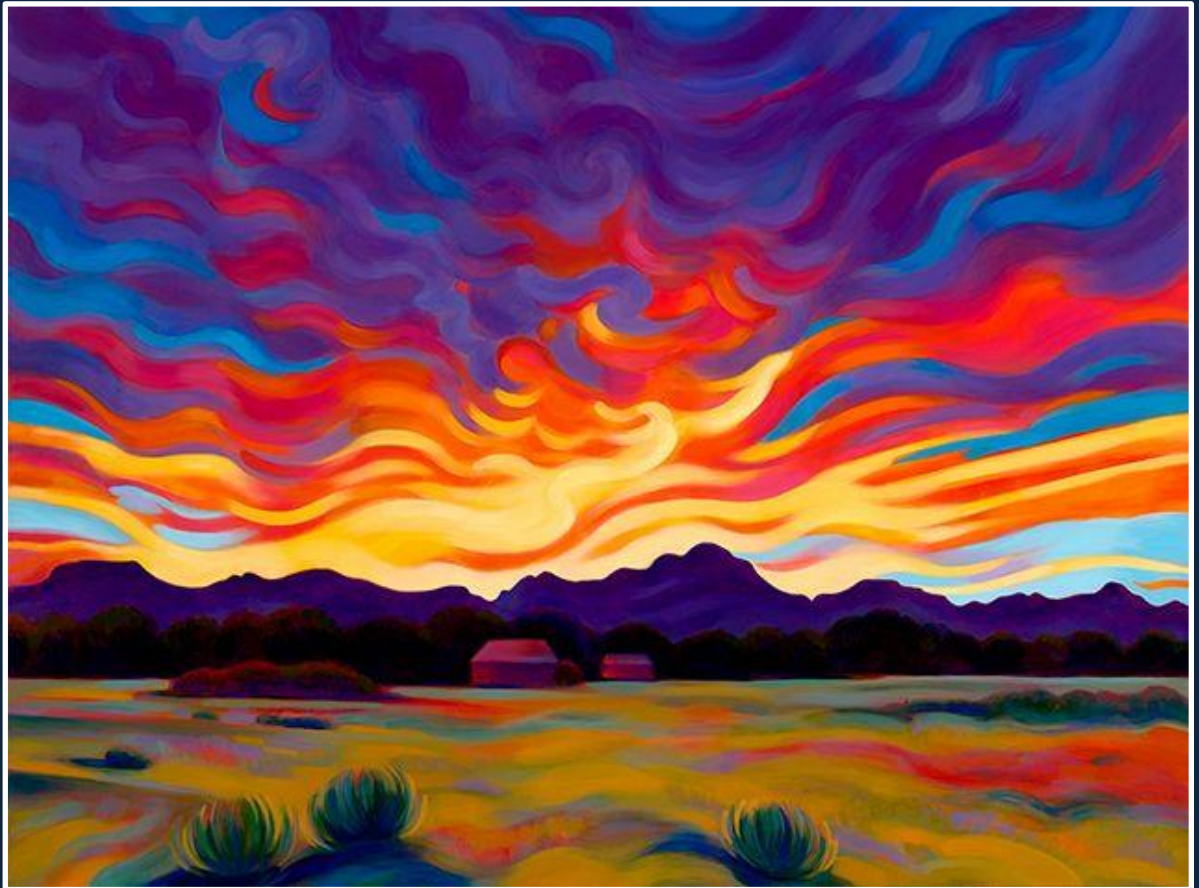


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Psychological Effects of a Lockdown

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The entire world is under the impact of COVID-19 (or SARS-CoV-2) with about 5 million people affected and more than 3,00,000 having lost their lives. The pandemic has led to the announcement of nation-wide lockdowns in more than 190 countries. This lockdown was initially announced for 21 days but had to be extended in order to curb the spread of the disease. At present, it is in its 4th phase, keeping people inside their homes, offices shut and almost an entire life coming to a standstill (except for essential services being functional) for almost about 2 months now. Though the lockdown has been necessary for the containment of COVID-19 cases, it has had a humongous emotional and psychological impact on individuals [1].

The lockdown has affected everyone at various fronts such as social, psychological and financial. However, the effect of lockdown can vary from individual to individual, depending on various factors. The impact of the lockdown has been worser in terms of psychological impact for some people, that has resulted in anxiety attacks, panic attacks, low moods, emotional breakdowns and high levels of distress [2]. Some of these particular groups are such as: [3]

1. Daily wage workers and people who have a strictly budgeted lifestyle are more affected by the lockdown given that commercial and economic activities have subsided greatly. People belonging to the lower socio-economic strata and those below the poverty line have lost lives due to hunger as a result of the inability to earn a wage to fill their daily meals.
2. Migrant workers and population have also been the worst affected with lack of shelter, food and remuneration which pushed thousands of them to take to roads and walk back home. Several migrants lost their lives while making it on their way back home.
3. Those who have lost their jobs or had their businesses shut as a result of the recession are far more hit, vulnerable and psychologically disturbed as compared to those who have had a chance to shift work virtually and / or have had their jobs retained. Additionally, those individuals who have received pay cut or no salary are worse affected than those who have been receiving their pay.
4. People living in unsupportive families where abuse and violence are high have had a tougher time and greater psychological worries in times of lockdown. Especially, women and children have been reported to be at the receiving end of increased domestic violence, emotional and sexual abuse.
5. It has also been a challenge for people who feel less accepted in their household and have interpersonal conflicts with family members. The lockdown period has put people together for longer durations that they were not used to before and this has evoked greater number of conflicts resulting in emotional turmoil.
6. Individuals staying alone and away from families have experienced worser episodes of low moods, panic attacks, feeling isolated and overwhelmed.
7. People with pre-existing mental illnesses have also had a challenging time where people with anxiety disorder have had higher number of panic and anxiety episodes and individuals with depression have had lower / sadder moods. People with severe mental illnesses have also had worser impact with poorer hygiene, lack of awareness of the pandemic situation, lack of access to healthcare facilities and also those who are homeless and disorganised- all these factors put people with severe mental illnesses at a greater risk for developing the illness yet worsening their mental state.

8. The lockdown has also had a great toll on the elderly, especially those who have been living alone and away from family / children. Many elders are living with no support in the form of house help, getting essentials or even access to basic medical help in times of need. A special challenge also arises for those suffering from existing medical / psychiatric illnesses and access to hospitals / clinics has been restricted.
9. Children in general have found it difficult to adapt to being at home round the clock, adapt to online classes and find ways to occupy their time indoors without having the opportunity to meet friends or visit the park / play grounds. Emotional and behavioural issues such as temper tantrums, irritability, anger issues and lack of discipline / routine. Further, children with special needs have had a greater challenge finding it difficult adjusting to the sudden change of lifestyle.
10. Another subset of the population that has psychologically been impacted are the LGBTQIA+ group that have faced hostility and grossly negative environments at home where they are not accepted for their identity / orientation.

The psychological impact of the lockdown among people has been wide ranging psychological stress and disorder, including low mood, insomnia, stress, anxiety, anger, irritability, emotional exhaustion, depression and post-traumatic stress symptoms. In severe cases, suicide has also been reported (due to the fear of developing the disease or getting to know that their loved one acquired the disease). Apart from this, the lockdown has had an exhausting effect of people, leaving them with time to think (and overthink) about the past squabbles, making them irritable over little things and ruminating over the past issues- all of this has added to their emotional exhaustion. The fear of going out has been on the rise among people in general as a result of getting infected by the COVID-19 virus [4].

General experiences of staying indoors for longer periods, not being able to freely move about and inaccessibility to basic public amenities has impressed a general sense of frustration and agitation among people. People have always been used to moving ahead despite all the challenges and hazards having come in the way, this pandemic however, has packed away everyone in their houses with bare financial resources, inactivity and restricted freedom. One of the biggest fears and worries that have housed everyone's minds during the lockdown is about how things will be post-lockdown- businessmen, industrialists, entrepreneurs, educators and corporates, everyone is plagued with the uncertainty of the future along with the constant worry of a big recession kicking in [5].

Corona-anxiety

Many people develop what is called Corona anxiety and they feel that they may contract the virus. Mild fever and cough may be thought of as COVID and anxiety may develop. The thought of stepping out may precipitate anxiety and this will be more in people with personalities that are predisposed to anxiety and worry. In those who may get infected the knowledge of the diagnosis, and isolation for treatment can be a potential trigger for anxiety and depression. Excessive protection and obsessiveness about social distancing and protection may also develop in people [6].

Tips to combat acute anxiety –

- Recognize the fear. Remember that you are not isolated in feeling insecure.
- Planning the daily routines helps in adapting quickly and managing anxiety.
- Divide your time clearly as work and non-work times. Make the same division in your headspace too.
- Identify an activity/hobby that brings you joy and perform it.
- Working in short bursts with clear breaks will help to maintain your clarity of thought.

Tips to combat loneliness and isolation –

- Several community teams have developed interactive platforms. Be active in groups you like.
- Spend time with loved ones.
- Be in touch with friends, family, and colleagues over social media or the phone.
- Pick a new hobby. Learn something new every day. Keep your mind engaged.

- Pen down your thoughts and emotions regularly.

Psychological aspects of undergoing quarantine

Most reviewed studies on psychological effects of quarantine have reported negative psychological effects including post-traumatic stress symptoms, confusion, anxiety, depression and anger. The stress revolved around factors like longer quarantine duration, infection fear, boredom, inadequate supplies, inadequate information, financial loss, isolation and stigma. Patients need to be psycho-educated about the clear rationale for quarantine and information about protocols, and ensure sufficient supplies are provided. People must appreciate that the benefits of quarantine to wider society are important. Considering the potential risk of agitation in an isolated environment, it is advisable to allow the patient to interact with the family member/caregiver using video/audio call whenever a patient is under quarantine or admitted to COVID hospital [7].

Special Care of children during the Lockdown

Children will have lots of questions about the coronavirus, so it's good to be prepared to answer them. It's not just grown-ups worrying about COVID-19 and the changes happening day by day. As parents it is important that we listen to the questions coming from our children and that we offer clear and honest answers. It's also OK to admit we don't know the answers. Much better to do that, than pretend we know the right response [8].

Certain measures that can be used to manage children include –

- Speak to them calmly and openly. Try not to wrap them up in cotton wool but at the same time choose your words carefully. Saying that it is a 'pandemic never seen before in our lifetimes' does not help to calm your child.
- Encourage them to ask questions.
- Ask them to share with you what they know and what they are worried about. Agree with them if you have the same concerns but also offer reassurance and set up a plan to help deal or cope with that worry.
- Reassure them it's normal to be worried about the coronavirus and that most people feel a little concerned.
- Provide reassurance that as young people, they are relatively safe. The (current) data suggests that while young people have just as much chance of catching the virus, they are unlikely to get very sick and even less likely to be hospitalized.
- Let them know that you will be available to talk to them about their worries whenever they would like to and if they think of questions after your chat, they can just come and ask them anytime.
- Identify some key responsible adults in their life they can talk to if they are feeling worried.
- Let them know what plans are in place to keep their family safe and encourage regular safe contact with loved ones (e.g., video chat with grandparents).

The uniqueness of the lockdown

Currently, an estimated 2.6 billion people, i.e. one-third of the world's population is living under some kind of lockdown or quarantine. This is arguably the largest psychological experiment ever conducted. In short, and perhaps unsurprisingly, people who are quarantined are very likely to develop a wide range of symptoms of psychological stress and disorder, including low mood, insomnia, stress, anxiety, anger, irritability, emotional exhaustion, depression and post-traumatic stress symptoms. Low mood and irritability specifically stand out as being very common amongst all symptoms.

We can already see a sharp increase in absenteeism in countries in lockdown. People are afraid to catch COVID-19 on the work floor and avoid work. We will see a second wave of this in three to six months. Just when we need all able bodies to repair the economy, we can expect a sharp spike in absenteeism and burnout [9].

In general, we know at-risk groups for long-term mental health issues will be the healthcare workers who are on the frontline, young people under 30 and children, the elderly and those in precarious situations, for example, owing to mental illness, disability and poverty.

There is broad consensus among academics about the psychological care following disasters and major incidents. Here are a few things that can be done –

- Make sure self-help interventions are in place that can address the needs of large affected populations;
- Educate people about the expected psychological impact and reactions to trauma if they are interested in receiving it. Make sure people understand that a psychological reaction is normal;
- Launch a specific website to address psychosocial issues;
- Make sure that people with acute issues can find the help that they need

When it comes to offering psychological support to their populations, most countries are late to react, as they were to the novel coronavirus. Better late than never [10].

Management of psychological issues during the lockdown

It is essential to understand that though the lockdown is not a very pleasant experience for many, it is an essential step that is required to be taken in order to maintain the decorum in handling the pandemic. People must be aware of the fact that COVID-19, though a pandemic is an illness with a death rate of 3%-4% and not everyone infected will succumb to death. A vigilant practice of maintaining hygiene, practicing physical distancing and taking care of own health are some important ways to keep oneself protected and healthy. Some other ways of taking care of one's mental health amidst the pandemic are as follows: [11]

1. **Ensure correct intake of information:** Don't only focus on COVID-19 related news 24-hour on news or social media as these updates can make you more worried. Set specific times in the day to check news, maybe 3-4 times in a day.
2. **Get the facts right:** Gather high-quality information that will help you to accurately determine your own or other people's risk of contracting coronavirus (COVID-19) so that you can take reasonable precautions. Trust the government and WHO websites only.
3. **Do not fear COVID-19:** there is a need for everyone to stay updated with the right information about COVID-19 and understand that there isn't a need to worry or feel fearful about the disease as far as one is keeping hygiene and protective measures in place.
4. **Distancing:** Physical distancing but no emotional distancing: one must be aware to maintain physical distancing among public places but stay connected with near and dear ones in all possible ways.
5. **Acceptance of a changed way to life:** we will have to gear up to accept and embrace a changed way of living where wearing masks and practicing physical distancing will be mandatory for some months from now. We must not forget that the lockdown may end however measures may have to be in place to ensure the health of everyone.
6. **Balancing health:** the lockdown has alerted a need to balance work with health and people must continue to do so post lockdown as well. The time off from work, in the beginning, did give many people a chance to think about focusing on healthier lifestyles as well and this must be ensued regardless of work resuming soon after lockdown. A lot of focus was also to maintain one's mental well-being which must equally be carried forward after the lockdown.

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Bhatia's Battery of Performance Tests of Intelligence: A Critical Appraisal

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ABSTRACT

Bhatia's Battery of Performance Tests of Intelligence, is one of the popular tests of intelligence in India. Despite some of its limitations, such as that it has norms only between 69 to 131 IQ points, that it is standardized only on boys who are 11 to 16 years of age and it is developed in 1950s, the battery still is one of the favourites among many psychologists. Some of the positives which psychologists attribute to it are: that it is a performance test and can be easily administered to language incompatible/delayed subject; that it is easy to administer and score; that the test interesting and due to which elicits good cooperation among subjects; and it has separate sets of norms for people who are literate and people who are illiterate. However, rarely it is questioned as to why there should be a separate set of norms for illiterate group? Does having separate set of norms adhere to the standard practices of ability testing or assessment of individual differences? Does having separate set of norms affects the identification of actual and correct intellectual abilities of either illiterate or literate group? and Does the separate set of norms for illiterate affects them adversely? This article provides detailed explanation with suitable examples as to why having separate sets of norms for literates and illiterate groups does not satisfy the standards of intelligence testing; and attempts to provide possible solutions on whom and how this battery can be used.

Key words: Bhatia's Battery of Performance Tests of Intelligence, intelligence, IQ, performance test, battery.

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INTRODUCTION

Bhatia's Battery of Performance Tests of Intelligence, popularly known as Bhatia's intelligence test or Bhatia's battery is one of the popular intelligence tests in the Indian subcontinent. The battery of tests consists of 5 subtests. viz Kohs' Block Design (BD), Alexander's Pass-along (PA), Pattern Drawing (PD), Picture Construction (PC) and Immediate Memory (IM) Tests. The battery is standardized on Indian boys in 1950s for ages between 11 to 16 years. The battery yields the overall Intelligence Quotient (IQ) based on all the 5 subtests and Performance Quotient (PQ) based on the 4 performance tests (BD, PA, PD and PC). The test's IQ as well as PQ range is relatively restricted and range between 69 to 131 [1]. It is probably one of the pioneer tests of IQ that dealt mainly with performance subtests/items.

Despite some of the limitations, such as that it is standardized more than half a century ago, standardized mainly on boys and that it provides IQ only between 69 and 131, many universities as well as substantial number of M.Phil. Clinical Psychology training institutes in India still teach this test. It is quite popular among many psychologists, who use it in their regular work to assess intelligence. The main reasons for its popularity are, that –

1. It is a performance test and hence can be administered to people with language incompatibility, poor verbal abilities
2. It can be used in some cases to children suspected of Specific Learning Disability (SLD), when the examiner is sure that the child has average intelligence, but (examiner) wants to objectively prove that the child's intelligence is average
3. It takes relatively less time approximately 30 to 45 minutes
4. The subtests are interesting; where Block Design (BD) test has wooden blocks with bright colors; Picture Construction (PC) test has drawings-pictures that represents the Indian subcontinent/culture; Pass-along (PA) test have sliding parts; and Pattern Drawing (PD) test requires drawing lines with interesting conditions. This automatically increases the cooperation as well as motivation of the subjects/patients.
5. Has separate set of norms for literates and illiterates, which apparently seems appropriate, given the illiteracy rates in the country and hence appeals to substantial number of the professionals.
6. It is easy to administer and score.

In addition to the above, one of the important aspects of the test administration is that, during the administration if the subject is unable to complete the task (fails), within the time limit, on any of the levels, in the four performance subtests (BD, PA, PD, and PC); the examiner demonstrates the correct procedure of doing it, before proceeding to the next item of the test. This can actually be considered as one of the best methods to check the actual ability of the person and how well he learns and makes use of the information taught or the feedback. Rarely any tests of intelligence have this mechanism to demonstrate the correct technique/answer when one fails before proceeding to the next level.

Due to expectation on the part of the examiner to demonstrate the correct technique/answer when the subject fails, many examiners themselves find it difficult on the higher level of the test. Due to which they need to practice and master the correct technique/answer for every level of all the four subtests. It is not surprising for one to see the markings of the correct answers in the test manual of many students/trainee psychologists.

Despite the positives of the test, there are some serious issues and concerns which this article tries to discuss.

ISSUES AND CONCERNS

1. IS THE SEPARATION OF NORMS FOR THE LITERATE AND ILLITERATE APPROPRIATE?

One of the major things that the Bhatia's battery assumed that illiterate people as a group are different compared to literate people as a group in terms of intelligence. This assumption was based on or justified by the results obtained during the norms development. That is, the illiterate group showed significantly lower scores compared to literate group [1] (p88). This was used to justify having separate set of norms for illiterates.

The irony is that, what many professionals consider best about Bhatia's battery, that it having two-separate set of norms for literate and illiterates, in itself is the most serious limitation of the battery. The very conceptualization that literates and illiterates form separate groups, constitutes the fundamental error of assessment of the individual differences, especially the assessment of abilities, such as intelligence tests. The error of conceptualization that the illiterates and literates form separate groups, has enormous implication with respect to gross miscalculation of IQs for both literates and illiterates, thereby leading to incorrect feedbacks, erroneous calculation of percentage of disability, improper intervention or rehabilitation programs, and/or inaccurate career and future planning.

It is very surprising that till now this went unnoticed. It might so happen that even after going through this article and the explanations as well as the justifications provided, it might be difficult for few of them to accept that the Bhatia's battery lies on a shaky foundation, which can destabilize the entire assessment

results and make the norms of the battery null and void, if certain issues are not considered. The following are some of the possible reasons as to why it might be difficult to accept that Bhatia's conceptualization of two separate set of norms as erroneous:

- The test has been in vogue since 1950s. So, the belief that, if any assessment tool that is being used from so long and not challenged till now, might be correct.
- The belief that when it is used by majority of the professionals, then it might be accepted by majority, and the associated belief that majority is always right.
- The belief that when the test is taught in many premier institutes and by eminent professionals, then it might be acceptable.
- The all known human factor that resists change, especially if it requires major adaptation and/or rejecting something which one is used to.
- Another common factor is that, the position of the person who proposes the change (identifies the error) and the position of the person/audience whom it is been addressed to. For example, if the proposing person is a young professional, then senior professionals might have issues in accepting. Similarly, age factor also works in the same way. Young professional's discoveries will not be easily accepted by the already established/senior professionals easily. The same applies to the institutional affiliation of the person, as well as where it is being published. It is easy to believe if the suggestion comes from a reputed institution as well as if it is being published in a reputed journal.
- The belief that the it is already been thought over by test developer, evaluated by test reviewers, scrutinized by the test publisher, it might be sound in its conceptualization.
- The belief that if the test has been reviewed / written foreword by a psychologist from developed countries, then it might be correct.

However, some of the professionals who resist change due to the above-mentioned reasons, rarely know/remember that many times, several good tests have been discredited/altered after few years/decades due to various reasons. For example, due to errors in the conceptualization of the test format, age-scale format was changed to point-scale format in Stanford-Binet Scales [2]. Similarly, errors in sampling and test standardization was corrected in later Wechsler's scales compared to the earlier version's sampling methods. Further, several popular subtests of Wechsler have been dropped in their latest versions and also the very way intelligence is reported has been changed from verbal & performance IQs to Indexes [3].

Therefore, the reader is requested to ignore all the preconceived beliefs and examine the facts presented below with fresh and unbiased way.

The reasons why it is erroneous to separate illiterates and literates in the norms are as follows

1.A. Normal Probability Curve

It is expected and required by all the intelligence tests to adhere to the distribution of such abilities (in the general population) to closely resemble the normal probability curve (NPC). The relatively standard practice with respect to intelligence assessment is to have a mean and the standard deviation (SD) of the test to be 100 and 15 respectively [4]. Given this, test developers adjust their test items in terms of difficulty level to achieve the normative scores relatively equal to the mean of 100 and SD of 15.

For majority of the ability tests, norms usually are developed for particular age levels. For example, separate norms for age 10, separate norms for age 12 and so on. It can be usually observed that for younger years, say till late adolescence, norms will be more distinctive. For example, 8 years, 9 years, 10 years will have separate norms. In contrast, for middle/older adults the norms cover wider age ranges. For example, the norms can be for 40 years, 50 years and/or 60 years. This is due to significant changes that occur during childhood and adolescent years, compared to adulthood.

Irrespective of particular age, the norms are usually supposed to represent all the people in that age level. So that, it can be generalized to the entire population of that particular age level. A small exception to this can sometimes be seen in earlier tests, where there were separate set of norms for males and females.

However, in recent times majority of the intelligence tests do not have separate set of norms for males and females.

Further, if it is an intelligence test, the standardization sample is supposed to have people representing all types of IQs, such as people with intellectual disability on the lower end as well as people with very superior intelligence on the higher end of the NPC. Only then the IQs match the normal probability distribution. Hence Bhatia's battery should have also included people who are illiterate in one set of or as common/comprehensive norms. People who are illiterate, are part of population and its distribution.

1.B. An intelligence/IQ score is a comparative value

It is not the scope of this article to discuss what is intelligence and/or what are the components of intelligence. Irrespective of what it is, intelligence or IQ score is 'a comparative value'. That is, an IQ score of a person is derived in comparison to people who belong to her/his age group. This is popularly referred to as 'deviation IQ' (Even in age scale-ratio IQs the age comparison would have done during the placement of items for particular age groups). That is, for example, if a person gets an IQ of 115 (i.e. mean + 1 SD; according to the WHO recommended norms), then approximately, about 84% of the people have less intelligence (or 15% have more intelligence) than him/her. Therefore, an IQ score of a person is always in comparison with her/his age group. Given this, as mentioned above in section 1.A. a normative sample should have all types of the people in that particular age group, including people who are illiterates.

1.C. Illiterates are also part of the same population

Closely related to what is mentioned in section 1.B., illiterates are part of the population (society/country) and they should be considered a part of the same norms. While developing norms one will not have separate norms for low vs. high socioeconomic status groups; high vs. low education groups; and/or different norms for different castes, religion or ethnicity. This is because, all these people belong to the society/population of which we derive the norms and for which the generalization will be made.

