higher use of antibiotics and restricted diet.[35] LPS component of cell wall of gram negative bacteria have been noted to be higher in ASD, and inversely correlated with socialisation scores on Vineland Adaptive Behaviour Scale and Autism Diagnostic Interview Revised (ADI-R) domain-A score.[36] Supplementation of Bacteroides fragilis has been shown to reduce gut permeability, alter microbiotal composition and reduce ASD like behaviours.[37] Therefore a causal association between use of antibiotics in pregnancy and ASD in the offspring needs to be further explored. Wang et al noted that ASD patients had a higher concentration of SCFAs and ammonia in faecal matter.[38] It has been hypothesised that SCFAs could play a critical role in ASD pathogenesis. SCFAs, especially propionic acid has been implicated in crossing BBB and inducing autistic behaviours like hyperactivity and repetitive behaviours in animal studies.[39]

Attention deficit hyperactivity disorders (ADHD)

Gut microbiota have been known to participate in mediating food allergies, and children with food allergies and asthma often have higher rates of co-morbid ADHD.[40] Pärtty et al found that increase in Bifidobacterium in infancy predicted ADHD and Asperger's syndrome, and that probiotic supplementation in infancy may prevent neuropsychiatric manifestations.[41] A meta-analysis reported that there was a reliable effect linking the Kaiser-Permanente diet (eliminating salicilates, artificial food colours and flavours, and the preservative butylatedhydroxytoulene) to ADHD symptoms.[42] These studies have led to popularity of multiple different diets among individuals with ADHD in the quest to find non-pharmacological methods to control symptoms.

Schizophrenia

Multiple evidences linking schizophrenic symptoms to perturbations in body immunity, most often originating the gut which may lead to neuro-inflammation have been proposed. Buscaino conducted a post-mortem study with 82 schizophrenia patients, and found that 50% had gastritis, 88% had enteritis and 92% had colitis.[43] Severance et al showed that anti Saccharomyces cereviseae antibodies (ASCA) were elevated in schizophrenic patients, Higher food antigen antibody levels correlated with GI inflammation only in schizophrenic group, raising the possibility that inflammation was a part of the disease itself.[44] Schizophrenia patients have higher rates of formation of immune complements C1q with food antigens, and increased casein IgG antibody in individuals with already high levels of C1q was predictive of 18% increased risk of schizophrenia.[45] Soluble CD14 (sCD14) and lipopolysaccharide binding protein (LBP), markers of bacterial translocation, were measured in individuals with schizophrenia, bipolar disorder and non-psychiatric controls, along with antipsychotic naive and treated individuals. Patients with schizophrenia had increased sCD14 and LBP, which correlated with increase in C-reactive protein (CRP), thus pointing to a common pathway of inflammation. LBP significantly correlated with body mass index scores,

suggesting that these inflammation patterns may be responsible for the high co-morbidity of schizophrenia with cardiovascular disease, diabetes and cancer.[46] Beumer et al have reported that schizophrenia and other psychoses are associated with abnormal monocyte and macrophage activation, leading to hyperactivity in the innate immune system.[47]

Minocycline has been found to improve negative symptoms as well as exert beneficial effects in treatment resistant schizophrenia. This is thought to be due to it resulting in shift from autoimmune TH17 to anti-inflammatory TH2 responses.[48] Experiments on rat schizophrenia models have shown that treatment with Bacteroides fragilis leads to improved gut microbiotal composition, decreased permeability and decreased anxiety like symptoms. In addition gut microbiota also have interactions with psychotropic medication, as olanzapine has been found to modify microbiota composition and trigger inflammatory responses, thereby suggesting that antipsychotics use the microbiotal pathway to effect weight gain and other metabolic complications in rat models. Evidence to this is further strengthened by resolution of these symptoms by administration of antimicrobials.[49]

Mood disorders

Much evidence, both direct and indirect, has been found, linking gut microbiota to mood changes. Park and colleagues used olfactory bulbectomy to induce depression and anxiety like behaviours in mice, and found that bulbectomised mice had increased central CRH expression and increased expression of c-fos gene, serotonin and motility in the colon, as well as altered microbial profile.[50] Zheng et al showed that depressed patients and normal controls had significantly different gut microbiota, and that GF mice transplanted with microbiota from depressed patients showed depression like symptoms, whereas GF mice with 'normal' microbiota did not show such behaviour. The microbial genes and host metabolic products, especially amino acids and carbohydrates considerably differed in mice with 'depression microbiota' and those with normal microbiota.[51] Wong et al compared normal mice with mice genetically deficient in or pharmacologically inactivated caspase-1, and noted that caspse-1 deficient mice had decreased depressive and anxiety like behaviours, associated with increase in Akkermansia, which attenuates inflammation and Blautia, which rebalances gut microbiota.[52] A meta-analysis by Hannestad et al showed that treatment with SSRIs resulted in decreased IL-1β and IL-6 levels with improvement in depressive symptoms.[53]

Alcohol use disorders

Alcohol use causes long standing changes in eating habits, as ethanol forms the major source of caloric intake in alcohol dependent individuals. These dietary changes lead to changes in the gut microbiota. Leclercq et al examined the gut microbiota of alcohol dependent (AD) subjects and found that 40% of them had abnormal gut microbiota, and had much more severe levels of depression, anxiety and craving compared to the AD subjects without dysbiosis. Even at the end of detoxification (18 days), dysbiotic AD patients continued to have these symptoms, whereas those without dysbiosis recovered completely. They noted that dysbiosis was associated with high intestinal permeability, and higher abundance of Lachnospiraceae, Blautia and Megashpaera, along with decrease in Ruminococcaceae and Clostridia. They suggested that dysbiosis and high permeability could be potential targets for management of alcohol use disorders, by targeting the negative reinforcers of drinking, viz., depression, anxiety and craving.[54] Vagal afferents relay in the NTS, projects on to the Central Nucleus of Amygdala, and has anti-inflammatory activity in normal state. Neurons with GLP-1 and glutamate activity project on to the amygdala and mediate pro-inflammatory responses by activating CRF neurons, which may be one of the pathways involved in alcohol withdrawal leading to neuroinflammation. These changes manifest in case of sudden alterations in compensatory mechanisms, as neuroinflammation is at a lower level in chronic alcohol exposure, when compared to controls.[55]

Neurodegenerative disorders

Recent studies have demonstrated links between changes in gut microbiota and biomarkers of Alzheimer's disease. Vogt et al compared the composition of the gut microbiota in participants with and without Alzheimer's dementia and found that the gut microbiota of the patient group had reduced diversity and a distinct composition compared to controls, with a decrease in fermicutes, which had primarily been associated with type 2 diabetes mellitus and obesity, suggesting that microbiota induced insulin resistance could worsen the neurodegeneration.[56] Willette et al found increased bacteroides and decreased bifidobacterium, resulting in a pro-inflammatory phenotype, as bacteroides are known to increase bacterial translocation and bifidobacterium leading to increased LPS translocation in Alzheimer's individuals, with LPS found to increase Aβ peptide assembly by increasing its toxicity, and called a pathological chaperone.[57]

Cattaneo and colleagues also found gut microbial modifications in cognitively impaired older adults (without Alzheimer's diagnosis), and found that Escherichia/Shigella was increased and the anti-inflammatory microbe Eubacterium rectale decreased in individuals with presence of amyloid deposition on PET imaging compared to those who did not show presence of amyloid.[58] Evidence of the role of gut microbiota in influencing cerebral amyloidosis is provided by Harach et al, who showed that GF transgenic Alzheimer's mice showed lesser cerebral amyloid deposition than conventional Alzheimer's model mice. Bacterial amyloids are produced to enhance adhesion, biofilm formation, invasion and thereby virulence. These can influence human neurodegeneration by interacting with host proteins and cross-seeding of neural protein, leading to enhanced misfolding or accelerating nucleation.[59]

A probiotic study by Akbari et al showed that Bifidobacterium given in patients with severe dementia showed improved mini-mental state examination (MMSE) scores after 12 weeks of probiotic treatment.[60] Long term broad spectrum antibiotic treatment in mice has been shown to decrease Aβ plaque deposition, with alteration of cytokine signatures and attenuated plaque localised glial reactivity. This study particularly made note of the increase in CCL-11 (C-C motif chemokine ligand-11), which has previously been associated with hippocampal neurogenesis and whose gene cluster has been implicated as a risk factor for late onset Alzheimer's.[61]

Psychobiotics

'Encephalobiotics' is the term given to prebiotics, microbes or microbial parts which influence the microbiome to affect cognition and mental well-being. Dinan and colleagues have defined 'Psychobiotics' as live organisms that, when ingested in adequate amounts, produce health benefits in patient's suffering from psychiatric illness. They are a type of probiotic, which are defined as live microorganisms, which when administered in adequate amounts confer a health benefit to the host.[62] They act by multiple pathways to exert effects on the CNS by decreasing the HPA activity. Microbiota influence the metabolism of neuroactive substances and sometimes even alter the expression of neurotransmitter receptors in different brain regions. For instance, Rosseaux et al found that L. rhamnosus treated animals showed alteration in GABAB1b mRNA, with increased expression in cortical regions and decreased expression in hippocampus, amygdala and locus ceruleus, which were dependent on vagus, as vagotomised mice did not show these changes.[63]

Akkasheh et al reported significantly decreased Beck's depression inventory scores in patients with major depressive disorder who received probiotics compared to patients who did not.[64] Another study conducted by Steenbergen and colleagues found that multispecies probiotic supplementation decreased cognitive reactivity to sad mood and had decreased rumination, suggesting that probiotics could potentially improve depressive cognition.[65] Messaoudi et al found that Lactobacillus helveticus and Bifidobacterium longus containing probiotic decreased depression, anxiety, level of somatisation, psychological distress and even 24-hour urinary cortisol in healthy human volunteers.[66]

Limitations of using psychobiotics for treatment of psychiatric illnesses

Most studies have used combination of strains, which makes it difficult to delineate a one-to-one cause effect relationship for individual strains. There are no approved guidelines for dosage or duration of treatment as of yet, which may be species and also host dependent. Different studies define symptoms and outcomes differently, making it difficult to reach a viable conclusion. Although stigma associated with the use of psychotropics may be bypassed using over the counter probiotics, there has been no consensus regarding the use of probiotics as an alternative or adjuvant treatment in psychiatric disorders.[67]

The psychological correlates of GBM axis

Microbiota can modify cognitive performance, susceptibility to stress, anxiety behaviour, pain perception and sensitivity, sickness behaviour, and even social behaviour. The physiological response to microbiota is tied up with an emotional response, which would in turn impact on the gut as well. Temperament and character may be transmitted between subjects, through fetal microbiotal transmission. High neuroticism and low conscientiousness are associated with increased proteobacteria in the gut.[68] The lifestyle, diet and healthcare changes have led to perturbations of the gut microbiota and as a possible consequence, human behaviour. We still do not have definitive evidence regarding whether psychological interventions can influence gut physiology and the gut microbiota. Translational applications from lab models to human psychology can lead to potential behavioural interventions targeting a healthy diet, thereby resulting in positive psychological effects, as psychological interventions may impact significantly upon microbial composition through top down regulation. Understanding psychology in the context of the GBM axis involves the physiological, intrapersonal, interpersonal and social and cultural levels. A few key questions pertinent to the psychology of the gut brain axis that warrants further longitudinal research has been summarized in Table 3.

Implications

With further experimentation, investigations which use microbes or their products or antibodies as biomarkers of various diseases may be designed. Current experimental research has extensive data from which probiotic strain selection for different conditions may be guided. Strains that specifically target the physiological changes seen in psychiatric illnesses, such as those which lower the LPS burden, oxidative stress, proinflammatory cytokines, intestinal permeability and uremic toxin burden, and those that have beneficial influence on stress resiliency, mood, cognition and those that alter neurotransmitter levels would be good targets. The multiple pathways involved in leading to a particular outcome in the GBM axis functioning, and the close overlap between relationships may lead to an ambiguity between correlation and causation. The changes in symptoms with change in microbiota that have been seen in studies may turn out to be co-incidences rather than direct causative associations, and further studies with more stringent study designs may well fail to demonstrate these changes. Most studies so far have been hypothesis generating and not definitive, and do not answer the question of whether gut dysfunction precedes behavioural alteration or vice versa, and connecting the Human Microbiome Project with the Human Connectome Project may give us an insight into these questions.

Conclusions

The 20th century was ruled by antibiotics, with all microbes being deemed harmful. The 21st century brought with it the understanding that microbes have beneficial effects on health, and the possibility of manipulating them for management and prevention of various diseases is being explored, the current stand being that the state of gut would markedly affect the state of mind. The utility of probiotics is questionable as it is as of yet not regulated by the FDA, and it is vital to underscore the fact that any discussion of probiotics as intervention is not akin to a discussion of psychotropic medications. If the now warranted clinical translation of animal data into human intervention studies do reveal a future role of probiotics in mental health relevant to clinicians, it would most possibly be as an adjuvant to well established front line care with psychotropic medications and psychotherapy.

Conflict of interest

None

Permissions

Not applicable

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Correlation between age of onset of drinking dyscontrol and alcohol related milestones

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Abstract

Introduction: There has been association between a lowered age of onset and increased severity of alcoholism and subsequent development of alcohol dependence. This study was carried out to evaluate if any correlation exists between age of onset of drinking dyscontrol and alcohol associated milestones in male subjects attending de-addiction center at a tertiary care hospital.

Materials and Methods: Total 100 male alcoholic patients attending the de-addiction center were enrolled in the study after obtaining their informed consent. The course of alcoholism was recorded as per a list of 25 items which covered various alcohol related milestone like quantitative progression and physical and psychosocial complications.

Results: Age of subjects at the onset of three drinking dyscontrol mile stones - daily, day time and morning drinking – were taken into consideration. Correlation between all these three milestones and various social and physical milestones such as loss of job, drunken brawls, tendency to borrow money for drinks, absenteeism, blackout, morning shakes, memory lapses and hospitalization were highly significant ($P<0.001$).

Conclusion: Age of onset of three drinking dyscontrol milestones are significantly associated with various social and physical milestones.

Keywords: Alcoholism, Drinking dyscontrol, De-addiction, Alcohol related milestones.

Introduction

Alcoholism is the inability to control drinking due to both a physical and emotional dependence on alcohol. Alcoholism is on increase in India especially among adult population. Studies suggest that relatives of alcoholics have increased risk of alcoholism ranging from three-to-five folds.[1] Several researchers across the world have demonstrated that individuals who have positive family history in terms of alcoholism tend to have an increased severity of alcohol dependence.[2,3] Methods to determine family history vary from study to study. Some researchers have considered parental alcoholism as the sole factor while studying family history.[4] Others have used multigenerational models to classify alcoholism.[4,5] Family Pattern of Analysis (FPA), proposed by Turner et al., explained more variance than other methods.[6] As a result, Zucker et al. advocated the need for the use of a standardized protocol across the studies.[7]

Individuals with lowered age of onset of drinking alcohol have higher chances of increased severity of alcoholism as well as subsequent development of alcohol dependence. Those with the early age of onset is associated aggression and a failure to comply with law,[8] social role maladaptation, loss of behavioral control when drinking,[9] and childhood criminality.[10] Several reasons have been suggested for initiation of alcohol use early in life which include pressure from peer groups, experimentation, and curiosity.

The data regarding any possible relationship between age of onset of drinking and family history of alcoholism and its association with severity of alcoholism in the Indian population is not clear. Indian studies lack the details regarding methods used to obtain family history,[11] are carried out in de-addiction settings[11,12] and the reliability of the family history information is not provided.[13] This study attempted to evaluate if any correlation exists between age of onset of drinking dyscontrol and alcohol associated milestones in male subjects attending de-addiction center at a tertiary care hospital.

Materials and Methods

The present study was a hospital based cross-sectional study which was conducted at the drug de-addiction and treatment center of a tertiary care hospital. Institutional ethical committee approved the study design before commencement.

Patient fulfilling the DSM-IV diagnostic criteria for alcohol dependence were included in the study. Patients having any other additional substance dependence/psychiatric disorder were included provided alcohol dependence remains the focus of concern. Similarly patients suffering from any medical disorder were included if criteria for alcohol dependence was met. Patients with any major active psychiatric, neurological or physical conditions which may interfere with assessment were excluded from the study.

Total 100 male alcoholic patients attending the de-addiction center were included by convenient stratified sampling method in the study after informed consent. They were assured about anonymity and interviewed separately. The study was conducted at the detoxification program when the subjects were drug-free. The subjects and one or more of their close family members were interviewed to obtain information regarding selected demographic features, family history and course of alcoholism. The course of alcoholism was recorded as per a list of 25 items which covered various alcohol related milestone like quantitative progression and physical and psychosocial complication. The subjects and their family members were encouraged to discuss and arrive at a consensus for age at onset for each milestone, if any discrepancy emerged e.g. if pattern of use

of a bottle a day was predated than the pattern of use of half a bottle a day, it was pointed out and resolved in all.

Data were collected with the help of pre-designed and pre-tested schedule and was analyzed with the help of Epi info software version 7. The means ages at onset for various alcohol related milestones were used to obtain a rank order profile of their progression. In addition, the correlation between three drinking dyscontrol milestones (daily, day time and morning) and other specified physical and social milestones were studied.

Results

Total 100 alcohol dependent patients were included in the study. In this study, majority of alcohol-dependents belong to age group 20-40 years (64%). 29% of alcohol dependents worked as unskilled labourers, 68% as semi-skilled labourers, 1% as skilled labourers and 2% as professionals. Majority of patients belonged to the lower socio-economic strata (Class-IV of Kuppuswami's Classification). (Table 1).

Table 1: Socio-demographic profile of alcohol-dependents

Particulars	**No. of Patients**	**Percentage**
Age in years		
0-20	3	3
20-40	64	64
40-60	32	32
Above 60	1	1
Sex		
Male	100	100
Female	0	
Occupation		
Laboratory	29	29
Semi-Skilled	68	68
Skilled	1	1
Professional	2	2
Socio-Economic Status		
Class-I		
Class-II	5	5
Class-III	41	41
Class-IV	49	49
Class-V	5	5
Education		
Illiterate	18	18
Primary	22	22
Secondary	39	39
Graduate	21	21

The correlation co-efficient between age at onset of three drinking dyscontrol milestones – (i) daily (ii) day time and (iii) morning drinking – and certain social and physical milestones demonstrated that the correlations were highly significant ($P<0.001$) between all the three drinking dyscontrol milestones and loss of job, drunken brawls, tendency to borrow money for drinks, absenteeism, blackout, morning shakes, memory lapses and hospitalization. Correlation between delirium tremens and day time morning drinking was significant ($P< 0.001$) as well as between delirium tremens and daily drinking ($P <0.01$). The sequencing of 12 milestones from our study shows that their orders are within ± 2 ranks. For 8 and 4 milestone respectively compared to the similar symptoms listed out by Schuckit et al (1993)[14] and Jellinek (1946)[15] (Table 2).

Table 2: Correlation co-efficient between age at onset of drinking dyscontrol and other alcohol related milestones

Milestones	**Drinking Dyscontrol**		
	Daily Drinking	**Day time Drinking**	**Morning Drinking**
Social			
Lost job	0.77**	0.87**	0.75**
Drunken brawls	0.67**	0.81**	0.64**
Borrowed Money	0.73**	0.75**	0.72**
Absenteeism	0.65**	0.80**	0.75**
Accident	0.55**	0.72**	0.63**
Wife left for 1 Month	0.87**	0.79*	0.79*

Police Contact	0.93**	0.68*	0.55*
Physical			
Blackouts	0.73**	0.75**	0.81**
Morning Shakes	0.74**	0.83**	0.85**
Memory Lapse	0.67**	0.80**	0.84**
Hospitalization	0.73**	0.77**	0.75**
Delirium tremens	0.75**	0.90**	0.94**

*P<0.01; **P<0.001

Table 3: Comparison of rank order and mean age onset for specified milestones across three studies

Milestones	**Rank Order**			**Mean Age(Years)**	
	P	**S**	**J**	**P**	**S**
Lost, Job (P),Fired (S)	9	8	4	32.6	34.6
Drinking day time (P) Before noon (S)	1.5	1	-	25.8	29.7
Stopped for 1 month (P),Abstained to control (S)	1.5	-	3	25.8	-
Police contact (P) Public intoxication arrest (S).	3.5	2	-	28.1	30.4
Jailed (S)	-	3	-	-	30.6
Driving arrest(S)	-	7	-	-	33.5
Accident (P), Auto accident (S)	6	5	-	30	32
Morning drinking (P) Used eye openers(J)	3.5	7	7	28.1	-
Blackouts (P,S,J)	8	4	1	31.6	31.5
Frequent blackouts (J)	-	-	2	-	-
Morning shakes (P,S),shakes (J)	7	6	9	31.4	32.8
Sex problem (P), Sex drive decreased (J)	5	-	6	28.9	-
Delirium Tremens (P),Hallucination (S)	11	9	-	35.5	36.7
Alcoholic psychosis (J)	-	-	8	-	-
Hospitalization (P,S,J)	12	11	5	37.6	40.8
Convulsions	10	10	-	35	40

P=Present study, S= Schuckit et. al (1993)[14] ; J=Jellinek et. Al (1946)[15]

Discussion

Even though the bulk of evidence favours the existence of a sequential pattern to progression of alcoholism, the research has often held as either party or fully invalalidates the symptoms sequencing, especially as given by Jellinek et al.[15] This diversity of finding can be attributed to a large extent of methodological and sampling differences. The earlier research had variables that used some or all of Jellinek's symptoms and/or other symptoms chosen by different researchers. The progression sequencing was either based on recall of age at onset of some symptoms (which, in turn, influenced the reporting of other symptoms) or by rank ordering of symptoms independent of age at onset. The subjects were taken from alcoholic anonymous programmes, inpatients, out-patients, de-addiction clinics, post-treatment groups or through newspaper advertisements.

Since the present study was conceived only as an exploratory work, we decided to keep the symptom list short and tried to include more of symptoms which could be easily identified and recalled by the subjects as well as the family members. Thus, our list had 12 milestones which had similarity with 11 and 9 symptoms listed by Schukit et al[14] (1993) and Jellinek et al[15] (1946) respectively (Table 4). In view of the availability of the family member to cross-check the patient's efforts and chart out the symptoms, we opted for age at onset, rather than rank ordering for symptom sequencing to rule out the effects of intoxication, withdrawal, medication etc. The assessment was done at end of the detoxification programme. Assessment was carried out when the subjects were drug-free and after ruling out conditions that could cause memory impairment.

In terms of the frequency of milestones, our subjects were similar to those of Schukit et al[14] (1993) for physiological milestone like day time\morning drinking, accident, blackouts, morning shakes, convulsions and job loss.

The sequencing of symptoms by Jellinek[15] (1946) had given four phases; pre-alcoholic, prodromas, crucial and chronic. The last three phases were heralded by the onset of three specific symptoms: blackout, loss of control and binges of prolonged intoxication. Our list of milestones also produced three phases: early, middle and late. The early phase started with the first drink, went on through weekly drinking and ended at the use of ¼ bottle of spirit a day. The middle phase began with daily drinking went through "social" complications and ended with the use of one bottle of spirit/day. The late phase was heralded by morning drinking extended through various physical complications and ended with convulsions. These phases and the phases given by Jellinek (1964) do not match e.g. Jellinek reported blackout to be the first symptom of prodromal phase. We found blackout to be an early symptom of the late phase.

The differences may be attributed to the difference in the symptoms lists and/or the sample subjects.

This study took three drinking dyscontrol milestones, namely, daily, day time and morning drinking into consideration. Various social and physical milestones taken into consideration were loss of job, drunken brawls, tendency to borrow money for drinks, blackout, absenteeism at work, morning shakes, memory lapses and hospitalization. The association between the age of onset of drinking and various social and physical milestones was highly significant (P<0.001) between all these three milestones and loss of job, drunken brawls, tendency to borrow money for drinks, blackout, absenteeism at work, morning shakes, memory lapses and hospitalization. Correlation between delirium tremens and day time morning drinking was significant (P< 0.001) as well as between delirium tremens and daily drinking (P <0.01).

In a study carried out by Varma et al.,[16] the early-onset alcoholics (those with alcohol dependence developed at the age of 25 years or less) were younger, had a greater proportion of first-degree relatives with dependence on alcohol or any other psychoactive substances, and they had experienced a greater number of alcohol-related problems in the previous one year. They tend to be higher sensation seekers and displayed violence, aggression and general disinhibition while drinking. A study conducted among Indian population found that the age of onset of alcohol was 18 years in a hospital-based population and the age at which alcohol dependence started was 27 years. The first criteria of alcohol dependence was developed in these subjects after six years of alcohol use and only four years later they developed the dependence syndrome according to ICD-10.[17]

Conclusion

Correlation between the age of onset of three drinking dyscontrol milestones and certain social and physical milestones was highly significant. Correlation between all the three drinking dyscontrol milestones loss of job, absenteeism at work place, drunken brawls, tendency of borrowing money from others for drinks, blackout, memory lapses, morning shakes, and hospitalization were found significant.