There exist innumerable groups in a society. It can be caste, religion, race, language, dialects, geographical region, socioeconomic status, occupation, gender, age, education, and so on. An individual usually belongs to several groups at the same time. That is, a person can be 16 years old girl studied upto 10th grade, from rural areas of Bengaluru belonging to middle socioeconomic status of xyz caste in xyz religion of xyz race who speaks xyz language.

Given this, a test that assesses intellectual ability cannot have multiple groups (except developmental age), such as separate norms for different castes, different religions, different regions, different socioeconomic status and so on. For example, Bhatia's norms showed that as a group, children of parents belonging to 'higher professions' (that included lawyers, doctors, engineers, teachers and high government officials), had an average IQ of 106, compared to children of parents who are involved in 'agriculture' (including landlords) had an average IQ of 91 [1]. So here, just because children of higher professions showed significantly higher IQs compared to children of farmers, it does not mean that they both should have separate set of norms. Similarly, just because people who are illiterate showed less intelligence as a group (compared to people who are literate), it should not mean that there is a need for separate set of norms for people who are illiterate.

1.D. Probable effect of schooling on the group differences.

There is no unequivocal agreement on why and how intelligence varies, if at all, with respect to different racial, cultural and environmental conditions. Further, it is also commonly known that, there are no intelligence tests that can provide justice to all the various groups or subgroups. It is often said that, culture-free test is an illusion, because irrespective of whether the testing material (i.e. verbal-nonverbal, mathematical, artistry or behavioral), culture has significant influence on intelligence and/or how it is tested.

Intelligence tests only assess the levels of intelligence in a group. It is based on, and limited by the sample selection as well as the items that are used in the test. Intelligence tests do not and cannot identify the cause of differences in intelligence among different groups, be it racial, caste, and/or geographical region.

In this regard, it is rightly said that “.... intelligence tests do not in themselves enable us to differentiate safely between what is due to innate capacity and what is the result of environmental influences, training and education. Wherever, it has been possible to make allowances for differences in environmental opportunities, the tests have shown essential similarity in mental characters in all human groups” [5].

However, the significant difference in the performance between the literates and illiterates can be *relatively* attributed to schooling to some extent. Bhatia also attributes the difference observed between the groups to “formal school practice and the demands of civilization” (Bhatia, 1955). This is because, both the illiterate and literate groups had children from rural areas, and even though not equally, both parents belonged to relatively similar occupation, caste/religion and socioeconomic status (for further discussion in this regard, please refer sections 1.E. to 1.I). The only major difference that seem to be apparent is that one group was in school and another group was not in school and/or did not know how to read and write. Therefore, the only probable reason that the difference in intelligence can be attributed to is schooling.

However, one can argue that, the battery contains performance subtests, which are primarily meant *not to be adversely affected*, due to lack of formal education. In addition, manual clearly mentions that the examiners took great efforts in making themselves familiar to, and establishing good rapport with the community as well as the test taker. It also mentions that children were given adequate practice before starting the actual assessment. So, to some extent all the children would have had familiarity with the test materials and good rapport with the examiner. Therefore, to continue this argument, it can be debated that the performance tests should have reduced the difference in the IQs.

On the other hand, it can also be argued that, the observed differences (which is quite high) in IQs between the groups are actually less, and if non-performance tests were used, the observed group differences would have been even greater.

Despite the above argument (that it is performance battery and rapport was established), it is beyond doubt that the education does play a role in determining one's level of intelligence. It is common knowledge that IQ and academic achievement are highly correlated, and in general higher IQ yields better academic grades. On the other hand, school education also contributes to IQ, where a large meta-analysis found that an additional year of schooling can contribute to about 1 to 5 points increase in IQ and has long-lasting effects [6].

However, few things that does matter are

- One cannot create separate norms just because a major chunk of the population did not go to school. If still one goes ahead and creates separate norms for them then, it will be akin to creating separate norms for a particular caste or low socioeconomic status group (a major chunk in India)
- A battery of tests that has performance subtests, with culture & illiterate friendly material does reduces the negative effect of not having gone to school, with regard to intelligence assessment (refer section 1.G. for detailed discussion in this regard). But, the extent of such reduction is very difficult to estimate.
- If school attendance alone was the factor that determined the differences, then, the significantly lower results observed in the immediate memory for illiterate group could not be present to the extent that was observed, as the test involved repeating verbal sounds that people use in their daily life (refer section 1.H. for a detailed discussion in this regard).
- It can be argued that, as mentioned above, the observed group differences (which is larger) in Immediate memory subtest was actually lesser, and if numbers of regional language were used instead of regional- verbal sounds, the group difference would have been even greater. However, though this argument seems plausible, it cannot be fully considered as true. Because, the group differences observed in Immediate memory is almost similar to that of other subtests. That is, if the regional-verbal sounds did reduce the group differences, then the group differences in Immediate Memory subtest would have been lesser compared to other 4 subtests. However, on the contrary, it is surprising to observe that despite using regional-verbal sounds (instead of numbers, which were difficult), illiterate group performed significantly worse (in comparison with literate group) in the Immediate Memory subtest compared to other 4 subtests (refer the bar diagram of IM, in figure 1).

Therefore, the differences observed between groups cannot be solely and fully attributable to differences in schooling.

1.E. Illiterate vs. Intellectually inferior

One of the main short-coming of the battery is, not considering the reasons for children being illiterate.

Compared to recent times where prime importance is given to school education, in 1940-50s India not many parents sent their children to school, probably due to lack of awareness, lack of opportunities (such as school availability, long distance, lack of toilet in the school) and/or the poor socioeconomic conditions.

However, one major reason could be that the children (at least some substantial number) in the illiterate group might have been really 'intellectually inferior', and hence they might have scored lower IQ. That is, as a group, illiterates scored less IQ, *probably* because the group contained more children with intellectual disability and not because they were illiterate per se.

Apart from the extraneous factors (eg. lack of opportunities, poverty, socioeconomic-political reasons) that might be responsible for a child not going to school, there can be intrinsic factors within a child that might have contributed for him not going to school. These factors can be 'global developmental delay / intellectual disabilities'. It is a common knowledge that if the child has any global developmental delay or intellectual disabilities, parents will not (or find it difficult to) send the child to school and/or probably school might not admit (or let it continue to attend) the intellectually disabled child. On the other hand, it is also common that children with mild intellectual disability might find it difficult to cope-up with the academic demands, and can drop out of the school during primary classes (before they reached 11 years, which is the starting age of this battery).

Given this, if this child is taken for the standardization and put into the illiterate group, it is natural that this child will perform poorly on an IQ test compared to a child who is literate. Therefore, this poor performance/IQ cannot be attributed to the child being illiterate. One important justification for the above argument is the performance of the illiterate group in Immediate memory subtest (refer figure 1 and section 1.H for detailed discussion).

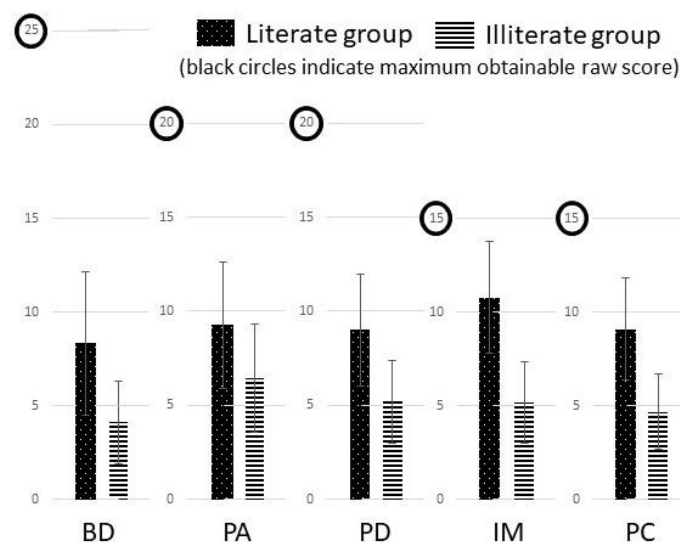


Figure 1: Showing the raw scores of Literate and Illiterate groups across different subtests

In addition, the selection of the sample also supports the above to a great extent. The sampling for the two groups in the standardization were completely different in terms of caste/religion (refer table 1) and parents' occupation (refer table 2). For example, the illiterates group included about 63% of children from

the so-called “backward communities” or “Harijans”, which currently referred to as ‘scheduled castes and scheduled tribes’ (SC and ST respectively). In contrast, the literate group included only about 5% of children from the so-called “backward communities” [1].

Table 1: Showing the differences of the two groups in terms of the distribution of the caste-religion of the normative sample.

	Categories	Illiterate group	Literate group
Caste/group and Religion	Non-backward community (Brahmin, Kshatriya, Vaishya, Muslim)	36.58%	85.66%
	Backward / Harijan community (i.e. SC and/or ST)	63.42%	4.83%
	Others (eg. Jains, Parsis, Sikhs)	No information	9.5%

Similarly, in terms of occupation, illiterate group had about 62% of the children whose parents were Farmers, compared to only about 14% in literate group.

Table 2: Showing the differences of the two groups in terms of the distribution of the occupation of the parents in the normative sample.

Illiterate group		Literate group	
Farming / agriculture	62.50%	“Higher professions”	21.03%
“Small village Shopkeepers”	7.81%	“Middle class service”	35.36%
Artists	11.33%	“Lower class service”	7.32%
Hired laborers	5.66%	Business	12.93%
Domestic helps	8.40%	Agriculture	14.33%
Not known / unemployed	4.29%	Not known	9.03%

This article is limited in its scope and does not discuss the merits or demerits of belonging to particular group in terms of caste, religion, and/or occupation. However, given the sociocultural milieu of 1940-50s during which the standardization of the battery took place, one cannot ignore the differences (in terms of the sociocultural-economic conditions), and how such differences could have contributed to the variations in terms of learning potentials and abilities.

These differences between the two groups in the representation of children from varied caste, occupation and socioeconomic conditions should have been controlled or reduced in the standardization sample. If the sampling were more equally distributed and/or more fairly representative, probably the differences observed between the groups would have been less, and subsequently there would have been no reason to have two set of norms.

To reiterate, even though there exist differences in the IQs between literate and illiterate group and that difference might have been the result of sociocultural-economic conditions, one cannot have a separate set of norms for literate and illiterate groups.

1.F. Plateau in performance

Literate group showed relative plateau in their performance (on the higher side/scores) compared to illiterate group. The illiterate group did not show this plateau in any of the subtests except Picture construction (fig. 2 – 6, pages 83 – 87 [1]). Figure 2 depicted below is an attempt to explain the above phenomenon. Due to the possible copyright issues, figure 2 has been modeled on the results observed in the standardization sample, and not the exact replication.

Just for discussion purpose here, if we consider that, if in case, the examiner takes the illiterate group norms for an illiterate person who is 16 years old, and certifies a particular intelligence based on how the person is performed in the test. Given the standard belief that IQs do not increase beyond 16 years, the examiner

who wrote the report, the person who reads the report, as well as the subject, all believe that the IQ mentioned in the report is the exact/true representation of his abilities. However, as the norms itself has suggested that there is no plateau/ceiling observed in the performance in illiterates, it suggests that their performance might improve over and above 16 years. Given this, it would be unfair for any person who is an illiterate if one uses the separate set of norms meant for illiterates.

Hence, the above fact again emphasizes that the separate set of norms for illiterates is not an appropriate idea.

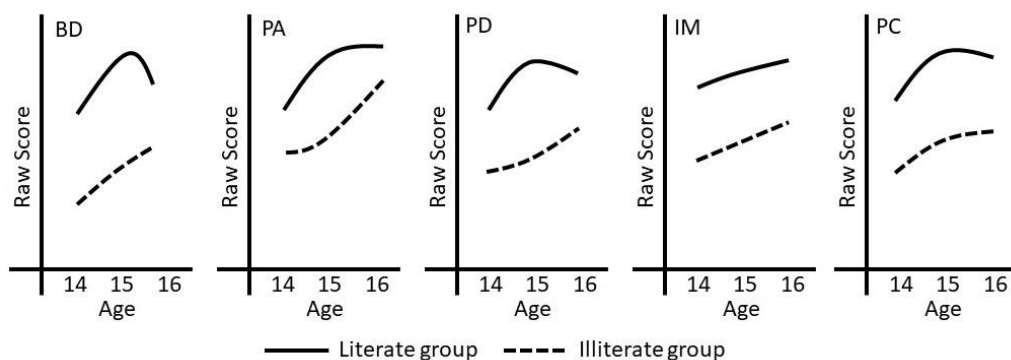


Figure 2: Depicting Performance plateau in literate group

1.G. Performance tests

It is usually accepted that nonverbal performance tests are the best option to administer if the subject does not know the language of the test and/or if the subject has poor verbal skills. Indeed, this is the case in India, where, many psychologists resort to Bhatia's battery and/or Standard Progressive Matrices.

As mentioned in section 1.D., some form of formal education always benefits in one getting a good score even on nonverbal or performance tests. However, the lack of the same (school education) does not in any way bring down the IQ substantially, as observed in the standardization sample.

One of the justifications put forward to develop this battery was that, "...tests of intelligence which do not require reading and writing on the part of the subject". Further, it is mentioned in the battery manual that, '... life in the village, again, is practically all out of doors. The village boy spends his day out in the fields, helping the elder folk in cultivating or in tending cattle. The experience that he comes across is the handling of concrete objects and materials'.

Given this, it can be assumed that all the people, especially the illiterate group where majority were from the rural area, might not have been so unfamiliar with the performance subtests used in the current battery. This is because, the battery consisted of colorful blocks, moving blocks, arranging pictures, drawing lines and repeating numbers/syllables.

Picture construction test consisted of pictures with human and livestock that depicted rural environment. According to the battery manual, pattern drawing was actually developed based on the observation of the common pastime in rural settings. Immediate memory had material familiar to the literate as well as illiterate group.

The subtests that were probably unfamiliar were the Kohs' block design and Alexander Pass-along test. However, this unfamiliarity might have been similar to both literate as well as illiterate group. Children from both the groups would have played and/or had familiarity with indoor & outdoor games played by people irrespective of whether they are from rural-urban and/or literate-illiterate background. Examples of such indoor games are, lagori, kancha/marbles, gilli danda, top/lattoo, snakes & ladders, cross & circle game (Pachisi), dice games (chauka bara / Dayakattai), and games played with small stones/conch shells.

Given this, it cannot be said that being illiterate would have put the children in such a disadvantage as the results obtained in the normative study of a performance test of intelligence. Hence, it would have been better to have a single comprehensive set of norms, instead of separate sets of norms.

1.H. Immediate memory

It is very interesting that to overcome the hurdle of illiteracy, the Immediate Memory subtest adopted verbal/speech sounds instead of numbers. The test did not even use the regional language numbers (eg. Ek, Do, Teen). Given this, it is very surprising that, despite having accommodated for the shortcoming of illiteracy, the manual created a separate norm for illiterate group.

An analogy can explain this better. For example, let us assume that out of two long distance runners, one runner needs to be selected to represent Karnataka state for a national level competition. One of the runners, 'Rura' is from rural background and the other runner 'Urba' is from urban background. A coach decides to have a race to select the best runner. The coach realizes that 'Rura' does not have shoes to run. Due to it, the coach decides that it would be unfair to make him run without shoes. So, the coach gives a pair of roller-skates to 'Rura'. Race begins, where 'Urba' runs and 'Rura' skates to covers a distance of 20 kilometers. 'Urba' reaches first and 'Rura' despite using roller-skates reaches second. However, the coach decides that it is still unfair to 'Rura', as he might not be familiar with roller-skates. Therefore, coach does not recommend either of them to the running race.

In this analogy, the issue is not about the fairness, equality and/or justice. It is about selecting a person to run the race to represent one's state/region. The issue was not about one's region, it is about running and the race. Given the same, intelligence assessment is about assessing where does the person stand among his age peers. It is not the question of 'whether one should do the assessment or not', 'whether who gets more or who gets less IQ', and/or 'what is the reason for one getting the lower IQ'. If one decides to do the intelligence assessment, then the result will always be comparative (as mentioned in section 1.A. and 1.B above).

Another interesting fact is the aspect that verbal-speech sounds (used in this battery for illiterate group) is not an exact substitution for numbers in the assessment of immediate memory. Actually, for three main reasons the verbal-speech sounds are far too easier to recall than the numbers.

First, each verbal-speech sound used in the battery (to assess immediate memory of illiterate group) constitutes just one element of sound, almost similar to that of phoneme. For example, |sa|, |la|, |ba|, |ma|, |ta|. Compared to this, the numbers used in the battery (to assess literate group) constitutes more than one sound or more than one phoneme. For example, 'four' has about 2 sounds, i.e. |fo| + |r|, and 'seven' has about 3 sounds, i.e. |Se| + |Ve| + |N|.

Given that, the capacity of the attention/working memory span is about 7 ± 2 bits of information, it is easier to register and recall more of verbal-speech sounds compared to numbers. For example, '|sa|, |ba|, |ka|, |da|' is just 4 bits of information, and whereas 'eight, three, seven, five' is about $(3+2+3+2)$ 10 bits of information. Research supports the above assertion. For example, it has found that Chinese children has better forward digit span (recall more numbers) compared to language such as English. This has been attributed to the fact that many Chinese numbers are pronounced with mainly one sound, for example, |yi|, |si|, |qi| [7-9].

Second, it is easy to register and remember the verbal-speech sounds compared to the numbers, due to the simple fact that the verbal-speech sounds can be automatically combined to make words. For example, one of the tasks that requires the subject to recall/repeat the vernacular verbal-speech sounds are 'pa, cha, la, ra, ba, sa' (which is a substitution for 6 digits forward recall). Here it is clear that the subject can easily make up words that are easier to remember, because it is in words format (chunks/group), the chunk might sound similar to real words. For example, the above speech-sounds can be chunked as 'pachal rabas'.

Third, the familiarity with the verbal-speech sounds used in this subtest far exceeds the familiarity of the numbers. That is people's entire conversation in their day-to-day life involves the very speech sounds used in the subtest to assess immediate memory. Therefore, automatically the test stimulus will be very familiar

to the illiterate group. In comparison, even though people in the literate group use numbers in their day-to-day life, it is far less familiar compared to speech sounds.

Given the above-mentioned advantages, it is clear that recalling verbal sounds is far too easier than recalling numbers even for illiterate group. However, it is very surprising that the illiterate group performed significantly poor (mean = 6.95; SD = 2.04) compared to literate group (mean = 10.77; SD = 1.84) in immediate memory subtest, which is about 35% lesser (refer figure 2). The possible reason one can attribute closest is to the factors mentioned in 1.E – Illiterate vs intellectual inferiority.

1.I. What purpose does the separate norms for people who are illiterate serve?

As mentioned above, having separate norms for illiterate group appeals to some professionals/trainees. It might appear that it is 'just and fair' that a section of people should not be penalized for no fault on their part that they could not go to school. This belief usually arises from the fact that if illiterate person is compared with common norms that involve both illiterate and literate people, then the illiterate person will get lower IQ. Here, this issue seems to loosely resemble the dilemma of social justice or social efficiency, and it appears fair to support social justice. Given these beliefs, some might think that having separate norms will benefit and it will do justice to the illiterate group.

However, rarely one thinks about what and how are these benefits help the illiterate group, if there is a separate set of norms for them. Apparently, there seem to be no actual benefits for the people who are illiterates for having separate set of norms, be it in relation to school, job, availing benefit schemes/services of the government, legal issues and/or rehabilitation. On the other hand, having separate set of norms can adversely affect the people who are illiterate. Some of the examples below will clarify how it might actually not help the people who are illiterate.

1.I.i. School:

Usually there are two main reasons why schools refer children for the assessment of intelligence, one for admission purpose, and the second when the child is showing poor performance in academics. This is done to see whether the child has any developmental delays.

This battery cannot be used for both of the above purposes because of two main reasons. One, the battery is standardized for children only between 11 to 16 years. In addition, rarely any child after 11 years tries to join a school. Second, for the obvious reasons that there is a separate set of norms for illiterate people. If this separate set of norms is used then a child might be considered as average, but might not perform better in school at all (refer section 1.J. for a detailed discussion). An example might make it clear. Let us assume that there are no separate norms for illiterate and literates, i.e. there is only one set of norms (that includes all types of children, literates and illiterates alike, based on the general distribution of the population). Given this, if a child still wants to get admitted to the school, if in case, the norms would have told where the child stands with respect to others in the class (for more clarity refer section 1.J. on Disability assessment). Given the above, a separate set of norms for the illiterate group was not warranted.

1.I.ii. Job

There is hardly any employment recruitment agency anywhere in India that expects IQ score to recruit (for a job) a person who is illiterate. Similarly, there won't be any demand for an IQ score for any job promotion. Recruitment for any training and/or job that requires reading and writing usually depends on the academic level/degree a person has attained. For those jobs that do not require reading and writing, none will require the person to furnish IQ score. Therefore, with respect to any job recruitment per se, there was no need for a separate set of norms for illiterates.

1.I.iii. Clinical purpose

It is a common practice in several mental health institutions and hospitals that patients are referred for intelligence assessment for various purposes. Apart from the purpose of disability benefits, IQ assessment is carried out to decide the plan intervention/treatment, to decide whether the person can benefit from the psychotherapy process, to determine the prognosis, to provide psychoeducation and for the rehabilitation purpose. However, using a separate set of norms for illiterates actually work against the patient and their family.

What a separate set of norms for illiterates does is, it actually automatically and artificially elevates just the IQ score without elevating the actual ability of the person who is illiterate. That is, the obtained IQ after using the separate norms (for illiterates) will be higher than what actual IQ. With this incorrectly elevated IQ, any plan for intervention, psychotherapy, psychoeducation and rehabilitation is bound to have some limitation. For example, if the person with actual 'borderline' level of intelligence is administered this battery and referred to the norms for illiterates, then the result might indicate that he has 'above average intelligence'. Given this, (incorrect, but not known) the examiner can say that the person can do well in therapy, job and life. However, it might not happen because actually the person has 'borderline' level of intelligence. For detailed discussion in this regard, refer to section 1.J. – Disability assessment and particularly the figure 3).

1.J. Disability, Legal issues and rehabilitation

Generally, one can have a misconception that the separate set of norms will benefit the illiterate people in availing any government schemes, legal issues and rehabilitation. However, it is a misconception, and in contrast, a separate set of norms actually discriminates against the illiterate person in the society.

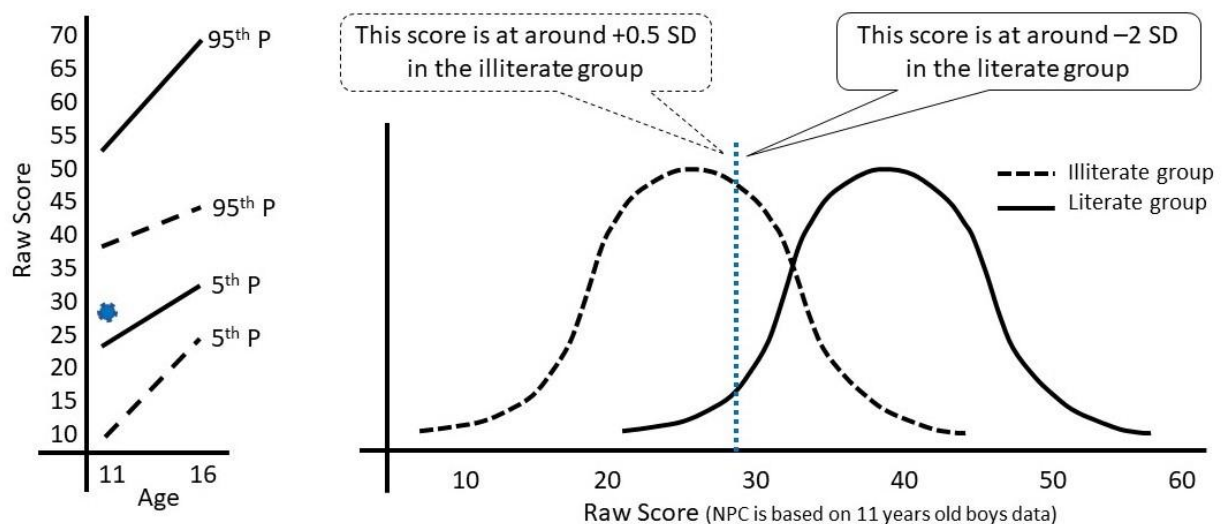


Figure 3: Percentile obtained for illiterate and literate group

The blue small circle seen in the left figure corresponds to the blue small-dotted line on the right figure
The above two figures are drawn based on the data depicted in the manual (Bhatia, 1955)

As it can be seen in figure 3 that two sets of norms will have two distributions. The two curves drawn on the right of the figure 3 are based on the 5th and the 95th percentile ranks of both illiterate and literate groups of 11 years old boys, as depicted on the left side of figure 3 (as well as in page 88 of the manual; [1]). For explaining purposes, the distributions are drawn resembling normal probability curve. The blue vertical dotted line in figure 3 shows how a particular raw-score can have a different interpretation based on different distribution/norms. Let us assume that the raw-score (the blue vertical dotted line) is 28. Then this score might correspond relatively to above average intellectual ability if illiterate norms are used. On the other hand, the same score might correspond relatively to 'borderline' intelligence category if literate norms are used.

Given the above, let us assume that the parents bring their son, of 11 years old, not gone to school boy (eg. Master Bor), to a psychologist. They say that the Government Census guy (who visited them from the city) told them to contact the psychologist to claim disability benefit for Master Bor, because the Census guy has felt that the child has intellectual disability. However, parents say that they don't think he has such a problem, because the child takes care of self-help needs, feeds cows, cleans the cowshed and goes around

their small village on his own. However, they report that the child had small delay in speaking (which they further say is commonly seen in their family), dropped out of school at 1st grade (again they report that it is a commonly seen phenomenon in the family and neighborhood), and due to which he does not know calculations, and hence they don't send him for shopping with money, and so on.

The psychologist administers the battery and the child gets a raw score of 23. The psychologist uses the norms meant for illiterates and determines that the child's IQ is 103 (refer left-side NPC on right part of the figure 3 above; as well as the manual norms on page 123, Bhatia, 1955). Therefore, the psychologist says that the child has average intelligence and says that the child does not have any intellectual disability. This might seem fair, as the psychologist has used the norms meant for illiterates. But technically it is not correct and with respect to disability assessment it is a serious mistake. This is because if you look at the green color NPC (which would have been the actual one comprehensive norms; read section 1.K. for clarity on this) in figure 4, the raw score of 23 might be somewhere in 'borderline' category of intelligence and probably the child would have got at least 25% disability.

To understand why it is a mistake in terms of disability assessment, one has to know the actual meaning of disability.

A disability can be defined as any condition in a person that makes it difficult for that person to perform certain activities and it limits his/her interaction with the world, which in turn affects her/his functioning, and thereby adversely affect the livelihood and wellbeing of the person [10].

It should be remembered that disability (diagnosis / assessment / certification) is usually independent of the cause of such disability. That is, disability might have been due to congenital, biological, developmental, acquired illness/conditions and/or accidents (or a combination of these). Again, to reiterate, it does not matter how the disability has happened, and what matters is the 'disability' itself.

One aspect of the disability is, that it is always in comparison to a general population. That is, for example, a person's seeing/hearing ability is compared to the general population to determine the disability. That is if a normal person vision is 20/20, then if a person has 20/40 (depending on the country/criteria) he is considered as having 20% disability. A person with disability is never compared with a group who has similar disability, to calculate the percentage of disability. That is, for example, let us assume that Mr. Onle has one leg. Then we cannot determine his disability by conducting a running/hopping race among several people who have only one leg. Further let us assume, an organization conducts such race and about 12 people with one leg participate. Everybody runs/hops the distance of say 100 meters and complete it between 120 to 150 seconds. Mr. Onle takes about 125 seconds, which is relatively faster when compared among the 12 people. Given this, one cannot claim that as Mr. Onle is one of the fastest, therefore he doesn't have disability, and disability benefit cannot be given to him.

Similar to the example mentioned above, just because there is a separate set of norms for illiterates, we cannot use it to assess it for disability.

For disability assessment IQs should go as low as 'less than 20' (in terms of WHO IQ classification criteria, 1992), so that, it can indicate what level of mental retardation/intellectual disability and what percentage of disability a person has.

The Bhatia's battery does not *fully* assess for disability per se, as it does not provide IQs below 69. However, a psychologist can get adversely influenced by the scores obtained by this test (as mentioned above with the example of Master Bor) and s/he might think that the child has normal (or below average) intelligence and does not have any intellectual disability. Given such result and subsequent erroneous in interpretation, a psychologist might not even attempt other tests to see whether the child has disability or not.

The same explanation applies to any legal issues. There can be several legal related scenarios where accurate representation of a person's intellectual ability is warranted. These reasons, can vary from the capacity to stand trial, taking care of one's property, parental responsibility, guardianship purposes and so on. As explained in the above example of Master Bor, another illiterate child who actually has mild mental retardation/intellectual disability, might get a result of below average intelligence if the separate norms for illiterates is used.

1.K. Limitations of the norms for 'literate'

The above discussions are mainly meant for explaining the limitations of using the norms meant for illiterate. However, one should remember that the norms meant for 'literate' is also not a proper representation of the entire community. That is, it is not comprehensive enough that can be applied to all the population. This is because, it has omitted a significant chunk of the population (i.e. illiterates), from its standardization. It is like removing the poor performers (the norms show that illiterates performed significantly poorly compared to literates; Bhatia, 1955) from the standardization. This has resulted in pushing the normative curve of the literate group towards higher side or towards the right.

Figure 4 clearly explains this phenomenon. In the figure it can be seen that a raw score of about 28 is around 'minus 2SD' if literate norms is used, which is equal to that of an IQ of about 70 (refer figure 5 for the distribution of IQ scores in NPC based on WHO guidelines). However, as this separate set of literate norms did not have an adequate representative of the population, the IQ of 70 is incorrect, and the IQ should have been little higher. If in case, the population was adequately represented, then there would have been one set of norms that included both literates and illiterates. This combined/comprehensive set of norms would have been at the green color NPC shown in figure 4. Therefore, if this comprehensive set of norms (green color NPC in figure 4) is used the person obtaining a raw score of 28 would be around 'minus 1SD', which is equal to that of an IQ of about 85 (refer figure 5 for the distribution of IQ scores in NPC based on WHO guidelines).

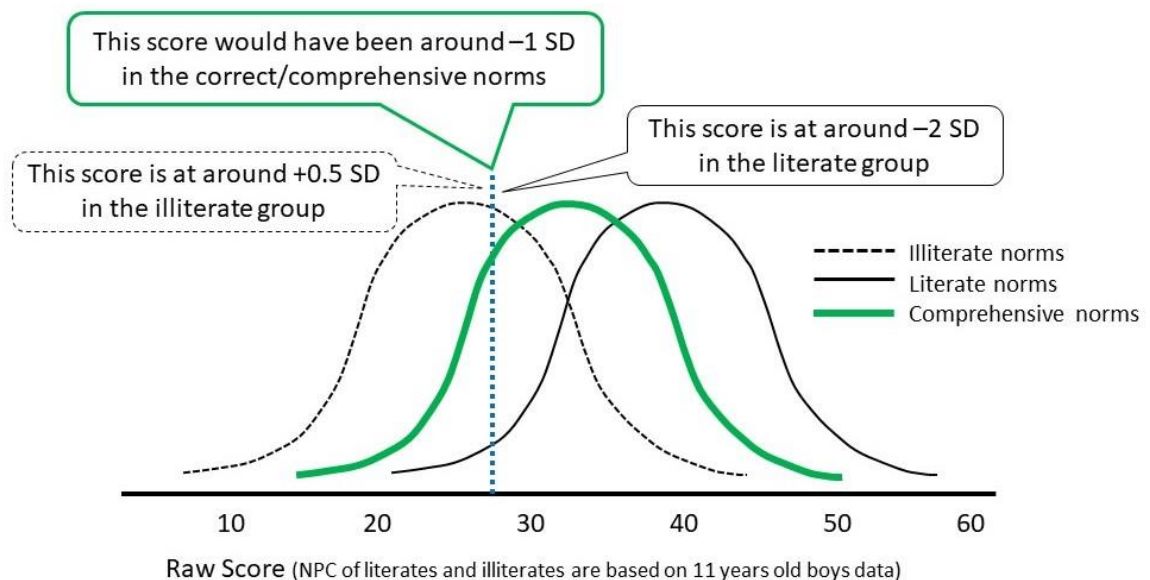


Figure 4: Percentile obtained for illiterate and literate group & hypothetical correct norms
The two NPCs of literates and illiterates are drawn based on the data depicted in the manual (Bhatia, 1955)

An analogy will help to clarify the above clearly.

Scenario/Time 1: Let us assume that a teacher, Ms. Bhavya wants to test where Master Dulav stands in his class in terms of running. The teacher decides to conduct a race for the class that has 40 children. On the race day, she notices that five children are having cold, 10 children appear weak and 5 who are not interested to run. Therefore, she decides to conduct the race for the remaining 20 people. Master Dulav comes in 16th place out of 20 children who ran the race. This can be said to be somewhat equal to about 25th percentile (due to 16 out of 20 being in the lower fourth quarter). Given this, Ms. Bhavya decides/certifies that, Master Dulav is a poor runner in his class.

Scenario/Time 2: However, couple of weeks later, another teacher Ms. Roopa, without knowing the above results, conducts the race again. On the race day 5 children say they don't want to run, and 10

children appear weak. However, Ms. Roopa encourages everybody to run as much as possible. This time Master Dulav comes in 18th place out of 40 children. This is somewhat equal to about 45 to 50th percentile (due to 18 out of 40 being almost in the mid-point). Given this, Ms. Roopa decides/certifies that, Master Dulav is an average runner in the class.

Applying the above analogy to the battery and its norms, Scenario/Time-1 is what the separate set of norms for literates does to a child. As the literate norms does not have representatives from all types of the population (i.e. in this case, omitted all the illiterate children), the IQ score obtained will actually be lesser than what the child's potential / standing in the community. Therefore, to obtain a correct estimate of one's intelligence, the scores need to be compared with all sections of the society, as described in scenario/time- 2 (also refer to sections 1.A to 1.C above). This does not mean that one should merge the above two sets of norms to obtain one set of norms (refer 1.L.iii. for the detailed discussion in this regard).

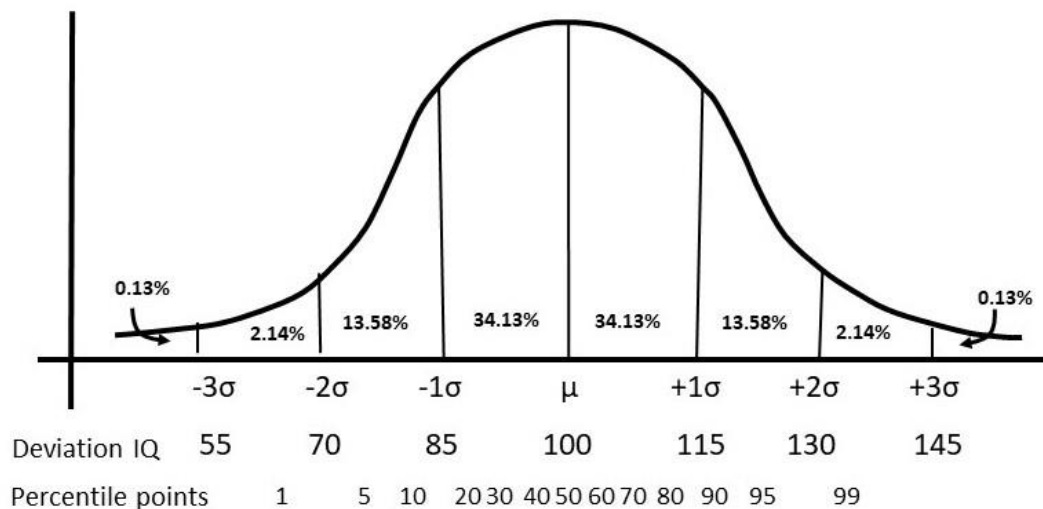


Figure 5: NPC characteristics and the IQ distribution based on WHO guidelines

1.L. Is there a way out from the two-separate set of norms?

Given the above limitations of having two separate set of norms, one can ask what is the solution. Does completely omitting the norms for illiterates and using only norms meant for literate help? Does one should not do intellectual assessment for illiterates? Is it possible and desirable to merge both the norms?

There are no correct foolproof solutions for the above questions. The following solutions are the opinion of the current author. However, one is expected to make up their own informed decision based on the facts/ideas presented in the article or other sources.

1.L.i. Does completely omitting the norms for illiterates and using only norms meant for literates help?

The above scenario/time-2 (Section 1.L.) is just an analogy, and it would be difficult to exactly calculate/identify how much the NPC/IQ is actually got shifted upwards/right side for the literate group. However, this alone cannot be used to completely discredit the battery. There is hardly any intelligence test that does complete justice to each and every person/child in any given society/community. Popular and well standardized intelligence tests such as Stanford-Binet and Wechsler's tests too had significant limitations earlier in their standardization, such as, not being representative of their entire population and/or not sensitive enough to certain groups/races/communities.

As mentioned in above sections, using separate set of norms for illiterates apparently does not serve any purpose, and in turn, it affects the illiterate population adversely, in terms of disability benefit,

rehabilitation, and so on. Therefore, as the answer the above question is 'yes'. Using only literate norms for those who are literate can be carried out with appropriate caution (as mentioned in section 1.K.).

1.L.ii. Does one should not do intellectual assessment for illiterates?

A person illiterate or literate has all the right to get tested for intelligence if one wishes to do so. However, there should be appropriate norms that takes into account the important factors of assessment of abilities in a given population. Given the above, one cannot say that intellectual assessment for illiterate people should not be done. However, if Bhatia's battery with norms for illiterate group is used, it will adversely affect the illiterate person. Therefore, it is strongly advised *not to use* illiterate norms and/or literate norms for illiterate people.

However, illiterates should be tested using a comprehensive well standardized norms that included subjects from all sections of the society. As it is not done with Bhatia's battery, it is good to not use this battery for illiterate people on the whole.

1.L.iii. Is it possible and desirable to merge both the norms?

It would not be easy to attempt such a task. If one tries hard, they can come up with one set of merged comprehensive norms. However, the question is, will it be correct? Few things one has to remember that, the situation and the population distribution in 1940-50s was different in terms of literacy. That time the illiteracy rates were significantly higher compared to current times. Therefore, the percentage of the illiterates in the Bhatia's standardization battery was almost equal to that of the literate sample. Further, the performance of the illiterate group was significantly lower compared to literate group. So, if one tries to merge both the norms, due to above mentioned reasons, the resultant set of norms would not be appropriate and will not represent the current abilities of the population. So, to answer the above question, that should both norms be merged, the humble answer is 'it is not a good idea'.

2. Can this battery be administered to girls?

The manual clearly mentions the limitations and the practical difficulties that it was impossible to recruit girls for intellectual assessment in 1940-50s in India.

Recent popular intelligence tests (Wechsler's tests, Raven's progressive matrices, and so on) do not have separate norms for the boys and girls. However, one of the important facts to remember is that these recent intelligence tests include 'females in standardization as one comprehensive sample of the population'. Therefore, when the females are included in the standardization sample, then the obtained norms can automatically be used irrespective of whether the person is a male or female.

However, Bhatia's battery has not included girls in the standardization sample. If girls would have been included in the standardization, probably the norms would have been different. In this regard, a re-standardization study on Bhatia's battery (unknown authors) done in 1990s with about 500 subjects between the age of 11 years to 16 years (244 boys and 256 girls; 349 literates and 151 illiterates), showed that both boys and girls performed almost equally. Given this, with great hesitation and more than a pinch of salt, one can accept that the same norms can be used for both boys and girls. However, the better option would be to use other tests instead.

3. Can it be administered for adults over 16 years?

The battery norms are restricted to a narrow range in terms of the age, i.e. 11 to 16 years. However, some professionals do administer this battery on adults who are much older than 16 years. The maximum higher age it is administered varies across professionals, however, it is observed to be around 50 years. One of the possible arguments put forward by such professionals for its use in adults is that, intelligence rarely increases after 16 years, and hence the 16th year norms could be used for adults.

On some level, the argument relatively appeals to reason, because, other popularly used intelligence test, Binet Kamat Test of Intelligence [11-12] uses 16 years as the maximum chronological age while calculating the (ratio) IQ, despite the test has items to assess till 22 years.

Though it is not the reason one site to administer it to adults. Bhatia battery itself provides an indirect reason that it is probably not wrong to use it on adults. The results of the standardization showed that the literate group relatively showed performance plateau at 15 – 16 years, i.e. the scores for literate group did not show increasing pattern after 15 years (refer section 1.F. and figure 2). One can still argue that this plateau in performance might be a small aberration or a developmental trend; and if tested on higher ages, probably the performance of literates would have shown increasing tendency. However, this cannot be answered unless a new research is carried out using Bhatia for ages higher than 16 years.

Some of the other reasons, for some professionals using Bhatia's battery for adults, apparently include, that the battery is familiar and easy to use, it fosters interest and cooperation from the client, and provides correct IQ scores that seem to match the person's abilities. However, given a choice other intelligence tests that are recent, with appropriate representative standardization, and those with less limitations can be used. Further, they should be aware that the belief/perception that 'obtained IQ seem to match the person's abilities' is a subjective opinion and may or may not match the objective realities.

4. Bhatia's Short form

The administration of Bhatia's full battery takes about 45 minutes. Given the significant disparity in psychologists-to-patients' ratio, and especially where time is a limiting factor, test developers usually come up with short version of the full assessment versions. Similarly, psychologists have proposed a shorter version that includes Block Design and Pass Along subtests from Bhatia's battery [13-14]. Even though many use these two subtests as the short battery, there are two versions to arrive at full IQ. One, to sum up raw scores of Block Design and Pass Along subtests and multiply it with 2.5, and to compare with the overall-full norms [13]. Second, scores were allotted for each block of 30 seconds instead of 60 seconds as in Bhatia original method [14]. Though, multiplying with 2.5 version has found to be better than reducing the time-epoch method to get a full-scale IQ [15], it still not an appropriate and/or reliable method to obtain comprehensive IQ [15-16].

The mean average raw scores obtained in the standardization by Bhatia's [1] of each subtest is given in Table 3. It can be observed in this, that, though, the short-form method raw score (literate group = 44; illiterate group = 26.3) closely matches the total raw score (literate group = 46.45; illiterate group 27.32), it is not the perfect match. One should remember that these raw scores of the standardization sample are the group mean/average scores. Group average scores tend to nullify the individual differences and/or extreme scores. Therefore, if in case, if one uses the short-form instead of the full battery on individuals who (have different specific abilities) perform differently on different tests, then they might get inappropriate IQ which does not match their actual ability (i.e. they might either get reduced or increased the full-scale IQ).

5. The norms range only between 69 to 131 IQ points

One of the major limitations usually talked about Bhatia's battery, is its apparently limited IQ range that it provides, which is only between 69 to 131 points. Usually intelligence tests that provide IQ as the final output value, always go beyond 69 to 131 IQ points on both sides, especially the lower side, where it is expected to indicate and differentiate the type of intellectual disability. This is not expected of those intelligence tests that provide the final output value in terms of percentile points, such as Raven progressive matrices.

One of the reasons why Bhatia's battery provides IQ points only between 69 to 131 is because, it is derived from (or arrived at after) extrapolating the percentile points. That is Bhatia's battery first calculated the 5th, 16th, 50th, 84th and 95th percentile points, and then fitted (through interpolation) the IQs to match the percentile points. It is inherent limitation of the percentile points that, at the extreme ends (more than ± 2 SD) percentile points are difficult to differentiate (please refer Figure 5). Therefore, as Bhatia's battery adopted IQs from percentile points, the lowest and the highest points are 5th and 95th respectively, and percentile points does not provide much differentiation at the extreme ends the IQs are understandably limited between 69 to 131. This can neither be a significant limitation nor an advantage.

Table 3: Showing the difference between the total raw score (obtained by Bhatia [1]) and the short form raw score. The short form raw score followed the method introduced by Murthy [2].

	Literate group Mean raw score	Illiterate group Mean raw score
Block Design (BD)	8.33	4.09
Pass Along (PA)	9.27	6.43
Pattern Drawing	9.0	5.18
Immediate Memory	10.77	6.95
Picture Construction	9.08	4.67
Total Raw Score	46.45	27.32
BD & PA X 2.5	44.0	26.3

CONCLUSIONS

One of the major limitations of the Bhatia's battery is having a separate set of norms for literates and illiterates. Indeed, the researchers found significant differences between literates and illiterates, but does this alone warrants two separates norms? This 'significant difference between group result' is a research finding, it is a publication worthy finding, it is a finding that raises significant questions, debates and concerns about the role of literacy (or socioeconomic conditions, caste, and so on) in intelligence; and it is a finding that affects the policy decisions on a larger societal scale. But it is not the finding that requires separate set of norms.

One of the most important face that supports the argument that there is no requirement of separate set of norms, can be seen in Binet-Kamat test of intelligence [11-12]. BKT was standardized in 1920-30s by Kamat on Indian population in a small town in south India. This standardization predates about 2 decades in terms of time and given this, there should have been far more illiteracy among the population compared to 1040-50s when Bhatia's battery was standardized. However, BKT did not have any separate set of norms for literates and illiterates; nor did it use separate item-to-age-allotment criteria for literates and illiterates (BKT uses age scale). Further, according to this authors knowledge, there are no tests apart from Bhatia's battery that uses separate set of norms for literates and illiterates.

Another, important question one can ask is that, the standardization was done in 1950s, are the norms still be valid? This question generally applies to several of the tests that are developed in India. Most of the tests that are currently used in day-today practice by psychologists have been developed/standardized at least several decades back.

The one important aspect that warrants this question is the phenomenon of 'Flynn effect' [17]. The Flynn effect implies to the observation of increasing intelligence (over generations of people) of about 3 IQ points per decade. This phenomenon has been observed across the countries, however, the exact extent has varied among different countries over the different timeline [18].

India, presents a significant challenge with respect to intelligence assessment, due to it being a developing economy and a dual economy, where several super-rich and ultra-poor people exist in a same geographical location, with each group providing varied access to different levels of stimulation, opportunity, nutrition, interpersonal interaction and care to their children. In addition, India also has over 25 different official languages and further more dialects. All these factors might contribute to varying levels of Flynn effect, where for some group there can be more than 3 IQ points and for some groups there might be far less increase or no increase at all. Given this, it becomes difficult to say whether a battery which was standardized several decades back is still applicable now or not.

According to the publicly (online) available literature an attempt was made in 1990s to re-standardize the Bhatia's battery (unknown authors). The authors used 500 subjects between the age of 11 years to 16 years (244 boys and 256 girls; 349 literates and 151 illiterates). Even though the sample size was almost half of that of the original Bhatia's standardization sample and included both boys and girls, the authors found that the IQ of the groups (both illiterate and literate groups) was only marginally increased. However, this

study is not without its limitations, such as they still retained the literates and illiterates as separate groups. Further, according to the available knowledge, it is not sure whether this study has been published in any peer reviewed journal or manuscript.

However, some psychologists use this battery mainly to confirm their belief or clinical judgment (based on the feedback from the family, or their interaction with the person) that the person's IQ is around 'normal' range to rule out any issues of mental retardation/intellectual disability. Further, the battery is used in clinical setting to determine whether the patient can understand treatment demands and/or to start some form of psychotherapy that require patient to be able to understand and reflect on the psychotherapy process. If it is used in such a scenario then, using this battery rarely affects the person adversely.

Therefore, the answer to the question that 'is the battery still be valid after decades old standardization?', the answer is, it depends on 'why' and 'on whom' it is used. It is not advisable to use for school and career guidance, definitely not for disability assessment and legal issues. Further, it is not advisable to use it for illiterates, even with the separate norms for illiterates (refer sections 1.A. to 1.M.). In addition to the reason that it provides IQs only from 69 to 131, it is not advisable to use it for those who are suspected to have extreme levels (on either side of the NPC) of intelligence.