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Conflict of interest

None.

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A study of psychological distress in caregivers of schizophrenia patients

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Abstract
Introduction: Mental illness in a family member can be a huge burden and problematic on the care givers and family. The study was conducted with the aim of assessing the psychological distress and caregiver burden among care givers of schizophrenia patients.
Materials and Methods: In this cross-sectional study, detailed history, relevant sociodemographic details, clinical and psychological assessment findings were documented in a structured proforma in all the subjects. Burden assessment schedule (BAS) was administered to assess caregiver burden, Self-reporting questionnaire 20 (SRQ 20) to assess psychological distress among the caregivers and Positive and Negative symptom scale (PANSS) for severity of symptoms in schizophrenic patients.
Results: A total of 40 subjects were included in the study. The mean age of the study population was 44.08 ± 12.12, 12(30%) participants were males and 28(70%) were females. The mean total caregiving time of study population was 7.63 ± 2.37 with the range 3 to 12 hours/days. 15 caregivers (37.50%) had psychological distress, and 25(62.50%) had no psychological distress. On univariate analysis, age, caregiver burden, total caregiving time (hours/day), negative symptoms and total PANSS score were found to be significantly associated with psychological distress among caregivers. After adjusting for the effect of other variables in the equation, it was found that the odds of psychological distress increased 1.09 times (95% CI 1.108 to 1.186, P value 0.015) with one unit increase in severity of caregiver burden.
Conclusion: The most important predictive factor of psychological distress in caregivers was the severity caregiving burden.

Keywords: Family, Caregivers, Psychological stress, Schizophrenia.

Introduction
Presence of mental illness in a family member can put a huge burden on the caregivers and family members and may lead to not only psychological distress and also physical illness.[1]Schizophrenia is one such psychiatric illness, which is reported to result in heavy burden and psychological distress in various settings.[2,3] Many studies conducted in the community, outpatient and inpatient care settings across the globe have documented high levels of caregiver burden, different types of negative psychological impact.[4-10] The typology of schizophrenia and the duration of illness were proved to be one of the strong correlates of the high caregiver burden in earlier studies.[11-14]

It is highly important to understand various disease-related and caregiver-related factors associated with psychological distress to be able to develop appropriate interventions to minimise the burden and associated distress. But a huge variation in the methodology and instruments used precludes effective cross-study comparison.[3]

There are very limited numbers of studies available on the subject in the Indian population. Jagannathan, A. et al. [15]have reported the duration of illness and perceived social support to be significant predictors of burden in addition to psychopathology and disability. Kumar, C. N., et al.[16] have concluded that burden experienced by family caregivers of schizophrenia patients depends on the level of disability experienced by the patient, age of the family caregivers and gender of the patient. Interventions to reduce disability of the patients may reduce the caregiver burden.

But, because of wide variations in the tools and methods used to assess the psychological impact and caregiver burden, it is very difficult to draw comparisons between studies conducted in different settings. Also due to huge differences in the stigma, cultural factors and sociodemographic profile of the populations across different settings, it is highly necessary to develop evidence on local populations to be able to develop culture-specific interventions. Hence the current study has been conducted with an objective of assessing the correlates of caregiver burden among caregivers of schizophrenia patients attending a tertiary care teaching hospital in south India.

Objectives
1. To study the prevalence and correlates of psychological distress and caregiver's burden of patients with Schizophrenia.

Materials and Methods
The current study was a cross-sectional study conducted in the Department of Psychiatry, Chettinad Hospital and research institute (CHRI), Kelambakkam. Primary Caregivers of psychiatric inpatients and outpatients in CHRI, Kelambakkam with a diagnosis of Schizophrenia with duration of illness >2yrs classified under F20 according to ICD-10 and aged more than 18 years were included in the study. Exclusion of caregivers of patients with psychiatric illness other than those under F20 and less than 18 years age was done. After obtaining informed written consent, all the subjects were evaluated by detailed history. Relevant sociodemographic details, clinical and psychological assessment findings were documented in a structured proforma. The following scales were administered:
1. Burden assessment schedule (BAS) -A 40 item questionnaire assessing both the objective and

subjective burden experienced by the caregiver of mentally ill patients. The scores range from 40 to 120.[17]
2. Self-reporting questionnaire 20 (SRQ 20) to assess psychological distress.It is a 20-item mental disorder screening instrument developed by World Health Organization. [18]
3. PANSS (Positive and Negative symptom scale).[19] This consist of 3 dimensions-Positive symptoms, Negative Symptoms and General symptoms to assess the severity of symptoms in patients with schizophrenia.

The study was conducted after obtaining ethical clearance Institutional Human Ethics Committee. All patients were given necessary treatment irrespective of their caregiver's participation in the study. In the case of the presence of psychological distress in the caregivers, further evaluation and appropriate management was done.

Sample size

Sample size was calculated assuming the proportion of psychological distress among the caregivers as 31.5% as per the study by Hui Chien Ong et al[21] The other parameters considered for sample size calculation were 15% absolute precision and 95% confidence level. The following formula was used for sample size calculation. The required number of subjects as per the above-mentioned calculation was 37. To account for a non-participation rate of about 10 % (3 subjects), it was decided to sample about 40 subjects in to the study.

Statistical methods

Descriptive analysis was carried out by the mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Univariate binary logistic regression analysis was performed to test the association between the explanatory variables and psychological distress (Self-reporting questionnaire 20). Unadjusted Odds ratio along with 95% CI is presented. Variables with statistical significance in univariate analysis were used to compute multivariate regression analysis. Adjusted odds ratio along with their 95% CI is presented. P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.

Results

A total of 40 subjects were included in the analysis.

Table 1: Socio-demographic parameters of study population (N=40)

Demographic parameter	Mean/Frequency	SD/Percentage
Age (Mean ±STD)	44.08	± 12.12
Gender		
Male	12	30.00%
Female	28	70.00%
Marital status		
Married	35	87.50%
Unmarried	5	12.50%
Education		
Middle School	15	37.50%
Primary School	12	30.00%
High School	8	20.00%
Illiterate	5	12.50%
Occupation		
Unemployed	14	35.00%
Unskilled Worker	13	32.50%
Employed	13	32.50%
Family type		
Joint	5	12.50%
Nuclear	35	87.50%
Primary earning member of family		
Caregiver	14	35.00%
Patient	13	32.50%

The mean duration of caregiving of study population was 7 ± 5.87 years with the range of 2 to 30 years. The mean total caregiving time per day of study population was 7.63 ± 2.37 with the range of 3 to 12 hours/days. The mean duration of illness of the patients was 8.8 ± 8.52 with the range 2 to 40 years. Among the schizophrenia patients, 40(100%) had positive symptoms, 22(55%) had negative symptoms and 39(97.50%) had general symptoms. The mean PANSS score of the study population was 57.30 ± 12.74 with the range 36 to 82. The mean caregiver burden schedule score of the study population was 44.60 ± 18.44 with the range of 20 to 80.

Table 2: Univariate logistic regression analysis factors associated with psychological distressin the study population (N=322)

Parameter	Odds ratio	95% CI		P value
		Lower	Upper	
Age	1.073	1.002	1.149	0.044
Gender (baseline= Male)				
Female	2.250	0.499	10.143	0.291
Marital status (baseline = Married)				
Unmarried	1.128	0.166	7.665	0.902
Education (base line= Illiterate)				
Middle School	2.667	0.237	30.066	0.427
Primary School	2.857	0.241	33.902	0.406
High School	2.400	0.175	32.87.9	0.512
Occupation (baseline= Unemployed**)**				
Unskilled Worker	1.125	0.236	5.371	0.883
Employed	1.125	0.236	5.371	0.883
Patient primary earning member of the family (Baseline=No)				
Yes	0.646	0.158	2.637	0.543
Duration of caregiving(in years)	1.148	0.995	1.324	0.059
Total caregiving time (hours/day)	1.392	0.018	1.904	0.039
Duration of illness(in years)	1.044	0.966	1.129	0.279
Type of symptoms				
Positive symptoms	1.044	0.966	1.129	0.279
Negative Symptoms	1.087	1.002	1.178	0.045
General symptoms	1.086	0.957	1.233	0.200
PANSS total	1.083	0.017	1.154	0.013
Care Giver Burden Schedule	1.117	1.047	1.192	0.001

The presence or absence of Psychological distress among the study population was determined using Self-reporting questionnaire 20. 15(37.50%) were found to have psychological distress and 25(625%) did not have distress. The odds of psychological distress were 1.073 times increase with each year increase age which was statistically significant (P value 0.044). The odds of psychological distress were 1.392 times increasing with each one hour increase in total caregiving giving time which was statistically significant (P value 0.039). The odds of psychological distress in caregivers was 1.087 times more in patients who had negative symptoms compare to those with positive symptoms. The association was statistically significant (P value 0.045).The odds of psychological distresswas1.083 times increased with one unit increase in PANSS total score and was statistically significant (P value 0.013).The odds of psychological distress was1.117 times increased with one unit increase in Care Giver Burden Schedule score which was statistically significant (P value 0.001). The remaining parameters have not shown any statistically significant association with psychological distress(P value>0.05).

Table 3: Multivariate logistic regression analysis of factors associated with psychological distress (Self-reporting questionnaire 20) (N=322)

Parameter	Adjusted odds ratio	95% C.I. for the adjusted odds ratio		P value
		Lower	Upper	
Age	1.003	0.924	1.088	0.951
Total caregiving time (hours/day)	1.070	0.625	1.832	0.806
Negative Symptoms	0.988	1.851	1.146	0.870
PANSS total	1.060	0.962	1.168	0.237
Care Giver Burden Schedule	1.099	1.108	1.186	0.015

After adjusting for the effect of other variables in the equation, only one parameter had shown statistically significant association with psychological distress in the study. The odds of psychological distresswas increased 1.09 times (95% CI 1.108 to 1.186, P value 0.015) with one unit increase in caregiver burden schedule score.

Discussion

Caregiver characteristics

The current study which has evaluated the burden of caregivers using Burden assessment schedule (BAS) scale and the presence of psychological distress usingSelf-reporting questionnaire 20 (SRQ 20) was conducted in a tertiary care teaching hospital in South India. The mean age of the caregivers was 44.08 ± 12.12 years and70% of caregivers were women. Majority of them were married and studied up to middle school and a major proportion of them were either unemployed or unskilled workers. In more than 50% of the cases, the caregiver was a spouse,and in the remaining cases, it was other family members. More than 80% of the study populations were from nuclear families. In a similar study done by Shah, S. T., et al .20, the mean age of the caregivers was 45.44±14.25 years, which was in accordance with the current study. Forty-two (84%) caregivers were males, and 8 (16%) were females. Twenty-eight (56%) were uneducated, 16 (32%) had Primary education, 4 (8%) were matriculates and 2 (4%), graduates. Thirty-four (68%) of the caregivers were married 8 (16% each unmarried and widows/widowers. Thirty-two (64%) were unemployed, and 18 (36%) were employed. These parameters differed slightly from the current study.

Disease-related characteristics

Among the study population, the mean duration of the schizophrenia was 8.8 ± 8.52 with the range of 2 to 40 years. The mean duration of caregiving was 7 ± 5.87 years and mean time of care giving per day was 7.63 ± 2.37 hours per day. Among the study population, 40(100%) had positive symptoms, 22(55%) had negative symptoms, and 39(97.50%) had general symptoms. The mean PANSS total of the study population was 57.30 ± 12.74, and the mean caregiver burden schedule of the study population was 44.60 ± 18.44. In the study by Kumar, C. N, et al,[16] the mean (SD) duration of illness was 154.8 (119.5) months. Symptoms were mild at the time of assessment (Mean (SD) total PANSS score = 50.5(23.6)), and they had a Mean (SD) total disability of 4.6 (4.2).In the study by Jagannathan, A., et al[15] the mean (SD) total burden of the caregivers (excluding spouses of the patient) was 80.02 (11.53), and the mean (SD) total burden of caregivers who were spouses of the patients was 74.94(11.27). The average BAS score was 1.94 (0.31). The mean PANSS (total) score was 58.5 (18.9). These studies were in according to ours.

Impact on caregivers

In the current study, 22(55%) had the moderate burden, and 18(45%) had a severe burden. The mean score of self-reporting questionnaire 20 of the study population was 8.78 ± 3.98. Among the study population, 15(37.50%) had psychological distress, and 25(62.50%) had no psychological distress. The stress level was assessed by using the Self Report Questionnaire (SRQ-20) with a cutoff score of 9 being taken as stressed. The study findings were similar to the study by Shah, S. T., et al.[20] 36 (72%) had psychological distress, and 14 (28%) had no psychological distress. In our study, 37.50% experienced distress whereas in the study by Shah, S. T., et al[20] where 72% experienced distress. Which was high compared to the current study. Our study was in accordance with the study by Ong, H. C., et al[21] where 31.5% of the caregivers experienced psychological distress.

Factors associated with caregiver burden and distress

Jagannathan, A., et al.[15] in their study of caregivers of 137 schizophrenia patients found that duration of illness and levels of psychopathology and disability had a significant direct correlation with total burden score; perceived social support had a significant inverse correlation with total burden score. There was a high correlation between psychopathology and disability ($p<0.001$). Two separate regression analyses, each including total PANSS score (psychopathology) or total IDEAS score (disability) showed that duration of illness and perceived social support were significant predictors of burden in addition to psychopathology and disability.

Kumar C. N., et al.[16] found in their study that level of burden had a significant direct correlation with disability (Pearson's $r = .35$; $p < .01$) and severity of psychopathology ($r = .21$; $p < .01$). Duration of treatment had an inverse correlation with burden (Pearson's $r = -.16$; $p < .01$). Multivariate analysis revealed that total Indian Disability Evaluation and Assessment Scale (IDEAS) score (Beta = .28; $t = 4.37$; $p </= .01$), duration of treatment (Beta = -.17; $t = -2.58$; $p = .01$), age of the family caregiver (Beta = .15; $t = 2.4$; $p = .02$) and gender of the patient (Beta = -.13; $t = -2.1$; $p = .04$) were significant predictors of burden. The model including total IDEAS score explained 14% of variance (adjusted $R (2) = .139$; $p < .01$). The authors concluded that, Burden experienced by family caregivers of schizophrenia patients depends on the level of disability experienced by the patient, age of the family caregivers and gender of the patient.

This study had a number of strengths. There are barely any Indian studies that have looked at predictors of caregiver burden in first admission acute patients of schizophrenia. This study opens up to wider aspects of mental illnesses where caregivers may also face enormous challenge every day. We need to address the caregivers to help them in the continuum of care. Secondly, even though the study used cross sectional designs, the validated standardized tools were used in this study to establish severity of caregiver's distress and to assess disability and burden.

However, the study was not without limitations. The study was a cross sectional study; thus, the observed association could not be interpreted as causal inferences.

The study was a single centred with small sample size. Hence the study findings could not be generalized to the rest of the population. Purposive sampling technique was employed for the study which is not a true representation of the general population. And self-reported measures often involve response bias or social desirability bias.

Conclusions

Majority of the caregivers in the study were females, with minimal educational qualification and were the spouse of the patients, with parents and siblings involved in care in a minor proportion of the patients. The mean duration of caregiving was 7 ± 5.87 years and mean time of caregiving as 7.63 ± 2.37 hours per day. In the study, the prevalence of psychological distress was 37.50%. 22(55%) reported moderate burden and 18(45%) reported severe burden. High distress and burden were reported in our study. The most important predictive factor of psychological distress in caregivers was the severity caregiving burden However, a further longitudinal study may provide a better insight on burden and distress among caregivers of schizophrenia.

Conflict of interest

Nil.

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A study of emotional intelligence, perceived stress and coping in final year medical undergraduates

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Abstract
The term "Emotional Intelligence" (EI) describes the "ability to monitor one's own and others' feelings and emotions, to discriminate between them and to use the information to guide one's thinking and actions. It helps people to cope better and therefore is required in medical students to cope with everyday stresses. This study was conducted with an aim to study emotional intelligence, perceived stress and coping in final year medical undergraduates. Evaluation of emotional intelligence, perceived stress, general health, and ways of coping was done. This study concludes that emotional intelligence had a negative correlation with perceived and mental stress, maladaptive coping behaviour (escape avoidance) and a positive correlation with adaptive coping style (Planful problem solving).Higher emotional intelligence is associated with better quality of health.

Keywords: Emotional Intelligence, Stress, Coping, Skills.

Introduction
"There is within the human heart a quality of intelligence which has been known to surpass that attributed to the human mind." — Aberjhani

The term "Emotional Intelligence" (EI) describes the "ability to monitor one's own and others' feelings and emotions, to discriminate between them and to use the information to guide one's thinking and actions."[1] As feelings take precedence over thoughts in making decisions, the emotional mind is believed to be faster than the rational mind.[2]

As Goleman suggested, EI includes ability to solve emotional problems, capacity to accept reality, flexibility, and ability to regulate and alter the affective reactions of stress and crisis.[3] It has been seen in previous studies that the persons with high emotional intelligence can better recognize potential stressors, can use emotions in coping with problem, as far as they cope in better way with negative emotions evoking in stressful situation.[4]

Medicine is a profession with a lot of stress and social demands. Therefore, students in these fields have to cope with stress related to burden and excessive workload from clinical practices during their education.[5]

Aim
To study emotional intelligence, coping mechanisms and perceived stress in final year undergraduate medical students.

Materials and Methods
This was a cross sectional type of study conducted on Final year undergraduate medical students in a rural medical college in Maharashtra.

A brief introductory session explaining the concept of EI and coping strategies, need for the study and the procedure of self-administration of scales, were provided to all participants. Written consent was taken. Ethical clearance for the study was obtained from Institutional Ethical Committee.

A semi structured proforma was used for socio-demographic data. The Emotional Intelligence Scale used was developed by Schutte.[6] It is a 33-item scale with a five-point Likert-type scale. Scores ranged from 33-165. Perceived Stress Scale (PSS) was used to assess the perceived stress levels of the individuals pertaining to different situations during the last month.[7] Each of the 10-items consists of a five point Likert scale (0 = never to 4 = very often), and the total score ranged from 0 to 40, where higher total scores indicates a higher level of perceived stress. GHQ 30 was used as a self reported proforma for screening physical ailments. Ways to coping questionnaire- It contains 66 questions and to determine the predominant methods used for coping, total score for each of the subscales divided according to the different ways of coping is calculated. If a person is scoring high in a particular subscale, it means person uses that way of coping more as compared to the other ones.[9]

Subjects
A total number of 119 Students belonging to both sexes, who were in final year MBBS course and gave consent were included in the study through purposive sampling method. Students suffering from any diagnosed mental and physical disorder were excluded. Their age range was 21-23 years.

Statistical analysis
Analysis was done using SPSS version 21 software. Pearson's correlation and t test were used to assess the relationship between various factors and correlation between variables. P value < 0.05 was taken as significant.

Results
The sample consisted of 119 participants. The mean age was 21.56 years. Sample had 78 female (65.5%) and 41(34.4%)

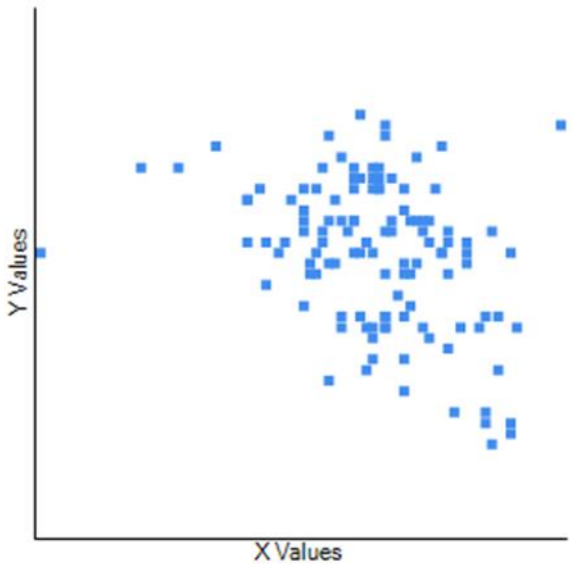
male participants. The mean scores of the sample on Emotional Intelligence, Perceived Stress, GHQ-30 and Coping styles are presented in table-1.The mean EI score was 118 and the most used coping mechanism was planful problem solving.

Table 1: The mean scores of emotional intelligence, perceived stress and coping styles

	Mean
Emotional Intelligence	118.57
Perceived Stress Scores	26.8991597
GHQ-30	23.8
Coping mechanism-Distancing	11.0336134
Coping mechanism-Accepting Responsibility	8.87
Coping mechanism- Confrontative coping	11.21
Coping mechanism-Self control	11.61
Coping mechanism-Seeking social support	10.51
Coping Mechanism-Planful Problem Solving	13.23
Coping Mechanism-Positive Reappraisal	11.94
Coping Mechanism-Escape avoidance	11.70

Correlation was seen between Emotional intelligence and perceived stress scores. A negative correlation (r =-0.3635) was seen between the two and it came out to be statistically significant (p = 0.000026). (Graph 1)

Graph 1: The correlation between emotional intelligence and perceived stress



Y values- Perceived stress score; X values- Emotional intelligence score

Correlation between various coping mechanisms and Emotional intelligence was done and it was seen that a statistically significant positive correlation (r= 0.3647, p=4.5E-05) was present between emotional intelligence and planful problem solving. Also, statistically significant negative correlation (r = -0.8589, p=0.00001) was seen between emotional intelligence and escape avoidance (Table 2).

Table 2: Correlation between Coping mechanisms and Emotional intelligence

Coping mechanisms	**Mean**	**R**	**P value**
Distancing	11.03	0.11	0.21
Accepting Responsibility	8.87	-0.10	0.24
Confrontative coping	11.21	-0.0253	0.78
Self-control	11.61	0.02	0.78
Seeking social support	10.51	0.01	0.86
Planful Problem Solving	13.23	0.36	4.5E-05
Positive Reappraisal	11.94	0.11	0.23
Escape avoidance	11.70	-0.8589	0.00001

A comparison was made between emotional intelligence of students whose parents were doctors and those from other professions. There was no significant difference seen (t-0.868, *p*-0.38).A comparison was also made between emotional intelligence values of males and females. The difference was statistically non-significant (t-1.38, p- 0.08). Another comparison was made between emotional intelligence scores and scores obtained on GHQ-30. There was a negative correlation seen which was statistically significant. (r= -0.52, p = <0.00001)(Table 3)

Table 3: Table depicting pearson correlation between emotional intelligence and GHQ-30 scores

X Values (Emotional Intelligence) $\sum$ = 14111 Mean = 118.58 $\sum(X - M_x)^2 = SS_x$ = 18800.992 *Y Values (GHQ30)* $\sum$ = 2841 Mean = 23.874 $\sum(Y - M_y)^2 = SS_y$ = 15385.109 *X and Y Combined* *N* = 119 $\sum(X - M_x)(Y - M_y)$ = -8874.303 *R Calculation* $r = \sum((X - M_y)(Y - M_x)) / \sqrt{((SS_x)(SS_y))}$ r = -8874.303 /√((18800.992)(15385.109)) = -0.5218	*X*: X Values *Y*: Y Values M_x: Mean of X Values M_y: Mean of Y Values $X - M_x$&$Y - M_y$: Deviation scores $(X - M_x)^2$&$(Y - M_y)^2$: Deviation Squared $(X - M_x)(Y - M_y)$: Product of Deviation Scores

Discussion

This study emphasizes the relevance of the concept of Emotional Intelligence in daily life, as it empowers people to have superior self-control, ability to motivate themselves, manage and express emotions appropriately, be assertive yet sympathetic and caring.

Thus EI is important for an individual, more so for doctors. Doctors are expected to be kind, caring, affectionate, have unbiased empathetic approach, adequate

self-control and maintain cordial relation with one's colleagues.

In this study it was seen that emotional intelligence had a negative correlation with perceived stress which means higher a person scores on the emotional intelligence, lesser a person perceives stress. This has been evident in previous studies as well.[10-13]

Matthew and Zeidner[14] suggest that successful coping with stressful encounters is central to emotional intelligence. Successful coping forms the very bedrock of good mental and physical health.

In our study we found that there was a positive correlation between emotional intelligence and use of planful problem solving which in turn points to the association that persons who use planful problem solving as a coping mechanism had higher scores on emotional intelligence scale. This has been established previously also that high EI individuals employ coping strategies more effectively i.e. use problem-focused coping in situations.[15]

Escape avoidance way of coping was negatively correlated with emotional intelligence scores owing to the fact established in previous studies also that Emotional Intelligence was related positively with adaptive coping stylesand negatively associated with maladaptive coping styles (escape avoidance, distancing).[16,17]

It has been seen in previous studies that socio demographic profile also had an impact on levels of emotional intelligence. In our study we also compared some parameters. While comparing between males and females no difference was found between the levels of emotional intelligence. This is not in concordance with the previous studies where it was seen that females score more as compared to males.[18-21] This can be attributed to the reason that it was a self-reporting scale and every student wanted show their best behaviour. Another comparison was made between students coming from a medico background and those from a non-medico background. No significant difference was seen in the levels of emotional intelligence in these categories.

We found a significant negative correlation between the general health components and emotional intelligence, such that the lower the general health means score (indicating greater levels of general health), the higher the emotional intelligence. This was also seen in previous studies that better emotional quotient makes quality of life better.[22-24]

Conclusion

Therefore, we can conclude by stating that emotional intelligence has a negative correlation with perceived stress, mental stress, maladaptive coping behaviour(escape avoidance) and a positive correlation with adaptive coping style (planful problem solving). Furthermore, higher emotional intelligence is associated with better quality of health.

Strengths and limitations

Our study was unique in analysing many factors responsible for affecting emotional intelligence together. The limitations include response bias and a small sample size.

Recommendations

Further studies should be done to assess other factors affecting emotional intelligence and the medical students should be taught more adaptive coping skills to handle their stress skilfully.

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Sexual dysfunction in male patients with alcohol dependence syndrome – A case-control study

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Abstract

Introduction and Aim: Alcohol may foster the initiation of sexual activity by removing inhibitions, but it impairs performance in the long-run, which leads to marked discomfort and relationship problems. These problems, in turn, would amplify alcohol misuse. Some studies have looked into sexual dysfunction due to alcohol, but there are only a few case-control studies reported from India.

Materials and Methods: 100 married male patients with alcohol dependence and 50 controls were evaluated. All study subjects were assessed for the socio-demographic profile and alcohol-related variables using semi-structured intake proforma, ICD 10, ICD 10 AM symptom checklist, and sexual.

Dysfunction checklist. Cochran-Mantel-Haenzel test and unconditional logistic regression were used for analysis.

Results: The two groups differed significantly with regard to age, domicile, family type, religion, nicotine use, and family history of alcohol use. 26% of patients had sexual dysfunction compared to 10% in controls with an odds ratio (OR) of 3.16 (CI: 1.13 -8.83). The difference almost reached statistical significance after controlling the confounding variables, age (p=0.06; common OR estimate=3.09), and co-morbid nicotine use (p=0.002; common OR estimate=5.37). About half of the patients with sexual dysfunction had it on more than one domain. Loss of desire was the prominent dysfunction in patients, while premature ejaculation was leading in controls. All those patients with chronic liver disease had sexual dysfunction.

Conclusion: The study highlights the global nature of sexual dysfunction in men with alcohol dependence. It emphasizes the need for clinicians to routinely assess the sexual problems in their alcohol drinking patients, especially those with liver disease.

Keywords: Alcohol Dependence, Sexual dysfunction, Alcohol, Sex.

Introduction

Alcohol surrounds us. It became the most popular drug of abuse in the 21st century.[1] Sexual dysfunction (SD) is quite common in the general population, with one in five males suffering from it.[2] Alcohol is long regarded as a risk factor for SD, whether in textbooks, review articles, or clinical teachings.[3] The rates of SD in the alcohol-dependent population extend between 8 and 95.2%. The typical SDs reported have been erectile dysfunction followed by premature ejaculation, delayed ejaculation, and decreased sexual desire.[4] However, it appears alcohol consumption is related to sexual function in a J-shape manner, with moderate consumption conferring the highest protection and higher use conferring fewer benefits. Chronic cytotoxic effects of alcohol on general health, endocrine, and hepatic function might be a mediator between the association of high alcohol consumption and SD.[3] Advancing age, education level, unemployment, and cigarette use may be the other correlates of SD in men with alcohol dependence.[4]

There is a limited number of studies that have evaluated the SD in patients with alcohol dependence. There are only a few studies reported from India. A cross-sectional study by Benegal and Arackal at NIMHANS, Karnataka, South India using sexual dysfunction checklist found that 72% of men with alcohol dependence had one or more sexual dysfunctions, most common being premature ejaculation, low sexual desire and erectile dysfunction.[5] SD was present in 37% of the study population in a similar study using Arizona Sexual Experience Scale (ASEX) in Kerala, another state in South India.[6] These studies are limited by lack of controls, and having a non-drinking control sample, would lend a greater depth of the above findings. A case-control study from north India reported the presence of ASEX defined overall sexual dysfunction in 59% of men with alcohol dependence. The dysfunction varied among different domains, with prevalence rates between 35-58%, which were significantly higher than those seen in the control group except for the domain of ejaculation/ability to reach orgasm.[7] Hence, this study was planned to assess sexual dysfunction in patients with alcohol dependence in comparison with controls.

Objectives of the Study

1. To study the frequency and nature of SDs in men with alcohol dependence syndrome (ADS) compared to healthy controls.
2. To study the relationship of SDs to socio-demographic and clinical variables in men with alcohol dependence.

Materials and Methods

Source of data

This non-matched cross-sectional, case-control study was conducted in the de-addiction centre of the department of psychiatry in Father Muller Medical College, Mangalore, a south-Indian city in the year 2013. The study sample consisted of two groups, recruited through convenience sampling: 100 in-patients with an ICD-10 (International Statistical Classification of Diseases and Related Health Problems, Tenth Revision) diagnosis of alcohol dependence and 50 controls enrolled from medical wards admitted for management of transient febrile illness. The study was approved by the institutional ethics board.

Inclusion criteria
1. Married men (currently having a stable heterosexual sexual partner.)
2. Age: 25 - 60 years.

Exclusion criteria
1. A history of primary sexual dysfunction.
2. Co-morbid physical or psychiatric disorder/s or on medications that can potentially cause SD.
3. Dependence on substance/s other than alcohol except for tobacco.

Tools used in the study
1. ICD 10 for the diagnosis of ADS[8]
2. ICD 10 AM Symptom Checklist and Modules[9]
3. Intake Proforma: A specific proforma designed for the study to evaluate socio-demographic, and alcohol-related variables (age of initiation, onset and duration of dependence, amount and preferred drink, complications, nicotine use and family history of alcohol use)
4. Sexual Dysfunction Checklist: The checklist is used to find out the presence and the type of sexual dysfunction. It contains items corresponding to 12 areas of sexual dysfunction described in the Diagnostic Criteria for Research, ICD-10 Classification of Mental and Behavioural Disorders.[5,8]

Procedure

After explaining the purpose and design of the study, written informed consent was obtained for participation from all the patients and controls recruited for the study. The socio-demographic and clinical variables were recorded in a specific form prepared for the clinical study. All the patients and controls were asked for a complete treatment history. They underwent a thorough clinical examination and blood investigations to rule out any medical disorders that can impair sexual functioning. They were further administered the ICD-10-AM (International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) Symptom Checklist for mental disorders screener by a trained clinician. Those who required further examination were administered the appropriate modules of the ICD-10-AM to rule out psychiatric disorders that can impair sexual functioning. If any control found to have alcohol dependence while assessment, he was enrolled as a case to avoid selection bias. Sexual dysfunction checklist was administered on the patients, during the 3rd week of admission when their withdrawal symptoms got completely subsided. The controls were assessed for the same during their discharge.

Statistics

The results were analysed using SPSS version 25. Data were analysed in the form of mean and standard deviation for the continuous variables and frequency and percentage for the categorical variables. Pearson's chi-square test or Fisher's exact test were used to comparing categorical variables between cases and controls. Cochran-Mantel-Haenszel test was used for controlling confounding (unmatched) variables. Unconditional logistic regression analysis was done to assess the predictors of sexual dysfunction among socio-demographic and alcohol-related variables. Statistical significance was assumed at a p-value <0.05.

Results

Men with alcohol dependence were different from controls with regard to socio-demographic data of age, domicile, religion, and family type. They were older than controls. The majority of the controls were from rural, joint, Islamic families compared to cases. There were no differences between them in education, occupation, and socio-economic status (SES). (Table 1)

76% of the patients in the case group initiated drinking alcohol before 25 years of age, with 31% of them started before 18 years of age. However, only 7% developed dependence before 25 years of age. The duration of dependence exceeded five years in 44% of patients by the time of de-addiction. The quantity of alcohol consumed per day was 14.9 (± 7.33) standard drinks (6-48 drinks per day). The predominant brand used was whisky (77%). More than half (54%) of the patients had alcoholic liver disease. Ultrasound was done in 27 patients who can afford it. Most of them (19) had fatty hepatomegaly. Eight had chronic liver disease (including cirrhosis). 67% of patients were having nicotine use compared to 26% in controls with significant difference (p=0.00). 3/4th of the patients in the case group had a family history of alcohol use, with half of them amounting to dependence. This finding was also significantly different from controls (p<0.03). (Tables 2 & 3)

46% of men with alcohol dependence had SD, whether situational or global. On ignoring temporary or situational complaints, 26% had SD. 10% of controls had global SD. The difference was statistically significant, with an odds ratio of 3.16 (95% CI of 1.13 – 8.83). Common odds ratio estimates using the Cochran-Mantel-Haenszel (CMH) test adjusted for age and nicotine use were estimated. The OR adjusted for age was 3.54 (95% CI of 1.06-9.00; Cochran's statistic = 0.033; Mantel-Haenszel statistic = 0.06) and that adjusted for nicotine use was 5.37 (95% CI of 1.78 – 16.16; Mantel-Haenszel statistic = 0.002). (Table 4)

Data on alcohol-related variables were compared between those with and without SD for comparison. 38% of those with SD exceeded ten years of dependence compared to 16% in those without SD. Two-thirds of those with SD had the complication of liver disease, while only half of those without SD had it. And 7 of 8 patients with chronic liver disease (including cirrhosis) had global SD (the remaining one had situational SD). Nicotine use was more common among those without SD than with SD. Differences were noted with regards to age (44.23 ±8.88 vs. 41.82 ±8.68 years) and duration of alcohol dependence (8.15±8.51 vs. 6.15±5.94 years) between those with and without nicotine use. (Table 2)

The prominent SD among men with alcohol dependence was low desire followed by premature ejaculation. Low sexual desire was reported by 14% and premature ejaculation by 11%. Every aspect of sexual functioning was disturbed in

men with alcohol dependence. 12% reported more than one sexual dysfunction. Premature ejaculation was a prominent type of dysfunction among controls. On the comparison between the patient and control groups, there was a significant difference with regards to low desire (p=0.02; OR- 7.98; 95% CI:1. 02-62.52) Frequency of intercourse dissatisfaction approached marginally outside the level of significance (p= 0.096). (Table 5)

Unconditional logistic regression analysis was done to assess the predictors of sexual dysfunction among socio-demographic and clinical variables. None of the variables added significantly to the prediction.

Table 1: Comparison of Socio-demographic data between cases and controls

Socio-demographic variables		Cases (N=100)	Controls (N=50)	Chi-Square test
Age	25 - 30 years	9	11	P<0.02
	31 – 40	35	23	
	41 – 50	36	11	
	50 - 60 years	20	5	
Religion	Hindu	74	28	P<0.00
	Muslim	4	13	
	Christian	22	9	
Education	Illiterate	4	5	NS
	Up to 10^{th} grade	81	42	
	Above 10^{th} grade	15	3	
Occupation	Unemployed	1	0	NS
	Unskilled	45	28	
	Skilled	26	16	
	Farm owners	25	6	
	Professional	3	0	
Income (per month)	<7,500	39	21	NS
	7,500-15,000	34	11	
	>15,000	27	18	
Domicile	Urban	31	5	P<0.005
	Rural	69	45	
Family	Nuclear	58	20	P<0.05
	Joint	42	30	
Socioeconomic Status (SES)	Upper	20	8	NS
	Middle	38	18	
	Lower	42	24	

Table 2: Clinical variables of men with alcohol dependence.

Cases with Alcohol Dependence (N=100)				
Clinical variables		**With Sexual Dysfunction (N= 26)**	**Without Sexual Dysfunction (N=74)**	**Total**
Age of initiation of alcohol use	< 18 years	7 (27%)	24 (32%)	31
	18 - 24 years	12 (46%)	33 (45%)	45
	≥25 years	7 (27%)	17 (23%)	24
Age of onset of regular use	< 18 years	2 (08%)	3 (04%)	05
	18 - 24 years	4 (15%)	14 (19%)	18
	25 - 34 years	16 (62%)	41 (55%)	57
	≥ 35 years	4 (15%)	16 (22%)	20
Age of onset of dependence	< 25 years	2 (08%)	5 (07%)	07
	> 25 years	24 (92%)	69 (93%)	93
Duration of dependence	≤ 1 year	4 (15%)	5 (7%)	09
	1 - 5 years	10 (39%)	37 (50%)	47
	6 - 10 years	5 (19%)	20 (27%)	25
	>10years	7 (27%)	12 (16%)	19
Quantity (SD)	6 - 10	9 (35%)	22 (30%)	31
	11 - 15	6 (23%)	18 (24%)	24
	16 – 20	6 (23%)	20 (27%)	26
	>20	5 (19%)	14 (19%)	19

Drink type	Hard drinks (Brandy, Whisky, Rum, Vodka)	26 (100%)	73 (99%)	99
	Beer	0	1 (1%)	01
Nicotine use	Use	10 (38%)	57 (77%)	67
	Absent	16 (62%)	17 (23%)	33
Complications of alcohol	Liver Disease [Cirrhosis]	17 (65%) [07]	37 (50%) [01]	54 [08]
	Others	5 (19%)	14 (19%)	19
	None	4 (16%)	23 (31%)	27
Family history of Alcohol Use	Dependence	11 (42%)	28 (38%)	39
	Use	7 (27%)	29 (39%)	36
	Absent	8 (31%)	17 (23%)	25
Family history of Psychiatric disorders		2 (08%)	4 (05%)	06
Family history of Medical illness		16 (62%)	42 (57%)	58

Table 3: Comparison of clinical variables between cases and controls

Clinical Variables		**Cases (N=100)**	**Controls (N=50)**	**Significance on Chi-Square/Fisher's Exact test**
Nicotine use	Use	67	13 (26%)	22.5, p=0.000
	Absent	33	37 (74%)	
Family history of Alcohol Use	Dependence	39	15 (30%)	6.84, P<0.03
	Use	36	12 (24%)	
	Absent	25	23 (46%)	
Family history of Psychiatric disorders		6	0	P<0.08
Family history of Medical illness		58	21 (42%)	3.42 P<0.06

Table 4: Comparison of sexual dysfunction between cases and controls

Sexual Dysfunction		**Chi Square test**	**Odds Ratio**	**95% Confidence Interval**	
Cases (N=100)	**Controls (N=50)**			**Lower**	**Upper**
26	5	5.20, p=0.023	3.16	1.13	8.83
CMH test adjusted for age		3.54, p=0.06	3.09	1.062	9.003
CMH test adjusted for nicotine use		9.56, p=0.002	5.37	1.784	16.163

Table 5: Comparison of domains of sexual dysfunction checklist between cases and controls

Sexual Dysfunction Checklist	**Global**		**Significance Chi-Square/ Fisher's Exact test (p value)**	**Odds Ratio**	**95% Confidence Interval**	
	Cases (N= 100)	**Controls (N=50)**			**Lower**	**Upper**
Aversion of sex	0	0	-	-	-	-
Low sexual desire	14	1	0.02	7.98	1.02	62.52
Difficulty achieving erection	3	1	1	1.52	0.15	14.95
Difficulty maintaining erection	5	1	0.66	2.58	0.29	22.69
Premature ejaculation	11	3	0.39	1.94	0.52	7.28
Delayed/ Inhibited ejaculation	5	0	0.16	-	-	-
Orgasm with flaccid penis	0	0	-	-	-	-
Anorgasmia	1	1	1	0.50	0.03	8.08
Pain coitus	0	0	-	-	-	-
Dissatisfaction with frequency of intercourse	7	0	0.096	-	-	-
Dissatisfaction of sexual relation with partner	2	0	0.55	-	-	-
Dissatisfaction with own sexual function	5	0	0.17	-	-	-

Table 6: Predictors of sexual dysfunction among socio-demographic and clinical variables

Socio-demographic and Clinical variables	Logistic regression analysis	
	Exp (B) value	P-value
Age in years	1.016	0.606
Duration of dependence	1.030	0.464
Amount of drinks	0.999	0.977
Alcoholic liver disease	1.783	0.229

Dependent variable: Global presence or absence sexual dysfunction on checklist

Discussion

In this study, the exclusive focus on males with alcoholism is entailed by the fact that the frequency of alcohol use by females in India, and concurrent alcohol dependence is exceedingly low.[5] Co-morbid nicotine use is not excluded in the present study as it is widely prevalent in most of the patients with alcohol dependence.[10] The socio-demographic profile of the sample is similar to previous studies done in the same region.[11,12] Controls are drawn from the hospital population; however, they are not matched with regard to the number or characteristics of the cases. There is a significant difference between the two groups with regards to age, domicile, religion, and family type. The majority of the men in the case group belong to the 4th and 5th decades (mean 42.44 ±8.82), while most of the controls are in their 4th decade. 70% of patients with alcohol dependence belong to the rural area. Therefore drug abuse in India as an exclusively urban phenomenon is a myth as told by a National survey on the extent, pattern, and trends of drug abuse in India.[13] Muslims are predominant in the control group rather than the case group, maybe because of religious restrictions in substance use.[14]

About three-fourths of the patients in the case group have started alcohol use before 25 years, with nearly one-third before 18 years. Though they started early, only 7% developed dependence patterns before 25 years. Thus, the majority (more than 90%) has Clolinger type 1 (milieu limited) alcohol dependence, which means the addiction is less hereditary and more influenced by the environment.[15] These findings are similar to study in Bangalore, which showed the mean age of onset of initiation was 21.39±5.34 years, and the mean age of onset of dependence was 27.8±5.7 years.[12] The mean quantity of alcohol consumption per day is 14.74 (±7.22) standard units of drinks per day and preferred drink being whisky. The amount is smaller compared to other studies from the same region (20.6 ± 9.07 units in Bangalore's study and 21.23 ± 10.10 units in Kerala's study).[5,6] Also the majority of patients in our study are referred for de-addiction in early years of dependence compared to other studies.[5,7]

Three-fourths of patients have health complications being predominantly liver diseases and gastritis. These findings are similar to the WHO study in Bangalore. It states that the alcohol-users are found to be at approximately three times the risk of suffering from a health problem as compared to non-users.[16] Nicotine use is also prominent among men with alcohol dependence which is a consistent finding in other studies.[5-7]

A significant difference exists between men with and without alcohol dependence concerning nicotine use and family history of alcohol use. This difference signifies nicotine use and family history of alcohol are widely prevalent in most of the men with alcohol dependence.[6, 7] The deficiency of matching between cases and controls had been overcome by statistical analysis using Cochran-Mantel-Haenszel test which controlled confounding variables like age and nicotine use. Thus, the difference in SD between cases and controls wasn't due to these factors.

26% of men with alcohol dependence complain of one or more problems with sexual functioning. This finding is similar to results reported in earlier studies. The rates of SD in these studies have ranged 8-95.2%.[4] SD was present in 37% of the study population (with a mean age of 39years) in another study using the ASEX scale in South India. The difference may be due to an increased quantity of alcohol taken, i.e., about 21 standard units per day compared to 15 units in our study.[6] 72% of the sample reported dysfunction in multiple sexual domains in the previous study using the same scale of our research. The high prevalence of SD may be due to more quantity (20.6SD per day) and longer duration of 8.6years, though the mean age of the sample is less (37years) compared to our study.[5] Another study from north India reported 58% sexual dysfunction in a population sample with a mean age of 37years drinking 17SD of alcohol per day for an average duration of 8.7years.[7]

The most common SD reported by men with alcohol dependence in our study is low sexual desire followed by premature ejaculation. Different types of SDs were reported as the commonest in men with alcohol dependence in the earlier studies. They include erectile dysfunction, premature ejaculation, delayed ejaculation, and decreased sexual desire.[3] Studies each by Akhtar, Jensen, and Vijayasenan reported low sexual desire as the most frequent problem similar to our study.[17-19] The finding is further confirmed in our research when men with alcohol dependence having SD compared with healthy controls on each domain of sexual dysfunction. Low sexual desire is significantly prominent in men with alcohol dependence.

Various co-existing dysfunctions are seen in the case sample. Therefore the number of SD complaints on the sexual dysfunction checklist is counted. The number of complaints is significantly higher than controls, indicating alcohol induces dysfunctions in multiple sexual domains. These findings are similar to previous studies.[5,18,20]

Many previous studies assessed SD in correlation with age, age of onset of alcohol use, duration of alcohol dependence, presence of liver disease, nicotine use, level of

education, and unemployment.[4] They showed conflicting results. A review published in 1991 concluded that in males with alcoholism, the higher quantity, frequency, and duration of drinking are associated with erectile dysfunction (ED), decreased libido, and delayed ejaculation.[21] However, recent studies refute the link between SD and alcohol.[4] A study by Okulate et al. in 2003 hadn't reported an increase in the risk of ED with alcohol abuse.[22] A meta-analysis by Cheng et al. said that cross-sectional studies yielded a protective association of alcohol on ED, but cohort studies did not demonstrate any significant findings.[3] None of the socio-demographic or alcohol-related variables added significantly to the prediction of sexual dysfunction in our study. In the study by Benegal and Arackal with the same scale of assessment used in our study, number of sexual dysfunction complaints was significantly associated with the amount of alcohol consumed per day, but not with number of years of alcohol dependence or on the age of the subject.[5] Sexual dysfunction was significantly associated with the amount of alcohol consumed per day, and the duration and severity of alcohol dependence in the Kerala's study.[6] The absence of association between SD and assessed alcohol-related variables in our study may be the result of confounding variables that weren't assessed in the patients with alcohol dependence.

All the patients with chronic liver disease (including cirrhosis) have SD, whether global or situational. This finding may be a result of an abnormality of the physiology of the hypothalamic-pituitary-gonadal-axis.[23] Patients without sexual dysfunction have increased frequency of nicotine use than with SD in our sample. This finding may be because of lower age and less severity on other alcohol-related variables among those who use nicotine. Further, standardized scales for assessing nicotine use are not used in our study.

The present study is one of the few case-control studies comparing sexual dysfunction in alcohol dependence with controls. It excluded confounding variables like the use of other substances except for nicotine, comorbidities, and co-administered medications. It also assessed the correlation of sexual dysfunction with alcohol-related variables.

Limitations of the study are

1. Being a cross-sectional done on admitted patients in a tertiary care hospital limits the generalization of the findings.
2. Only male and married patients are included in the present study
3. Nicotine use is not excluded from the study.
4. Data on nocturnal erection and hormonal levels are not assessed ruling out psychogenic sexual dysfunction.
5. Marital functioning is not explicitly evaluated, which is common in men with alcohol abuse.
6. Not assessed the severity of different aspects of sexual dysfunction caused by alcohol.

Conclusion

This study is one of the few case-control studies that examined the sexual dysfunction in alcohol dependence. It emphasizes the need for clinicians to routinely assess the risk of sexual problems, which is often missed, unexplored, however, very important for the management of addiction to alcohol.

Conflict of interest

Nil

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Nil

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Presentation of depression: Its relationship with stigma and sociodemographic variables in a tertiary care centre

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Abstract

Introduction: Symptomatology of any illness is not only the expression of a pathological process in an individual, but depends upon many factors, such as environment, socio- demographic and cultural back ground and the same thing is also applicable for depression. There are plenty of studies worldwide to support the fact that depressive patients predominantly present with somatic symptoms. Many authors pointed out the influence of culture behind this fact. But the very few highlighted an important explanatory feature of this process with substantial practical and clinical significance – that is, the role of stigma.

Aims and Objectives: To identify interrelation between chief presenting complains of depressive disorder with level of stigma associated, with reference to patient's socio economic and demographic back ground.

Materials and Methods: Sixty adult patients attending psychiatry OPD for first time with Major Depressive Disorder (MDD) has been selected. Semi structured proforma for socio-demographic and clinical variables, Hamilton depression rating scale, distress questionnaire and stigma scale from the selected portion of Eplanatory Model Interview Catalogue (EMIC) were used.

Results: Near about half of the patients reported pains or other somatic symptoms most frequently as the most troubling symptom whereas fewer than 20% patients reported sadness as most troubling. Somatic complaints were experienced as less stigmatizing compared to sadness; the difference in mean stigma scores were statistically significant. Stigma scores were positively correlated with depression severity. Family history of psychiatric illness was experienced as more stigmatizing along with unmarried status.

Conclusion: Majority of patients with major depression reported somatic complaints as most troubling which may hinder early recognition. As stigma is positively related with depression severity it may acts as barrier to help seeking. Socio-demographic variables are unrelated with presentation of depression.

Keywords: Presentation of depression, Stigma, Sociodemograhic Variables, Somatization.