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The SARS COV-2 – The Great Imitator: Neuropsychiatric Masquerades: a systematic review and case report

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ABSTRACT

The COVID-19 pandemic has affected people worldwide and across all nations. The present review aims at presenting the various neuropsychiatric manifestations of COVID with an aim of describing how these manifestations may be missed and how neuropsychiatric manifestations are embedded in the presenting features viral infections like COVID. The fear related to contracting and spreading SARS CoV-2 has not only expressed itself in the rising number of cases of diagnosable psychiatric disorders, but has also resulted in an increasing number of suicides. Working in a tertiary general hospital, we have seen in liaison practice, a relatively increased number of cases of late onset and first episode psychosis, unexplained agitation, features of anxiety, depression, suicide attempts and completed suicides without any apparent precipitating stressor and of a severity rather disproportionate to the environmental or social stressors. Viral infections and viral theories of psychiatric disorders like schizophrenia abound psychiatric literature. The present review was conceived to present the various neuropsychiatric manifestations and masks that may be seen in COVID cases.

Key words: neuropsychiatric, COVID-19, psychiatric disorders, depression, suicide.

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INTRODUCTION

The COVID-19 pandemic has gripped us all, from the loss of lives to the fear of losing life, and has been unprecedented at that. Uncertainty, loss of jobs, disruption of daily routine and social isolation are some of the reasons for a rapid rise in the cases of anxiety and depression, so much so that the World Health Organization (WHO) has issued public interest guidelines to address psychological issues [1]. Also the heightened fear related to contracting and spreading SARS CoV-2 has not only expressed itself in the rising number of cases of diagnosable psychiatric disorders [2], but has also resulted in an increasing number of suicides [3].

However, not all 'psychiatric symptoms' can be attributed to problems with adjusting to the 'new normal'; especially, when, in liaison practice we see a relatively increasing number of cases of late onset, first episode psychosis, unexplained agitation, features of anxiety, depression, suicide attempts and completed suicides without any apparent precipitating stressor and of a severity rather disproportionate to the environmental or social stressors.

We are all aware of the 'viral hypothesis of Schizophrenia' [4] and, an entity called Encephalitis Lethargica (EL) wherein hypersomnolence, psychosis, catatonia and Parkinsonism were attributed to an inflammatory disorder of the CNS as a result of the 'Spanish influenza' pandemic [5].

If we re-examine studies of respiratory viral pandemics in the 18th and 19th century, we see that apart from respiratory symptoms, there was an increase in the incidence of various syndromes affecting the cognitive, affective, behavioral, and perceptual domains, all of which could not be explained by the psychosocial model of causation alone, these features included insomnia, anxiety, depression, mania, psychosis, and suicide [4]. Neuropsychiatric manifestations of the SARS CoV 1 (Severe Acute Respiratory Syndrome Coronavirus 1) in 2003 and the MERS CoV (Middle East Respiratory Syndrome Coronavirus) epidemic in 2009 revealed that during the acute illness, common symptoms apart from those which were respiratory in nature; included confusion, depressed mood, anxiety, impaired memory and insomnia [6].

Taking from the current SARS-CoV-2 pandemic, a study showed that about 36% of SARS CoV-2 positive patients presented with neuropsychiatric symptoms, instead of the usual presenting symptoms of fever, cough and breathlessness [7].

Therefore, this should put to question our understanding of “asymptomatic carriers” of infection and will hopefully have a bearing on the indications for COVID 19 testing, which will have a bearing on our isolation and treatment strategies, in the wake of a second wave. Hence the current review was carried out, to understand the various manifestations (masks) that the SARS CoV2 presents with.

SEARCH STRATEGY

We did a systematic search for neurological and psychiatric symptoms associated with the SARS-CoV-2, using databases such as PubMed, Google Scholar, Science Direct and Medscape. The following keywords were used in the search using the MeSH terminology- “Psychiatry” “COVID 19”; “SARS Pathophysiology” “pandemic”, “MERS” “Neurology”; “Psychosis”; “first episode psychosis”, “catatonia” “immunology”; “neuroimmunology” “inflammation”; “immunomodulatory drugs”. We were able to find 5012 articles.

We excluded the articles related to psychiatric disorders in those who never tested positive for CoV-2 and excluded substance induced disorders, duplicates, cross references.

NEUROPSYCHIATRIC MANIFESTATIONS

We know that reports from the 18th and 19th century suggested that influenza pandemics apart from the respiratory symptoms, showed an increase in the incidence of insomnia, anxiety, depression, mania, psychosis, suicide and delirium and an exposure to viral infections in adults, in utero and during childhood development, have each been associated with increased risk of developing schizophrenia; what we call the ‘viral hypothesis of Schizophrenia’ as of today [4] and hypersomnolence, psychosis, catatonia, and Parkinsonism, which were attributed to an inflammatory disorder of the CNS caused by the “Spanish” influenza pandemic, an entity called *Encephalitis Lethargica (EL)* [5].

A meta-analysis of the neuropsychiatric manifestations of SARS epidemic in 2003 (SARS CoV-1) and MERS CoV in 2009 revealed that during the acute illness, common presenting symptoms included confusion (27.9%), depressed mood (32.6%), anxiety (35.7%), impaired memory (34.1%) and insomnia 41.9% [6]. In the post-illness stage, depressed mood (10.5%), insomnia (12.1%), anxiety (12.3%), irritability (12.8%), memory impairment 18.9%, fatigue 19.3%, traumatic memories (30.4%) and sleep disorders (100%) were frequently reported [7] and neurological conditions such as polyneuropathy, encephalitis, and aortic ischemic stroke were seen [8]. This can be explained as both SARS-COV1 and MERS-COV are neurotropic and neuro-invasive [9], and an autopsy of the deceased demonstrated signs of cerebral edema and meningeal vasodilation. This was seen along with the infiltration of monocytes and lymphocytes in the vessel wall, ischemic changes of neurons, demyelination of nerve fibers, and the detection of SARS-CoV virus particles (by genome sequencing) in the brain [10].

In a study done, 70.8% had Psychiatric symptoms as the only presenting complaints [11], while another study reported insomnia, impaired memory and persecutory ideas [12]. Chronic fatigue was associated with active psychiatric illness in a study done [13]. Various neuropsychiatric manifestations have been outlined in Table 1.

Table 1: Neuropsychiatric manifestations of SARS COV

Study	Sample size Type of study	Presenting complaints	Highlights
SARS CoV-1 (Rogers et.al. 2020) [6]	3559 Meta-analysis	Meta-analysis of the Neuropsychiatric manifestations of SARS epidemic in 2003 (SARS CoV-1) and MERS CoV in 2009 IN THE ACUTE PHASE Common symptoms included Confusion (27.9%), Depressed mood (32.6%), Anxiety (35.7%), Impaired memory (34.1%) Insomnia (41.9%). IN THE POST-ILLNESS STAGE Sleep disorder (100%) Traumatic memories (30.4%) Fatigue (19.3%) Depressed mood (10.5%) Anxiety (12.3%) Irritability (12.8%) Memory impairment (18.9%)	The SARS CoV-2 and MERS both can present with neuropsychiatric symptoms a presenting complaint. Hence to decrease transmission, detect and isolate. Similarly, we also ought to be aware that in the long term we may come across cases in psychiatry that are post infection manifestations.
MERS [11]	N=24 Acute phase	70.8% had Psychiatric symptoms as the only presenting complaints Anxiety/ tension [37.5%], Insomnia [29.2%] Depressed mood [20.8%], Disorientation [8.3%], Impaired memory [8.3%], Auditory hallucinations [8.3%] Aggressive outbursts [8.3%]) Mild neurocognitive disorder [4.2%]	That not all patients infected with the MERS virus presented with complaints of fever, cough and breathlessness. High of index of suspicion required as cases presenting without respiratory symptoms harbor the virus ad spread infection.
Sheng et al. [12]	n=102 Observational analysis	MOOD AND ANXIETY Insomnia (46.1%) Low mood (36.3%) Tension (36.3%), Fear and panic (26.5%) Crying spell (23.5%), Irritability/yelling (4.9%), COGNITIVE DYSFUNCTION Impaired memory (41.2%) Poor concentration (38.2%) Disoriented in time (33.3%) and place (3.9%) PSYCHOTIC FEATURES Persecutory ideas (3.9%), Auditory hallucination (3.9%), Visual hallucination (2.0%) and Suicidal ideation (2.0%)	Severity for infection and corticosteroids therapy were associated with symptoms of anxiety, depression, psychosis and behavioral problems. Health care work was associated with more cognitive problem.
Lam et al [13]	n = 181 31-51 months	The most common diagnoses were PTSD (23.2%), depression (16.6%), somatoform pain disorder (15.5%), panic disorder (13.8%) OCD (6.6%)	Chronic fatigue was associated with active psychiatric illness.

The SARS CoV-2 virus (belonging to the β -coronavirus family) is taxonomically similar to coronaviruses such as SARS-COV-1 and MERS-COV both of which caused neuropsychiatric syndromes affecting cognitive, affective, behavioral, and perceptual domains and both of which are neurotropic and neuro-invasive [14].

ETIOLOGICAL THEORIES OF THE NEUROPSYCHIATRIC MANIFESTATIONS OF SARS COV-2

Beginning with the entry of the virus in any cell, the ACE-2 receptor acts as the entry port for the virus. ACE-2 receptors express 2 cells (goblet and ciliated) that have been identified as likely infection points for the SARS-CoV-2. Once attached, the virus employs the host cell enzyme, Transmembrane Serine Protease 2 (TMPRSS2) to expose fusion peptides, that fuse the viral membrane with the host cell, allowing the virus to enter the cell [15].

How does the virus gain access to the neuronal cells

There are two postulated pathways one direct and the other indirect pathway

1. *Direct pathway involves neuronal transport of the virus*

How does this happen

- The pathways for the SARS CoV-2 to gain access to our nervous system (central and peripheral) is through retrograde axonal transport via the olfactory pathway, The Gut - Brain axis and the respiratory system. Let us examine each.

Olfactory pathway

Retrograde neuronal transport via the olfactory pathway occurs because the olfactory cilia have ACE2 receptors, after binding to the receptors, retrograde transport occurs through the cribriform plate onto the olfactory bulb (anosmia) and basal part of the forebrain, within about 7 days of infection thereby causing neuronal infection and inflammation [16].

Gut-Brain Axis

The very first symptom of COV2 infection was of gastrointestinal origin with complaint of diarrhea, vomiting; without respiratory symptoms and it was found on follow up testing that, viral shedding in feces can occur up to 5 weeks post-infection, until which the patient could potentially infect others [17].

The gut is postulated as a key entry point due to the following factors: The expression of ACE-2 receptors is higher in the enterocytes than the lungs, thus the SARS-CoV-2 virus can directly infect and replicate in the intestinal cells. However, the enterocytes are connected to the enteric nervous stem and thereby provide a source of entry to the brain (by retrograde axonal transport) and cause inflammation, as a result of which, those with coexisting GI and respiratory symptoms, have worse clinical outcomes, with need for assisted ventilation. Another route is through the Antigen Presenting Cells of the Gut Associated Lymphoid Tissue (GALT) which breach the blood brain barrier causing neuronal infection [18].

Respiratory network

The virus may also enter via retrograde neuronal transport via axons from the peripheral nerves of the respiratory network into the medulla oblongata, where respiratory rhythm is generated and regulated [19]. Therefore, despite low levels of oxygen saturation, patients don't complain of breathlessness, which goes by the name of 'happy hypoxia'. So far we have seen how via axonal transport the virus gets access to the brain and causes infection and inflammation. This is the basic premise of the following clinical presentations of COV-2 infection.

CLINICAL PRESENTATION

Delirium and psychotic disorders

In a study done by Helms [20] agitation was a presenting feature in 40 out of 58 patients. Out of these 40 patients, 26 (65%) were delirious. The rest (35%) presented with agitation, (without confusion, delirium or psychotic features), that is they had unexplained agitation as the initial presenting symptom. Thus, timely recognition and initiation of treatment could prove to be helpful. During the COVID19 pandemic, it has been found that between 0.9% and 4% of people exposed to the virus (tested positive on nasopharyngeal swab test) have developed psychosis or psychotic symptoms (hallucinations and/or delusions) [21].

Authors have reported an increase in the incidence of first-episode psychosis with a shift towards late age of onset in those who were tested for and were found to be positive for SARS CoV 2 virus, on throat swab samples. Thus, a high index of suspicion is warranted for early testing, and isolation, thereby decreasing the spread of infection [22].

Headache

As psychiatrists we have not been trained to think of causes other than migraine, tension type headache or chronic daily headache, when treating patients with headache as a presenting complaint. However, bear in mind that a number of studies have reported headache as an initial symptom in those who were found to be covid 19 positive. The incidence of headache as a sole presenting feature in COV 2 positive patients has been found, with studies showing rates from 8-70% [23] and a meta-analysis showing a prevalence of headache at 12% [24], which were later followed by the typical respiratory complaints around 5 to 7 days later, providing a window of opportunity to diagnose and treat, thereby decreasing the chances of spread.

Cerebrovascular events [25]

A case series of 221 patients with COVID-19 showed 11 (5%) developed acute ischemic stroke, 1 (0.5%) cerebral venous sinus thrombosis (CVST), and 1 (0.5%) cerebral hemorrhage [25-26]. Hypercoagulability is associated with stroke in younger individuals.

Peripheral neuropathy, anosmia, dysgeusia, myopathy and Guillain-Barre syndrome are rare nerve diseases linked to demyelination [7].

Neurodegenerative Disorders

Bianchetti and others [27] stated that given that neural and immune cells can serve as reservoirs of latent CoV, it is plausible that this could contribute to delayed neurodegenerative processes,

Gastrointestinal Disorders

In a study done by Xin and others [18], 11.4% presented with at least one GI symptom (nausea, vomiting or diarrhea), of cov2 positive patients, 22.97% had severe GI symptoms and 31.08% had family clustering, therefore attention to patients with GI symptoms is of importance to prevent spread of infection.

FIRST EPISODE PSYCHOSIS

In a study by Brown et al. [21] incident cases of psychosis in people infected with COV 2 virus was in the range of 0.9% to 4%. Hu and others reported an increase in the incidence of first-episode psychosis with a shift towards late age onset in those who were tested for and were found to be COV 2 positive on throat swab samples [28]. Thus, vigilance for early testing/isolation in those with first episode, sudden onset of psychotic features is warranted.

Now, coming to the postulated Indirect Mechanisms of neuronal Involvement (That is without any direct access of the virus to the brain or neuronal cells). This involves inflammatory chemicals affecting the brain, a study of Psycho-Neuro-Immunology.

BASIC PREMISE OF PSYCHO-NEURO-IMUNOLOGY

Cytokine dysregulation

Infection with SARS-CoV-2, leads to the release of large amounts of pro-inflammatory cytokines (IFN α , IFN γ , IL-1 β , IL-6, IL-12, TNF α , TGF β) and chemokines (CXCL10, CXCL8, CXCL9, both of which have powerful chemo-attractant activity leading to immune cell recruitment during inflammation [30].

Cytokine Storm

Thus, uncontrolled and over-production of soluble markers of inflammation which, in turn, sustain an aberrant systemic inflammatory response, is what we call "CYTOKINE STORM SYNDROME", which is characterized by a fulminant and fatal hyper-cytokemia associated with multi-organ failure and mortality. Pro-inflammatory cytokines (e.g., IL-6 and TNF- α) are significantly higher among deceased COVID-19 patients, which has previously been linked to cytokine storm syndrome-related encephalitis [30].

Neuro-inflammation and neuropsychiatric manifestations of COV 2 infection

Cytokines released through peripheral inflammation may increase the permeability of the BBB providing a pathway for the virus to enter the brain. Once in the CNS, it activates a cascade of neuro-inflammation and neuro-degeneration through the release of TNF, cytokines, ROS and other inflammatory mediators [31]. Thus, it has been observed that the severe clinical manifestations of the disease could not be ascribed only to the viral activity per se, but that an immune-mediated mechanism played an important role in causing neuronal damage, driving the clinical progression of neuropsychiatric manifestations of COV 2 infection [30]. In this context, Interleukin-6 (IL-6) and C Reactive Protein (CRP) deserve a more extensive discussion in view of their involvement in the coronavirus-induced cytokine storm as acute phase biomarkers. High serum levels of IL-6 and is now a widely proposed and used predictor of disease severity [30].

Post-infectious autoimmunity

Viral infections have been suggested to induce auto-reactive processes that can potentiate the development of an autoimmune response in susceptible individuals. In fact, the literature has already described cases of autoimmunity following SARS-CoV-1 and MERS-CoV infection [32].

The SARS-CoV-2 epitopes bear a structural resemblance to several human proteins. Molecular mimicry between the virus epitope and myelin basic protein leads to an immune attack against the host cells, causing demyelination, skeletal muscle breakdown, hypercoagulability and acute renal injury. This is one of the many factors contributing to critical illness and mortality in COVID-19 via autoimmunity [33].

ETIOPATHOGENESIS OF THE MANIFESTATIONS OF PSYCHIATRIC SYMPTOMS IN COV 2 POSITIVE PATIENTS

In retrospect, we have seen increased levels of various cytokines in several psychiatric disorders. Soluble cytokines that reach the brain can influence synthesis, release and reuptake of several neurotransmitters, including monoamines, such as dopamine, norepinephrine, and serotonin. Also, changes in the metabolism of neurotransmitters that occur as a result of inflammatory molecules are involved in the pathophysiology of various psychiatric disorders, such as depression, anxiety, PTSD, and obsessive-compulsive disorder, not just that but soluble markers such as IL-6 and CRP, to name a few also cause dysfunction of the Hypothalamo-Pituitary-Adrenal (HPA) Axis and a consequent increase in serum cortisol levels, as another causative factor for psychiatric symptoms [31].

Psychotic features

In a noteworthy case report, psychotic symptoms characterized by psychomotor agitation, anxiety, thought disorganization, persecutory delusions and auditory hallucinations, followed by dysphagia, dysarthria and seizures in a SARS COV-2 positive patient, for which the patient was given antiviral medication (Remdesivir, HCQ) with little improvement, the patient's serological testing showed an increased IL-6 and CSF anti-NMDA receptor antibodies. A diagnosis of anti-NMDAR encephalitis was made. High doses of dexamethasone and intravenous immunoglobulin (IVIG) were administered with improvement [34].

ANXIETY AND DEPRESSIVE FEATURES

Studies showed that Inflammation was associated with a range of depression symptoms, particularly with tiredness, lack of energy, sleep problems, and changes in appetite. These symptoms characterize what we call 'sickness behaviors'. Inflammation was also associated with the cognitive and emotional symptoms of depression (eg. anhedonia, depressed mood, feelings of self-worth, lack of concentration, and suicidal ideation).

LABORATORY BIOMARKERS

In a study done by Dantz et al, Laboratory findings showed elevated levels of inflammatory markers, such as C-reactive protein in people with depression. It was suggested that this association may, in fact, be symptom-specific, in that higher levels of inflammation are particularly likely to underlie symptoms that characterize sickness behavior, including fatigue, reduced appetite, withdrawal, and inhibited motivation [36].

Trait versus State Markers:

- Evidence suggests that IL-6 may be a state marker of schizophrenia, as it is elevated only in currently symptomatic patients, but not in stable outpatients
- Some studies have found IL-6 to be correlated with duration of illness or
- Being a potential biomarker for early psychotic symptoms [37].
- In contrast, other inflammatory markers, including TNF- α and interferon (IFN)- γ , been suggested as possible trait markers [38].

CLINICAL APPLICATION OF BIOMARKERS

As an extended application, cytokines could help stratifying population samples for clinical trials testing new therapeutic agents. In particular, it has recently been reported that baseline IL-6 levels may predict treatment response to ketamine in treatment-resistant depressed patients, with higher IL-6 levels amongst responders [39].

C Reactive Protein (CRP)

C-reactive protein has been associated with all the specific depression symptoms. Independent associations were apparent specially with sleep problems, and changes in appetite. The independent association with anhedonia was close to statistical significance. With C reactive protein, a dose-response pattern was observed for sleeping problems, tiredness or lack of energy changes in appetite [40].

Case 1

Male, 56 years old, hypertensive, came with complaints of decreased interaction with family members, lethargy, decreased interest in activities, decreased appetite, episodes of panic attacks and decreased sleep and headache since 15 days. He had no past nor a family history of psychiatric illness. There was no history of fever, cough, breathlessness or any high risk contact. His blood pressure was 146/90, while on 5 mg of Amlodipine. There was no history suggestive of delirium, no agitation, no history suggestive of psychosis or any other systemic abnormalities on examination. However, considering the age, no past or family history, no substance use, without any precipitating factors or stressor, and a rather sub-acute onset, routine investigations were done. The reports showed a raised WBC count of 8000 and an ESR of 20 with normal renal and liver function test reports. Serum CRP was done which was 14 mg/L. The patient however did not fulfil criteria for a COV 2 nasopharyngeal swab test. An HRCT of the chest was done which showed peripheral infiltrates with a ground glass appearance in both the lungs. Antigen testing was done which turned out to be positive for cov 2 and the patients was admitted. Only 6 days later, did the patient complain of breathlessness and cough. Thereafter the patient was lost to follow up.

Blood picture of COV 2 positive patients with CNS symptoms

Immunologic test results from COVID-19 patients show that CNS symptoms such as headache, dizziness, and ataxia are linked to significantly lower blood lymphocyte counts, platelet counts, and higher blood urea nitrogen levels compared to those without CNS symptoms. Lymphopenia has been suggested to be indicative of immunosuppression in patients with CNS symptoms. Patients with CNS symptoms had lower lymphocyte levels, platelet counts and blood urea nitrogen compared with those without CNS symptoms. Patients with muscle injury had significantly higher levels of Creatine Kinase had higher neutrophil counts, Lower lymphocyte counts, higher C-reactive protein levels, and higher D-dimer levels [7]. The abnormalities were manifestations of increased inflammatory response and hypercoagulability.

Psychotropic drugs with immuno-modulatory effects

The in vitro literature on antidepressants shows that some antidepressants, such as clomipramine and fluoxetine, more consistently decrease proinflammatory cytokines, interleukin-6 (IL-6), interferon (IFN)- γ , Tumor Necrosis Factor α (TNF- α), whilst others like mirtazapine and venlafaxine [42] tend to increase cytokine levels with patients complaining of pain and soreness of muscles. However, caution is warranted as fluoxetine inhibits liver enzymes and clomipramine lowers the seizure threshold. Haloperidol inhibited Nuclear Factor-kB activation, and thereby suppressed expression of CD80, as well as secretion of IL-1b, IL-6, and IL-12 p40. CD80 and IL-6 levels were similarly attenuated by a D2-like receptor antagonist, but not by a D1-like receptor antagonist [43], however an ECG should be done prior to initiation and QTc interval should be monitored as haloperidol has the propensity to prolong the QTc interval.

Vigilance for side effects of psychotropic drugs in routine use

When using any SSRI, weigh risks and benefits in patients with recent bleeding or high risk for bleeding (e.g., thrombocytopenia, concurrent anticoagulation therapy (LMW-Heparin) which is used in patients suffering from moderate to severe symptoms of infection with SARS COV-2.

Our patients on clozapine and carbamazepine, to name a few, are monitored for blood dyscrasias. However, there is a class effect FDA warning on all first and second generations antipsychotics for the potential association with leukopenia, neutropenia, and agranulocytosis. Carbamazepine is more likely to be associated with an early transient leukopenia and has also been associated with agranulocytosis and aplastic anemia [44]. It has been suggested that clozapine, specifically is associated with a higher risk of pneumonia and its complications, reasons for this include aspiration, sialorrhea, sedation, and poorly understood effects on the immune system [45]. Challenges faced in practicing Liaison psychiatry is that drugs used rather sparingly, earlier like Chloro-quine and hydroxychloroquine, tocilizumab, Remdesivir, atazanavir, lopinavir/ritonavir, favipiravir and Azithromycin amongst antibiotics, are now used almost empirically in COV 2 positive patients and some also using it prophylactically. Hydroxychloroquine (HCQ) can cause anxiety and, less frequently, psychosis. The list doesn't end here, Corticosteroids, given as a bolus or rather large oral doses or can cause manic and psychotic symptoms [46].

Drug interactions

HCQ can interact with antipsychotics, increasing the levels of phenothiazines [46]. Atazanavir and lopinavir/ritonavir can substantially increase the levels of quetiapine, lurasidone, ziprasidone, and pimozide, as well as benzodiazepines, such as midazolam and triazolam [47]. Carbamazepine, meanwhile, reduces levels of atazanavir, remdesivir, chloroquine, and hydroxychloroquine. Disulfiram and nalmefene should be discontinued in patients with alcohol addiction. In patients treated with clozapine, SARS CoV-2 infection may lower the white blood cell count [48].