Introduction

Depressive disorders are a major public health problem now. They occur frequently, and it is likely that their prevalence will grow in the years to come due to socio-demographic changes in most countries of the world that increase the numbers of people at high risk for depressive disorders, the longer life expectancy of people with chronic illness who often suffer from depressive disorders, iatrogenic depression, and the effects of certain forms of prolonged stress.[1]

Currently depressive disorder is a serious public health concern, particularly in view of the fact that recent years have seen the development of a variety of effective methods of treatment of depressive disorders. These new therapies are significant additions to the armamentarium of the psychiatrist, but what is more important are that general practitioners and other physicians can successfully apply many of them.[2]

It is therefore disturbing that a large proportion of people with depressive disorders do not get treatment. The general population is unaware of the frequency and ubiquity of the disorder and does not realize that effective treatment is possible. Therefore, many do not come forward seeking help from health care services, and unfortunately even those who utilize health care services are not always appropriately treated. It is estimated that in even in developed countries nearly half of those who have depressive disorders do not come forward asking for help from their doctors, and of those who do, half remain unrecognized as suffering from depressive disorders.[1]

Symptomatology of any illness is not only the expression of a pathological process in an individual, but depends upon many factors, such as environment, socio-demographic and cultural background and the same thing is also applicable for depression. A major reason for not recognizing depressive disorders is that they often present mainly as physical symptoms. In previous years, it was believed that somatic complaints characterized mainly patients from developing countries and those with little education. Today it is clear that this is not so and that somatic symptoms and complaints are frequent in all populations and in people with different degrees of education. [2]

Several cultural factors complicate the identification and treatment of depression. These include the experience and communication of social and emotional problems as aches, pains, and other somatic symptoms, illustrating a process known as somatization. Failure to recognize these somatic symptoms as a presentation of depression leads to missed diagnosis and opportunities for treatment. Because the relationship between somatic symptoms and emotional symptoms is not obvious, patients may reject the diagnosis and fail to comply with recommended treatment.[2]

The reasons for this trend are many. The stigma attached to mental illness makes patients reluctant to speak about their psychological problems.[2] Physicians are often reluctant to treat people with mental illness and therefore may be rather superficial in their exploration of the psychological state of their patients. Unless these physicians were given additional training during their service, they may not see much point in recognizing diseases for which they think there is no adequate treatment. [2]

So, interrelation between chief presenting complains of depressive disorder with level of stigma associated, with reference to patient's socio economic and demographic background is an important issue to identify depression.

Aims and Objectives

1. To enumerate most prominent (patient specified) symptoms of patients with major depressive disorder in an outpatient department of a tertiary care centre.
2. To assess if these presenting symptoms of depression differ when compared across different socio-demographic variables.
3. To assess if stigma score as measured by stigma scale is significantly different when compared across patients with different presenting symptoms of major depressive disorder.
4. To compare depression severity as measured by Hamilton Depression Rating Scale (HDRS) across patients with different presenting symptoms and its relation with stigma score.

Materials and Methods

This was a cross-sectional study conducted at the out patient department (OPD) of Department of Psychiatry, IPGMER & SSKM Hospital, Kolkata - 700020; a tertiary care hospital catering more than 250 patients per day. Sixty (60) cases of Major Depressive Disorder were taken using convenience sampling method.

Inclusion criteria

(a) Subjects aged between 18 years and 60 years (b) Consecutive subjects diagnosed as Major Depressive Episode according to DSM-IV-TR. (c) Subjects with reliable informants (d) Subjects who will be able to communicate properly (e) Subject who will give informed consent (f) Subjects who can understand and speak Bengali.

Exclusion criteria

(a) Subjects aged below 18 years and more than 60 years (b) All subjects with a past history of established manic, hypomanic or mixed episode (c) All subjects who had not been previously diagnosed as bipolar or had received any approved mood stabilizer (except when its use is documented as for augmentation of antidepressant) (d) Subjects who have been suffering from [i] Disorders usually first diagnosed in infancy, childhood and adolescence e.g. Mental retardation, ADHD, Conduct disorder etc. [ii] Delirium, Dementia, Amnesic and other Cognitive disorders [iii] Mental disorders due to a general medical condition [iv] Substance related disorders when that will be the dominating picture [v] Schizophrenia and other psychotic disorders [vi] Mood disorders other than major depressive disorders [vii] Patients who do not understand and cannot speak Bengali.

Tools used

1. Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision (APA, 2000).[3]
2. Kuppuswamy's Socioeconomic Status Scale - Updated for 2007 (for urban population).[4] The original scale was designed by Kuppuswamy (1976). It takes into account education, occupation and income of the family to classify study groups in to upper, upper-middle, lower-middle, upper-lower & lower socioeconomic status. Due to the steady inflation and consequent fall in the value of the rupee, the income criteria in the scale lose their relevance, so it was modified taking into account the price index of April, 2007.
3. Pareek's Socio-economic Status Scale (for rural population):[5] Developed by Udai Pareek and G. Trivedi (1964) to examine the socio.-economic status for the rural or mixed population only. This scale has nine factors which assess the socio-economic status of the individual: Caste, Occupation, Education, Social participation, Land, House, Farm powers, Material possession and Family. The reliability of the scale was found to be very high (r = 0.93). The category obtained is upper class, upper middle class, middle class; lower middle class, lower class.
4. Semi-structured proforma for socio-demographic profile and clinical data sheet especially designed for the study includes socio-demographic variables (i.e. age, sex, marital status, family structure, residence, education and religion) and clinical variable (i.e. family history of psychiatric illness and diagnosis).
5. Hamilton Depression Rating Scale (HAM-D)[6] to assess severity of depression. It was developed in the early 1960s to monitor the severity of major depression, with a focus on somatic symptomatology. Version in most common use has 17 items which was used here. Items are scored from 0 to 2 or from 0 to 4, with total score ranging from 0 to 50. Scores 7 or less considered normal; 8 to 13, mild; 14 to 18, moderate; 19 to 22, severe; and 23 and above, very severe. Reliability is good to excellent, including internal consistency and interrater assessments. Validity appears good based on correlation with other depression symptom measures.
6. Distress questionnaire (Bengali version) and Stigma scale (Bengali version) from the selected portion of Explanatory Model Interview Catalogue (EMIC) developed by Chowdhury et al (2000)[7] to assess the most troubling patient-specified symptoms and stigma among the selected patients.

In a pilot study (Chowdhury et al, 2001), the interrater reliability of the most troubling patient-specified symptom was good (kappa=.74), and for the section in which stigma items were extracted, interrater agreement was excellent

(kappa=.89). The 13 items included in the assessment of stigma, and the internal consistency, as indicated by Cronbach's alpha (.67), was sufficient to justify their use in a linearly combined unweighted scale. The items of the stigma scale had homogeneous variance; each item had a value from 0 to 3 with higher scores indicating more stigma, and the theoretical maximum scale score was 39. [8]

Methods

60 subjects; presenting for the first time to the outpatient clinic at the Department of Psychiatry, IPGME&R, Kolkata, West Bengal, were included as per inclusion criteria by purposive sampling. They were screened for any features that meet exclusion criteria listed before. Patients fulfilling any exclusion criteria, those patients were excluded.

The objectives of the study were explained to them and if they agreed, informed consent was taken. Then; a research interview was conducted using the specified tools for this study before any treatment was initiated.

Their age, sex, residence, marital status, family structure, family history of psychiatric illness, educational qualification, were noted using the semi-structured proforma designed for this study, and socio-economic status were determined using Kuppuswamy's Socioeconomic Status Scale-Updated for 2007 (for urban population) and Pareek's Socio-economic Status Scale (for rural population).

All subjects were rated with Hamilton depression rating scale to assess severity of their depression.

Selected portion of EMIC Questionnaire (Distress questionnaire & Stigma scale) Bengali version (Chowdhury et al, 2000) were used to assess the most troubling patient-specified symptoms with reference to four broad categories of symptoms (sadness, pain and other somatic, mental tension and others) and total perceived Stigma (illness experience) with reference to 13 items directly related to stigma, which had been derived previously in pilot study by Chowdhury et al (2000)[8] among the selected subjects.

All collected data were then tabulated and entered in a SPSS-13$^{(R)}$ spread sheet, analyzed and assessed properly with appropriate use of statistics.

Statistical analysis

The statistical analyses were done using Statistical Package for the Social Sciences, version 13 (SPSS-13). The socio-demographic and clinical variables (both continuous & discrete) were summarized in terms of frequency, percentage, mean & standard deviation as per applicability. To compare difference in terms of mean stigma and HDRS scores across different most prominent presenting complaints (patient specified) of study population; one way ANOVA was done. To measure the relationship among continuous clinical and socio-demographic variables; Pearson's correlation test and for discrete variables; spearman's correlation test were done. The relationship between depression and stigma scores were examined with simple linear regression and computation of Pearson's correlation coefficient. As the mean stigma score of the sample was 16.10; a median split of the data was done to make two groups (patients having stigma score ≥16, considered high and < 16, considered low). To measure the significance of difference among the groups; in terms of various socio-demographic variables, chi square for discrete variables & for continuous variables, t-test was applied.

Ethics

The protocol was submitted to and approved by the Ethics Committee of Institute of Postgraduate Medical Education & Research (IPGME&R), Kolkata. Informed consent was taken from each patient participating the study. Each patient's name was replaced by an abbreviation in the study database to ensure confidentiality.

Results

Table 1A: Showing socio-demographic variables (discrete) of patients with major depressive episode (N=60).

Variables		N (%)
Sex	Male	17 (28.3%)
	Female	43 (71.7%)
Marital status	Married	49 (81.7%)
	Unmarried	08 (13.3%)
	Widow	03 (05.0%)
Religion	Hindu	46 (76.7%)
	Muslim	14 (23.3%)
Education	Illiterate	11 (18.3%)
	Read and write	05 (08.3%)
	Primary	11 (18.3%)
	Secondary	14 (23.3%)
	Higher secondary	06 (10.0%)
	Graduate	13 (21.7%)
Family structure	Joint	31 (51.7%)
	Nuclear	29 (48.3%)
Residence	Urban	30 (50.0%)
	Rural	30 (50.0%)
Socio-economic Status	Upper middle	10 (16.7%)
	Lower middle	19 (31.7%)
	Lower	13 (21.7%)
	Poor	18 (30.0%)

Table 1B: Showing clinical variables (discrete) of patients with major depressive episode (N=60)

Variables		N (%)
Most prominent Symptoms (Pattern of Distress)	Sadness	12 (20.0%)
	Pain and other somatic	29 (48.3%)
	Tension	12 (20.0%)
	Others	07 (11.7%)
Family history of psychiatric illness	Positive	18 (30.0%)
	Negative	42 (70.0%)
Stigma score	> 16	32 (53.3%)
	< 16	28 (46.7%)

Table 1 C: Showing Socio-demographic and clinical variables (continuous) of patients with major depressive episode (N=60)

Variables	Mean ± SD
Age	36.15 ± 9.71
HDRS score	20.20 ± 3.82
Total Stigma score	16.10 ± 4.68

Socio-demographic and clinical characteristics of patients with Major Depressive Episode in this study have been shown in table 1A, 1B, 1C. Study population consists of, 17(28.3%) male and 43(71.7%) female. Mean age were 36.15 ± 9.71. Among them 49(81.7%) were married, 08(13.3%) unmarried and 03(05.0%) widow. Majority of them were Hindu 46(76.7%) and 14 (23.3%) Muslim by religion. Regarding educational status, 11(18.3%) were illiterate, 05(08.3%) can read and write only, 11 (18.3%) upto primary levels, 14(23.3%) completed secondary level, 06(10.0%) upto higher secondary level and 13(21.7%) completed graduation. 51.7% of them from joint family and 48.3% having nuclear family background. Equal numbers of patients were from rural and urban area. 16.7% were belongs to upper middle class, 31.7% lower middle class, 21.7% lower and 30% poor.

30% of the study population having positive family history of psychiatric illness; 12(20.0%) complaint sadness, 29(48.3%) pain and other somatic problems, 12(20%) tension as most troubling and 7(11.7%) complaint other problems. Mean HDRS and stigma score were 20.20±3.82 and 16.10±4.68 respectively, 32(53.3%) having stigma score 16 or above and 28(46.7%) having less than 16.

Table 2: Showing group difference in total stigma and HDRS score among patients with major depressive episode, presenting with different pattern of distress (N=60)

Variables	Pattern of Distress						
	Sadness	Pain & other somatic	Tension	Others	df	F	p
HDRS score	24.08 ± 4.71	17.79 ± 1.31	21.25 ± 3.67	21.71 ± 2.69	3	14.54	<0.001**
Total Stigma score	21.25 ± 2.92	13.58 ± 3.72	16.00 ± 3.61	17.85 ± 4.87	3	12.68	<0.001**

Comparisons of mean HDRS and Stigma scores across different patterns of distress of the study population have been shown in this table. Mean HDRS Scores of patients complaint sadness was 24.08±4.71, among patients complained pain and other somatic symptoms it was only 17.79±1.31, where as among the complainer of tension it was 21.25 and for others 21.71. This difference in means is highly significant statistically (one way ANOVA; df 3, F=14.54, p <0.001). Mean stigma scores among those who complaint sadness was quite high 21.25±2.92, where as among somatic complainer it was lowest 13.58±3.72, 16.00±3.61 was among them who complained tension and 17.85±4.87 among others. This difference is also highly significant (one way ANOVA; df 3, F=12.68, p <0.001).

Table 3: Correlation of socio-demographic & clinical variables (continuous) with total stigma score in patients with major depressive episode (N=60)

Variables	Total Stigma score	
	r	p
Age	0.140	0.285
HDRS Score	0.490	<0.001**

** Correlation is significant at the 0.001 level (2-tailed)

The relations among the continuous Socio-demographic & Clinical Variables have been shown in this table. Relation between age and total stigma score is insignificant (r=0.14, p=0.285) where as there is a positive correlation exists between HDRS score and total stigma score (r=0.490) which is strongly significant at p<0.001 level.

Table 4: Correlation of Socio-demographic and clinical variables (discrete) with distress patterns in patients with major depressive episode (n=60)

Variables	Distress patterns	
	P	P
Sex	0.093	0.481
Marital status	0.025	0.849
Religion	0.054	0.684
Education	0.118	0.368
Family structure	0.151	0.250
Residence	0.076	0.562

Socio-economic status (SES)	0.138	0.292
Family h/o psychiatric illness	0.175	0.182

The relations among the discrete socio-demographic & clinical variables have been shown in this table. There are no statistically significant relation exists between distress patterns and sex (ρ=0.093, P=0.481)**,** marital status (ρ=0.025, P=0.849), religion (ρ=0.054, P=0.684), education (ρ=0.118, P=0.368), family structure (ρ=0.151, P=0.250), residence (ρ=0.076, P=0.562), SES (ρ=0.138, P=0.292), family history of psychiatric illness (ρ=0.175, P=0.182).

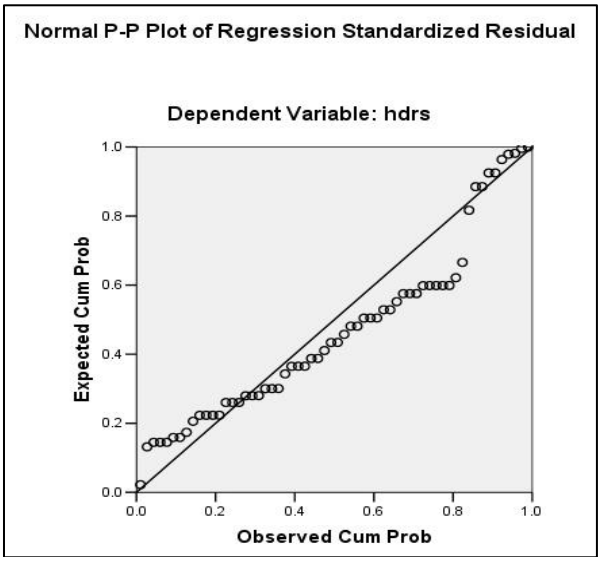

Fig. 1: Regression plot showing relationship of stigma with depression severity (HDRS score) in patients with major depressive episode (N=60). (R^2=0.24, r=0.49).

Table 6A: Showing difference in terms of socio-demographic variables (discrete) between patients with major depressive episode having stigma>16 (N=32) and stigma<16 (N=28).

Description		**Stigma>16**	**Stigma<16**	χ^2	**df**	**P**
		N (%)	**N (%)**			
Sex	Male	08(25.0%)	09(32.1%)	0.375	1	0.540
	Female	24(75.0%)	19(67.8%)			
Marital status	Married	23(71.8%)	26(92.8%)			
	Unmarried	07(21.8%)	01(03.0%)			
	Widow	02(06.0%)	01(03.0%)	-	-	0.061
Religion	Hindu	27(84.3%)	19(67.8%)			
	Muslim	05(15.6%)	09(32.1%)	2.278	1	0.131
Education	Illiterate	03(09.0%)	08(28.5%)			
	Read & write	03(09%)	02(07.0%)			
	Primary	08(25.0%)	03(10.7%)			
	Secondary	08(25.0%)	06(21.4%)			
	Higher secondary	04(12.5%)	02(07.0%)			
	Graduate	06(18.7%)	07(25.0%)	5.463	-	0.375
Family structure	Joint	15(46.8%)	16(57.1%)			
	Nuclear	17(53.1%)	12(42.8%)	0.630	1	0.42
Residence	Urban	17(53.1%)	13(46.4%)			
	Rural	15(46.8%)	15(53.5%)	0.268	1	0.60
SES	Upper middle	08(25.0%)	02(07.0%)			
	Lower middle	12(37.5%)	08(28.5%)			
	Lower	04(12.5%)	08(28.5%)			
	Poor	08(25.0%)	10(35.7%)	5.557	-	0.133

Table 6B: Showing difference in terms of clinical variables (discrete) between patients with major depressive episode having stigma >16 (n=32) and stigma <16 (N=28)

Description		Stigma>16	Stigma<16	χ^2	Df	P
		N (%)	N (%)			
Distress patterns	Sadness	12(37.5%)	00(00%)	-	-	<0.001**
	Pain & other somatic	07(21.8%)	22(78.5%)			
	Tension	07(21.8%)	05(17.8%)			
	Others	06(18.7%)	01(03.5%)			
F/H of psychiatric illness	Positive	13(40.6%)	5(17.8%)	3.686	1	<0.055*
	Negative	19(59.3%)	23(82.1%)			

Table 6C: Showing difference in terms of socio-demographic & clinical variables (continuous) between patients with major depressive episode having, stigma>16 (N=32) and stigma<16 (N=28).

Variables	Stigma >16	Stigma <16	F/'t'	df	P
	Mean ± SD	Mean ± SD			
Age	35.09 ± 10.42	37.35 ± 8.87	3.566	58	0.373
HDRS Scores	22.00 ± 4.35	18.14 ± 1.40	4.482	58	<0.001**

The comparative picture of socio-demographic and clinical variables among patients having stigma score >16 (high) and <16 (low) have been shown in the table 6A, 6B and 6C.

There were 08 (25.0%) males and 24 (75.0%) female in high stigma group with mean age 35.09±10.42 (SD) years whereas 09 (32.1%) males and 19 (67.8%) females in low stigma group with mean age 37.35±8.87 (SD) years. Thus the two groups were comparable with respect to age (F=3.566; p=0.373) and sex (χ^2=0.375; p=0.54). There was no significance difference between the groups with respect to marital status (p=0.061) but there was a trend towards significance. The groups were also comparable with respect to religion (p=0.131), education (p=0.375), family structure (p=0.427), residence (0.603), socio-economic status (p=0.131). Within high stigma group there were 23(71.8%) married, 7(21.8%) unmarried, 2(06%) widow among them 27(84.3%) Hindu and 5(15.6%) Muslim, 17(53.1%) were from urban along with and 15(46.8%) from rural background along with 15(46.8%) having joint family structure and 17(53.1%) having nuclear family. Within low stigma group there were 26(92.8%) married, 01(03.0%) unmarried, 01(03.0%) widow among them 19(67.8%) Hindu and 09(32.1%) Muslim, 13(46.4%) were from urban along with and 15(53.5%) from rural background along with 16(57.1%) having joint family structure and 12(42.8%) having nuclear one.

There were statistically significant differences between groups with respect to distress patterns (p<0.001), family history of psychiatric illness (p<0.05) and HDRS scores (p<0.001).

Discussion

Discussion of methodology

It is an established fact that there is a role of somatization in many parts of the world, where it often accounts for 'common presenting features of depression'[9] and today it is clear that somatic symptoms and complaints are frequent in all populations suffering from depression and in people with different degrees of education.[10]

There are many studies focusing importance of somatic symptoms in recognition of depression but no consensus over the instrument to use. Most of the studies used rating scales mostly patient rated (like CES-D, SSI, SRQ etc),[11-13] few studies used patient's account of symptoms, symptom checklists and self reported questionnaire specially prepared for,[14-16] which may lack psychometric property and may also ignored patient's experiences of distress; which ultimately turn him / her towards help seeking.

Same thing happened in case of measurement of stigma. Derived from many socio- anthropological theories as well as addressing different dimensions of stigma related to mental illness as a whole (like public / personal, felt or self, perceived, stigma associated with treatment and many more) scales were developed with reference of local ethno cultural context and used to measure stigma.[17] few researchers tried to make depression specific stigma scale also.[18]

Keeping clinico-epidemiological utility in mind, with reference to cultural perspective, locally adapted Bengali version[7] of the EMIC (internally consistent with Cronbach's alpha of .67, consisting of 13 items and depending upon subjective response rating was done; 0=no, 1=uncertain, 2=possibly, 3=yes, one item (no.2) contains reverse rating); which employed the framework of cultural epidemiology to examine illness-related experience, meaning and behavior, was used to examine pattern of distress (Interrater reliability was good; kappa=.74) and measure stigma (interrater agreement was excellent, kappa=.89) among selected patients in this present study in which an effort was made to find out relation between most distressing symptomatic presentation of major depressive episode; diagnosed clinically as per DSM-IV TR criteria, with stigma along with severity of depression measured by HDR Scale (17 item scale was used in contrast to few studies[19,8] where 24 items was used without any extra benefit).

Regarding selection of study population many studies were population based (though many of them took sample via internet response),[10,14,20] but substantial number of studies were used purposive sampling at outpatient department of a health institute[19,7,12] which was followed in this present study with a more stringent inclusion and exclusion criteria to focus solely on unipolar depression presents at clinical setting excluding comorbid conditions which may confound the purpose of the study.

So, considering all the limitations of the previous studies this present study designed to incorporate both quantitative and qualitative aspect of illness experience including stigma and to relate that experience in recognition of clinical condition (major depression) and its severity; along with its impact over public health system. The impacts of socio-demographic variables over pattern of distress were also explored in a systematic way (using socio-economic status scale, Kuppuswamy's scale for urban people, Pareek's scale for rural people) which was not stressed in other studies of same kind,[8,19] to get a reflection of the socio-cultural influence over presenting style of depressive patients of West Bengal.

Discussion of Results

Socio-demographic and clinical characteristics

All 60 participants diagnosed having major depressive episode as per DSM-IV-TR criteria, 30% of them having positive family history of psychiatric illness. As per patient's identification of most troubling symptom; patterns of distress of study population was determined and broadly categorized as Sadness, Pain and other somatic complaints, Tension and others; it was noticed that almost half (48.3%) of the participant of this study complained pain and other somatic problems which is in concurrence with the previous studies conducted at local, national, international levels.[10,12,21] Only a few 20% complaint sadness, 20% tension and 11.7% identified other problems as most troubling. Mean HDRS and Stigma score of the total study population were 20 (SD=23.82) and 16.10 (SD=4.68) respectively. For statistical purpose data was given a median split considering mean and median of total stigma score (median=16) of the study population. 53.3% were found having stigma score 16 or above considered high and 46.7% having less than 16 considered low.

Though western-nonwestern discrimination regarding somatic presentation of depression does not exists today [2] yet controversies exists regarding the explanation of this phenomenon but there is consensus regarding importance of somatizing tendency of depressive patients in recognition of depression at earliest and its enormous impact over the nation's economy. One popular hypothesis is cultural influences the perception of illness and plays an important role in shaping up idioms of depression. For example Kleinman[22] pointed out that in many parts of Chinese society, the experience of depression is physical rather than psychological, many of whom find the diagnosis of depression morally unacceptable and experientially meaningless. Culture influences the experience of symptoms, the idioms used to report them, decisions about treatment, doctor–patient interactions, the likelihood of outcomes such as suicide, and the practices of professionals. But it is also evident that majority of patients who somatize used to reveal psychosocial aspects in response to careful probing. Only a few, < 20% is true somatizer.[23] Supporting Raguram et al,[19] Patel[24] argued about the role of stigma in expressing psychological distress.

Relationship between depression severity and stigma with respect to patterns of distress

From table 2 it is evident that patients complaining sadness having highest HDRS and stigma scores (24.08±4.71, 21.25±2.92) and somatic complainer having the lowest one (17.79±1.31, 13.58±3.72) in both cases the differences were highly significant statistically (one way ANOVA; df-3, F=14.54, for HDRS and df-3, F=12.68, for stigma) at $p<0.001$ level, one possible cause for this observation may be that, mild and moderate depression tends to present somatic complaint. On further analysis to find relationship between depression severity in terms of HDRS score and stigma, it is found that both of them highly related with each other, positive correlation exists between them ($r=0.49$, $p<0.001$), simple linear regression was done in search of further evidence of their relationship; and found that stigma score was positively correlated with depression score ($R^2=0.24$). This finding was consistent with findings of Raguram and colleagues[19] ($r=0.47$, $R^2=0.22$) and Cheng-Fang Yen and colleagues.[12]

So, it can be the explanation why depressed people somatize. According to Raghuram and Weiss[19] through qualitative analysis of patients' narratives, we also demonstrated that patients viewed depressive, but not somatic, symptoms as socially disadvantageous. Somatic symptoms were considered to be less stigmatizing since they resembled illness experiences that most people could expect to have from time to time.[25] It is important to address the issue of stigma related personal and social context with reference to local cultural perspective to improve recognition of depression at earliest; even in milder form as it also causes significant distress along with loss of productivity and to prevent wastage of resources in search of organic cause. It is also relevant from clinical point of view as Angst et al reported that among people with depressive disorders, those who received antidepressant treatment had lower mortality rates than those who did not receive treatment, due in part to the lower suicide rates of those treated and in part to the lower mortality from cardiovascular and other physical disorders.[26]

Relationship between socio-demographic variables with patterns of distress

There are no statistically significant relation exists between distress patterns and sex ($\rho=0.093$, $P=0.481$), marital status ($\rho=0.025$, $P=0.849$), religion ($\rho=0.054$, $P=0.684$), education ($\rho=0.118$, $P=0.368$), family structure ($\rho=0.151$, $P=0.250$), residence ($\rho=0.076$, $P=0.562$), SES ($\rho=0.138$, $P=0.292$), family history of psychiatric illness ($\rho=0.175$, $P=0.182$).

So, patterns of distress in this study were comparable with each others, no relation (positive or negative) exists between socio-demographic variables and patterns of distress. Though small sample size, heterogeneity, unintended sampling error may influence the result. A population based approach is needed to clarify this issue in the future.

Comparison between socio-demographic and clinical variables with high (≥16) and low (<16) stigma group

No statistically significant difference exists in terms of mean age (p=0.373), sex (p=0.54), religion (p=0.131), education status (p=0.375), family structure (p=0.427), residence (p=0.605) and socio-economic status (0.133) between the groups having high (>16) and low (<16) stigma scores indicating towards the fact that the groups were comparable in above mentioned terms.

Though significant difference did not exist between the groups with respect to marital status (p=0.061) but that was close to the significance. More systematic research is needed in future to find relationship between marital status and stigma.

But there were significant difference when compared across family history of psychiatric illnesses (p<0.055), persons having positive family history of mental illnesses were experienced high stigma than patients did not have such history.

When the groups were compared in terms of mean HDRS scores and patterns of distresses, a strong statistically significant difference were noticed (p<0.001) that means patients having high depression severity and who complained sadness as their main distressing complaint experienced high stigma compared to patients with less severe depression and somatic complainers.

The above findings might have implications from public health perspective especially in early recognition of depression. Unmarried people and particularly persons having positive family history of psychiatric illnesses are the vulnerable groups who tend to feel stigmatized more regarding depression in particular. Special probing is needed to diagnose those having depressive illness.

Limitations

Our study has the following limitations inspite of our heartiest effort to make it flawless:

1. Small sample size which may not be representative of the populations of Bengal.
2. Purposive sampling.
3. Cross sectional assessment.
4. Referral bias inherent in the hospital based also relevant in our study.

Conclusions

1. Majority of patients with major depression endorsed somatic complaints as most troubling which may hinder early recognition. Despite fulfilling criteria for major depressive episode, near about half of the patients reported pains or other somatic symptoms most frequently as the most troubling symptom. If the professional medical and local experience were the same, we might expect all patients with a depressive episode to highlight sadness, but fewer than 20% patients we studied here reported sadness as most troubling.
2. As stigma is positively related with depression severity it may acts as barrier to help seeking. Somatic complaints were experienced as less stigmatizing compared to sadness; the difference in mean stigma scores were statistically significant.
3. Socio-demographic variables are unrelated with presentation of depression.
4. Issues related to marriage should be an important aspect of anti-stigma measure relevant to social context of Bengal.

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Conflict of interest

Nil

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A study of prevalance of internet addiction and its association with depression and anxiety among medical students

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Abstract

Introduction: With the advent of technology, medical education has been transformed to the extent that internet has become a necessary part of it. The use of Internet ranges from purely academic purposes like acquisition of knowledge and research to completely leisure activities. While proper use of internet has its own benefits, problematic internet use can disrupt occupational and social life. It has been reported to be allied with anxiety disorders, introversion, pathological gambling, personality disorders, bipolar disorder and depression in young people. DSM-V classifies Internet Gaming Disorder in Section III and in the beta draft of ICD-11 it is included as a diagnosis under disorders due to addictive behaviours (6C51).

Aim: To study the prevalence of internet addiction and its association with Depression and Anxiety among Medical Students.

Materials and Methods: Cross sectional study involving 700 medical students who were using internet for more than 6 months duration was conducted. A pretested self-reported questionnaire, Young's Internet Addiction Test, Beck's Anxiety Inventory and Beck's Depression scale were administered. Statistical analysis was done using latest IBM SPSS 2.0 Software.

Results: Majority of the students 51.8 % belonged to 21-25 years age group. The prevalence of Internet Addiction was found out to be 19.1% with moderate addiction of 17.4%, and severe addiction of 1.7%. Among the internet addicts, 58.9% reported anxiety symptoms and 32.8% scored high on Becks Depression Scale.

Conclusion: Around 1/5th of our sample had internet addiction which had positive correlation with Depression & Anxiety, indicating need for preventive measures like proper education, support groups and physical activities etc.

Keywords: Internet addiction (IA), Young's Internet Addiction Test (IAT) Beck's Anxiety Inventory (BAI) and Beck's Depression Scale (BDS).

Introduction

With the advent of technology, medical education has been transformed to the extent that internet has become a necessary part of it. Internet can be used in various ways like to gain information, communication and for scientific research. It can also be used for gaming, pornography and gambling. Problematic internet use can disrupt occupational and social life.[1]

As per Shaw M and Black DW, IA can be described as "excessive or poorly controlled preoccupations, urges, or behaviors regarding computer use and Internet access that lead to impairment or distress".[2] Internet Gaming Disorder is classified under Section III of DSM-V, which conceptualizes it as persistent and recurrent use of internet for gaming with increased preoccupations, withdrawal symptoms, tolerance, unsuccessful attempts to control the use, continued use despite knowledge of harm in a 12 month period which is in line with criteria's for substance use disorder.[3] Furthermore, In the beta draft of ICD-11 it is included as a diagnosis under disorders due to addictive behaviours (6C51).[4] Gaming disorder is characterised by i) impaired control over gaming ii) Increasing priority to gaming over other activities and iii) continuation of gaming despite of negative consequences.

Thus, IA is thought to be a psychiatric disorder with precise diagnostic and management principles. Jerald Block, a psychiatrist from US conceptualized IA as a "compulsive–impulsive spectrum disorder" and argued that the definition should include both online or offline computer usage and conceptualized that excessive gaming, sexual preoccupations, and email/text messaging are three subtypes of IA.[5]

Young individuals with internet addiction can develop various mental health problems due to excess time spent on online shopping, gaming, chatting, pornographic sites and hobby sites. Internet addiction is also associated with anxiety disorders[6], personality disorders, bipolar disorder, social phobia and depression and other mental health problems such as pathological gambling, game playing, especially in young individuals.[7]

Depression and Internet addiction are associated with each other. Depressed individuals have low self-esteem, feel lonely, have high need for affiliation all of which can lead to excess use of internet.[8] On the other hand individuals with excess internet use are usually socially isolated which can lead to depression.[9] Internet Addiction can lead to anxiety and stress.[10] Individuals suffering from anxiety and stress face difficulties in developing meaningful communications in real world which can lead to more use of social media sites.

Many studies describe the prevalence of internet addiction among university students in other countries, however only a few studies are there from Indian subcontinent. Studies from Indian subcontinent are mostly from large metro cities and there is lack of data from smaller cities. Lesser facts are available on the association between internet addiction and mental health problems like depression and anxiety specifically among medical students.

Hence through this cross sectional study we describe the prevalence of internet addiction and its association with depression and anxiety among medical students of Kalaburagi district of Karnataka, India.

Aims and Objectives

1. To study prevalence of internet addiction among medical students.
2. To study association between Internet Addiction and Anxiety symptoms.
3. To study association between Internet Addiction and Depressive symptoms.

Materials and Methods

We conducted a cross sectional study among medical students of Kalaburagi with approval from Ethics Committee of the institute from 1st May 2018 to 15th July 2018. Three medical colleges in Kalaburagi district were approached and their students were included for the study. A simple random sampling method was used for recruitment. Consent from all students was obtained. The students were informed about the subject and purpose of the study and 4 page questionnaire was filled under guided supervision. The procedure took approximately 30 minutes. In total 730 students participated in the study, out of which 700 had given completely filled forms. Thus the population of study considered was n=700.

Sampling technique

Simple random sampling method

Inclusion criteria

Medical students from all the four professional years, using internet since at least last six months, who gave written consent were included for the study.

Exclusion criteria

Students who were absent on the day of study.

Tools- A four page self- administered questionnaire based on the purpose of study was developed. It consisted of-

1. Socio demographic details comprising of Age, Gender, Type of family, internet variables like purpose, data used/day, Login status, place of internet access and duration of internet use/day.
2. Young's Internet Addiction Test: It contains 20 questions with 5 options each and scores ranging from 0 to 100 which measures the severity of internet addictive behavior.[11] It is evaluated as: < 50 normal internet users, 50–79 moderate addicts, 80-100 severe addicts. Data were analyzed by dividing into two groups, with scores<50 considered as normal users and scores>50 as internet addicts as per study by Ghamari et al.[12]
3. Becks Depression scale: The scale consists of 21 Likert-type questions scored 0 (none) to 3 (severe) with scores ranging from 0-63.[13] Students with scores of - 17-20 borderline clinical depression, 21-30 moderate depression, 31-40 severe depression and > 40 extreme depression.
4. Beck's Anxiety Inventory: It is a 21 question multiple choice self-report inventory with each answer being scored on a scale value of 0 (not at all) to 3 (severely). Total score range from 0 to 63.[14] 0-7 normal/ minimal anxiety, 08-15 mild anxiety, 16-25 moderate anxiety and 26-63 severe anxiety.

Statistical analysis

All the data was entered and tabulated using SPSS version 20.0 software. Descriptive statistics were calculated. Chi square test and Pearson correlation test was applied and P value was calculated. The significance obtained was of $p<0.05$ which means variables are strongly correlated with each other.

Results

Of the 700 students comprising the study group, 372 (53.14%) were females and 328 (46.8%) were males. Majority of the participants 51.8 % belonged to 21-25 years age group followed by less than ≤20 years i.e. 42.6%.

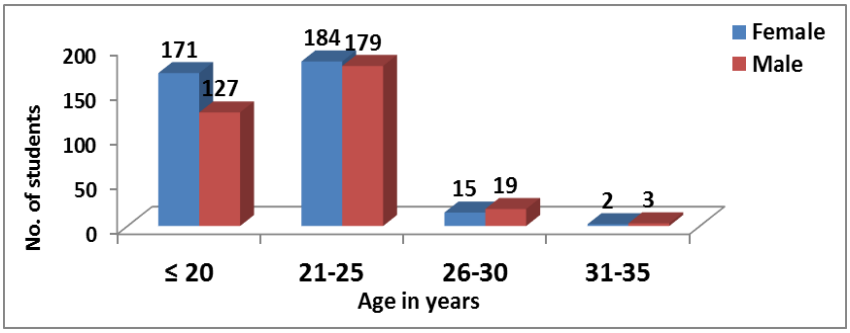

Fig. 1: Age and sex distribution of students

Among 700 students, 134 had internet addiction giving overall prevalence of 19.1%, moderate internet addiction of 17.4% and severe internet addiction of 1.7%.

Table 1: Prevalance of internet addiction

IAT* scores	Category	Medical students	
		Number	Percentage
0—49	Normal	566	80.9
50—79	Moderate addiction	121	17.4
≥80	Severe addiction	13	1.7
Total students		700	100

*IAT is Internet Addiction Test

The reason for internet use was reported as Entertainment by majority 81 % of students. 36.1% used internet for academics, 35% involved themselves in social friendships online whereas 11.4 % reported their loneliness as the reason.
51% kept their phone next to bed while sleeping at night and 50.6% checked their phone on getting up in the morning even before brushing their teeth/going for toilet.

Association of internet addiction with anxiety
Out of 700 students 191 (27.2%) reported anxiety symptoms. Whereas out of total 134 internet addicts 79 (58.9%) students had anxiety symptoms. Study reveals that, there was statistically very high significant association between internet addiction and anxiety (P<0.001).

Table 2: Association of internet addiction and anxiety symptoms

*IAT Categories		Anxiety categories			
		Mild	**Moderate**	**Severe**	**Total anxiety cases**
Normal User (No IA)	566	91	19	2	112
Total IA	134	53	19	07	79
1. Moderate addiction	121	50	15	2	67
2. Severe addiction	13	3	4	5	12
Total students	**700**	**144**	**38**	**9**	**191**
Chi-square, P value	χ^2=86.7, P<0.001, Very High Significant				
Correlation coefficient	r = 0.380				

*IAT is Internet Addiction Test

Out of 238 students who used internet for >4 hours daily, 78 (32.8%) students had anxiety symptoms as compared to 194 students who used internet for 0-2 hours daily among them 43 (22.1%) students reported anxiety symptoms. As the number of hours spent online increased, the anxiety symptoms also increased which showed statistically very high significance.

Table 3: Association of time spent daily online & anxiety symptoms

Internet use hours/ day	Total students		Anxiety symptoms				Chi-Square test	P Value
			Present		Absent			
	No.	%	No.	%	No.	%	54.41	<0.001
0-2 hours	194	27.7	43	22.2	151	77.8		
2-4 hours	268	38.3	70	26.1	198	73.9		
>4 hours	238	34	78	32.8	160	67.2		
Total	700	100	191	27.2	509	72.7		

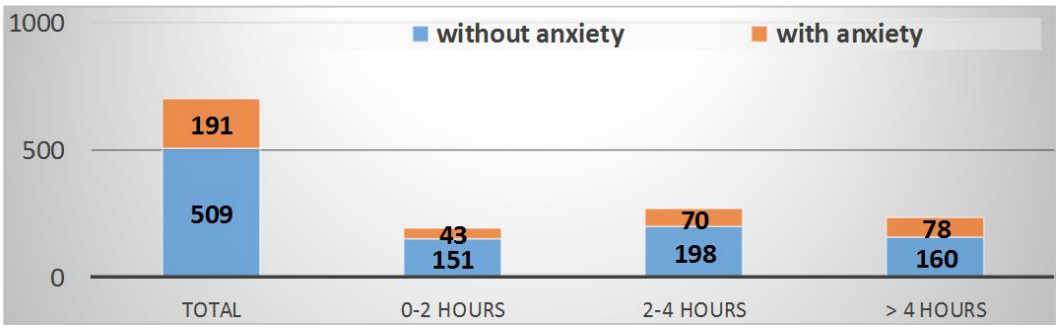

Fig. 2: Number of students with and without anxiety symptoms and its association with time spent daily online

Out of 700 students, 304 (43.5%) stayed on line permanently, among them 110 (36.2%) developed anxiety symptoms. Whereas out of 396 students logging on occasionally, 81 (20.4%) reported anxiety symptoms. Students who permanently logged on vario us social media sites developed anxiety symptoms more than those occasionally logged on which was statistically significant.

Table 4: Login status & association with anxiety symptoms

Login Status	Total students		Anxiety symptoms				Chi- Square test	P Value
			Present		Absent			
	No	%	No.	%	No.	%		
Occasional	396	100	81	20.4	315	79.6	21.44	<0.001
Permanently	304	100	110	36.2	194	63.8		
Total	700	100	191	27.3	509	72.7		

The students who used > 4 GB were 9, and among them 4 students (44.4%) reported anxiety symptoms. Whereas 200 students who used 1-2 GB data/day among them 69 (34.5%) reported anxiety symptoms. Thus as the amount of data used increased, the anxiety symptoms also increased which was statistically significant.

Table 5: Data used/day and its association with anxiety

Data/day	Total students		Anxiety symptoms				Chi- Square	P Value
			Present		Absent			
	No.	%	No.	%	No.	%		
1-2 GB	200	28.6	69	34.5	131	65.5	13.215	<0.01
2-4 GB	42	6	13	30.9	29	69.1		
>4 GB	9	1.3	4	44.4	5	55.5		
Total	700	100	191	27.3	509	72.7		

357 (51%) students kept phones next to bed while sleeping at night and they checked phones repeatedly, among them 110 (30.8%) reported anxiety symptoms. Similarly 354 (50.6%) students checked their phones as soon as they got up from bed, among them 117 (33%) reported anxiety symptoms. Thus more Anxiety symptoms were noticed in those who kept their phones next to bed while sleeping and checked their phone immediately when they got up in the morning which was statistically significant.

Table 6: Variables associated with anxiety

Demographic variables		Students		Anxiety cases		Chi square	P value
	Category	No.	%	No.	Ratio %		
Phone at night	Another room	51	7.3	12	23.5	χ^2=6.53	P<0.05, Significant
	Away from bed	292	41.7	71	24.3		
	Next to bed	357	51.0	110	30.8		
1st thing in the morning	Check up your phone	354	50.6	117	33.0	χ^2=9.131	P<0.05, Significant
	Brush	286	40.8	61	21.3		
	Tea/coffee	17	2.4	4	23.5		
	Other	47	6.7	9	19.1		

Association of internet addiction with depression

Out of 700 students, 97 (i.e. 13.8%) reported depressive symptoms. Out of 700 students, 134 were internet addicts and among them 44 (32.8%) reported depressive symptoms. As the severity of internet addiction increased, higher depressive symptoms were noted. In our study, very high statistical significant association is seen between internet addiction and Depression (P<0.001).

Table 7: Internet addiction & correlation with depression

*IAT Categories		Depression categories				
		Mild	**Moderate**	**Severe**	**Extreme**	**Total depression cases**
Normal User (No IA)	566	30	17	6	0	53
Total IA	134	17	7	7	3	44
1. Moderate addiction	121	16	13	6	1	36
2. Severe addiction	13	1	4	1	2	8
Total students	700	47	34	13	3	97
Chi-square, P value		χ^2=43.38, P<0.001, Very High Significant				
Correlation coefficient		r = 0.330				

Out of 700 students, 194 (27.7%) used internet for 0-2 hours/day and among them 13 (6.7%) reported depressive symptoms. Whereas 238 students assessed internet for more than 4 hours daily and among them 50 (21%) reported depressive symptoms. Thus the students who spent more hours online reported more depressive symptoms which was statistically highly significant.

Table 8: Time spent online /day and its association with depression

Internet use hours/ day	**Total students**		**Depressive Symptoms**				**Chi-Square test**	**P Value**
			Present		**Absent**			
	No.	%	No.	%	No.	%	13.429	<0.05
0-2 hours	194	27.7	13	6.7	181	93.3		
2-4 hours	268	38.3	34	12.7	234	87.3		
>4 hours	238	34	50	21.1	188	78.9		
Total	700	100	97	13.8	603	86.2		

Out of total 700 students, 536 (76.6%) were from nuclear families, among them 82 (15.3%) reported depressive symptoms. 30 (4.3%) were from divided families, among them 4 (13.3%) had depressive symptoms and 134 (19.1%) were from joint families, among them 11 (8.2%) reported depressive symptoms. Out of 97 students who reported depressive symptoms, 82 were from nuclear and 4 from divided family and 11 from Joint family**.** Thus Depressive symptoms were seen more in students from Nuclear than joint families which was statistically significant.

Table 9: Family type and its association with depression

Family Type	**Total students**		**Depressive Symptoms**				**Chi-Square test**	**P Value**
			Present		**Absent**			
	No.	%	No.	%	No.	%	4.01	<0.05
Nuclear	536	76.6	82	15.3	454	84.7		
Joint	134	19.1	11	8.2	123	91.8		
Divided	30	4.3	4	13.3	26	86.7		
Total	700	100	97	13.9	603	86.1		

Out of 700 students, 449 were using up to 1 GB of data, among these 46 (10.2%) reported depressive symptoms. Whereas 51 used more than 2 GB data and 11 (21.7%) were found to have depressive symptoms. Thus students who were using >2 GB of data daily were found to have more co morbid Depressive Symptoms which was statistically significant.

Table 10: Data used/ day and its association with internet addiction

Data Used per day	**Total students**		**Depressive Symptoms**				**Chi-Square test**	**P Value**
			Present		**Absent**			
	No.	%	No.	%	No.	%	13.69	<0.01
Up to 1GB	449	64.1	46	10.2	403	89.8		
1-2 GB	200	28.6	40	20	160	80.0		
2-4 GB	42	6.0	8	19	34	81.0		
>4 GB	9	1.3	3	33.3	6	66.7		
Total	700	100	97	13.9	603	86.1		

Out of 700 students, 304 (43.4%) stayed on line permanently, among them 63 (20.7%) developed depressive symptoms. Whereas out of 396 (56.6%) students logging on occasionally, 34 (8.6%) reported depressive symptoms. Thus the students who stayed permanently on logged reported more depressive symptoms as compared to occasionally logged on which was very high statistically significant. (p>0.01 VHS)

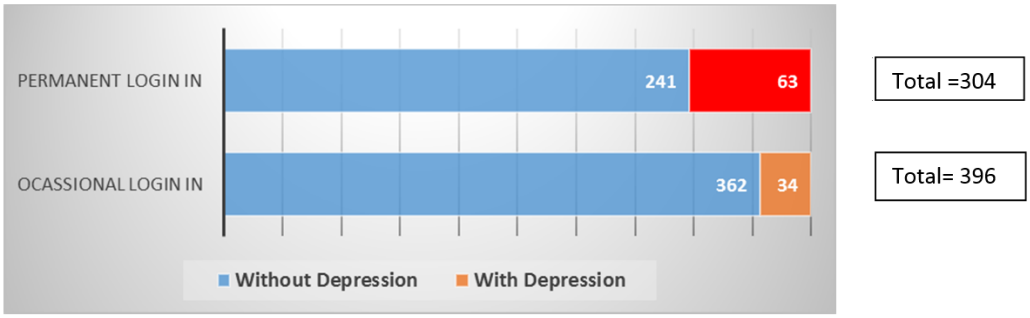

Fig. 3: Number of students with without depressive symptoms and its association with login status

Out of 700 students, 80 students reported Loneliness to be their reason to use excessive internet. Among them 27 (33.8%) were found to have depressive symptoms which was statistically significant when compared to others reasons to internet access. (χ^2=13.69 P<0.01).

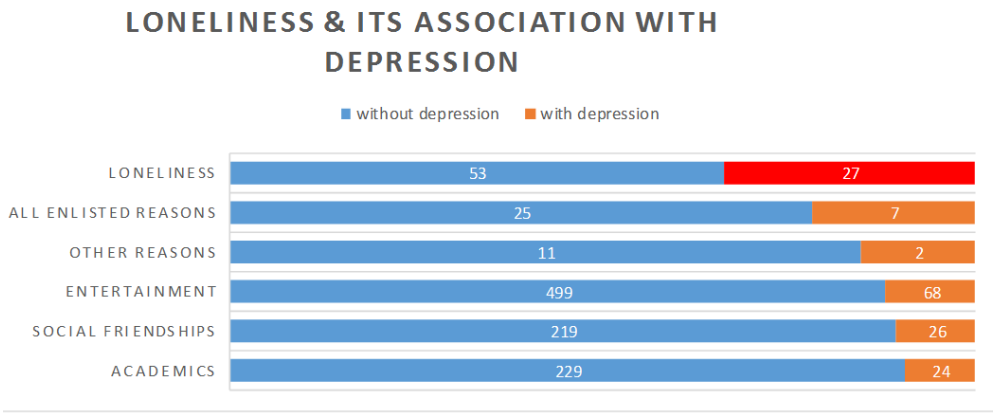

Fig. 4: Loneliness & association with depression

Out of 700 students, 357 (51%) kept phones next to bed while sleeping at night, among them 62 (17.4%) reported depressive symptoms. Similarly, out of 700 students, 354 (50.6%) checked their phones as soon as they got up from bed, among them 62 (17.5%) reported depressive symptoms. Thus more Depressive symptoms were noticed in those who kept their phones next to bed while sleeping and checked their phone immediately when they got up in the morning which was statistically significant. (P<0.01)

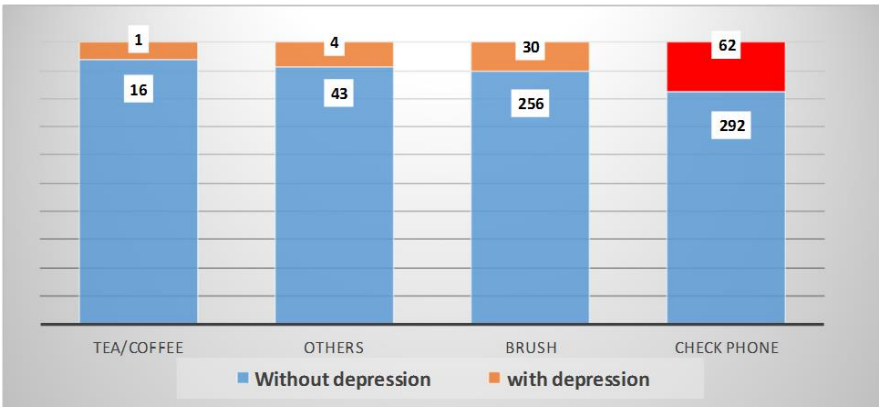

Fig. 5: Number of students with & without depressive symptoms and association with first thing done in the morning

Discussion

In our study, we found out 19.1% as overall prevalence of internet addiction with moderate addiction being 17.4% and severe addiction of 1.7% which is in accordance to Lam et al study where moderate internet addiction prevalence was 10.2% and severe internet addiction was 0.6%.[15] Among Indian studies, study conducted by Deepak Goel et al in Mumbai reported 24.8% of the sample size as possible addicts,[16] study by Krishnamurthy et al in Bangalore suggested 45.8% as prevalence of internet addiction[17] and study by Chaudhari et al reported 58.87% of overall internet addiction.[18] The level of internet addiction differs from one study to another. These discrepancies can be explained by the differences in methods used for the diagnosis of internet addiction and differences in study populations.