CONCLUSIONS

SARS CoV 2 is a respiratory virus and may damage the CNS as a result of direct neuroinvasion by retrograde axonal transport, which directly causes damage to neuronal cells or by the effect of inflammatory markers on neuronal cells, neurotransmitters and the HPA axis or as a result of misdirected host immune response

that could be associated with autoimmunity. This phenomenon could also initiate later, in the post-acute phase of the illness and therefore the importance of follow up cannot be over emphasized. This review highlights the diverse presentations of covid 19, clinicians should be alert of the propensity of SARS COV-2 to mimic non respiratory systemic manifestations. The onset of respiratory symptoms sometimes starts after 5 to 7 days after the presenting complaint. Thus, testing strategies can be modified so that detection and containment strategies can be implemented before infection spreads. Serum biomarkers like CRP and IL-6 are simple non-invasive tests, used by many as a prequel to HRCT or chest radiography in those with sudden neuropsychiatric symptoms. These findings should direct future research to establish the role of early sensitive and specific markers of SARS CoV 2 infection without there being respiratory symptoms because SARS CoV 2 is a great imitator.

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Sanskrit Shloka Chanting and Mindfulness

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ABSTRACT

Background: Mindfulness can simply be defined as “moment-by-moment awareness” or as “a state of psychological freedom that occurs when attention remains quiet and limber, without attachment to any particular point of view”. Through past studies it was noted that chanting Sanskrit Shlokas has an energizing effect. It has been well established through various research findings that meditation increases mindfulness. But the relationship between Sanskrit Shloka chanting and mindfulness has not been explored. The purpose of this study was to investigate whether chanting of Sanskrit shlokas has an effect on mindfulness scores.

Methodology: Men and women in the age range of 45-55 years, were taken as samples and two groups were formed. The experimental group consisted of 15 participants who chant Sanskrit shlokas every day for about 25 minutes at the same time in the morning. The control group consisted of 15 participants who do not engage in chanting or meditation. To measure mindfulness, the Kentucky Inventory for Mindfulness Skills (KIMS) was administered.

Results: The mean scores of mindfulness on the KIMS questionnaire for the Sanskrit Shloka Chanting group was 137.93, with a Standard Deviation of 11.56. The mean scores of mindfulness on the KIMS questionnaire for the Non-Chanting group was 124.93 with a Standard Deviation of 5.47. An independent *t* test on the mean mindfulness (KIMS) scores found that the scores for Sanskrit Shloka Chanting group were significantly higher than the mean scores of the Non-Chanting group.

Conclusion: The findings suggest that mindfulness scores on the KIMS were significantly higher for the Sanskrit Shloka Chanting group as compared to the Non-Chanting group.

Keywords: mindfulness, sanskrit, chanting.

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INTRODUCTION

Sanskrit is one of the oldest documented languages in the history of the human civilization. Sanskrit's effect on the brain (“Sanskrit Effect”) through chanting of shlokas can be realised through James Hartzell's research. They studied a bunch of verbal memory specialists to see whether intensive oral text memory is related to structural features of hippocampal and lateral-temporal regions implicated in language processing. Professional Vedic Sanskrit Pandits in India train from childhood for around 10 years in an ancient, formalized tradition of oral Sanskrit text memorization and recitation, mastering the precise pronunciation and invariant content of multiple 40,000-100,000 word oral texts. They conducted structural analysis of grey matter density, cortical thickness, local gyrification, and white matter structure, relative to matched controls. They found massive grey matter density and cortical thickness increases in Pandit brains in language, memory and visual systems, including i) bilateral lateral temporal cortices and ii) the anterior cingulate cortex and also the hippocampus, regions related to long term and short term memories. Differences in hippocampal morphometry matched those previously documented for expert spatial navigators and individuals with good verbal working memory. The findings provide unique insight into the brain organization implementing formalized oral knowledge systems [1]. In another study on the implications of

Sanskrit on Attention, 60 school students (boys = 30 and girls = 30) in the age range of 12-14 years, were trained for chanting GM (Gayatri Mantra) for 5 days. They were assessed on DLST (Digit Letter Substitution Task) immediately before and after two sessions (i) GM chanting (10 min) and (ii) Poem line (PL) chanting with an equal duration (10 min). Fifty percent of participants performed GM chanting and remaining on the PL recitation on day 6. The orders of the sessions were reversed on day 7. Both sessions showed significant improvement in the total and net score of DLST. The magnitude of net score improvement was greater after GM (21.67%) compared to PL (4.85%) [2].

Mindfulness can simply be defined as “moment-by-moment awareness” [3] or as “a state of psychological freedom that occurs when attention remains quiet and limber, without attachment to any particular point of view” [4]. The benefits of mindfulness training have been demonstrated by scientists from the University of Michigan Medical School and VA Ann Arbor Healthcare System. They studied 23 combat veterans with post-traumatic stress disorder (PTSD) who served in Afghanistan and Iraq. All of the veterans participated in weekly group therapy sessions, but only those who undertook mindfulness training showed specific brain connectivity improvements [5]. The purpose of this study was to investigate whether chanting of Sanskrit shlokas has an effect on mindfulness scores. Through past studies it was noted that chanting Sanskrit shlokas has an energizing effect. It has been well established through various research findings that meditation increases mindfulness. But the relationship between Sanskrit Shloka chanting and mindfulness has not been explored. Gao et al’s study corroborates evidence suggesting that the neurophysiological correlates of religious chanting are distinct from correlates of the extensively researched mindfulness meditation [6]. The link between Sanskrit shloka chanting and mindfulness was thus thought of being studied.

Hypothesis for the current study is:

- There is no significant difference between the mean scores on the KIMS questionnaire of participants who chant Sanskrit Shlokas daily and those who do not chant.

METHODOLOGY

15 participants in the age range of 45-55 years were chosen for the study for each of the two conditions - the Sanskrit shloka chanting condition and the non-chanting condition. 15 participants who chant Sanskrit shlokas daily were assigned to the chanting condition. Likewise, it was established that the other 15 participants do not chant Sanskrit shlokas were assigned to the non-chanting condition. It was also ensured that none of the participants of both conditions participated in any other activity like meditation, yoga, dancing, singing, swimming, other sports and are not currently undertaking any therapy. Each participant filled a consent form which explained them about the study and the KIMS self-report questionnaire was administered. Each participant took 15 to 20 minutes to complete the scale.

The following scale was used to measure Mindfulness:

The Kentucky Inventory for Mindfulness Skills (KIMS): This is a 39-item self-report inventory that is used for the assessment of mindfulness skills. The instrument has good internal consistency. Alpha coefficients for Observe, Describe, Act with awareness and Accept without judgment were .91, .84, .76, and .87, respectively. Adequate to good test-retest reliability with correlations for the Observe, Describe, Act and Accept scores being .65, .81, .86, and .83, respectively. The instrument demonstrates good content validity. Higher scores on the questionnaire imply greater mindfulness [7].

The Shloka Chanting Condition group chanted the following Shlokas daily for 25 minutes.

- Shree Suktam
- Purusha Suktam
- Narayaneeyam
- Atharvashirsha
- Ganesh Stotram
- Mahamrityunjaya Mantra
- Mantrapushpanjali

RESULTS AND DISCUSSION

Table 1: Descriptive Statistics, t and p values of both conditions

Shloka Chanting Condition		Non-Chanting Condition			
Mean	SD	Mean	SD	t value	p value
137.93	11.56	124.93	5.47	- 3.94*	0.005

* $p < 0.05$, significant

The mean scores of mindfulness on the KIMS questionnaire for the Sanskrit Shloka Chanting group was 137.93, with a Standard Deviation of 11.56. The mean scores of mindfulness on the KIMS questionnaire for the Non-Chanting group was 124.93 with a Standard Deviation of 5.47. An independent t test on the mean mindfulness (KIMS) scores found that the scores for Sanskrit Shloka Chanting group were significantly higher than the mean scores of the Non-Chanting group ($t_{(28)} = -3.94$, $p < 0.005$). The results indicate that mindfulness scores were enhanced by Sanskrit Chanting. Past studies indicate the benefits of chanting in the form of improved pulmonary function, increased mental alertness, increased environmental awareness and potential relief from depression and stress [8]. Psychological benefits of mantra repetition include decreased heart rate, lowered level of tension as well as a decreased rate of blood pressure [9]. Chanting vibrations with concentration enable to reduce the adrenaline level and cortisol and reducing the level of stress. Besides this, sound seed vibrations have a significant impact on improving the efficiency of the spinal cord. Meditation not only improves concentration but also strengthens the control on reacting to emotions, at the same time, helps with detoxification. Chanting these sound seeds along with a constant deep breathing process improves blood circulation by providing more oxygen to the body thus restoring youthfulness both externally and internally. Moreover, the other health benefits include filtering out negativity, getting enough sleep and nurturing throat and thyroid glands [10]. Religious chanting appears to provide a streamlined procedure for the modulation of biological processes [6]. The findings therefore imply that Sanskrit shloka chanting has implications on mindfulness. Mindfulness interventions are used as psychotherapeutic techniques by mental health professionals. This study demonstrates that Sanskrit Shloka chanting can be used as a cost-effective psychotherapeutic technique for improving mindfulness in people. Mental health professionals should encourage people suffering from stress or other emotional or behavioural problems to practice religious chanting at home or in stressful situations, which can be done without the intervention of a counsellor in a long run. The present study, however, has some shortcomings. The respondents were aged 45-55 years and the sample size was very small, hence this reduces the generalization of results. The results could be better generalized if data was collected by experimental method under laboratory conditions using pre-post-test method.

CONCLUSION

The findings of the study were found to be consistent with past research studies and have led to the following conclusion: Sanskrit Shloka Chanting helps to improve mindfulness scores as compared to the Non – Chanting group.

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A Study of Emotional Intelligence and Resilience Among Medical Interns – to emphasize Inclusion in the Medical Curriculum

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ABSTRACT

Background: Emotional Intelligence (EI), influencing one's interpersonal and communication skills can help doctors to improve their patient care and clinical outcomes. Medical interns are young, naïve professionals who face numerous psychological stressors during their internship. Encouraging resilience can alleviate negative effects of stressors improving their professionalism during internship and further medical profession. The aim of the study was to study the pattern and correlation of emotional intelligence and resilience among medical interns.

Method: Total 109 medical interns, consenting to participate in the study were included in the study after obtaining informed consent and institutional ethics committee approval. Participants were asked to fill in a Google survey form which consisted of emotional intelligence and resilience scale and the responses were tabulated and analysed using descriptive analysis and t-test.

Results: Majority of the interns of both genders had poor scores and needed improvement on all the domains of Emotional Intelligence. Total resilience score was found to be comparable for both male and female interns. Total resilience score was found to be significantly lower in those who needed improvement in emotional intelligence.

Conclusions: Female interns had better EI as compared to male interns. Poor emotional intelligence was associated with poor resilience score in our study. Majority of the interns reported inadequate training on EI and resilience in current undergraduate medical education. Increasing awareness about emotional intelligence and resilience in interns can be an essential component in their medical curriculum.

Keywords: Emotional Intelligence, Psychological Resilience, Education, Medical, Undergraduate.

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INTRODUCTION

Emotional Intelligence (EI) is defined as the capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships judiciously and empathetically. EI is an important component of cognitive ability that facilitates interpersonal behaviour. It facilitates the effective integration of emotion and cognition, resulting in intelligent use of emotions and the use of emotions to improve thought processes [1]. Bar-On defined EI as a set of emotional, personal, and social abilities, skills, and competencies that impact one's ability to cope with daily demands. Available studies have highlighted association of EI to physical and psychological health influencing one's ability to cope with stress and demands, less professional burnout resulting in more success, effective leadership skills, across a variety of professions [2]. In the medical field too, it has been noted that EI plays an important role in the professional success of medical doctors [3]. EI can have a positive influence on domains of medical practice including doctor-patient relationship,

empathy, communication skills, patient satisfaction, diagnostic skills, patient compliance, decrease in lawsuits, teamwork, professional burnout, organizational commitment, and medical leadership. Additionally, academic success among medical students has also been linked to higher EI levels [4-5].

Resilience is an ability of an individual to show positive adaptation and to bounce back even when they experience significant trauma or adversity [6-7]. It is the capacity to cope positively with stress. Resilience plays an important role in enhancing academic success, to overcome challenges and stress in professional life [8]. Resilience can enhance abilities of an individual like better adaptability in stressful environment through problem-solving skills and flexibility. These skills can be essential to make graduating medical students a confident and efficient doctor in their professional life. Thus, 'resilience' is an important aspect to be studied in this population [9]. Resilience also includes other factors such as the capacity to make realistic plans, having self-confidence and a positive self-image, developing communication skills and the capacity to manage strong feelings and impulses [10].

Current medical profession is facing lots of challenges like increased disease burden with increasing lifespan, technology misguiding patients and families leading to their challenging and demanding behaviour, lawsuits, violence towards the doctor etc. A doctor needs to develop a balancing ability to handle these challenges and at the same time, maintaining better communication with patients, relatives and the team. This process itself can result in higher burn-out with the medical profession. It is proposed that a good EI and resilience can protect the medical professional from developing burn-out. There is a growing research highlighting importance of EI and resilience in the success of a health-care professional.

The traditional medicine has been criticised to be less patient-centric where health-care workers were encouraged to preserve an emotional distance from their patients in order to maintain a certain degree of objectivity [11]. It's only recently, however, there has been a shift in patient-care approach toward breaking down barriers of communication between patients and health care practitioners, with emphasis of more empathic approach. In modern medicine, the focus is on improving the trusting relationship between doctor and a patient. Hence, developing good EI, resilience and communication skills becomes essential in order to improve patient satisfaction to build mutual understanding and trust with the treating doctor.

Aims & Objectives

1. To study the pattern of emotional intelligence in medical interns
2. To study overall resilience in medical interns
3. To study association between emotional intelligence and resilience

METHODOLOGY

This was a descriptive cross-sectional study conducted at a tertiary care private teaching medical college and hospital. It was a one-time assessment of medical interns at the end of their compulsory rotatory postings. Total of 109 medical interns, fulfilling inclusion and exclusion criteria were enrolled in the study after obtaining ethics committee approval from institutional ethics committee and informed consent from the participants using complete enumeration. The participants were explained about the study objectives and a Google survey form using validated scales for EI and resilience to self-administer via e-mail. The responses obtained through Google survey form were tabulated and analyzed using Microsoft Excel Version 13. Descriptive statistics: mean, standard deviation, frequency and percentages were calculated. Chi square test were used as test of significance at p value cut off of 0.05.

Materials

Proforma: A detailed semi-structured proforma to record the name, age, sex & ethnicity of the participant. The Google survey form included 5 questions to assess knowledge and attitude of medical interns towards concept and need EI and Resilience in medical education. These questions were:

- 'Are you aware of the term 'Emotional Intelligence & Resilience?'
- 'Have you officially been introduced or received training in the domains of EI and Resilience?'
- 'Have you been suffering from any psychological health issues currently or in the past?'

- 'Have you witnessed or experienced psychological health issues in your family/ close relatives/ friends?'
- 'Do you think introduction and training about EI and Resilience is required in medical profession?'

Scales Used –

1. **Emotional Quotient Self-Assessment Checklist:** It consists of 30 statements, five each for the domains of self-awareness, self-confidence, self-control, empathy, motivation and social-competency. Each question is scored based on a 5-point Likert scale ranging from 1 to 5 (virtually never = 1 to virtually always = 5). The total score was the sum of all 6 domain scores. The minimum and maximum scores for each domain were 5 and 25 respectively and a cut –off value for good EI is 20 in each domain, the score below which needs improvement in the respective domain. This questionnaire has good psychometric properties in terms of reliability (Cronbach's alpha=0.82) [12].
2. **The Connor-Davidson resilience scale (CD-RISC-25):** CD-RISC contains 25 items, all of which carry a 5-point range of responses, as follows: not true at all (0), rarely true (1), sometimes true (2), often true (3), and true nearly all of the time (4). The item response is based on how the subject has felt over the past month. The total score ranges from 0–100. Higher the score, greater is the resilience. Internal consistency of the scale reported is 0.90 [13].

RESULTS

Total 109 medical interns were enrolled for our study. On studying socio-demographic profile, it was observed that majority (two-thirds) of them were females and mean age of interns was found to be 23.35 years with range of 22 to 28 years (SD=0.843). (Table 1)

Socio-demographic Parameters		Frequency	Percentage
Mean Age		23.35 years (SD=0.843)	
Sex	Females	73	66.97%
	Males	36	33.03%

Table 1: Socio-demographic parameters

When interns were asked whether they knew the term “Emotional Intelligence& Resilience”; majority of them (88.07%, N=96) reported to be aware while 4.58% (N=5) of them were not aware and rest of 7.35% (N=8) were not sure about the term. Majority of the interns (87.16%, N=95) claimed that they have not been officially introduced or received training in the domains of emotional intelligence.

Nearly three fourth reported that psychological disorder was not experienced by them (77.98%) but had witnessed their family members/ close relatives or friend suffering through one(72.48%) either currently or in the past. Almost half (48.56%) of the interns felt that introduction and training about emotional intelligence and resilience is required in medical profession.

Domains of EI compared with Gender

On comparing domains of emotional intelligence gender- wise, it was observed that majority of males and females needed improvement on all the domains. Among interns having normal EI score on the scale, it was observed that the percentage of female interns was higher compared to male interns on all domains except ‘total self-control’. However, this gender-wise comparison of EI score was not statistically significant. (Table 2)

Domains of Emotional Intelligence	Male		Female		p-value
	Need improvement	Normal EI	Need improvement	Normal EI	
Domain 1 (Self- Awareness)	29 (80.6%)	7 (19.4%)	55 (75.3%)	18 (24.7%)	0.543
Domain 2 (Empathy)	27 (75.0%)	9 (25.0%)	48 (65.8%)	25 (34.2%)	0.327
Domain 3 (Self- Confidence)	30 (83.3%)	6 (16.7%)	58 (79.5%)	15 (20.5%)	0.629
Domain 4 (Motivation)	28 (77.8%)	8 (22.2%)	54 (74.0%)	19 (26.0%)	0.665
Domain 5 (Total Self- Control)	29 (80.6%)	7 (19.4%)	60 (82.2%)	13 (17.8%)	0.836
Domain 6 (Social Competency)	30 (83.3%)	6 (16.7%)	56 (76.7%)	17 (23.3%)	0.426

Table 2: Domains of EI compared with Gender

(Test used: Chi-Square test, Chi-Square value: Domain 1: 0.371, Domain 2: 0.960, Domain 3: 0.234, Domain 4: 0.187, Domain 5: 0.043, Domain 6: 0.635. df = 1)

Resilience

The mean resilience score found was 65.79 (SD = 13.324). The mean resilience score was observed to be comparable for both male and female interns. (Table 3)

	Mean	SD	P value
Female	65.51	14.044	0.755
Male	66.36	11.900	

Table 3: Resilience scores

(Test used: Independent Samples t-test, t-test value: -0.313, df = 107)

Domains of Emotional Intelligence compared with Total Resilience

On comparing total resilience score with all the domains of emotional intelligence, it was observed that the mean resilience scores were higher for those who had normal Emotional Intelligence Scale and didn't need any improvement. This comparison of resilience with emotional intelligence was observed to be statistically significant on all the domains of EI scale. (Table 4)

Domains of Emotional Intelligence		Total Resilience		p value
		Mean	SD	
Domain 1 (Self-Awareness)	Need Improvement	62.23	11.895	0.001*
	Normal EI	77.76	10.764	
Domain 2 (Empathy)	Need Improvement	61.51	11.953	0.001*
	Normal EI	75.24	11.271	
Domain 3 (Self-Confidence)	Need Improvement	62.83	11.823	0.001*
	Normal EI	78.19	12.274	
Domain 4 (Motivation)	Need Improvement	61.84	11.374	0.001*
	Normal EI	77.78	11.663	
Domain 5 (Total self-control)	Need Improvement	62.75	11.753	0.001*
	Normal EI	79.30	11.576	
Domain 6 (Social Competency)	Need Improvement	62.47	11.848	0.001*
	Normal EI	78.22	11.160	

(* denotes p value < 0.005 i.e. statistically significant)

Table 4: Domains of Emotional Intelligence compared with Total Resilience

(Test used: Independent Samples t-test. T-test values - Domain 1: 5.852, Domain 2: -5.653, Domain 3: -0.5311, Domain 4: -0.6276, Domain 5: -5.704, Domain 6: -5.731. df = 107)

DISCUSSION

Even though only minority of the medical interns were unaware of the term 'EI' and 'Resilience', most of them agreed upon the fact that their current medical education did not cover training for the EI and resilience and that the training for the same is essential in a medical curriculum.

This is only recently that with newer recommendations of competency based medical education by Medical Council of India, medical schools have begun integrating soft-skills development in their curriculum. EI and resilience training as a part of the soft skills can contribute to development of core skills of a medical professional. It has been proposed that understanding needs of a graduating medical intern can help design the curriculum and address the budding medical professional's overall emotional wellness, which can further enhance their clinical experience, and perhaps even improve patient outcomes [14].

In India, the Vision 2015 document of the Medical Council of India, the apex body in charge of curriculum development for medical education in the country, focused on the AETCOM module, which is the Attitude, Ethics and Communication module, in order to impart education on communication skills, empathy, emotional intelligence, resilience and ethics [15].

Emotional Intelligence

Emotional intelligence contributes significantly to communication skills and empathy by enabling a health-care worker to understand patient's, caregiver's and their own emotions, respond appropriately, to minimize inter-personal conflict while working in a team and improving outcome of patient care. Given significant importance placed on the quality of medical care, many researchers have recommended training of EI in medical curriculum to increase their professional and soft skills [16-19].

The percentage of normal EI scores on all domains of self-awareness, empathy, self-confidence, motivation and social-competency were higher in female interns as compared to males except for domain of total self-control where, male interns scored better than the females, although, this gender-wise difference in EI scores was not statistically significant.

The concept of emotional intelligence is widely researched with emphasis on gender-wise difference, the findings of which suggest that women score better than men in terms of emotional understanding and expression, translating into better empathy and clinical care, whereas men do better than women when it comes to managing distressing emotions [20-21]. The widely available literature has highlighted that women tend to have better emotional understanding. They tend to understand, express emotions better than men and have a greater ability as regards to certain interpersonal skills. Women for instance, recognize other people's emotions better, are more perceptive and have greater empathy [22-24]. The superiority of female gender in emotional intelligence over males has been supported by biological theories too. Some evidence exists that certain areas of the brain dedicated to processing emotions could be larger in women than in men [25].

Resilience

In our study, resilience score was comparable in both the gender. This finding is in accordance with previous studies on resilience in medical students which reported that gender doesn't play a significant role in relation to resilience [9, 26]. The concept of EI and resilience are inter-dependent with each ability complement to the other. Both EI and resilience together are required for better stress appraisal, stress management and to reduce professional burn-out. Wide research is available in association of EI and resilience with perceived stress. The available research suggests that university students with better emotional intelligence and resilience present lower perceived stress. Thus, improving emotional intelligence and resilience could prevent students from suffering perceived stress in higher education [27], considering high level of stress and burn-out in medical professions, it is essential to study EI and resilience in the budding medical graduates. When total resilience score was compared with the domains of emotional intelligence, it was observed that the mean resilience scores had significantly positive association with the emotional intelligence score across all domains. The resilience score was high in interns with good emotional intelligence. Consistent with our findings, the vast majority of research in the area shows that people with better EI have better resilience. Similar observations are reported by Schneider et al. [28], Magnano et al. [29] and Cejudo et al. [30] who

demonstrated that EI facilitates stress resilience. Infact, the four EI abilities appeared to facilitate resilient stress responses including challenge appraisals, more positive and less negative affect, and challenge physiology. The components of EI can help in better stress-appraisal, emotional understanding, self-control, emotional expression, and emotional regulation, thus facilitating resilience. A study by Armstrong et al. [31] revealed that EI was related to psychological resilience. These authors concluded that having higher EI is adaptive in stressful circumstances resulting in better resilience.