In our study group, IA, anxiety and depression was higher among students from Nuclear and Divided families than Joint families. It is well known that although individuals may have "real social support" from their families and society, they may also have "virtual social support" from the internet.[19] Individuals separated from their families, use the internet frequently to satisfy their need for interpersonal relationships and to create alternative social channels.

In diagnosing Internet Addiction, time spent on the internet is one of the important factors. A use of 40-80 hours weekly or up to 20 hours at one time can serve as an indication for hospitalization.[20] In our study, students who used the internet 4 or more hours daily, 30 hours/week scored high on IA, Anxiety symptoms and depressive symptoms ($p<0.05$)

As rightly pointed by Young (2004) cases of problematic internet use should be screened for depressive symptoms. In our study, depression and internet addiction had significant positive correlation ($p<0.05$). There were 44 (32.8%) who had depressive symptoms of all 134 internet addicts which is in accordance with Indian study by Subhashini J where 38.7% of internet addicts reported depression.[21] Also various other recent studies have shown that Internet Addiction causes decrease in social interactions, depression and loneliness and lower self-esteem.[22] In our study 27 (33.8%) students who scored high on Depressive symptoms had reported loneliness as frequent reason for use of internet which is in consistence with other studies done in the past which showed positive correlation between IA and Depression.

There is lack of research depicting relationship between IA and Anxiety symptoms. Excessive internet use is associated with loneliness, decreased self-esteem, lower satisfaction levels in life, anxiety symptoms and overall poor mental health. Consistent with this, anxiety and IA was seen positively correlated in our study. Out of total 134 internet addicts 79 (58.9%) students had anxiety symptoms.

We also noted that the students who kept their phone bed side while sleeping at night and first thing they did was to check their phone in the morning, scored high on IA, anxiety symptoms and depressive symptoms as they had repeated urge to check their phones so as not to miss any of the notifications.

Conclusion

The present study revealed that of all 700 students 80.9% were normal internet users, 19.1% were IA among them 17.3% had moderate IA and 1.8% had severe addiction. IA is seen to be positively correlated with Depressive and anxiety symptoms. The cause-effect relationship between depression and IA is not clear, nevertheless it is beneficial to screen for depression in individuals with IA. Various factors like stressful educational process, uncertainty of living away from one's family, financial and emotional stress may lead to depression or internet addiction among students. Hence, treating the underlying depressive symptoms may help to decrease internet addiction. Appropriate preventive strategies like educating students about healthy use of internet, stress management techniques, coping strategies, maintaining good peer relationships, importance of offline world need to be taught in order to protect the physical and mental health of the users. Parents and teachers need to be sensitized regarding identification of problematic internet use and further referral to advanced centers for screening and management.

Acknowledgement

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Limitations of the study

The study design being cross-sectional could not conclude a cause–effect relationship between the causative factors and IA. As the study involved only medical students from a district of Karnataka with a small sample size; therefore findings cannot be generalized to the community. The tools used were self-reported questionnaires which could have led to errors in the study results. No control group was included in the study.

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Nil

Conflicts of interest

There is no conflict of interest.

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Co-morbidity of depression and disability in patients with alcohol dependence syndrome

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Abstract
Introduction: Alcohol Use Disorders and Depression are among the leading causes of disability in the world according to WHO. But there are limited studies assessing comorbidity of depression and disability in Alcohol dependence syndrome and whether disability in alcohol dependant patients is due to depression or Alcohol Dependence Syndrome alone in this part of the country.
Materials and Methods: This is a cross-sectional observational study conducted in Dr. PSIMS and RF. 50 patients were included in the study and assessed for depression and disability.
Results: Prevalence of depression in alcohol dependence patients is found to be 84%. Disability is present in 94.98%. Significant correlation is observed when disability was compared with 'ADS with depression' (P-value <0.0001). And also, significant correlation was observed when disability was compared with 'ADS without depression' (P-value <0.0001).
Conclusion: Three fourths of the patients with ADS are suffering from depression. ADS is also associated with greater levels of disability, irrespective of the presence or absence of depression.

Keywords: Alcohol dependence syndrome, Depression, Disability.

Introduction
Alcohol misuse and depression frequently co-occur.[1] The prevalence of depression in people seeking treatment for Alcohol Use Disorder (AUD) ranges from 25.7%[2] to 70%.[3] Among patients with an AUD, comorbid depression is associated with an earlier onset of alcohol dependence, higher rates of lifetime drug dependence[4] and worse outcomes among those entering treatment for alcohol and drug problems.[5] Co-morbid depression is also associated with higher relapse following Alcohol Use Disorder treatment among adolescents.[6] and adults.[7] AUD with co-morbid depression is also associated with greater severity of suicidality in adult psychiatric patients;[8] and higher likelihood of suicide attempts[9,10] and completed suicides.[11] Heavy drinking, especially binge drinking, has been found to produce depressive symptoms.[12] Remission of problem drinking has also been found to significantly increase the chances of remission in depression.[13]

1. The Global Burden of Disease 2000 Study was conducted by the World Health Organization.[14] This study found that Alcohol Use Disorders and depression are among the leading causes of disability in the world, as measured by disability-adjusted life years (DALYs) and years of life lived with disability (YLDs).
2. Excessive use of alcohol causes 5.9% of all deaths globally. In addition, it is responsible for 5.1% of the disability adjusted life years.[15] It remains a major public health problem in South Asian region including India.[16]
3. The National Survey report published in 2004 estimated that nearly 62.5 million people were current users of alcohol, which is roughly 21% of the Indian adult population (16 years and older).[17] Dependence on alcohol was found in 16.8% of the current users and alcohol users constituted the largest proportion of treatment seekers (44%) among those with substance use disorders.
4. Alcohol contributes to the largest burden of non-communicable disease in the country.[18]
5. Although alcohol use has been widely acknowledged to be detrimental to the personal and socio-occupational functioning of a person, alcohol use disorders (AUDs) associated disability remains understudied in the country. Moreover, it is not recognized as a ground for disability certification and benefits. On the other hand, disability certification for people with mental illness is provided to those with specific mental disorders such as schizophrenia, obsessive-compulsive disorder (OCD), bipolar disorder, and dementia.[19]
6. These findings emphasise the importance of studying depression and disability in alcohol dependence. Studies regarding co-morbidity of depression and disability in patients with alcohol dependence syndrome are very limited in this part of the country. In the above background, the present study is undertaken with an intention to study the prevalence of depression and disability among patients with alcohol dependence syndrome.

Objectives
1. To study the prevalence of depression among alcohol dependant patients attending a general hospital.
2. To study the disability in alcohol dependence patients attending a general hospital.

Methodology
The present study is a cross sectional observational study.It was conducted in psychiatry department of Dr.PSIMS& RF for a period of 3 months from January 2018 to March 2018 and the complete project was done in accordance with the permission granted by Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation and Hospital's Ethics Committee.

Inclusion criteria

Patients of age 18 years and above, who met the criteria for alcohol dependence syndrome according to ICD- 10, and having informant available. Only new cases were taken into the study.

Exclusion Criteria

Patients with Acute and severe physical illness, already diagnosed psychiatric illness, Uncooperative persons and those who do not give consent to take part in the study.

All the Patients meeting criteria for alcohol dependence syndrome according to ICD-10, attending psychiatry department who met the fixed inclusion and exclusion criteria were selected for the study.**S**ample size of 50 patients were taken by consecutive sampling.

Sample size is calculated based on the Cochran formula:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where:

e is the desired level of precision (i.e. the margin of error, 5%)

p is the (estimated) proportion of the population which has the attribute in question,

q is 1 – p.

After explaining about the study, informed consent was taken from the participants and sociodemographic details were taken using a semi-structured proforma developed in the department of psychiatry. Patients were screened for depression through clinical interview using ICD-10 criteria and severity was assessed using HAM-D rating scale (Score on HAM-D: 0-7 = normal, 8-16= mild depression, 17-23 = moderate depression, 24 and above = severe depression). Disability was assessed using WHODAS 2.0 rating scale. WHODAS 2.0 scale was chosen because it has been used in previous studies to measure disability in alcohol dependence syndrome.[19] Statistical analysis was done using SPSS version 21. Mann-Whitney U test was used and the level of significance was set at p value <0.05.

Results

The sociodemographic characteristics of this sample (n = 50) is depicted in Table 1. All of the patients were Males (100%). Majority of the subjects were married (82%) and studied up to secondary education (40%), belonged to Hindu religion (74%), low socioeconomic status (64%) and belonged to rural back ground (78%). Most common occupation was semiskilled (52%) and unskilled (32%).

Table 1

Parameters	Frequency(50)	Percentage(100.0)
Age(years)		
20-30	8	16.0
31-40	25	50.0
41-50	12	24.0
51-60	5	10.0
Religion		
Hindu	37	74.0
Christian	10	20.0
Muslim	3	6.0
Education		
Illiterate	14	28.0
Primary	14	28.0
Secondary	20	40.0
Graduate	2	4.0
SES		
Lower	32	64.0
Middle	17	34.0
Upper	1	2.0
Marital Status		
Unmarried	2	4.0
Married	41	82.0
Separated	2	4.0
Divorced	2	4.0
Widower	3	6.0
Family type		
Nuclear	41	82.0
Joint	9	18.0
Employment status	4	8.0
Unemployed	16	32.0
Unskilled	26	52.0
Semiskilled	4	8.0
Skilled		

Prevalence of depression

The prevalence of depression in alcohol dependence patients was found to be 84%. In terms of severity, Moderate (32%) and very severe depression (20%) was more common. This is depicted in Fig. 1.

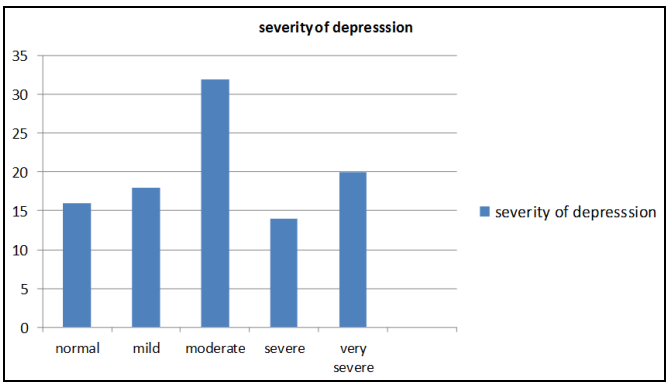
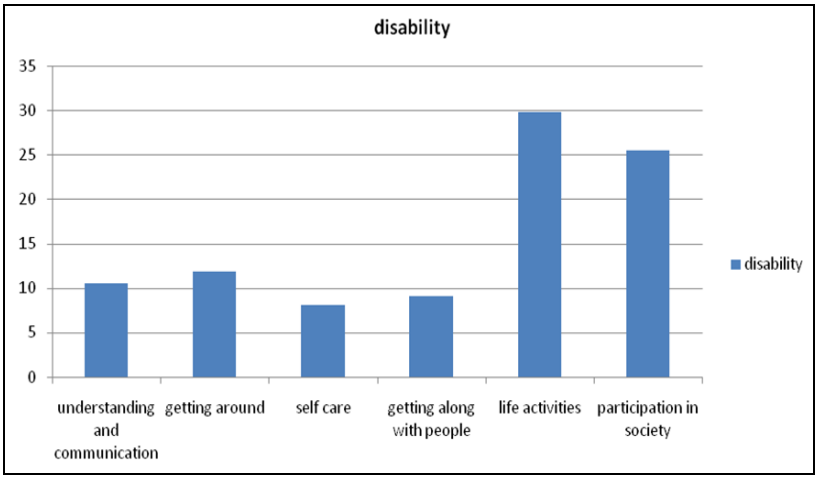


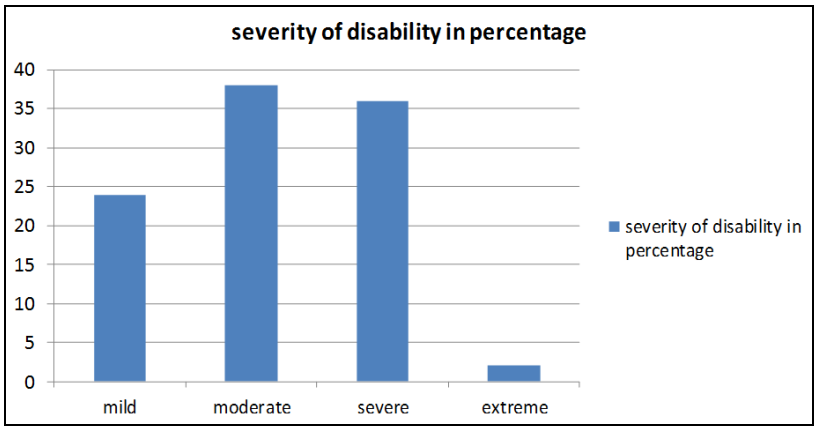
Fig. 1

Disability

Disability was assessed using WHO DAS 2.0 Scale. It was found that disability is present in 94.98% of the sample. Among the individual domains, life activities (29.84%), which include both household and work activities was most affected, followed by participation in the society(25.46%). This is depicted in Fig. 2.



In terms of severity, most of the patients had moderate (38%) to severe (36%) disability and this is depicted in Fig. 3.



Patients with alcohol dependence syndrome with co-morbid depression correlated with disability (ads+ depression versus disability).

Correlation was assessed between patients with alcohol dependence syndrome with comorbid depression and their disability using Mann- Whitney U test.p-value between alcohol dependant patients with depression and their disability was found to be <0.0001 which was significant. The results are shown in table 2.

Table 2

	n	Mean	SD	p-value
Ads + Depression	42	18.76	5.79	<0.0001
Disability	42	100.19	27.22	

Patients with alcohol dependence syndrome without co-morbid depression correlated with disability (ADS-depression versus disability)

Correlation was assessed between patients with alcohol dependence syndrome without depression, with their disability using Mann- whitney U test. p-value between alcohol dependant patients without depression and their disability was found to be <0.0001 which was significant. The results are shown in table 3.

Table 3

	n	Median	SD	p-value
Ads - depresion	8	6.0	2.82	<0.0001
Disability	8	56.5	27.29	

Discussion

1. In our study, sociodemographic details reveal that total sample consists of only male gender which indicates local cultural background and majority of them belong to Hindu religion which is the common religion in this area. It was found to be more common in 31-40yrs age group. Surprisingly, our study contained majority of people who did their secondary education. Most of the people belonged to lower socio economic status. Majority of the patients were married.
2. The prevalence of depression in general population is 5-17%.[20] Where as in patients with alcohol dependence it was 25%[2]-70%.[3] In this study, we found that prevalence of depression in alcohol dependant patients to be 84% which is a little higher to the previous studies, who found a prevalence of 25[2]-70%.[3] In terms of severity of depression, most of the patients had moderate (38%) to severe (36%) depression.
3. The prevalence of disability was found to be 94%. WHODAS 2.0 reveals most impairment in the domains of life activities (29.84%), which include both household and work activities, followed by participation in the society (25.46%). Similar results were obtained in the study conducted by Balhara YP et al., and they found most impairment in the domains of participation in the society, household, and work‑related activities.[15]
4. In this study, we compared the prevalance of disability in alcohol dependant patients with depression and without depression. Significant association was found between alcohol dependence and disability, both with and without depression.These findings suggest that alcohol dependence is related to disability irrespective of the presence or absence of depression.
5. Our study had certain limitations. Sample size is small and therefore results cannot be extrapolated to general population. Berkson bias can also be present as this study was conducted on hospital based population. Majority of the population were Hindus and the entire study sample contained only males and this can effect the results.

Conclusion

AUDs, depression, and their co-occurrence impose a tremendous burden on individuals, families, and communities.Three fourths of the patients with alcohol dependence syndrome are suffering from depression. Alcohol dependence is also associated with greater levels of disability, irrespective of the presence or absence of depression. Further research in disability assessment of alcohol users can help in formulating preventive early intervention strategies for specific disabilities. Alcohol control policies need to shift focus from economic issues to the social issues associated with alcohol use.

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None.

Conflict of interest

None.

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A study of incidence of bipolar disorder in patients treated for major depression

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Abstract
Aim: Recurrent episodes of depression are common in both unipolar and bipolar disorder, but diagnostic and clinical problem with bipolar mood disorder is that hypomanic episodes usually go unnoticed by caretakers and clinicians. Several studies have indicated that if carefully looked for, 25% of patients with major depressive disorder have history of bipolarity. So we aim to assess the proportion of patients with features of bipolar disorder amongst those primarily diagnosed and treated as major depressive disorder and compare the symptom profile of unipolar depression and bipolar depression.
Methodology: One hundred consecutive patients, in tertiary care hospital in Ahmadabad, who were being treated as major depressive disorder according to DSM-4 TR and assessed using scales, HAM-D, GAF, Hypomania Check List-32(HCL) and Mood Disorder Questionnaire (MDQ). Patients who scored higher in HCL and MDQ were assessed in details by MINI.
Results: 100 patients of unipolar depression were taken in study, out of which 16 patients were found to have bipolar mood disorder after assessment. Our incidence of bipolar mood disorder in patients treated as unipolar depression is 16%. Patients of bipolar depression had significantly higher number of prior mood episodes, family history of mood disorder and episodes with psychotic features. Conclusion - Bipolarity is confidently diagnosable in a substantial proportion of patients being treated as unipolar major depression. All the patients of unipolar depression must be screened for bipolarity to give them specific treatment with better results and better quality of life.

Keywords: Major depressive disorder, Unipolar depression, Bipolar depression.

Introduction
Major depression is one of the most frequent and one of the most disabling psychiatric illnesses. It occurs in 10 to 15% (as per US figures)[1] and 15.9% (as per Indian figures)[2] of general population during their lifetime. Recurrent episodes of depression are common in both unipolar and bipolar disorder, but diagnostic and clinical problem with bipolar mood disorder is that hypomanic episodes usually go unnoticed by caretakers, and also they just consider it as phase of over activity as it causes less or no distress to patients as well as caretakers. Whereas depressive episodes, which also have frequent occurrence are distressing and patients seek treatment for that. As a result, clinicians usually treat the depressive episodes but tend to miss history of hypomanic episodes and on occasion, full-fledged manic episodes results.[3,4] Several studies[5-10] have indicated that if carefully looked for, 25% of patients with major depressive disorder have history of bipolarity and few study report that figure is as high as about 50%. General population does not perceive hypomania as pathological and busy clinicians do not always make relevant and detailed inquires about past manic or hypomanic episodes of patients presenting with major depressive disorder, so diagnosis of bipolar mood disorder is delayed for[8-10] years according to a number of studies carried out in past.[3,4,11,12]

Manning JS et al[5] conducted a study (1997) in 108 patients of both anxiety and depression. 25.9% patients had bipolar I or II or III disorder or cyclothymia. Bipolar spectrum disorder was more common 33.3% within the depressive group as against anxiety group, amongst which bipolar II disorder was more common. Angst et al[9] made national co morbidity survey replication between February 2001 to April 2003. Nearly 40% of study population with history of major depressive disorder had history of sub threshold hypomania. Bschor et al[13] conducted a study with similar objectives, it showed that out of total 252 patients being treated as major depressive disorder, 11.6% of patients had undiagnosed bipolar disorder according to DSM IV TR whereas according to bipolarity specifier algorithm (which expands DSM IV criteria) showed 24.8% prevalence of bipolarity was found in the same patient population. Later in 2008 Angst et al[14] conducted multi centric multinational study in a large patient population of 5635 and found that 16% patients with major depressive disorder fulfilled DSM IV criteria for bipolar disorder when interviewed carefully, using very reliable and valid screening instruments. Hu C[15] in a similar study conducted in China in 2012 showed around 20.8% prevalence of bipolarity in patients of being treated as major depression.

Anti-depressants are robustly used psychotropic medications in field of psychiatry as well as general medicine. Effects of anti-depressants in controlling depressive episodes are well established. But anti-depressants don't offer any mood stabilizing properties. Moreover, Anti-depressant medications can adversely affect the long term prognosis by inducing manic switch, more frequent depressive episodes and also treatment refractoriness as statistically shown in study by Sharma et al.[16] Such patients are better treated with a combination of mood stabilizers and antipsychotics than with antidepressants alone.[17]

Ghemi et al[18] reviewed 85 patients with depression. 37% of bipolar depression was misdiagnosed as unipolar depression. Anti-depressants were used earlier and more frequently than mood stabilizer. 23% of patients experienced worsening of course of illness in the form of

causing more frequent episodes after anti-depressant use. Wehr et al[19] and Alfshuler LL et al[20] study results showed similar results implying use of anti-depressants alone in bipolar depression induces more frequent episodes, chronicity and thus increasing disability and overall burden.

There are clear differences in the optimal management of both bipolar and unipolar depression. So it is important to distinguish between these two conditions clinically. It is commonly assumed that there are no important differences between unipolar and bipolar depression clinically. But many a times, patients with bipolar mood disorder have their first episode of illness as depression rather than mania, so it is desirable to recognize and differentiate in order to treat specifically in the early stage of illness.

Liz forty et al[21] (2008) carried out a study in 593 patients of unipolar major depression and 443 patients of bipolar mood disorder and studied clinical presentation of depression amongst them. Depression was associated with presence of psychotic features, diurnal variation of mood, and hypersomnia during depressive episodes and greater number of episodes. Benazzi et al[6] (1997) made a cross sectional epidemiological survey of 203 consecutive patients of major depression in a private setting. They found that patients of bipolar disorder II were associated with early age of onset and more atypical features, psychotic features and more frequent depressive episodes.

In an Indian study of 2017 by Kamal et al,[22] which compared socio demographical correlates of unipolar and bipolar depression, in study 330 cases were taken out of which 164 of unipolar depression and 166 of bipolar depression. They found male gender, employment status, Hindu religion, onset of illness and chronicity are risk factors for bipolar depression. A similar study by Nisha et al[23] 2015, found that bipolar depression had younger age of onset, longer duration of illness, more frequent episodes and hospitalization. Psychotic symptoms like delusion and auditory hallucination were significantly high in bipolar depression patients. The new diagnostic category in DSM 5 untitled Major Depressive Disorder with mixed features is applied to individuals who meet criteria for MDD and have concurrent sub syndromal hypomanic or manic features. Mixed symptoms are more common in bipolar depression than unipolar depression. Research over several years made it clear that careful differentiation of unipolar depression and undiagnosed bipolar illness and its specific treatment helps in reducing the morbidity associated with it.

Aims and Objectives

1. To study incidence of bipolar disorder in diagnosed cases of major depressive disorder.
2. To compare the symptom profile of unipolar depression and bipolar depression.

Methodology

Source and Collection: One hundred consecutive, outdoor and indoor patients from Department of Psychiatry, tertiary care hospital in Ahmadabad, who were being treated as Major Depressive Disorder according to DSM-4 TR and were receiving antidepressant medications, were included in the study. A convenience sampling technique was used and institutional ethical committee approval was taken. All the patients were above age of 18 years and have informant available. Participants were included in the study after taking informed consent.

Exclusion criteria

1. Those who were unwilling for the interview
2. Those who had medical emergencies.
3. Those who had co morbid psychiatric illnesses like substance use disorder, personality disorder or obsessive compulsive disorder, mental retardation, seizure disorder, cognitive impairment, permanent neurological deficit, affective illness secondary to substance use, psychosis outside mood episode.

Procedure and Assessment: Each participant completed a case sheet with demographic information, current clinical diagnosis, treatment received and previous psychiatric consultation or hospitalization if any, to establish a diagnosis of depression and to check severity of episodes following scales were applied.

Scales

Hamilton rating scale for depression (HAM-D)[24]

The 21-item HAM-D for assessing the severity of depression was developed by Max Hamilton in 1960. It is instrument for rating depression with very high reliability and validity. It is a time tasted instrument. Each item is scored from 0-4 or 0-3 or 0-2 with score range of 0- 66. Higher the score, higher the severity of depression.