It can be proposed that the undergraduate students with higher levels of EI were inclined to be more resilient, which may contribute to a decrease in perceived stress. The EI determines the perceived stress and also can act as a protective factor promoting stress-resiliency, plays a paramount role in the activation of strategies that could help in protecting psychological adjustment [32]. EI is thus postulated to buffer the effects of aversive events of stress in an individual. This hypothesis is supported by findings of a study by Armstrong [31] who observed that EI was negatively associated with events and distress. Most persons with higher EI scores reported that fewer stressful events continued to distress them. Importantly, individual differences in four EI dimensions were found to distinguish between the vulnerable. According to author, all the components of EI i.e. Emotional Self-Awareness, Emotional Expression, Emotional Self-Control and particularly, Emotional Self-Management determine the resilience and stress coping.

A study to investigate the relationship as well as the impact of Emotional Intelligence (EI) on to the perception of role stress of medical professionals in their organisational lives, observed that there was no significant difference in the level of EI and perceived role stress between genders, but significantly negative relationships of EI with organisational role stress for both the gender and the medical professionals as a whole [33]. This can be elaborated to understand that the stress understanding and coping as a component of resilience can be improved through the training on EI in medical professionals.

Limitations

The study was carried out in a small sample size in a single cohort of batch of interns. A study on different stages of medical education focussing on first-year, final year, interns and residency across multiple centres can create more generalizable results. Also, multiple correlates of the EI and Resilience apart from gender were not a part of study methodology.

CONCLUSIONS

EI score was higher in female interns whereas, the resilience score was comparable across both genders. Poor emotional intelligence was associated with poor resilience score in our study. Majority of the interns expressed inadequate training on EI and resilience in current undergraduate medical education. Newer Competency Based Medical Education can initiate training about emotional intelligence and resilience to enhance the communication skills, empathy, clinical skills, professionalism and stress management abilities of a graduating medical student. Medical education should focus on gender-specific innovative strategies to train medical students to understand, express and manage their emotions and to translate their EI into resilience and better clinical care.

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A study on the prevalence Of Depression in caregivers of patients with Alcohol Dependence and its influence on caregiver help seeking tendency

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ABSTRACT

Introduction: Caregivers of patients with alcohol dependence often refrain from asking for help for deaddiction. This leads to worsening of the condition due to delay of planned interventions for treatment of dependence and further adds to the care giver burden..

Methodology: In this cross-sectional study we used consecutive sampling of patients with alcohol dependence syndrome who got admitted into the gastroenterology in-patient ward. Their corresponding caregivers included for the study were spouse/parent/sibling. The prevalence of depressive symptoms was screened using the Becks depression inventory [BDI]. We assessed the likelihood of help seeking in the caregiver for their affected relative's addiction problem by survey questionnaire formulated in Tamil. To compare the BDI scores between the help seeking and non-help seeking caregivers, we used the one way ANOVA test.

Results: In the whole sample, 34 [out of 39] caregivers [87.18%] had depressive symptoms score of above 17 [clinically significant depression] on the BDI depression scale. The mean BDI score was significantly higher in those caregivers who did not seek help for their relative's addiction and this was statistically significant [p value = 0.04]

Conclusion: The identification of depressive symptoms in the caregiver is important in addressing care giver burden and thus in improving psychosocial support for persons with alcohol dependence.

Keywords: Care Giver Depression, Help seeking, Alcohol dependence

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INTRODUCTION

Family plays a central role in providing care to the alcohol dependent patients especially in an Indian setting where inter-dependence is prominent. An alcohol dependent person creates imbalance in all aspects of family life and causes enormous burden to the caregivers [Fig.1]. In most cases the spouse/parent of the patient is the most affected and experience severe emotional instability.

According to the Global Status Report on Alcohol, Alcohol Use Disorders account for 1.4 % of the worldwide burden of diseases [1]. A nationwide Indian study on alcohol and drug abuse by Sarkar et al estimated the prevalence of alcohol use as 21.4% [2]. Alcohol dependence affects not only the patient but also their caregivers. It causes physical and emotional distress and financial burden due to addictive behaviour of the dependent individual. This has a serious impact on the lives of the caregivers [3].

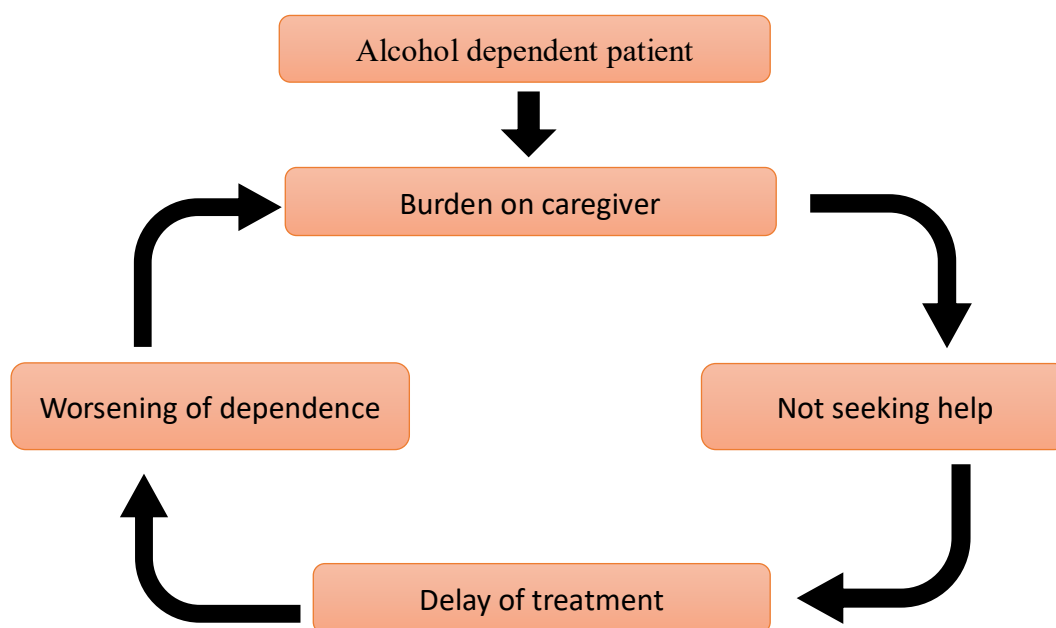
The role of the caregiver in helping their family member with alcohol dependence includes financial assistance, management of illness symptoms and also the engagement and retention of the patient in

treatment [4]. This requires a lot of resilience and motivation on part of the caregiver in providing such exhaustive psychosocial support for their family member with alcohol dependence especially when there are frequent relapses. Research also indicates that care giving itself can be an independent risk factor for mortality [5].

If caregivers refrain from asking for help it would be keep adding to their burden due to worsening of the condition due to delay of planned interventions for treatment of dependence. A study on the impact of partner alcohol problems on women's physical and mental health was carried out by Dawson et al. [6]. It was found that these women had increased incidences of mood disorders and depressive episodes than women whose partners did not have alcohol problems. Tempier et al had studied the consequences of alcoholism on the mental health of the spouses and found that there was a high level of psychological distress among the wives of male lifetime at-risk drinkers [7].

Studies show that emotional burdens related to care of alcohol dependent patients warrant attention from health care and mental health care professionals [8]. On literature review we were able to identify Indian studies looking at caregiver burden in patients with alcohol dependence [9-11], but there was paucity of studies analysing the correlation of depressive symptoms in care givers and help seeking for their relatives with alcohol dependence patients per se.

Figure1. Figure depicting effect of non-help seeking tendency on caregiver burden



Objective of the study:

- 1] To study prevalence of depressive symptoms in the caregivers of alcohol dependent patients who were admitted as in-patient for gastroenterological problems.
- 2] To compare the mean beck's depression inventory [BDI] scores between help-seeking carers and non-help seeking carers. Help seeking was defined in the sense of seeking deaddiction for their relative.

METHODOLOGY

This was a cross-sectional study in which we used consecutive sampling of patients getting admitted into the in-patient gastroenterology ward at a private multi-specialty hospital in the district of Coimbatore at Tamil Nadu State in India. The study had been approved by the institute's Human Ethics Committee [Project No. 18/093]. After getting informed consent we collected data on socio demographic and clinical profile of the

patients and their corresponding primary caregivers. This was done by the author [JJ] using a semi structured data collection profoma [Figure 2]. We set the sample size of 80 caregivers, similar to a previous study which had analyzed the likelihood of help seeking in caregivers of patients with substance use [16].

Inclusion criteria for the relation of caregiver were that they should have been either the spouse/parent/sibling to the patient. The corresponding patient should have satisfied the criteria for alcohol dependence syndrome confirmed by a psychiatrist by administering SCID for DSM 5. All alcohol dependent patients admitted to the gastroenterology ward were seen by a consultation-liaison psychiatrist as per department policy. The age of caregiver must be over 18 years. The patient and caregiver should have given informed consent for the study.

If the patient being cared for by the caregiver had co-morbid physical or psychiatric disorders which were not associated to alcohol use, then those caregivers were excluded from the study. Care givers with past history of psychiatric illness or co-morbid medical illness were excluded from the study.

The consultation liaison psychiatrist assessing patients in the gastroenterology ward utilized the SCID interview for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition [DSM-5] for assessing alcohol dependence syndrome in the patient [12]. The Beck's Depression Inventory [validated Tamil translated version] was used for assessing depressive symptoms in the caregiver. This was a self-rating depression scale that was completed by the caregivers themselves after being explained by the author [JJ]. BDI is a 21-item; self-report rating inventory that measures characteristic attitudes and symptoms of depression. It has high internal consistency, with alpha coefficients of 0.86 and 0.81 for psychiatric and non-psychiatric populations respectively [13-14]. For the patients corresponding to these caregivers, author 'JJ' had administered the "Severity of Alcohol dependence questionnaire" [validated Tamil translated version] for assessing severity of alcohol dependence [15].

We assessed the likelihood of help seeking in the caregiver for their affected relative's addiction problem by asking them 3 questions with yes or no reply options framed in the local language Tamil. The screening questions were posed in the order such as: a) Do you know whether your relative has a problem with alcohol addiction? b) Are you likely to ask for help for your relative's addiction problem? We classified the caregivers as help seeking if they answered yes to both the questions and as non-help seekers if they had answered yes to question 'a' but no to question 'b'.

Statistical Analysis

We used the SPSS software version 19 for Windows for statistical analysis. Case and control matching in our sample was done to randomly match only for socio demographic variables like age, gender and socioeconomic and demographic status and clinical variable of dependence severity in the patient using the SADQ score. This was done by comparing the mean differences and associated p value of these variables between the 2 groups [those willing and those not willing to seek help].

We used descriptive statistics to calculate the mean and the standard deviation. Among the help seeking and non-help seeking groups, we used descriptive statistics to get the mean and standard deviation of continuous variables. Among the help seeking and non-help seeking groups, we used chi-square test to compare dichotomous variables like gender, education [secondary level and below secondary levels], socioeconomic status [lower and middle], relation of caregiver[spouse], presence of psychological symptoms in the relative, presence of social and occupational dysfunction in the relative, presence of past deaddiction treatment, presence of co-morbid substance abuse. Student t test was used to compare continuous variables like age, SADQ total scores, duration of alcohol intake. To compare the mean Becks depression inventory [BDI] scores between the help seeking and non-help seeking carers, we used one way ANOVA test.

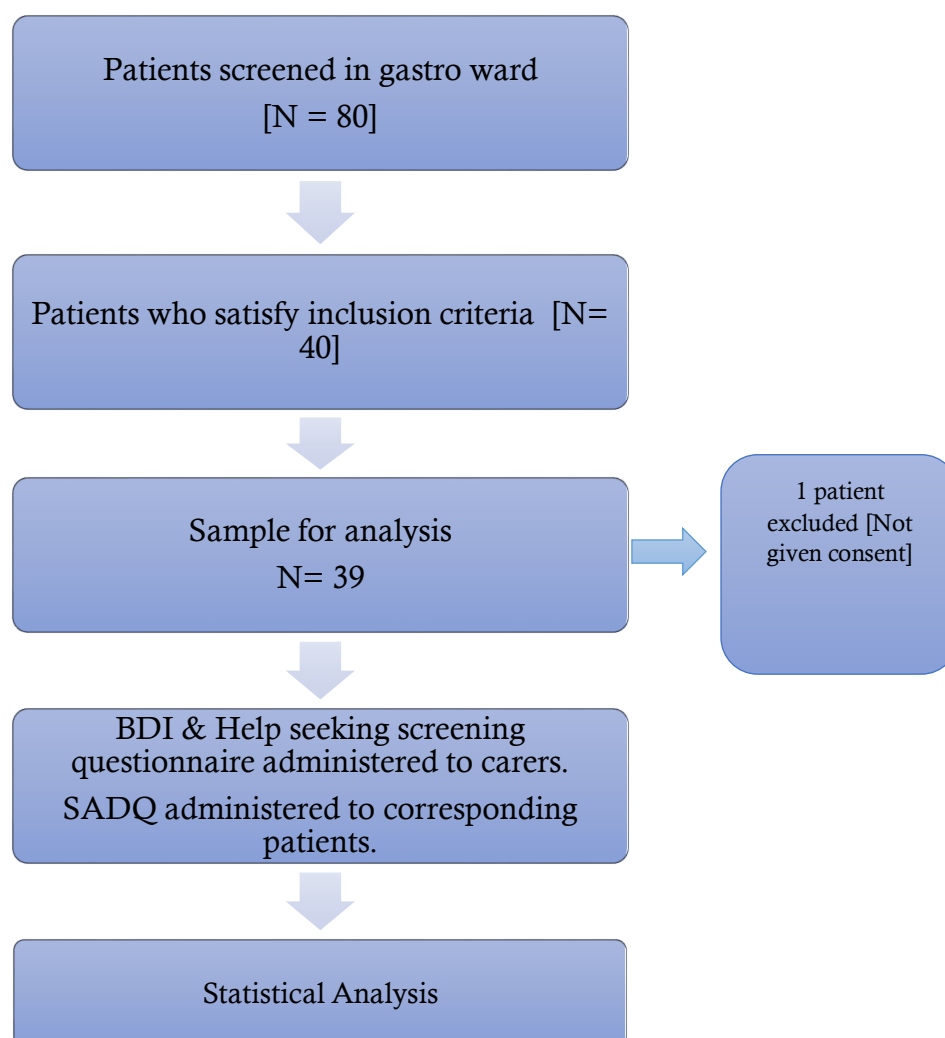
RESULTS

Sociodemographic Variables

Among the total sample of 39 care givers, they were divided into two groups such as the help seeking [N= 21, 53.85 %] and the non-help seeking group [N=18, 46.15 %], based on their responses in the help-seeking questionnaire.

There was no significant difference among variable of socioeconomic status between the help seeking and non-help seeking group. The care givers were predominantly female gender in both groups and there was no significant difference between the mean ages of caregivers in the help seeking and non-help seeking groups. Regarding socioeconomic status, 50 % in both the groups were from lower socio economic strata. Regarding relation of the caregivers to the patient, more than 50% of caregivers were the wives of the patients in both the groups. Mothers constituted around 14 and 22 % of the caregivers in the help seeking and non-help seeking groups respectively. Remaining percentage [28% in help seeking and 22% in non-help seeking] of the caregivers constituted either brother, child or father of the patient. No significant difference was found in the relation of caregivers between the two groups. [Table1]

Figure 2: Methodology



Clinical Variables

Clinical variables influencing severity of the alcohol dependence such as duration of alcohol intake, mean SADQ score, comorbid substance abuse and family history of alcohol dependence did not differ significantly between the two groups. But there were some significant differences in terms of certain clinical variables which may have influenced the results and this has been looked at under the discussion part of the paper. [Table 2]

Table 1: Comparison of Socio-demographic Variables

N [%]	Help seeking care giver [N=21]	Non help seeking care giver [N=18]	Significance P value
Gender [Female]	15 [71.43 %]	15 [83.33%]	0.38
Mean Age in years	43.43	47.11	0.20
Lower Socioeconomic status	12 [57.14%]	9 [50%]	0.46
Secondary Education	12 [57.14%]	9 [50%]	0.46
Relation of caregiver to patient [Spouse]	12 [57.14%]	10 [55.56%]	0.39
Relation of caregiver to patient [Mother]	3 [14.28%]	4 [22.22%]	0.52

Table 2: Comparison of clinical variables

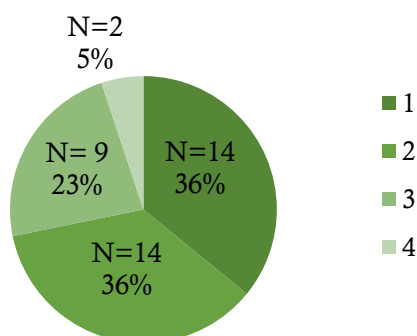
N [%]	Help seeking care giver [N=21]	Non help seeking care giver [N=18]	Significance P value [*<0.05]
Mean duration of alcohol intake	13.29	13.22	0.49
Mean SADQ score	27.24	27.83	0.41
No. of patients with Psychological symptoms of dependence	18 [85.71%]	14 [77.78%]	0.51
No. of patients with Social dysfunction due to dependence	10 [47.62%]	3 [16.67%]	0.04*
No. of patients with Occupational dysfunction due to dependence	12 [57.14%]	3 [16.67%]	0.01*
No. of patients with Co-morbid substance abuse	13 [61.9%]	10 [55.56%]	0.69
No. of patients with Family history of alcohol dependence	9 [42.86%]	9 [50%]	0.66
No. of patients with Past de-addiction treatment history	7 [33.33%]	13 [72.22%]	0.02*

Primary outcome measure: Prevalence of depression in care giver

In the whole sample, 34 out of 39 caregivers [87.18%] had depressive symptoms score of above 17 [clinically significant depression] on BDI scale. Out of this 34 care givers with clinically significant depression, 9 caregivers [26.47%] had borderline clinical severity on BDI, 14 [41.18%] had moderate severity depression was, 9 [26.47%] had severe depression and 2 [5.88%] had extremely severe depression on BDI rating [Figure 3]

Secondary Outcome measure: Comparison of mean BDI scores

On comparison of the mean BDI scores between the help-seeking and non-help-seeking caregiver groups, the non-help seeking group had higher mean BDI score [66.36] than the help-seeking group [58.18] and this difference was statistically significant [$p = 0.005$]. It was also important to note that both groups of care givers had reported mean score indicating more than severe depression [more than 40] on BDI rating.

Figure 3 Distribution of depression severity [as per BDI scores] in the care givers

BDI scores*

17-20

[Borderline clinical depression]

21-30 [Moderate depression]

31-40 [Severe depression]

> 40 [Extreme depression]

*1[Borderline clinical depression], 2[Moderate depression], 3[Severe depression], 4[Extreme depression].

Table 3 - Comparison of mean BDI scores between help seeker and non-help seeker

	Number [Total N= 39]	Mean BDI score [Depression severity]	P value [Student T test for comparison of mean BDI scores]
Help seeking Caregiver	21 [53.85%]	58.18	0.005*
Non Help seeking Caregiver	18 [46.15%]	66.36	

DISCUSSION

There have been many studies on care giver burden in alcohol dependence. A study in Chandigarh had assessed care giver burden in 120 subjects with alcohol and/or opioid dependence, and found around 95-100% reported severe care giver burden on the FBIS scale [18]. Further, there was a study done at Chennai on 200 people with alcohol dependence and their caregivers. It had shown that the severity of alcohol dependence was positively correlated [coefficient of 0.67] with severity of care giver burden. Thus more the severity of dependence more is the caregiver burden [19]. A national representative study in French adult population of 1018 participants in 2013 had looked further into burden of caregiver and found it being significantly influenced by social, behavioural and physical complications of alcohol dependence [20].

Thus, we can see that the caregiver burden is well established in alcohol dependent population. In our study we went further to analyse the prevalence of depression in the caregivers of alcohol dependent patients in our sample and to compare severity of depression in help seeking and non-help seeking groups of care givers. This would be a first step in looking at the significance of depression severity in help seeking tendency of caregivers in our sample burdened with alcohol dependence.

Out of 39 caregivers, 46.15 % [N=21] of care givers were found to be unlikely to seek help for their relative with alcohol dependence and they formed the “non-help seeking group” and the remaining formed the “help-seeking group” [53.85%, N=18] in our study. This was based on their responses in the questionnaire. Our finding was similar to a study done in Cleveland, Ohio on caregivers of 82 women with alcohol dependence. This latter study had shown that though caregivers undergo moderate levels of caregiver burden, only about 45 % of caregivers were unlikely to ask for help.

The two groups that is the help seeking and the non-help seeking caregivers did not differ significantly in terms of socio demographic profile. Most common among the type of caregivers were the spouses of the patients, followed by mothers of the patients.

Now let us discuss regarding the clinical profile of the patients for whom the caregivers were responsible for. We already know that physical complications in alcohol dependence can worsen the caregiver burden. All the patients in our sample were those who had been admitted in the ward for alcohol related gastro intestinal problems. Thus we chose a homogenous sample of alcohol dependent patients from a gastroenterology in-patient setup so that there is no significant difference between the help seeking and non-help seeking caregivers in this aspect. Regarding the medical profile of the patients admitted in the gastro ward, 32 patients [82%] had alcohol related liver disease and remaining 7 patients [18%] had alcohol related pancreatic disease. All patients had been already medically stabilized at the time of interview in the ward which was part of our inclusion criteria. There was also no significant difference between the mean duration of alcohol intake or severity of alcohol dependence [as measured on SAD Q scale] between the help seeking and non-help seeking carer groups.

Further, we analysed the depressive symptomatology in the whole sample of caregivers. We found that 87 % of the whole sample had clinically significant depression [BDI scores of above 17]. When we further compared the severity of depression between the help seeking and the non-help seeking caregivers, we found that the mean BDI score was significantly higher in the non-help seeking group. This was an important finding as the risk of worsening of burden in the non-help seeking group could be further complicated by higher depression severity in that group. Furthermore it is clinically important to note that the mean BDI score in either of the groups were falling between the extremely severe depression range on BDI rating [over 40]. This shows the disabling capability of the depression in this cohort of caregivers and the compounding effect that it could have if the care giver is not seeking help.

When we compared the clinical profile between the two groups, we had some more significant findings that could also be correlated to help-seeking tendency in the care givers. We found a higher number of patients with social and occupational dysfunction [as assessed in SCID interview] to be cared for in the help-seeking care giver group. Care givers in the help seeking group had higher proportion [47.6 %] of socially dysfunctional alcohol dependent relatives compared to non-help seeking group [16.7 %] and this was statistically significant [$p = 0.04$]. Similarly, the proportion of occupationally dysfunctional alcohol dependent relatives were higher in the help-seeking group [57.1%] as compared to the non-help seeking group [16.7%] and this difference was also statistically significant [$p = 0.01$].

Still another significant finding was that the non-help seeking group had higher proportion of relatives [72.2%] who have had history of deaddiction treatment in the past. This was statistically significant with a p value of 0.02. Thus the experience of past deaddiction treatment may have influenced the current non-help seeking tendency in this group. But a limitation of our study was that we hadn't qualitatively assessed the nature of their past experience with deaddiction treatment to understand this further.

The high mean severity of depression in our care giver sample could also be explained by the profile of the patients for whom the care givers were responsible for. The severity of alcohol dependence and also the physical complications for which patient had been admitted for in the gastro ward and also the social and occupational dysfunction secondary to alcohol dependence could have been contributing to the depressive symptomatology. Also we had ruled out history of psychological illnesses in the profile of the caregivers in the sample. But the limitation of our study was that we hadn't looked into the qualitative report of the caregiver's specific concern regarding their alcohol dependent relative and we hadn't thus confirmed whether that was the actual contributing factor to their depression.

A limitation of this study was that our study objective was analysed using just a "yes" or "no" survey whereas a better method would have been to use a standardized scale to assess the likelihood of help seeking in caregiver. Though a recent scoping review of help seeking measures had identified 10 validated scales for measuring help seeking, these were scales directed towards the patient's help seeking behaviour rather than that of care givers. [17] Further to say, these scales were not specific to alcohol dependence and were covering mostly disorders such as schizophrenia, depression, anxiety and ADHD. Thus due to non-availability of such a standardized and specific scale so far for caregivers of alcohol dependent patients, we decided to initially conduct a survey of help seeking behaviour and then in future studies to further analyse

these behaviours using a standardized scale specific to the findings that emerge from our current study. In a previous study with a similar objective they had also mentioned a similar limitation of non-availability of a standardized scale specific to caregiver of alcohol dependent patients [16]. In their study too they had used just a single question survey on caregiver's likelihood of help seeking and had rated it on a 4-point likert scale.