GAF (Global Assessment of Functioning)[25]

Scale was developed by Jones et al with reasonable reliability and validity. Impairment in psychosocial and occupational functioning as well as personal care and symptoms severity is taken into consideration. It does not include impairment due to physical or environmental conditions. The score ranges from 0 to 100. It has been objectively specified that loss of progressive functioning reduces the total score. Lower the score, poorer the global functioning of patient.

Hypomania Check List -32:[26]

This scale was developed by J. Angst, R. Adolfsson and colleagues in 2004-05 with sensitivity of the instrument 80% and specificity of 51%. It is a self-reported instrument which consists of 32 statements. The patient has to answer yes or no. Each yes is given a score of 1 and the total gives the final score. An HCL score range from 0-32, the cut off is 14 for positive result.

Mood Disorder Questionnaire (MDQ):[27]

It was developed by Hirschfield et al (2000). It has sensitivity of 0.73 and specificity of 0.90. It is also a self-reported instrument. It basically pertains to hypomania symptoms. It consists of 13 questions. The patient has to answer yes or no. Each yes is given a score of 1 and the total

score is final score. Range is 0-13 and cut off for positive result is 7. There is also specifier that those symptoms occurred during same period. Subjective distress ranging from no distress to severe distress is also noted.

HCL 32 and MDQ Gujarati versions were used. The cronbach alpha for the translation was 0.959 and 0.943 which indicate very good reliability. The educated patients completed these on their own, while those who had no formal education, data were completed by verbally reading out by the researcher.

Patients who scored 14 or more on HCL32 and /or score 7 or more on MDQ were assessed in detailed by MINI (International Neuropsychiatric Interview) (Sheehan et al.1998)[26] for the presence of Axis I disorders according to DSMIV The patients were categorized into 2 main subgroups (Bipolar disorder, Bipolar –I and Bipolar–II vs. No bipolar Disorder).

Analysis

Demographic characteristics and disorder related characteristics were tabulated. On the MINI interview, Patient who were found to have Bipolar Disorder and those who had no Bipolar disorder were compared regarding demographic characteristics, disease related characteristics (duration, number of episodes, age at onset, family history, past history of suicide attempt, psychotic feature, diurnal variation) and Global assessment of functioning. The groups were compared using chi square, t test, Yates correction and mid-p (as appropriate). $P<0.05$ was considered statistically significant. SPSS version 17 was used to analyze the data.

Results

Table 1: Demographic characteristics

		Number of Patients n=100
Sex	Male	35
	Female	65
Marital status	Single	7
	Married	79
	Widowed	13
	Divorced	1
Occupation	Professional	3
	Clerical	1
	Skilled work	4
	Semiskilled work	26
	Unskilled work	27
	Unemployed	39
Education	Graduate	5
	Post high school	6
	High school (matriculation)	18
	Middle school	25
	Primary school	27
	Illiterate	19
Income	9798-19574	5
	7323-9797	9
	4891-7322	25
	2936-4890	27
	980-2935	13
	Up to 980	21
Religion	Hindu	79
	Islam	17
	Sikh	3
	Others	1
Family type	Nuclear	51
	Joint	49
Locality	Urban	85
	Rural	15

100 patients, diagnosed and treated as Major Depressive Disorder were taken into study. Demographic characteristic analysis of total sample shows mean age of 39.8 years, majority of selected patients were married females (around 52%). 61% of the patients visiting our centre come from lower socio economic class and are not well educated. (89% were below or at matriculation level). 85% patients had no history of suicide and there was no family history of any psychiatric illness in 80%.

Table 2: Disease related characteristics

		Number of Patients N=100
Suicide	0	85
	1	5
	2	5
	3	3
	4	2
Diurnal variation	No	51
	Worse in am	21
	Worse in pm	28
Psychotic features	No	76
	Suspicious	16
	Ideas	5
	Delusions	3
Family history	Positive	20
	Negative	80
	MDD	5
	BMD	6
	Psychosis	5
	Others	4
GAF	41-50	7
	51-60	31
	61-70	44
	71-80	16
	81-90	2

Table 3: Comparison of patients having Unipolar Depression (MDD) and Bipolar Mood Disorder (BMD)

		Unipolar depression		Bipolar depression		
		Number/ mean	**Percentage/sd**	**Number/mean**	**Percentage/sd**	
Age		42.54	11.69	37.25	10.73	t – 3.5841 p = 0.0105
Sex	Male Female	30 54	35.7 64.3	5 11	31.3 68.8	Chi square=0.116 p=0.36
Marital status	Single Married Widowed Divorced	5 65 13 1	6 77.4 15.5 1.2	2 14 0 0	12.5 87.6 0 0	Chi square=3.664 p=0.16.1
Occupation	Professional Clerical Skilled work Semiskilled Work Unskilled Work Unemployed	2 1 4 21 23 33	2.4 1.2 4.8 25.6 27.4 39.3	1 0 0 5 4 6	6.3 0 0 31.3 25 37.6	Chi square=0.122 p= 0.9409
Education	Post Graduate High High school Middle school Primary school Illiterate	4 4 13 22 23 18	4.8 4.8 15.5 26.2 27.4 21.4	1 2 5 3 4 1	6.3 12.5 31.3 18.8 25 6.3	Chi square=4.737 p= 0.1889
Income Kuppuswamy classification	9798-19574 7323-9797 4891-7322 2936-4890 980-2935 UP TO 980	3 8 20 25 12 16	3.6 9.5 23.8 29.8 14.3 19.0	2 1 5 2 1 5	12.5 3.6 31.3 12.5 6.3 31.3	Chi square=0.6249 p=0.73
Religion	Hindu Islam Sikh Others	64 16 3 1	76.2 19 3.6 1.2	15 1 0 0	93.8 6.3 0 0	Chi square=2.581 p=0.2751
Family type	Nuclear Joint	44 40	52.4 47.6	7 9	43.8 56.3	Chi square=0.4 p=0.2638
GAF	41-50 51-60 61-70 71-80 81-90	7 26 37 12 2	8.33 30.95 44.04 14.28 2.38	0 5 7 4 0	0 31.25 43.75 25 0	Chi square=0.74 p=0.688

On HCL 32, score 14 or more was obtained by 19 patients. That indicates positive bipolarity in 19 patients Using MDQ, 18 patients showed score of 7 or more which again is indicative of bipolarity. All these 19 patients, who were screened positive for bipolar mood disorder, were subjected to MINI to confirm the diagnosis. Out of 19, 16 patients fulfilled the criteria for bipolar mood disorder out of which 9 had bipolar mood disorder type II (with current or past hypomanic episode) and 7 had bipolar mood disorder type I (with current or past manic episode) So out of 100 patients being treated as unipolar depression, 16 patients had bipolar mood disorder.

Table 4: Comparison of disease related characteristics

		Unipolar Depression (n=84)	**Bipolar Disorder (n=16)**	
Duration	Range	3-420	1-288	t= 0.4151
(in months)	Mean	78.61	88.31	p=0.6790
	SD	88.29	87.79	
	Median	48	48	
Number of	Range	1-15	1-24	t=4.4672

Episodes	Mean	3.5	8.15	p=0.0001
	SD	2.95	6.78	
	Median	2	6	
Family History	Present	15	5	Chi
of any	Absent	69	11	square=0.789
Psychiatric				p= 0.1877
Illness				
Family History	Present	7	4	Chi
of Mood	Absent	77	12	square=2.301
Disorder				p= 0.043
(Bipolar				
Disorder or				
Depression)				

In our study, out of 100 patients treated for depression, after assessment we found that 16 patients diagnosed having bipolar mood disorder and 84 diagnosed with unipolar depression. Patients having Bipolar Mood disorder were significantly younger than unipolar depression. No significant difference was found in sex, marital status, education, religion, income, family type, occupation or locality between two groups. Number episodes of illness were significantly higher in bipolar mood disorder than unipolar. Family history of mood disorder was significantly higher in bipolar disorder group than unipolar.

Using age of the patient and duration, after mathematical calculations, it showed mean age of onset for unipolar depression is 35.59 years as compared to bipolar depression for which mean age of onset is 29.9 years. The two tailed P value equals 0.1072. Although the difference does not reach statistically significant level, but apparently bipolar depression has early age of onset compared to unipolar depression patients.

Table 5: Comparison of clinical features

		Unipolar Depression (n=84)	**Bipolar Disorder (n=16)**	
H/O Suicide attempt	Present	11	4	Chi square=0.70 p=0.2005
	Absent	73	12	
Diurnal variation	Present	44	5	Chi square=2.40 p=0.06
	Absent	40	11	
Psychotic features	Present	17	7	Chi square=7.66 p=0.021
	Absent	67	9	

In clinical features, there was no significant difference in suicide attempt between both groups. Significant difference was found in diurnal variation as 55.5% patients of unipolar depression shown symptoms diurnal variation where only 18% patients of Bipolar depression shown that symptoms. Psychotic features were significantly higher in bipolar mood disorder patients than unipolar depression.

Discussion

Incidence of undiagnosed bipolarity

Our incidence of bipolar mood disorder in patients treated as unipolar depression is 16% which is similar to that found in much larger multicentre studies in various parts of the world including UK, Asian countries like China. Angst et al[14] had prevalence of 16%, Hu c et al[15] 20.8%, Smith et al[29] 3.3 to 21% of undiagnosed bipolarity. It goes on to confirm that in a substantial chunk of patients being treated as major depression, bipolarity would go undiagnosed and untreated in absence of high index of awareness. Therefore these patients would be bereft of the advantage of more specific and more efficacious treatment of bipolar mood disorder as against the treatment of unipolar depression only.

Age of onset

Our study showed apparent difference in age of onset where bipolar depression group showed younger age of onset with mean age of onset being 29.9 years as compared to unipolar for which it is 35.5 years. BRIDGE[13] study showed younger age of onset of psychiatric symptoms before 30 years of age in bipolar depression compared to unipolar depression. Smith et al[29] showed similar results. Study showed mean age of onset 20 years for bipolar depression and 26.6 years for unipolar depression. Those were in keeping with our study. A study by Nisha et al[23] also showed early age of onset in bipolar depression than unipolar depression. It suggests that clinicians should take extra precaution and screen for bipolarity features before using antidepressants

alone when patient presents with depression in early life especially adolescents and young adults.

Prior mood episodes

In our study, results showed that patients with bipolar depression were associated with more frequent mood episodes (mean: 8.125) as compared to those with unipolar depression (mean: 3.5). According to Smith et al,[29] bipolar mood disorder group demonstrated average 6 episode as compared to depression group who showed 3 episodes as an average. Whereas Angst et al[14] study results shows that history of prior mood episodes (2 or more) was present in bipolar depression and statistically significant difference was there amongst unipolar and bipolar depression. In a study by Nisha et al[23] shown similar results as bipolar group had more frequent episodes than unipolar. This indicates bipolarity has a more chronic course with multiple mood episodes ultimately resulting in poorer prognosis in the long run. Therefore it is all the more important to detect it with high index of suspicion and give the patient better quality of life with specific treatment.

Family history of mood disorder

Our study showed statistically significant higher chances of positive family history for mood disorder for bipolar depression then in those with unipolar depression ($p<0.043$) that bipolar depression had higher rates compared to unipolar depression. Family history of mania was significantly positive in bipolar mood disorder as compared to unipolar in BRIDGE study,[13] whereas in smith et al[29] it showed no significant difference for family history of mood disorder in both bipolar and unipolar depression group. Judith et al[30] conducted study in 74 subjects with depressive episodes (including both unipolar and bipolar mood disorder) from NIMH clinical research centre of study of depression in Duke University. Study suggests bipolar patients have higher rate of positive family history of mood disorder as compared to unipolar depression patients. Mitchell et al' 2001[31] found similar results when study done in 270 patients of unipolar and bipolar depression. This suggests that positive family history in bipolar mood disorder is bad prognostic indicator in long run hence, it is important to diagnose or rule out carefully.

Psychotic features

Our study results show significant difference between unipolar and bipolar depression as far as psychotic features are concerned ($p<0.021$), the incidence being higher in patients of bipolar depression. Goes FS et al[32] conducted a cross sectional study 4724 subjects of major depression and bipolar mood disorder and found that psychotic features during depressive episode increases likelihood of diagnosis of bipolar mood disorder. ($p<0.0005$) Angst et al[14] study results also states the likelihood of bipolarity if episode of depression is associated with psychotic features. Nisha et al [23] found similar results as psychotic symptoms like delusion, auditory hallucination and Schneider's first rank symptoms were significantly high in bipolar group. As these studies suggest more association of psychotic features with bipolar depression, it might require anti-psychotic drugs with all the resultant implications.

Common Clinical manifestation of Mania and Hypomania

Results shows that both HCL 32 and MDQ in patients of bipolar depression, most common features are related to irritability, increased self-confidence and talkativeness. These results are consistent with review done by RAO GP[33] on Indian research on bipolar disorder, according to which irritability was 82%, aggression was 70%, and euphoria was 50% in patient sample.

Global assessment of functioning

In our study, we found no statistically significant difference between the global assessment of functioning in unipolar and bipolar depression. These findings is similar to the findings of Dorz S et al[34] (2003) study conducted in 162 inpatients of depression. Whereas our findings are contrary to those of Smith et al,[29] Angst et al[14] conducted study in 576 and 5635 patients respectively which were multi centric cross sectional study. The difference in the studies can probably be explained by the fact that our study and similar study was conducted a smaller patient sample respectively, whereas the two studies showing positive correlation of higher functional impairment and bipolarity were conducted on a much larger patient sample of 576and 5635. Hence, it may be inferred that our study needs replication on much larger scale before conclusion can be made regarding this research impact.

Conclusion

It is clear that with high index of suspicion, bipolarity is patently diagnosable in a substantial proportion of patients being treated as unipolar major depression. They have difference in clinical features from unipolar depression in the form early age of onset, positive family history for mood disorder, more number of mood episodes and presence of psychotic features during the depressive episode and course of illness.

Although conducted on a limited numbers of patients and therefore the need to replicate it in larger study groups, the clinical inference of our study is quite clear. All the patients of unipolar depression must be screened for bipolarity to give them specific treatment with better results and better quality of life.

Limitation

This study being a cross sectional study with some limitation like smaller sample size and confounding factors were not taken into account.

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A series of case reports of reintegration of persons with mental illness with their family members

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Abstract
Person with Mental Illness (PWMI) during the course of illness may get separated from their families due to their psychopathology or cognitive distortions. They may forget their identity and address of family, wander away to distant places. Because of illness person may have poor self-care, aggressive behaviour and wandering on roads. These may grab the attention of social workers, NGO's, Police personnel will get them admitted into Mental Health Facility [MHF] for treatment with reception order, get better in course of time. When they improve then real problem arises because after recovery PWMI are not supposed to be kept in MHF. Reunion of PWMI with family is challenging with available resources. It involves many people like doctors, social workers, police and other higher authorities to trace the families. But new technology like Google maps, Aadhar finger print are helping a lot by decreasing the time spent for tracing the families of PWMI. With the help of all these people and technology, family members were traced and reunited with PWMI.
Here we presenting a series of cases where the PWMI who wandered away because of their mental illness, found in our city brought to our MHF through court order and were treated. Their addresses were traced through a team work of doctors, social workers, police and technology and were reintegrated with their families.

Keywords: Reintegration, Mentally ill, Technology, Wandering lunatic.

Introduction
As per Mental Health Care Act 2017, when a Person With Mental Illness [PWMI] gets improved after admission and treatment in the closed ward they are not to be detained in Mental Health Establishment. For PWMI whose family members details are known they can be easily reintegrated and sent home. But the problem arises when PWMI are unidentified or unable to give their address or contact details, either because of language barrier or low education levels.

Reintegration of such patients with their family is a daunting task. Our hospital doctors, nursing staff, social workers, police and legal personnel have been showing proactive and persistent efforts in trying to reintegrate such patients with their families. Collective efforts and recent advances in technology have been helping us immensely in this process.

Institute of Mental Health [IMH]
IMH is a 600 bedded hospital which was established in 1895 in Maharashtra and later shifted to Hyderabad in 1953. The mental health facility provides Out-Patient, In-Patient treatment, ECT, Psychological tests, Psychotherapies, actively involved in academic training of post graduates, nursing and research activities. Beneficiaries to this hospital include patients not only from Telangana and Andhra Pradesh but also from Maharashtra, Karnataka and Tamil Nadu even distant places such as West Bengal. We have separate open and closed wards for patients who get admitted on voluntary and involuntary basis. Patients are generally brought with a reception order from court for closed ward admissions [as per mental health act].

Here we are presenting case reports where such wandered away PWMI were brought to IMH, treated and efforts were made to trace out their family members, ultimately resulting in the reintegration of patient with their family members.

Case Reports
1. Mr. X, a male of unknown age was found on the streets in a dishevelled state, was pelting stones on people and eating from dust-bins was referred to IMH along with court order. Initially he couldn't give his details but did so with treatment. The PG's of our institute were attending a national conference at Lucknow happened to see a missing poster of a person who bore striking resemblance with unknown patient in our hospital. A poster was also displayed with phone numbers, when contacted confirmed about whereabouts of the patient, informed that he got separated from his family 11yrs back. This patient was reunited with family members after a long gap of 11yrs.
2. Mrs. Y, a female patient 30 years old was referred to our hospital with a court order with complaints of abusing people around her, pelting stones on them, disrobing her clothes, showing poor self- care. The patient was found by a journalist and he had shifted her to an NGO. With the help of police and legal professionals she was referred to IMH. After treatment, the patient revealed her address but it could not be traced out and she was subsequently shifted to state home. From state home, our social worker has traced out her family and she was handed over to her family members.

List of patients who were traced and reintegrated with family members from 2018-2019

S. No	IP NO	Gender	Date of admission	Date of discharge	Patients traced by Process	Place of residence
1	197290	Male	17-3-2016	9-1-2018	Traced by Google maps and informed to local police	Orissa
2	204486	Male	7-1-2017	1-10-2018	Pt told his address and informed to local police	Karnataka
3	202684	Female	24-10-2016	21-5-2019	Contacted local police and traced address	Madhya Pradesh
4	222033	Male	24-11-2018	19-3-2019	Google maps, local police	West Bengal
5	206541	Female	25-3-2017	15-3-2019	Google maps	Pune, Maharashtra
6	194420	Male	28-11-2015	9-4-2018	Pt told his address and contacted family members	Maharashtra

Discussion

Mental illness is an important contributor to homelessness and may have further exacerbated and complicated mental and physical disorders. Little initiative, will and support of NGO's, local police, judiciary and government psychiatric facilities, it will be possible to identify, manage and reintegrate the majority of the home less mental illness patients with their family/society.[1] Involving family members in the care of their mentally ill patient improves treatment outcomes.[2] We found one study similar to present case report in which newer technologies were used in early identification and reintegration of patients with their family members. Family members are important because they help in follow up, adherence to treatment, detecting early signs of relapse, side effects of medications and rehabilitation.[3] Early reintegration reduces unnecessary detention of person with mental illness.

Conclusion

In a developing country like India, family plays an important role in treatment engagement and further rehabilitation of patients. Family members will act like a shock absorber and help the patient to recover and readjust. The early reintegration of PWMI is the need of the day as it reduces the hospital stay and burden on psychiatric rehabilitative services.

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Conflict of interest

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They had to do it: A case series of compulsive insertions

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Introduction

The behavioural phenomenon of insertion of foreign objects into bodily orifices is common among young children which happens by accident and is a particular trait of Smith-Magenis syndrome.[1] In adults it may reflect risk taking behaviour, sexual experimentation or drug trafficking. It is a symptom manifestation of conditions including eating disorders, substance use disorders, factitious disorders, depression, dementia, Obsessive Compulsive Disorders (OCD), intellectual disability disorders and psychosis.[2] Most of the case reports detailing foreign object insertion in adults describe them as paraphilia or autoerotic mishaps leading to medical and surgical complications.[3,4] Although sexual obsessions are seen as a symptom in obsessive compulsive disorders limited literature exists on foreign object insertion as an OCD symptom. Here we present a series of cases presenting as compulsive insertion of foreign objects into bodily orifices.

Case 1

A 40 year old female was referred by Department of Pulmonary Medicine to whom she presented with the chief complaints of breathlessness, cough with sputum, sneezing and fever on and off from the past 8-10 months. On examination and evaluation, the patient was diagnosed as aspiration pneumonitis with left lung collapse. On further history taking, the patient reported to have an irresistible desire to stuff tobacco into her nose. Hence she was referred to Psychiatry department for further evaluation. Upon interview, the patient was found to have repetitive thoughts to insert some or other objects into her nostrils. This thought was intrusive and distressing which led to disturbed sleep and low mood in the patient.

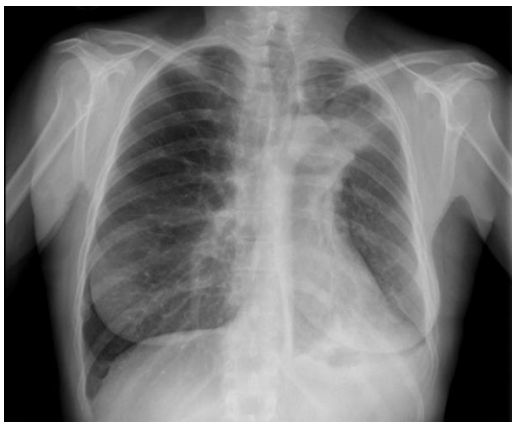

Fig. 1: X-ray chest showing left lung collapse.

Case 2

A 44 year old female was brought to the Psychiatry outpatient department by her husband with the chief complaint of compulsive insertion of cylindrical objects (pens, pencils, and straws) or even fingers into her throat since the past 2 months. On interview, the patient claimed to have repetitive intrusive thoughts of inserting objects down her throat which led to the compulsions. The patient was quite distressed with the thoughts and was anxious about her health condition. This distress was relieved only after inserting any object or fingers into her throat.

Fig. 2: Compulsive insertion of fingers into the throat.

Case 3

A 52 year old female patient was referred from Department of Gynaecology to whom she presented with the chief complaint of white discharge on and off since the past 1 month. Upon history taking, the patient revealed to have a constant urge to insert objects (vegetables, knob of hand-shower) into her vagina which has led to the present infection. She was referred to Psychiatry department for further evaluation. On interview, the patient reported to have repetitive unwanted thoughts which led to her compulsively inserting objects into her vagina. The patient denied any sexual gratification by the act. The patient was ashamed of her thoughts and actions and had suicidal ideations at the time of interview.

In all the above cases, on examination vitals were stable. The patients were alert and oriented at the time of the

act. They were cognitively intact and had average level of intelligence.

Upon questioning regarding their compulsive insertions, the patients reported to have had repetitive and intrusive thoughts to insert objects. The patients clarified that the insertions were not for sexual gratification or was not an intentional self-injurious act. On further inquiry, we elicited that though the repetitive thoughts were irrational, the patients could not resist them. The thoughts were recognised as their own and they denied of any hallucinations or delusions. The thoughts were identified to be obsessive in nature.

There was no history of any substance abuse or any medical comorbidity in the patients.

The patients were diagnosed as having obsessive compulsive disorder and were started on fluvoxamine and clomipramine. Patients were rated on Yale- Brown Obsessive Compulsive Scale (Y-BOCS). On their first follow up after two weeks, the patients claimed improvement of their symptoms. Further follow ups showed improvement both clinically and on rating scales.

Discussion

Obsessive-Compulsive Disorder (OCD) is characterised by the presence of obsessions and/or compulsions. Obsessions are intrusive and unwanted repetitive thoughts, urges, or impulses that often lead to a marked increase in anxiety or distress. Compulsions are repeated behaviours or mental acts that are done in response to obsessions, or in a rigid rule-bound way.[5] A feeling of anxious dread accompanies the central manifestation and the key characteristic of a compulsion is that it reduces the anxiety associated with the obsession. A patient with OCD realises the irrationality of the obsession and experiences both the obsession and compulsion as ego-dystonic (unwanted behaviour). The obsessions and/or compulsions are time consuming and interfere significantly with the person's normal routine, occupational functioning, usual social activities or relationships.[6]

The most common presentations of obsessions in adults are contamination, pathological doubt and need for symmetry. The most common presentations of compulsions are checking, washing, counting and need to ask or confess.[6] Insertions of foreign objects into the bodily orifices occur as a result of a variety of psychosocial and psychiatric states. Sexual gratification is commonly reported by patients as the reason for autoerotic or consensual sexual acts involving insertion of foreign objects into the urethra, vagina or rectum.[7,8]

Non-suicidal self-injurious behaviour is strongly associated with Borderline Personality disorder. Such behaviour seeks to modulate unbearable emotions, to externally mark for oneself or others an internal experience of being bad or simply to feel. Such non-suicidal self-injurious behaviour can take the form of insertion of foreign objections like 76 needles and hair pins self-inserted under the skin of woman's arms, head and neck which required surgical excision.[9]

A case study reported a patient with hypochondriacal delusion about having urethral strictures who inserted knitting needles into the urethra to overcome the feared stricture.[10] Insertions of foreign bodies have been reported in patients with malingering, factitious disorders, depressive disorders, substance intoxication and cognitive disorders. In one case series of 17 men with urethral insertions, substance intoxication was found in 6 of them.[11] A review of 8 dementia cases with foreign body insertion into the lower urinary tract revealed that 6 of those cases occurred in patients aging between 60-65 years.[12]

Though there is plenty of literature regarding insertion of foreign objects into bodily orifices as cases of sexual experimentation, drug trafficking, part of a Smith Magenis syndrome, paraphilias, and dementias the literature on insertion of foreign objects as obsessive compulsive disorders is quite sparse. Further research and studies are required in this regard.

Conclusion

Insertion of foreign objects into bodily orifices can occur due to various psychosocial and psychiatric conditions. Unfortunately such behaviour leads to medical morbidity in the patient (complications of object insertion, its surgical removal and its associated complications). In addition to considering the possibility of intellectual disability disorders, paraphilias, psychosis and dementias psychiatrists should also entertain the possibility of obsessive compulsive disorder as well when evaluating similar patients. Liaison with a surgeon or physician is imperative in order to achieve improvement in physical and mental health of such patients. Even in the absence of an underlying psychiatric disorder, harm reduction strategies can be taught to psychologically stable patients who embrace the insertion behaviour as a lifestyle preference.

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Hard to swallow, harder to digest: Bezoars seen in Psychiatric conditions

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Introduction

Bezoars are retained concretions of indigestible foreign material that accumulate and conglomerate in the G.I tract most commonly in the stomach. The term Bezoar comes from the Persian "pahnzehr" and the Arabic "badzehr" both of which mean counter-poison or anti dote. Bezoars can be classified into 4 types based on their origin and components: Phytobezoars, trichobezoars, lactobezoars and pharmacobezoars. Other rare, less frequent bezoars are unclassified and include materials such as plastic and metal. Predisposing risk factors for bezoar formation are gastric surgeries, hypothyroidism, diabetes mellitus, cystic fibrosis and psychiatric illnesses like intellectual disability, depression, psychosis and personality disorders.[1] Here we present a series of different psychiatric cases with different types of bezoars.

Case 1

A 64 year old male patient presented to surgical outpatient department with the chief complaints of abdominal pain, nausea, and vomiting on and off since the past 6 months. The patient also complained of weight loss of over 8kgs during this period. On history taking, the patient was found to be a known case of schizophrenia from the past 30 years currently on antipsychotic medication. On physical examination a large abdominal mass was found and abdominal ultrasound was confirmatory of it. Exploratory laprotomy was performed by the surgical gastroenterologist and a large phyotbezoar was extracted. Post surgery the patient was referred to Psychiatry department for further evaluation and management of his condition. Upon psychiatric interview, patient reported an irresistible urge to eat grass associated with raise in tension which was relieved only after ingestion of grass. Patient denied any command hallucinations in this regard. The urge to eat grass persisted and there was no relation to exacerbation and remission of symptoms or antipsychotic medications. Fluoxetine was added to his current treatment regimen, and on follow up the patient reported an improvement in his symptoms.

Fig. 1: Upper G.I endoscopy showing a phytobezoar

Case 2

A 16 year old female patient suffering from Mild Mental Retardation with behavioral problems, was referred to Psychiatry outpatient department after being operated for trichobezoar. On interview, the informant gave a history that the patient was constantly plucking her hair from the scalp and eyebrows since 4 years resulting in multiple bald spots over frontal and parietal regions and a loss of eyebrows. She had a peculiar behavior of eating those plucked hair. The patient would not refrain from her behavior even after repeatedly telling her not to do it. Hair pulling persisted even after improvement in behavioral problems. Family history was positive for OCD in maternal aunt. Fluoxetine was added to the treatment regimen with improvement in symptoms over the next couple of months.

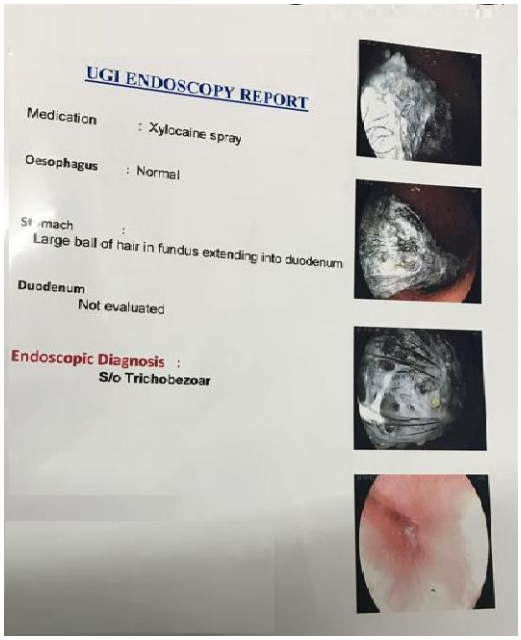

Fig. 2: Upper G.I Endoscopy showing Trichobezoar

Discussion

The ingestion of foreign material is a comparatively rare psychopathological behavior. In children, it can occur in regressive states due to developmental disturbances.[2] Among adolescents and young adults, it may be interpreted as self-injuring or suicidal behavior[3] or associated with eating disorders.[4] Moreover, challenging behaviors, such as the ingestion of non-food items, i.e., pica disorder frequently occurs with severe autistic disorders and intellectual disability.[5] Although rare, this pathological behavior has also been reported in patients suffering from psychosis and personality disorders.[6] Swallowing foreign material can also present in Munchhausen syndrome or as an act of malingering, often seen in prisoners.[7]

Of the various foreign materials ingested, abundant literature is available for cases of hair ingestion leading to Trichobezoar formation. Trichobezoars were described first by Baudamant in 1779. Trichobezoars are thought to form when hair, once swallowed, escapes peristalsis in the stomach due to its slippery surface, and becomes trapped in the gastric folds of mucosa. As more hair accumulates from repeated ingestion, peristalsis causes this ball to become enmeshed and harden which with time assumes the shape of the stomach. Ultimately, this may result in an obstructive foreign body or cessation of peristalsis.[8-11]

Trichobezoar is usually associated to underlying psychiatric disorder, such as depression, obsessive-compulsive disorder, body dysmorphic disorder, and particularly trichotillomania.[12] Ninety per cent of trichobezoars occur in women, 80% of these occurring under the age of 30 years.[8] Trichotillomania (hair pulling) and trichophagia (hair eating) may result in a trichobezoar. Trichotillomania (TTM) is a psychiatric disorder characterized by the compulsory and persistent pulling of one's hair involving the hair of the scalp, eyebrows, eye lashes or elsewhere in the body along with compulsive ingestion of pulled hair(Trichophagia).[13] In trichotillomania, comorbidity is described along with OCD, anxiety, depression, eating disorders. 5-30% of the persons with trichotillomania engage in trichophagia.[14]

Phytobezoars are concretions of poorly digested fruit and vegetable fibres that are found in alimentary tract and are mostly composed of indigestible cellulose, tannin and lignin from ingested vegetables and fruits. The commonest Phytobezoar encountered worldwide is related to the ingestion of persimmon fruit. There are several predisposing factors that influence Phytobezoar formation. Some of the common ones are previous gastric surgery, excessive consumption of fruits rich in fibres, poor dental health, insufficient mastication, diabetic gastro paresis, kidney failure, hypothyroidism, use of drugs which affect gastric motility and in a few psychiatric conditions.[15]

Haribhakti et al., reported a rare case of a large hard gastric phytobezoar in a 60 year old man who is a known case of paranoid schizophrenia with a long history of antipsychotic medication usage. Anti-psychotic medication alters the gastric emptying time which combined with poor mastication and consumption of large amount of indigestible solids could have led to bezoar formation in this patient. Hence modification of dietary habits is needed in patients who are on long-term anti-psychotics.[16] A case study reported an 82 year old female with a long standing history of depression and previous history of hiatus hernia and cholecystectomy was operated for a large phytobezoar.[17]

There is sparse literature for other less frequent bezoars in psychiatric conditions. Domingo-Claros et al., reported a case of 29-year old women with schizophrenia and severe anaemia who was diagnosed with lead poisoning as a result of the pica ingestion of small metal jewellery found in her stomach during an endoscopy.[18] Gupta Suresh Kumar et al., reported a case of metal bezoar in a 24 year old male with manic depressive psychosis who had history of ingesting nails and screws of varying sizes for more than a year without causing any perforation or other acute complications.[19] Plastic bezoars are also rare, resulting from ingestion of plastic material, especially by mentally retarded patients.[20]

Conclusion

Ingestion of foreign material and bezoar formation can occur due to various organic and psychiatric conditions. Evaluation of the psychiatric condition in such patients reveals varied diagnoses like depression, intellectual disability, impulse-control disorders and psychosis. Liaison with a surgeon is imperative for timely assessment of the condition and to achieve improvement in physical and mental health of such patients. Proper recognition of the psychiatric condition and its appropriate management would help in the reduction of medical and surgical morbidity associated with such behaviors.

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Conflict of interest
None.

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Abstract
Dr. Jaswant Singh Neki (1925–2015) is amongst the foremost psychiatrists of India. He has been variously described as a world-renowned mental health expert, a noted metaphysical poet, a teacher par excellence, and an excellent humane person of international repute. He joined his graduate course in medicine and surgery from King Edward Medical College, Lahore and completed graduation from Medical College, Amritsar.[1] He passed his MA (Psychology) from Aligarh Muslim University. Later he passed DPM exam from All India Institute of Mental Health, Bangalore. He held high academic and administrative positions including Consultant - WHO, Geneva and UNDP S-E Asia.

Keywords: J S Neki, Guru-Chela relationship, Kairos, Poet, Cross cultural psychotherapy.

Introduction
Dr Neki was born in village Murid, Distt. Jhelum (Pakistan), on 27th August, 1925. His father, S. Hari Gulab Singh and his mother, Smt. Sita Wanti were both God-fearing individuals.[1] When he was an infant, his parents shifted to Quetta (Baluchistan). He joined Khalsa High School in Quetta, from where he matriculated in 1941 securing the highest marks in entire Baluchistan and setting up a new record. He then joined Forman Christian College, Lahore, for his premedical studies. There he enjoyed two merit scholarships – one was granted by the University and the other was granted by the college. In his FSc (Medical) exam, he stood second in the university. For his graduate course in medicine and surgery, he joined King Edward Medical College, Lahore. In medical college too he received a merit scholarship granted by the Govt. of Baluchistan. When the country was partitioned, in 1947, he left Lahore and joined Medical College, Amritsar, where he completed his medical studies and graduated in 1949.

After medical graduation, he worked first as a House Physician, then as Asstt. Registrar, and then as a Demonstrator in Medical College, Amritsar. He also had a short stint, in between, as Demonstrator in Christian Medical College, Ludhiana. While teaching there, he passed his MA (Psychology) exam as a teacher candidate from Aligarh Muslim University. In this exam he secured First Division and first position in the University. He passed his DPM exam from All-India Institute of Mental Health, Bangalore, and Mysore University, in 1958. He passed DPM with double distinction and again set up a new record to become a psychiatrist. In 1955, he married Kanwerjit, the eldest daughter of his own Professor, Lt. Col. Dr Gurbuxsh Singh Kanwer and he had two children.

Dr NN Wig recalled him as one of the finest psychiatrists India has produced.[2] He said he was one of those who laid the foundation of this discipline of psychiatry in India.[2] As a psychiatrist, rising through the ranks, he became Prof. & Head of Psychiatry Department at the All-India Institute of Medical Sciences, New Delhi[1]. He worked there for about a decade. Then he was appointed Director of the Postgraduate Institute of Medical Education and Research, Chandigarh. He spent next three years there. From there, he was picked up by the World Health Organization, Geneva, as a consultant for a project in Africa. He served in Africa for over four years (1981-1985)[1]. He came back home in 1985, and then had been engaged in private practice. In between, he also had a short engagement with the United Nations Development Programme and United Nations Fund for Drug Abuse (South-East Asia).

Belonging to a devout religious family Dr Neki has always had keen interest in religion. Like his family, he also has unbigoted, liberal views. During his student life, he became President of the All-India Sikh Students Federation and organized training camps for the Sikh youth in the Sikh lore.[1] He is a well-recognized metaphysical poet in Punjabi. He has contributed more than ten volumes of original verse. His opus magnum is his autobiography in verse[1]. He also writes powerful, inspiring prose as evidenced by his books Achetan di Leela, Meri Sahitak Swaijeevani and Ardas.

Backed by an excellent academic career in Medicine, Psychology and Psychiatry, he represented India at many an international forums, chaired important sessions of international professional conferences, delivered key-note addresses, earned numerous Fellowships, held office in international bodies and Visiting Professorship at foreign universities. The vast experience he thus gained into human psyche shaped the poet in him in many ways.[3] He has won several prestigious awards in literature. Commissioned by Guru Nanak Dev University, he wrote The Spiritual Heritage of the Punjab which traces the evolution of spiritual thought and practice from the pre-Aryan times up to Guru Gobind Singh. He has represented Sikh community at various international forums including The Parliament World Religions 1993, UNESCO Conference on Religion and World Peace 1998, UNESCO Centre Catalunya Conference on Universal Ethics 1998, World Thanksgiving Conference 1999 and peace meeting of religions invited by

the Pope and held in Vatican in 2011. He breathed his last at his home in New Delhi on September 11, 2015.[1]

Contributions of J S NEKI

He is a psychiatrist of international repute, known for his cross-cultural enquiries into human behavior[3]. Some of the prominent publications of J S Neki are as follows[1]

1. Witchcraft and psychotherapy[4]
2. Psychiatry in East Africa[5]
3. Ausar ("Kairos"): and its place in creative psychotherapy[6]
4. Medical ethics: a viewpoint from the developing world[7]
5. Sahaja: an Indian ideal of mental health[8]
6. Psychotherapy in India: past, present, and future[9]
7. A reappraisal of Guru-Chela Relationship as a Therapeutic Paradigm[10]
8. Psychiatric education and the social role of the psychiatrist in developing South-East Asian countries[11]
9. Yoga and psychoanalysis[12]

Positions Held[1]

1. Dr Neki became Prof. & Head of Psychiatry Department at the All-India Institute of Medical Sciences, New Delhi and occupied that chair for about a decade (1968-1978).
2. Then he was appointed Director of the Postgraduate Institute of Medical Education and Research, Chandigarh where he spent three years (1978-1981).
3. Then he was picked up by the World Health Organization, Geneva, as a consultant for a project in Africa where he served for over four years (1981-1985).
4. He also had a short engagement with the United Nations Development Programme and United Nations Fund for Drug Abuse (South-East Asia).
5. For one year he was Chairman of the Board of Consultants constituted by the Delhi Gurdwara Management Committee for setting up of an Institute of Medical Sciences.
6. He was also Professor of Eminence in Religious studies at the Punjabi University, Patiala.
7. Dr. Neki served on the Advisory Boards of several National and International organisations.
8. He had been a member of the jury (Punjabi) for Sahitya Akademy Awards.
9. He was also a member of the Advisory Committee (Punjabi) for Jnan Peeth Award.
10. He was one of the past Chairmen of Punjabi Akademy, Chandigarh.

Awards[3] -

1. Sahitya Akademy Award (1979) for his contribution to Punjabi literature[1]
2. Bhai Vir Singh Award (1978).
3. Punjabi Sahit Samikhya Board Award (1981)
4. Asian Memorial Award (1984).
5. Shiromani Sahitkar Award (1986)
6. Punjabi Sahit Academy Dhaliwal Award (1988)
7. Punjabi Academy, Delhi, Waris Shah Award (1991)
8. Punjabi Academy Bal-Sahitkar Award (1994)
9. Punjabi Academy, Delhi, Award for Best Poetry Book of the Year (2001)
10. Guru Nanak Dev University conferred on him PhD honorous causa for his contribution to literature[1].

Conclusion

Dr J S Neki will always be remembered as one of the most eminent name in the history of Indian psychiatry. Through his professional and literary works he has highlighted the importance of culture in psychotherapy. He has significantly helped to formulate an Indian perspective of mental health in accordance to Indian culture and based on cultural beliefs. He proposed guru-chela relationship as a model for therapy in Indian patients unlike therapist-patient relationship in western psychotherapy. With the help of his valuable contributions in various organizations of international repute and by working on multiple international projects, he made Indian psychiatry reach the international stage. He is an inspiration for the younger generations and will always be remembered with a lot of respect and affection for his contribution to Indian and international psychiatry.

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Conflict of interest

Nil.

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Abstract
Dr. M. Sarada Menon is the first woman psychiatrist in India internationally reputed Psychiatrist, and passionate about rehabilitation who held the post of Superintendent of the Institute of Mental Health, Chennai for over 18 years. She was the founder of SCARF (Schizophrenia Research Foundation). She was largely instrumental in getting the annual grant from the State Government and the land to construct the day care center. Dr. Sarada Menon stepped down from the post of Director in 1995, making way for Dr. Thara, the present Vice Chairman. She received many awards for her many outstanding works in the field of mental health. Padma Bhushan was awarded to Dr. Sarada Menon by the President of India in the year 1992.

Keywords: Sarada Menon, First woman psychiatrist, SCARF.

Introduction
Mambalikalathil Sarada Menon is a first Indian woman Psychiatrist, social worker and the founder of Schizophrenia Research Foundation (SCARF), which is a Chennai based non -governmental organization working for the rehabilitation of people affected with Schizophrenia and other mental disorders. She is a former Madras Medical Service officer and the recipient of the third highest civilian honor in India, the Padma Bhushan, in 1992, for her contributions to society.[1]

About her personal life
Sarada Menon was born in a Malayali family on 5 April 1923 as the youngest of eight children of her parents in Mangalore, Karnataka. Her father was a judge and when he was transferred to Chennai, young Sarada moved with him for her early schooling at Good Shepherd School and later at Christ Church Anglo – Indian Higher Secondary School after which she graduated from Women's Christian College.[2]

Medical career
She graduated in medicine from Madras Medical College in 1951. She did her residency at Irwin Hospital, New Delhi (which is now Lok Nayak Jai Prakash Narayan Hospital) before joining Madras Medical Service in 1951 to start her career at Pittapuram Mission Hospital, Andhra Pradesh. She simultaneously studied for the post - graduate degree of MD which she obtained in 1957. Subsequently, she successfully completed the Diploma in Psychiatric Medicine, at the National Institute of Mental Health and Neurosciences (NIMHANS), thus becoming the first woman psychiatrist in India.[2]

Her role in the field of Psychiatry
As superintendent of IMH, Kilpauk (1961 – 1978)
Menon joined the Institute of Mental Health (then known as Government Mental Hospital) in Kilpauk in 1959 and superannuated from the institution in 1978. She became its first woman Superintendent in 1961. During her period (1961–1978), several special clinics were started. Child Guidance Clinic started functioning under Dr. O. Somasundaram who got training in child psychiatry at the UK. Other special clinics which were started were neuropsychiatric clinic, geriatric clinic, epilepsy clinic, adolescent clinic, and neurosis clinic.[3] During the initial period of Dr. M. Sarada Menon's tenure, there were around 14 medical officers apart from the superintendent, deputy superintendent, and resident medical officer. Only 3 of them were trained but others out of their experience were able to manage. Office administrative works were done by the Secretary and his officials. Psychologists, nursing staff, social workers, statistician, pharmacists, recreation therapist, occupational therapist, physiotherapist, and teacher for children, medical record official, garden supervisor, photographer, dietician, kitchen staff, male attendants, female attendants and other staff members were also recruited. In 1961 the strength of the hospital rose to 2800 as against the sanctioned 1800.[3] It was during her tenure, the institution started the department of psychiatry, opened an out - patient facility and established regional psychiatric centers at all the district hospitals in the state. Advancement in professional sphere was noticed after she took up the job of superintendent of the institute. She was responsible for beginning of the Medical Library. Many students of psychology, sociology and social worker received postings at the institute.[3]

Industrial therapy center in IMH
In 1970, under the supervision of Dr. M. Sarada Menon "Industrial Therapy Centre" was established after obtaining government permission with the help of philanthropists, and, Dr. M. Peter Fernandez was made as medical officer in charge. This was a non – profitable and therapy – oriented center. Its primary focus was on psychosocial rehabilitation. Eventually, the center was developed and has a soft toys manufacturing unit, wire bag unit, incense sticks unit, paper cover making unit, chalk piece making unit, soap preparing section, a flour mill for grinding the essential day to day of the kitchen of IMH, and a candle making section. There is

also a bakery unit that caters to the daily requirement of bread for the Mental Hospital, which also supplies biscuits, cakes, and other confectionaries to the hospital canteen.[3]

Founder of SCARF

In the year 1984, she gathered a few like – minded people and founded Schizophrenia Research Foundation (SCARF), a non - profit non – governmental organization, for the rehabilitation of people afflicted with schizophrenia and other mental disorders.[4] Over the years, SCARF has developed into a full – fledged research base and is one of the few Indian institutions recognized by the World Health Organization (WHO) as a Collaborating Center for Mental Health Research and Training.[5] The SCARF team is composed of psychiatrists, psychologists, social workers, rehabilitation personnel, administrative and supportive staff.[6]

Objectives of SCARF

1. Research into biological, social and psychological aspects of Schizophrenia.
2. Treatment and rehabilitation of people suffering from Schizophrenia and prevention / reduction of disability.
3. Community outreach programmes in urban slums and villages to offer treatment and improve awareness.
4. Educating the public about Schizophrenia, to create awareness and understanding, to facilitate early detection, and to eliminate social stigmatization.
5. Training programmes to various groups of workers on principles of detection and management of mental illnesses.
6. Lobbying extensively with the Government and other apex bodies for programmes for the mentally disabled.[6]

Red cross society and WFSAD

Dr. Menon also served as the Vice – President of Chennai chapter of the Red Cross Society and has been a member of the state government panel set up for proposing prison reforms.[2] She is also associated with the World Fellowship for Schizophrenia and Allied Disorders (WFSAD).[7]

List of Dr. Menon's Publications

1. Dermatoglyphic Fluctuating Asymmetry and Symmetry in Familial and Non Familial Schizophrenia.[8]
2. Folie a Deux of Capgras Quality — A Study of Two Cases.[9]
3. Myocardial infarction — Psychological Study.[10]
4. A Clinical Trial of Pimozide (R6238) in anxiety state.[11]
5. Social and Clinical factors in the outcome of Schizophrenia.[12]
6. Cerebral Biopsy in Dementia.[13]
7. Clinical Trial of Thiothixene.[14]
8. Prochlorperazine in the Treatment of Chronic withdrawn Schizophrenics.[15]
9. The faces of depression.[16]
10. Social workers in a psychotherapeutic setting workshop on behavior modification held at Government Mental Hospital, Madras.[17]

Table 1: Awards received by Dr. Sarada Menon[2]

Awards received
Padma Bhushan Award from Govt. of India
Avvaiyar Award from Govt. of Tamilnadu
State Best Doctor Award from Govt. of Tamilnadu
Government of India Best Employer Award
International Association of Psycho - Social Rehabilitation Special Award
For the Sake of Honor Award from the Rotary Club

Conclusion

The contributions of Dr. Sarada Menon to the field of psychiatry are enormous. She laid foundation for the development of SCARF and also a recipient of many awards. Her contribution to IMH, Kilpauk during her tenure as a superintendent and her responsibility towards mental care is indeed worth noting. She is one of the psychiatrists in India who has set an example as a role model for young psychiatrists of this generation.

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Conflicts of interest

Nil.

Sources of funding

Nil.

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Mental health status of tribal school going adolescents: A study from rural community of Ranchi, Jharkhand

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In the article published in the Telangana Journal of Psychiatry, January- June 2016: 2 (1):38-41, titled '**Mental health status of tribal school going adolescents: A study from rural community of Ranchi, Jharkhand**, the sentences in the introductory paragraph (….Adolescence is often described as a period of stress and strain. Peer influence, fulfilling expectations from family, dealing with the stimulations from the external world and creating a niche and identity for oneself in this fast paced, dynamic and demanding society can throw up challenges that an adolescent may not be equipped to handle. The biological changes coupled with pressure to perform, conform and succeed could influence the adolescent's state of mind and being.) are identical reproduction of sentences from Mr. Harikrishnan U (M.Phil trainee, batch-2014-16, Department of Psychiatric Social Work, Tezpur, Assam) dissertation titled 'A **study on health risk behavior and protective factors among the school going adolescents in Tezpur.** The content was taken from the student's dissertation which has not been duly acknowledged in the article.

I was the Co-guide of this dissertation and Dr. Sobhana H. (Associate Professor, Department of Psychiatric Social Work, Tezpur, Assam) was the Guide.

There is an inadvertent error and there is need for the students name **Harikrishnan U (2016)** in reference as unpublished dissertation as a credit.

Regards
Arif Ali

References

1. Mental Health Status of Tribal School Going Adolescents: A Study from Rural Community of Ranchi, Jharkhand. *Telangana J Psychiatry* 2016:2(1):38-41.

Manuscript Submission

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Homepage on the Internet: Cancer-Pain.org New York: Association of Cancer Online Resources, Inc: c200-01(updated 2002 May 16: cited 2002 Jul 9). Available from http://www.cancer-pain.org/.
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