Despite small sample size of this study, we were able to get significant findings when comparing the help seeking and non-help seeking care giver groups. The results have important clinical implications in reducing the burden of the caregivers of patients with alcohol dependence by identifying depressive symptoms in the care givers. The results of the study could help in understanding the role of depressive symptoms in the caregiver as an important prognostic factor in the help seeking tendency. Early interventions in addressing the depressive symptoms in the caregiver should be an important part of the management of alcohol dependent patient.

CONCLUSION

Factors such as high severity of depression in the caregiver, and past history of failed multiple deaddiction treatments in the past could negatively influence the help seeking tendency in care giver. Whereas, social and occupational dysfunction in the alcohol dependent patient maybe driving force for help-seeking tendency in the caregiver. Future studies are warranted to look into the caregiver's qualitative reports of reasons attributable to their depression. Qualitative studies are also warranted to analyse the subjective perceptions of past deaddiction treatment experiences that may have influenced the care giver's current help seeking tendency for their relative.

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Original Research Article

Resilience, Well Being and Marital Adjustment: a comparative study between those who are working from home to the ones who are working from their workplace

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ABSTRACT

The purpose of the study was to compare the participants who are working from their homes with the ones who go to their workplace on variable Resilience, Well-being and marital adjustment. A population of 30 Working from home and 20 working from their place individuals participated in the study for this. The participants completed a measure of Nicholson McBride Resilience questionnaire and PGI General well-being questionnaire. The result reveal that there is no significant difference in any variable among working from home participants when compared to working from their place population based on the analysis of data done by using Mann-Whitney U test.

Keywords: Resilience, Adjustment, Workplace.

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INTRODUCTION

The world stands still, empty roads, schools, restaurants, malls, locked in our own homes, scared and confused. On 11th March 2020, The World Health Organization (WHO) declared COVID-19 a global pandemic [1]. The effect that the global pandemic has put on the world is abysmal. It is not the first pandemic of the 21st century. But it could be considered as 1st of the age of globalization. Countries that were economically linked to the origin country were the 1st to see rapid rise in the Covid - 19 cases [2]. Since 1st identified, the virus spread has increased significantly hindering the normal life of everyone all over the world. The virus was first flagged in Wuhan, China. It is the seventh member of the coronavirus family and a member of orthocoronavirinae subfamily [3]. The pandemic has already killed millions of people; it stirs phobias, myths, stereotypes, discrimination, and many more psycho-social problems. It is almost that the pandemic has highlighted the already existing problems in our societies. The already low investment in mental health services are often neglected during pandemic even though it's of great importance. A larger part of studies that measured the psychological impacts of pervious epidemic like SARS, MERS, and H1N1 flu focused on patients and front liners [4]. It is equally important to measure the problem faced by other population. The study of psychological impact relating to pandemic offers great help in fighting the current situation and developing of long-term strategies for handling the post corona situation. There is a need to investigate and understand the non- biological angle of the pandemic given the considerable hampering daily chores. In such circumstances the psychological response plays a vital role in spreading as well as containment of malady. People differ in their reactions when threatened. The interpretation of these difference or complexities helps us understand the psychology of pandemics [5].

In a study conducted by Rajkumar [6], he reviewed the existing literature on the COVID-19. The literature was retrieved from PubMed database. The data suggested some common psychological response to the Covid 19 outbreak were symptoms of anxiety and depression (16–28%) and self-reported stress (8%) and disturbed sleep. The reported symptoms were from health care workers as well as general public. A need for more representative study is required.

In an online survey conducted in India, sample of 662 people were received, 12.5%, 37.8%, 36.5% participants reported sleep difficulties, paranoia about acquiring COVID-19 infection and distress related social media respectively. More than 80% of respondent perceived need for mental healthcare services for their problems [7].

Studies suggests that factors associated with mental health outcomes among healthcare workers exposed to COVID-19 in multiple regions of China and found out that a considerable proportion of health care workers reported experiencing symptoms of depression, anxiety, insomnia, and distress, especially women, nurses, those in Wuhan, and front-line health care workers directly engaged in diagnosing, treating, or providing nursing care to patients with suspected or confirmed COVID-19. Overall, 50.4%, 44.6%, 34.0%, and 71.5% of all participants reported symptoms of depression, anxiety, insomnia, and distress, respectively [8].

Vahia and others found out that even though quarantine measures protect against spreading the coronavirus, they entail isolation and loneliness which inflict major psychosocial stress and can possibly trigger or exacerbate mental illness. It was also discovered that the significant shortage of masks and disinfectants, the overwhelming and sensational news headlines, and erroneous news reports have also added to anxiety and fear [9]. The aim of this study was to compare the participants who are working from their homes with the ones who go to their workplace on the variable resilience, marital adjustment and well-being.

METHODOLOGY

Hypothesis: In the present paper it is hypothesized that –

There will be a significant difference between the participants who are working from their homes and the ones who go to their workplace on Resilience, Well Being and Marital Adjustment.

Research design: The investigation of the present research is based on non-experimental cross-sectional research design. The study is an empirical type study which is quantitative in nature.

Sample

Participants consists of a purposive sample of 50 (30 Work from home participants and 20 work from their workplace participants). Ranging in age from 25-65 years. Participants were recruited from Sonipat, Delhi and Chandigarh.

Selection Criteria for participants

Inclusion Criteria: Married couples, participants who work from home and work from their place, participants above 25 years of age.

Exclusion criteria: Unmarried couples, less than 25 years of age, Non-working people.

The following two tools were used in this study:

1. **Nicholson McBride Resilience Questionnaire:** Nicholson McBride Resilience Questionnaire (NMRQ) is a 12 item measure on resilience, created by McBride [10]. It is measured on a five point Likert scale, ranging 22 from 'strongly disagree' to 'strongly agree'. Scores 0-37 a developing level of resilience, scores 38-43 indicate an established level of resilience, scores 44-48 indicate a strong level of resilience and scores 49-60 indicate an exceptional level of resilience. The reliability estimated by Cronbach's Alpha = .76.
2. **Marital Adjustment Test (MAT):** Marital Adjustment Test is a 20 items measure on overall happiness in the marriage, the degree of agreement between the spouses in various matters, how they resolve conflicts, the choice of shared activities, and their expectations about the marriage, created by Locke and Wallace. The total scores can calculate by summing the each item which range from 2 to 158. Higher scores indicate greater satisfaction. The reliability estimated by Cronbach's alpha between 0.63 and 0.74 [11].

3. **P.G.I General well-being measure:** PGI General well-being measure was developed by means of Santosh Verma and Amita Verma (1989). It consist of 20 items to be enclosed in yes or no format. A score of 1 is given for yes and zero is given for no response. Number of ticks was counted and that constituted the wellness of that particular individual at that time. Subjects who acquired more than 10 points on this scale had been viewed healthy. The reliability estimated by Kuder and Richardson formula 20 was 0.98 (P 0.01) and for test retest reliability the coefficient was 0.91 (P 0.01) [12].

Procedure

The questionnaires were converted into a Google Forms. The respondents were approached personally, the purpose of the research was explained and after taking their consent for being assessed, then respondents were provided with the instructions regarding how to answer each tool and requested them to give honest answer assuring that it would be kept confidential and information exclusively used for the purpose of research work. The tools were answered by all the participants and all were duly thanked for being the part of this research.

Statistical Analysis

For the purpose of data analysis Mann- Whitney U test was used to compare the two groups by using SPSS Version 20.0.

Ethical considerations

- The researcher personally approached each participant to explain the study and requested his or her participation.
- All participants were informed that participation in the study was voluntary and they were free to withdraw.
- Participants had the opportunity to ask questions regarding their participation and had additional opportunities to ask questions during the time of filling form.

RESULTS

The purpose of this study was to compare the participants who are working from their homes with the ones who go to their workplace pertaining to their Resilience, Marital Adjustment and well-being and in doing so the following tools have been used: Nicholson McBride Resilience Questionnaire, Marital Adjustment Test and P.G.I General well-being measure.

Table 1: Showing comparison between participants who are working from their homes with the ones who go to their workplace on the below mentioned variable -

Variable	Group	Mean Rank	Mann Whitney U	Z value	P value
Resilience	Work from home	26.1	284	-0.321	0.748
	Work from their workplace	24.7			
Well being	Work from home	24.97	283	0.326	0.7414
	Work from their workplace	26.3			
Marital Adjustment	Work from home	25.9	287.5	0.237	0.81034
	Work from their workplace	24.9			

According to Table, there is no significant difference between participants who are working from their homes and those who are working from their workplace on resilience (U=284, p= 0.784). Although the difference is not significant, by comparing mean ranks, it can be said that working from home participants (26.1) are more resilient than those who work from their workplace(24.7). Similarly, there is no significant difference

between the two groups on well-being and marital adjustment. Although by comparing the mean rank of well-being was found to be higher in participants who are working from their workplace (26.3) than those who work from home (24.97) whereas by comparing the mean rank of marital adjustment was found to be higher in participants who work from their home(25.9) than those who work from their workplace(24.9)

DISCUSSION

The outbreak of the COVID-19 pandemic first traced in China during December 2019 has afflicted countries and territories worldwide; resulting in more than 387,000 deaths and a recovering population of about 2.83 million. These numbers might be highlighting the pandemic as a cause for physiological health problems but alongside came an abundant outflow of psychological or mental health problems such as paranoia, anxiety, depression etc. Amidst this situation nations are able to combat the disease with the heroic efforts of people involved in hospital staff such as doctors, nurses, ambulance drivers, paramedical team, pharmacists etc and the police services, government officials who are enforcing law and order aimed at preventing the outspread of the disease and the community volunteers who are serving the poor with meals. However, we can't undermine the efforts of people who managed to follow the law and order and kept working from home in a quarantined state in order to keep the economy of the country running.

The main objective of the present study was to compare the participants who were working at their workplace with those who were working from their homes on the three variables being resilience, marital adjustment and general well-being. It was hypothesized that there will be a significant difference between the two groups on all the three given variables. To measure the variable of resilience Nicholson McBride Resilience Questionnaire (NMRQ) was used, marital adjustment was evaluated using Marital Adjustment Test (MAT) and PGI General Well-being measure was used to measure the general well-being of the participants.

The overall results of the study came out to be non-significant and did not confirm our hypothesis that there will be a significant difference between the two groups on the variables of resilience, marital adjustment and general well-being. However, if we compare the mean ranks of the two groups it was found that participants working from home (26.1) exhibited more resilience as compared to the participants working outside their homes (24.7). Similarly, the mean ranks on the well-being dimension of the participants working outside their homes (26.3) was higher as compared to the ones working from their homes (24.97) and on comparing the mean ranks of the two groups on marital adjustment variable, the working from home group (25.9) scored higher than the group working outside their homes (24.9).

However the two groups have been exposed to quite different work environments but our results conveyed no significant difference among them pertaining to their resilience, marital adjustment and general well-being. One possible explanation to this could be that the pandemic has created an even amount of panic, fear, anxiety, despair, stress, or other psychological symptoms in people all over the world, no matter whether working from home or outside home. The fear of dying of a deadly disease has left the communities with no alternative but to fight this disease through ensuring quarantine to prevent its outspread and ensuring recovery of those who have been found positive for it. Support from social agents such as spouse or other family members not just decreases the mental weight during the public health emergencies yet in addition changes the disposition in regards to social help and help-seeking techniques. This outcome recommends that powerful and vigorous social help is important during such crises [13].

During Covid-19, medical staff is presented to extraordinary requests enveloping high mortality,, proportioning of Personal Protective Equipment and significant moral difficulties of apportioning access to ventilators and other basic human services supplies. Individual concerns incorporate contamination hazard to self as well as other people, and concerns in regards to the prosperity of relatives who are 'self-taught', isolated or tainted are genuine [14].

Limitations

This study just like any other has several limitations. It's limited in its scope as the data was collected from a small sample situated in NCR region and Chandigarh therefore, limiting our scope for generalizing the findings to areas with higher or lower number of cases. Since it is a comparative study, the number of participants in the two groups was not the same. The study was conducted during the mid-phase of the

pandemic and a prolonged investigation would have given a better insight into the situation of COVID19. The study was not able to distinguish between the current mental state and the pre-existing state of the participants. A respondent bias is likely in a stressful state as it has been.

CONCLUSION

The widespread of COVID-19 has become the biggest public health emergency of this decade for the entire world. Developed countries with excellent healthcare services have failed to protect its citizens and an uncontrollable loss of life lies in front of them. Lack of enough resources, man power and anti-virus to combat this deadly disease has left the whole world into an acute state of stress and helplessness. The pandemic has contributed to an outbreak of psychological, social and emotional difficulties to the people for example the fear of contamination to this highly contagious virus, anxiety, losing loved ones or losing jobs, financial stress, postponing exams, cancelling recruitments etc. the present study did compare the people working from home and those working outside home on dimensions of resilience, marital adjustment and general well-being. The results exhibited no significant differences between the two groups on these dimensions. Protecting its citizens from both physiological and psychological ill-effects of this pandemic i.e. COVID-19 whether working inside or outside their homes should be at utmost priority of any nation. Various online services are available to people for psychological aid thereby providing them with best mental health care without the risk factor of getting contaminated by corona virus.

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A cross-sectional study on Depression awareness using the D-Lit

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ABSTRACT

Background: We as a society do not discuss about mental health as much as we talk about other diseases. The WHO and NCHM in 2016 had declared India as the most depressed country (6.5%) in the world. 70% of India's population is the youth and do we wish to leave this legacy behind? "Immunization by Information" is the key to deal with this calamity. The objective of the study was to determine the current level of depression literacy.

Methodology: 2,102 subjects comprising of high school students, college students and teachers were assessed with depression literacy scale (D-lit, 2004) designed by Kathy Griffiths.

Results: The key findings were: that female subjects had significantly higher depression literacy (MU=9.98, $t=7.845$, $p=0.00$) than male subjects. Both college (MU=10.35, $t=8.083$, $p=0.00$) as well school students (MU=11.09, $F=38.390$, $p=0.00$) from arts stream had the highest depression literacy. The college students obtained the lowest mean percentage score of 41.97% on the Depression literacy scale. It was further noted that the subjects had very poor literacy in psychotic (28.55%) and management (22.75%) aspects of depression.

Conclusion: This study acts as a preamble to an awareness model that is to be implemented by the professionals targeting the youth and adults of our society who reflect poor depression literacy. The eye-opening findings of this study substantiate the need of a robust movement of mental health awareness.

Keywords: Depression, Stigma, Depression Literacy, Awareness, High school students, College students, Teachers.

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INTRODUCTION

Clinical Depression disorder is rampant in India, with a mortality rate only behind diabetes and cardiovascular disease. According to the WHO, India is the most depressed country in the world, with One in Twenty Indians affected by depression [1]. As it turns out, clinical depression can be completely treated and very efficiently managed if individuals have all the correct information about their symptoms and treatment options, and all the myths about depression are clarified. The only immunity against depression is information. We need to deal with it at the mental, emotional, political, legal and socio-cultural levels. The Indian Government has played an important role in destigmatizing and sensitizing the public through its various agencies.

An important landmark in the area of mental health is the Mental Healthcare Act, 2017, which was passed by the Rajya Sabha on August 2016 and the Lok Sabha in March 2017 [2]. For the first time in our country, the Act creates a justifiable right to mental healthcare. The right to mental healthcare is the core of the Act and represents the government's attempt to address the neglect of this aspect of healthcare for decades. This remains a drop in the ocean if we do not take away the social stigma and myths around mental disorders.

Ironically, in India, the current rate of Mental Health providers is 1.0 psychiatrists and 1.5 clinical psychologists for every 1,00,000 people (Ministry of Health and Family Welfare, 2017) [3]. This conveys the critical need for more practicing professionals in the field of mental health not only for treatment purposes but also for the establishment of mental health awareness amongst the masses.

Author have stated, that personal experiences and anecdotal evidence from family and friends, internet sources, print media, books, cinema, and television are important sources that people acquire knowledge and beliefs about mental health. We as a society underplay our understanding of mental disorders as the stigma attached to it is far more over-bearing. We take an 'ostrich' like approach to it. There are consequences of this poor mental health literacy. First, it may place a limit on the implementation of evidence-based mental health care. Secondly, the task of preventing and helping mental disorders becomes largely confined to mental health professionals [4].

In this era, the human race has become vulnerable to the extremes of stress and is exposed to severe losses, be it economic or social in nature. This has resulted in an increase in the prevalence of disturbed mental health in a developing country like India. The word depression is a part of our everyday language, people use the term to describe the feelings of sadness and have attached their own meaning to it which is far from the clinical picture WHO has described Depression as a common mental disorder, characterized by persistent sadness and a loss of interest in activities that you normally enjoy, accompanied by an inability to carry out daily activities, for at least two weeks [5]. But as described by Sigmund Freud and Karl Abraham, "depression is a complex reaction to loss" [6]. It is a disorder that is characterized by negative mood (melancholia), cognitive-behavioral changes and even physical issues. It is much more profound and perilous than a feeling of sadness. It includes a spectrum of conditions with episodes, illnesses, and disorders that are often disabling in nature, varies in their severity (from mild to severe) and duration (from months to years) and often exhibits a chronic course that has a relapsing and recurring trajectory over time [7].

Depression literacy is a specific type of mental health literacy and is defined as the ability to recognize depression and make informed decisions about treatment [8]. Research by Jorm and associates [9] mentioned that in spite of significant developments in India's healthcare systems, studies have rarely focused on literacy about mental illness. Depression is a major public health problem in India, contributing to significant morbidity, disability as well as mortality, along with significant socioeconomic losses [10].

The high rates of depression among adolescents and young adults, their low rates of mental health related help-seeking, and evidence that a young person's mental health literacy is associated with their help-seeking practices, highlights the need for examining and improving the depression literacy of the youth.

Every section of society possesses distinctive notions and beliefs about mental illness, particularly the young generation. The modern education system, westernization, and industrialization immensely influence this generation by establishing a very peculiar and biased way of perceiving situations, thus educating this group in a realistic method is necessary. The status of mental health awareness is built on the fundamentals of pseudo-knowledge and false information which has exposed the younger generation to poor mental health literacy. In a study by Judith Miti Ogorchukwu and colleagues [10] it was stated that out of 916 the percentage of mental health literacy among the respondents was very low, and depression was identified by only 29.04% of the students.

The scenario is quite similar amongst college going students as well, implying that higher education does not necessarily lead to an increase in awareness which should occur in an ideal educational environment. This view supported by a study which concluded the prevalence of poor literacy status among university students [11].

In this regard, teachers who work very closely with society also have an active role in fighting against stigma about mental illnesses. Teachers are frontline professionals who have daily contact with the youth and are therefore most likely to have the biggest impact on their students. Initially, teachers need to be aware of their prejudices and labelling practices against people with mental disorders. A study by Gur and Sener [12] stated that only 16.3% participants could correctly identify and label the depression vignette and just 13.5% recommended professional help from a psychiatrist or psychologist. The young generation is on the frontline of our society and their mind-sets are the future of our country, whereas the teachers are one of the most influential professionals in our society whose beliefs and knowledge shape the norms and minds of the youth.

The core objective of this research is to determine the current level of mental health awareness, focusing on depression literacy with the target audience of high school students, college students and teachers. The research also highlights the existing stigmas attached to clinical depression and seeks to understand beliefs and perspectives related to mental health of the subject sample. It further aims to facilitate professionals to develop a new educational model in order to create a higher level of awareness regarding varied aspects of depression in the population.

METHODOLOGY

A total of 2102 sample size was selected which included 1000 high school students (10th, 11th and 12th grade), 726 undergraduate students from arts and commerce college and 376 school teachers. The subjects varied from 14 different educational institutes of Ahmedabad and Baroda (Gujarat, India). The subjects were to be well versed in either English or Gujarati (local language of the demographic area of the research). The study was conducted from July 2019 to September 2019.

Initially, respondents were approached, consent was taken after explaining the study objectives and procedures, inclusion criteria included those students and teachers willing to give informed consent and those who were affiliated to the approached institutes. The focus of this study is to derive knowledge regarding depression literacy among the student and teacher population. The subjects were subsequently assessed with the following:

Depression Literacy Questionnaire (D-Lit)

It is a 22-item questionnaire designed by Kathy Griffiths [13], which was used to gather respondent's knowledge about depression including common symptoms, soliciting "true" or "false" responses to 22 items. Don't know response is classified as false responses. Each correct response was assigned 1 point and false responses were assigned 0 points, so that the higher the score the higher the respondent's depression health literacy. Its internal consistency is $\alpha = 0.70$ ($n = 40$) and test-retest reliability is $r = 0.71$, $p = 0.02$ ($n = 12$). This scale was used in Indian population in English and local language (Gujarati).

The study also focuses to aid the professionals in order develop an awareness model for which the items in D-lit questionnaire were categorised and differentiated in accordance to the varied symptoms, impact and management of depression, this model has been adopted from Yasir Arafat and others [11]. This was done to gain more profound and holistic understanding of the population awareness.

Statistical Analysis

The software used was SPSS and the statistical tests used for the computation included Independent Samples T-Test and One-Way ANOVA. The level of statistical significance was kept at $p < 0.05$ for all tests.

RESULTS

Table 1: Mean Scores on the questionnaire

Variable		N	Mean	SD	T
Gender	Female	1138	9.98	3.002	7.845*
	Male	964	8.96	2.969	
Language	English	1412	9.59	3.100	1.634
	Gujarati	690	9.36	2.87	

* $p < 0.05$

Table 1 yielded a significant difference between female and male subject's depression literacy ($t = 7.845$, $p < 0.05$). It was revealed that the average score of female subjects on the D-lit was 9.89, which was higher than male subjects with their average score of 8.96. This suggests that gender is a variable that influences depression literacy. Similar results have been revealed in another study conducted by Ram and others where female gender had statistically significant higher D-Lit score ($p = 0.025$) than male [14].

There is a link between female and high depression literacy, this could be due to the fact that women are perceived to be more likely to have experience depression and thus are more aware about mental health. A study by Viren Swami concluded that respondents were more likely to indicate that a male vignette did not suffer from a mental health disorder compared to a female vignette [15]. However, it is noted that there isn't a significant difference in depression literacy among Gujarati and English-speaking subjects

The following table shows the classification of the items:

Biological Symptoms	Q7- Sleeping too much or too little may be a sign of depression Q8- Eating too much or losing interest in food maybe a sign of depression
Cognitive Symptoms	Q2- People with depression may feel guilty when they are not at fault. Q4- Loss of confidence and poor self-esteem may be a sign of depression Q9- Depression does not affect your memory or concentration.
Behavioural Symptoms	Q5- Not stepping on cracks in the footpath may be a sign of depression. Q11- People may move more slowly or become agitated as a result of their depression.
Psychotic Symptoms	Q1- People with depression often speak in a rambling and disjointed way. Q3- Reckless and fool hardy behaviour is a common sign of depression. Q6- People with depression often hear voices that are not here. Q10- Having several distinct personalities may be a sign of depression.
Impact of Depression	Q13- Moderate depression disrupts a person's life as much as multiple sclerosis or deafness. Q14- Most people with depression need to be hospitalised. Q15- Many famous people have suffered from depression.
Management	Q12- Clinical psychologists can prescribe antidepressants. Q16- Many treatments for depression are more effective than antidepressants. Q17- Counselling is as effective as cognitive behavioural therapy for depression. Q18- Cognitive behavioural therapy is as effective as antidepressants for mild to moderate depression. Q19- Of all the alternative and lifestyle treatments for depression, vitamins are likely to be the most helpful. Q 20- People with depression should stop taking antidepressants as soon as they feel better. Q21- Antidepressants are addictive Q22- Antidepressant medications usually work straight away.

Similar to the results of Table 1, it was noted that there is a significant difference among male and female students of high school ($t = 5.817$, $p < 0.05$) as well as college ($t = 5.058$, $p < 0.05$). However, there was no significant difference revealed between male and female teachers. When the sample was bifurcated into high school students, college students and teachers in terms of language, specifically the English and Gujarati medium of education, significant difference was found in both high school ($t = 4.642$, $p < 0.05$) as well as college students ($t = -2.401$, $p < 0.05$). It was found that high school students pursuing their education from an English medium school had a higher mean score of 10.05 as compared students studying in Gujarati medium school who had a mean score of 9.14. However, it was revealed that college students from Gujarati medium had a significantly higher mean score of 9.74 on the D-Lit as compared to English medium students with a mean score of 9.12.

It was further revealed that college students from arts ($t = 8.083$, $p < 0.05$) background had higher depression literacy than commerce students. The results of our study however contradicts with the findings of a study by Arun Dev which stated that for identification of mental health problems students from management were well aware compared to students from other fields which included arts, philosophy and natural sciences [16].

Table 2: Mean, S.D, t-score of D-lit with regards to the subject's gender, language, stream and level of education

Variables			N	Mean	SD	T
Gender	School students	Female	537	10.16	2.956	5.817*
		Male	462	9.03	3.189	
	College students	Female	295	9.86	2.795	5.058*
		Male	429	8.81	2.724	
	Teachers	Female	303	9.81	3.266	0.928
		Male	72	9.42	2.877	
Language	School students	English	546	10.05	3.229	4.642*
		Gujarati	453	9.14	2.901	
	College students	English	579	9.12	2.832	-2.401*
		Gujarati	145	9.74	2.614	
	Teachers	English	286	9.67	3.242	-0.682
		Gujarati	89	9.93	3.048	
Stream	College students	Arts	251	10.35	2.760	8.083*
		Commerce	473	8.65	2.641	
Level of education		School students	1000	9.64	3.115	2.765*
		College students	726	9.24	2.797	

*p<0.05

There was significant difference between High school students and college students with regards to their depression literacy ($t = 2.765$, $p < 0.05$). High school students had a higher mean score of 9.46 than college students with a mean score of 9.24. As we know that awareness regarding mental health has increased in recent times with the portrayal of psychological disorders in mass media. Owing to fact that there is a sudden rise in the availability and accessibility of information on the internet and social media, the upcoming generation such as high school students are more curious and aware of aspects concerning mental health compared to the college going students who were not exposed to such information in their times.

Table 3: ANOVA of depression literacy in school students from arts, commerce and science stream.

Variables			N	Mean	SD	F
Stream	School students	Arts	247	11.09	2.969	38.390*
		Commerce	330	8.89	2.949	
		Science	314	9.62	3.097	

*p<0.05

The score of three groups of high school students from arts, commerce and science stream were tested for significance of depression literacy. A significant difference was obtained between the three groups on ANOVA ($F = 38.390$, $p < 0.05$) conducted on the D-Lit scores. It was discovered that the mean score of high school students from arts stream on the D-Lit was 11.09 which was higher than that of students from other streams. Science students had lower average score of 9.62 than arts students, however this score was higher than students from commerce stream who had the mean score of 8.89 on the D-Lit. Hence, one can notice that commerce students are least aware about depression as their course does not provide them any knowledge regarding mental health, however in streams such as arts and science which include subjects like psychology and biology where psychological aspects of humankind are taught, enables them to have a broader perspective of mental health. It is shocking to note such disparity of knowledge regarding depression between students from same age group (16-17yrs) and how the course of subjects selected by the students influences depression literacy.

Table 4: Percentages of correct responses on D-Lit items

Sr. No	Question	School per (%)	college per. (%)	teacher per. (%)	overall (%)
1	People with depression often speak in a rambling and disjointed way	35.20%	18.87%	32.71%	29.11%
2	People with depression may feel guilty when they are not at fault	70.60%	75.48%	64.09%	71.12%
3	Reckless and foolhardy behaviour is a common sign of depression	34.20%	23.96%	32.97%	30.44%
4	Loss of confidence and poor self-esteem may be a symptom of depression	78.80%	79.20%	79.78%	79.59%
5	Not stepping on cracks in the footpath may be a sign of depression.	46.30%	50.55%	37.50%	46.19%
6	People with depression often hear voices that are not here.	25.10%	24.24%	25.53%	24.88%
7	Sleeping too much or too little may be a sign of depression	66.20%	72.58%	76.06%	70.17%
8	Eating too much or losing interest in food maybe a sign of depression	62.70%	60.05%	74.73%	63.93%
9	Depression does not affect your memory or concentration.	81.40%	80.26	76.86%	81.01%
10	Having several distinct personalities may be a sign of depression.	32.50%	26.17%	29.52%	29.78%
11	People may move more slowly or become agitated as a result of their depression.	68%	62.39%	67.02%	65.88%
12	Clinical psychologists can prescribe antidepressants	27.60%	23%	22.07%	25.02%
13	Moderate depression disrupts a person's life as much as multiple sclerosis or deafness.	29.00%	36.08%	38.29%	31.68%
14	Most people with depression need to be hospitalised.	73.20%	66.67%	75.79%	71.45%
15	Many famous people have suffered from depression.	72.80%	79.065	75.26%	75.40%
16	Many treatments for depression are more effective than antidepressants.	8.70%	10.19%	5.58%	8.65%
17	Counselling is as effective as cognitive behavioural therapy for depression.	8.80%	8.12%	2.65%	7.46%
18	Cognitive behavioural therapy is as effective as antidepressants for mild to moderate depression.	36.80%	37.05%	55.58%	40.24%
19	Of all the alternative and lifestyle treatments for depression, vitamins are likely to be the most helpful.	25%	21.48%	30.05%	24.69%
20	People with depression should stop taking antidepressants as soon as they feel better.	22.50%	17.76%	25%	21.31%
21	Antidepressants are addictive	19.80%	16.39%	22.87%	17.74%
22	Antidepressant medications usually work straight away.	42.50%	32.78%	30.05%	36.91%

As elucidated in Table 4 the lowest correct response percentage was for statement 17, 16 and 22 that were to do with management of depression. This reflects that the highest stigma is attached to the treatment of depression; pharmacological as well as non-pharmacological.

(17) Counselling is as effective as Cognitive Behaviour Therapy (CBT) (7%).

(16) Many treatments for depression are more effective than antidepressants (9%).

(22) Anti-depressants are addictive (18%).

From the above results it can be deduced that people have highest stigma attached to the treatment of depression, through which one can understand the stigmatised help-seeking attitudes of the sample related to therapy and medication. Fear of judgement, lack of empathy, stigma, lack of education and expensive

treatment are the key reasons that people don't seek help. While the statements 9, 4 and 15 – had the least stigma attached to them.

(9) Depression does not affect memory and concentration (81%).

(4) Loss of confidence and poor self-esteem may be a symptom of depression. (80%)

(15) Many famous people have suffered from depression. (75%)

Table 4: Percentage of correct responses with regards to the categorised items on the D-Lit

Sr.no	Category	School Students	College Students	School Teachers	Overall
1	Biological	64.45%	66.32%	75.39%	67.05%
2	Cognitive	77.26%	79.10%	73.58%	77.24%
3	Behavioural	57.15%	37.64%	55.26%	56.04%
4	Psychotic	31.75%	23.31%	30.18%	28.55%
5	Impact	58.36%	60.60%	60.46%	59.51%
6	Management	23.58%	20.85%	24.23%	22.75%

Table 3 reveals that the sample had least awareness regarding psychotic symptoms (28.55%) and management (22.75%) of depression. The results of this study is similar to the study from which this model is adopted which concluded that only a very small portion of the participants correctly knew about psychotic symptoms and different options for the management (treatment) of depression [11].

It was further analysed that college students had the lowest awareness of psychotic symptoms (23.31%) and management (20.85%). These results are disturbing because 70% of our country's population comprises of youth. The WHO states that clinical depression among many individuals has an early onset during young adulthood(1). Thus, lack of awareness in the youth allows depression to grow into a profound mental health disorder due to the negligence of treating it during its onset.

DISCUSSION

An awareness model has to be developed with regards to the results of this study. As revealed, poor depression literacy is noted in all the three groups, however, the college students are the least aware and their laid-back approach must be tackled progressively, increasing depression literacy as the first step in encouraging youths to seek treatment. As teachers are one of the most important socializing agents in a student's life, thus their understating and clarity of mental health can positively influence the mental health literacy of the students. Hence teachers must be one of the main target groups of workshops and initiatives. It was further noted that students from the commerce stream had alarmingly low depression literacy as they are not exposed to that sort of discussion in their course, in school as well as college. This issue must be taken care of to establish equanimity amongst all the three streams.

There is a dire need to integrate mental health awareness as part of one core subjects in high school and college. The west has shown the way in doing so.

Two of the most popular awareness models in the west are:

The Adolescent Depression Awareness Program [17]

ADAP is a school-based depression education program that educates high school students, teachers, counsellors, and parents about adolescent depression. Multiple teaching modalities are employed with interactive lectures, videos, film assignments, homework, and group activities to reinforce key concepts. The core components include identifying symptoms of depression, understanding the process of medical decision-making, seeing parallels between depression and other medical illnesses, recognizing suicide as a potential consequence of depression, and understanding that depression is a treatable medical illness.

School Peer-to-Peer Awareness Program Addressing Adolescent Depression [18]

Researchers led by Sagar V. Parikh looked at the effectiveness of the Peer-to-Peer Depression Awareness Program (P2P), a school-based program that aims to decrease depression and other mental illness and promote well-being among students. The program, developed by the University of Michigan Depression Centre and the Ann Arbor Public Schools, seeks to improve the school climate around mental health so students feel comfortable talking about mental health and feel it's okay to ask for help if they need it. One unique aspect of the program is that it actively involves students in the design and implementation of the outreach. "Tapping into youth voices is a huge part of the success of the P2P program," the authors note.

One such project was founded by Udit Thakre, Nimrat Singh and Lalit Vaya in 2016. It began with an open program on 'Chats About Depression' attended by around 120 participants on the occasion of World Mental Health Day. 'Depression let's talk' events have been extended to schools, colleges, universities, townships, cafes, corporate and NGO's designed as an elaborate semi-structured conversation between the audience and professionals. This conversation revolves around 9 points namely-Depression and its characteristics (myth vs. reality), Signs / Symptoms of Depression, Sub-types of Depression, Relationship between Stress, Anxiety, and Depression, Effects of Depression, Depression, Suicide and Suicide Prevention. Types of professional treatment available for clinical depression - psychotherapy and psychiatric medicine, Lifestyle tips to prevent and manage depression, How to increase self-awareness, and how to say 'no' in the face of abuse and peer pressure.

The forte of this project is its structure that allows a fluid conversation about depression between lay audiences and experts with years of clinical experience in addressing mental issues. Reference material from the WHO regarding clinical depression is provided to all participants, along with an audited list of mental health professionals practicing in Ahmedabad. Yet there is a need to formalize our efforts and classify the general population according to their literacy about depression. The findings of this 2000 plus sample hold importance in designing more such programs to deal with the general ignorance on a grave topic of serious concern.

The study highlighted that teachers and adults are less informed about depression. And High school children had the best understanding of depression. Hence, the internet and social media have played a facilitating role in increasing the understanding of mental health. While teachers continue to live in denial lest they will have to deal with one more challenge in class.

The Mental Health Care Act provides persons with mental illness protection from cruel, inhuman and degrading treatment, right to information about their illness and treatment, right to confidentiality of their medical condition and right to access their medical records, to list just a few rights. The government is explicitly made responsible for setting up programs for the promotion of mental health, prevention of mental illness and suicide prevention programs. Given the huge shortage of trained mental health professionals in the country, the Act requires the government to meet internationally accepted norms for the number of mental health professionals within 10 years of passing this law. It has also effectively decriminalized suicide attempts by 'reading down' the power of section 309 of the Indian Penal Code.

The findings reflect that we are resorting to the 'denial to control' model and the 'ignorance is bliss' approach to depression which explains the findings of the study.

We have been avoiding to bring up this topic of depression as a society and the more we resist the more will persist. We are the most depressed country in the world. The question is that – are we mental health practitioners ready to take a proactive role to immunize through awareness or are we going to wait for it to take a toll like a natural disaster and then respond to it. The choice is within each one of us.

Limitations and Future Directions

The study was an eye-opener and the first step towards opening our doors to education and sensitization of the youth and adults. The way forward – is to design workshops, seminars, talks, programs that work on the educational – awareness model. So that one knows symptoms of depression and is ready to seek help and help others to seek help as one would do for typhoid and diabetes. Our next step is in this direction to create a better model that reflects the notion of "Immunization by Information".

The study is not without limitations. The sample size can be stratified, larger and could include adults of various professions including medical practitioners, corporate managers, lawyers, scientists, engineers, and designers.

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Psychological interventions for the management of Pediatric Chronic Pain

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ABSTRACT

Background: Pain is a frequent experience during childhood. Paediatric Chronic pain (PCP) is defined as recurrent or continuous pain for more than 3 months. It can affect virtually all aspects of the child's and family's life and is also a burden on the medical healthcare system. Wide scale access to effective psychologically based pain management treatments remains a challenge for many children who suffer with pain. The aim of the study was to look at the impact of psychological interventions on the management of Paediatric Chronic Pain in terms of pain intensity and functionality in children and adolescents visiting a tertiary care setup in Haryana.

Methodology: The study followed a single arm pre-post design. The sample consisted of 18 children and adolescents in the age range of 8-14 years, with at least one parent. After baseline assessment with Visual Analogue Scale (VAS) and Functional Disability Inventory (FDI), weekly one-hour sessions for 8 weeks were provided during the intervention phase consisting of Pain Neuroscience Education (PNE), relaxation training, parent training in operant strategies and cognitive strategies. This was followed by a post intervention assessment.

Results: there was a reduction of more than 50% in the post-intervention ratings on measures of pain intensity and functionality (significant at $p < .001$ compared with pre-intervention data)

Conclusion: Following a psychotherapeutic management process of PCP results in pain reduction and increased functional capacity in children and adolescents.

Keywords: Chronic pain, recurrent pain, functional restoration, psychotherapy, paediatric pain

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INTRODUCTION

Every child will experience pain at one time or another, either as a primary concern or as a manifestation of an underlying medical or psychological condition. This is best understood within a biopsychosocial framework [1]. Pain treatment is considered an obligation under the right to health as a basic human right as stated by the international human rights law and the International Association for Study of Pain (IASP) [2-3]. When the same pain recurs or persists over a period of at least 3 months, this is considered to fall beyond the point of expected natural healing and is categorized as Chronic Pain [4]. It has a staggering prevalence of 20%-35% world over with headache, recurrent abdominal pain and lower limb pain being the most common [5-10]. Despite this paediatric pain remains under diagnosed and consequently undertreated [11]. Literature data show that children with chronic pain often encounter significant delays between their initial pain complaints and the time they eventually consult a psychologist, which is surrounded by various barriers [12]. This could be because attitudes towards pain depend on culture and religion among other factors [13]. Asian cultures believe showing pain to be a weakness and children in pain may have been taught

not to express their concerns. Supernatural beliefs and visit to faith healers are also a common practice. Also, in low to middle income countries like India, when available, specialized care for pain tends to be clustered around cities and are therefore unavailable to rural and suburban communities. There is a dearth of research in the Indian context on paediatric pain and more so with respect to the interventions for the same. In view of the above, the aim of the present study was to study the impact of psychological interventions on the management of Paediatric Chronic Pain in terms of pain intensity and functionality in children and adolescents visiting a tertiary care setup in Haryana.

METHODOLOGY

Study Design

The study followed a single arm pre-post intervention design conducted at a tertiary care hospital in Haryana between January 2019 to December 2019.

Participants: 18 children and adolescents in the age range of 8-14 years with at least one parent. Participants with medical conditions explaining chronic pain and comorbid conditions like seizures, mental retardation, conduct disorder, autism or significant problem behaviour reported by parents were excluded. None of the participants were on regular medication for the reported symptoms of pain. Ethical guidelines were followed; assent was taken from all the children and adolescents and informed consent was taken from their parents. A total of 101 paediatric referrals (age range 8-14 years) were received from paediatricians and psychiatrists during the one-year period. Of these, 43 were diagnosed cases of PCP. Among these, 21 reported recurrent abdominal pain, 14 reported headache and 8 reported chest pain as the primary symptom. At the time of the baseline assessment, the sample consisted of 43 children with one parent or both parents. This was followed by weekly one-hour sessions for 8 weeks. At the time of the post intervention assessment, the number of participants reduced to 18 with one or both parents due to some participants dropping out (Figure 1).

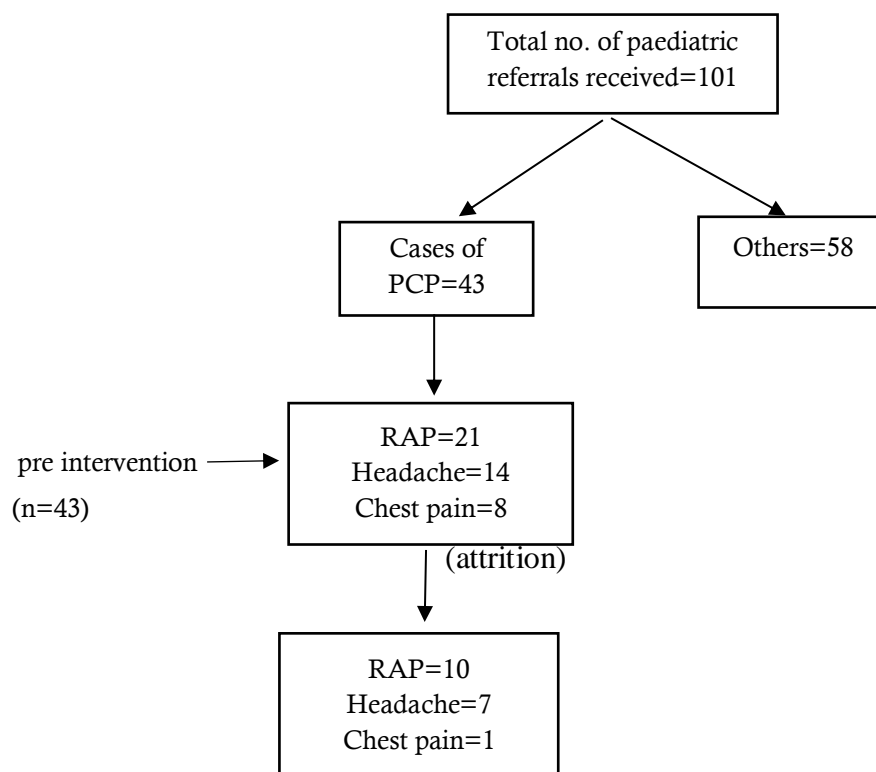


Figure 1: Flow Diagram showing recruitment of study participants

(PCP- Paediatric Chronic Pain, RAP- Recurrent Abdominal Pain)

Treatment Outcome Measures

Pain Intensity: Visual analogue scale (VAS) has been well-researched and validated for children 8 years of age and older [14-16]. It is a 10-cm visual analogue, in the shape of a thermometer, anchored with the terms “no pain” and “worst imaginable pain” at the end points were used to assess highest, lowest, and average pain intensity on a 0-10 scale. On the VAS average pain intensity scores were calculated across each assessment period.

Functionality: Functional Disability Inventory (FDI) [17-18] is a 15-item self-report inventory (with child and parent forms) assessing difficulty with the performance of daily activities in home, school, recreational, and social domains during the past 2 weeks. Items are rated on a 5-point Likert scale, ranging from 0 to 4 (“No Trouble” to “Impossible”) and summed to create a total score (range 0-60) with higher scores indicating greater pain-related disability. The FDI may be used to assess health-related activity limitations among youth in both community and clinical populations. It has been reported to have high internal consistency, moderate to high test-retest reliability, moderate cross-informant (parent-child) reliability, and good predictive validity [18].

Procedure

A structured assessment interview was conducted with the child/adolescent and parent [4]. Treatment content was grounded in the Cognitive Behavioral approach and the Self Determination Theory (SDT) [19]. The application of SDT to psychotherapy is particularly relevant because a central task of therapy is to support the client to autonomously explore, identify, initiate, and sustain a process of change. According to this theory, all individuals strive for and need autonomy (the need to feel free and self-directed), competence (the need to feel effective), and relatedness (the need to connect closely with others) in order to flourish and grow.

Based on the review of the most common outpatient intervention frameworks cited over the past 15 years, highlighting how a variety of skills and strategies may be applied in helping children, adolescents, and parents in the management of pediatric pain, the following interventions were included- pain neuroscience education, relaxation strategies, operant strategies for parent training and cognitive skills training.[20] These were mutually inclusive of each other. Each session commenced with the child rating his/her pain on a Visual Analogue Scale (VAS) for the previous week.

Session 1 involved the assessment of the following areas: pain history (onset, frequency, intensity, duration, interference), medication review, emotional functioning (cognitive-affective responses to pain, pain catastrophizing), physical functioning and lifestyle factors (activities of daily living, activities with family, peers and school functioning), sleep, family relationships, school functioning and peer relationships. FDI was also conducted.

Session 2 involved a discussion of the assessment results and pain neuroscience education. The aim was to make the child and family understand that not all pain is due to tissue damage or muscle injury. It could be due to extra sensitive nerves which could be a result of faulty cognitions about pain.

Session 3 and 4 consisted of relaxation training for the child/adolescent (diaphragmatic breathing, progressive muscle relaxation) and their parent along with parent training in operant strategies to encourage normal activity during pain episodes of the child and reinforcing it, eliminate status checks (asking time and again if the child was fine), reduce response to pain behaviors (giving pain killers) reinforce use of pain management skills (e.g. relaxation), point system, increase positive and encouraging words; decrease complaints, warnings and commands.

Session 5-7 reinforced coping skills including progressive muscular relaxation and deep-breathing exercises, and cognitive strategies like detective thinking, thought stopping, positive self-statements, continuum techniques and exposure-based exercises.

Session 8 was devoted to relapse prevention training, in which children were taught problem solving strategies for dealing with pain that might arise in future high-risk situations (e.g., when studying for examinations or when participating in social activities).

The training process was accomplished through a combination of verbal and written instructions for both parent and child, within-session demonstrations and practice of techniques, and specific weekly homework tasks.

RESULTS

Table 1: Sociodemographic and clinical characteristics of the participants

Age	Mean = 10.8 years
	SD=1.84
Sex	Male= 12
	Female =6
Accompanied by	Mother= 12
	Father= 3
	Both parents=3
Type of PCP	Recurrent Abdominal Pain (RAP)= 10
	Headache =7
	Chest pain =1
Chronicity	Mean= 9.6 months
	SD= 5.75

Sociodemographic characteristics are shown in Table 1. Mean age of the participants was 10.8 years. They were primarily male and mostly accompanied by their mothers for treatment. The mean duration of chronicity of pain was 9.6 months and RAP was the most commonly reported complaint amongst the participants.

Table 2: Descriptive statistics for treatment outcomes

Outcome		Pre-intervention	Post-intervention
VAS	Child rating	7.05 (0.72)	2.66 (0.84) *
	Parent rating	6.50 (0.98)	2.33 (0.84) *
FDI	Child form	2.50 (0.53)	1.32 (0.34) *
	Parent form	2.36 (0.61)	1.30 (0.32) *

Means and SDs for pain intensity (VAS) and functionality (FDI) at pre-intervention and post-intervention are shown in Table 2. As shown, most of the participants endorsed moderate pre-treatment pain intensity and moderate to high activity limitations. The benchmark for treatment success in paediatric trials for several decades has been typically defined by a reduction in pain of 50% or greater at treatment completion or short-term follow up as compared to baseline [2]. In the present study there was a reduction of more than 50% in the post-intervention ratings on the VAS and scores on the FDI (significant at $p < .001$ compared with pre-intervention data)

DISCUSSION

As opposed to existing research, there was a male predominance in all 3 categories of pain [22]. This could be due to greater stigma attached to bringing a girl child for psychological treatment, especially in the state of Haryana which is notorious for its lop-sided sex ratio and access to health care for females. It was also found that RAP was the most reported symptom among the participants. It is defined as recurring episodes

of abdominal pain severe enough to interfere with a child's usual activities, but not having an identifiable organic pathology. Previous studies have found RAP to be a common paediatric complaint affecting an estimated 10%–15% of school-age children [23-24].

The VAS has been widely used as a valid and reliable measure of pain intensity with children. The measure has been shown to correlate highly with parental and clinician estimates of pain and is sensitive to the effects of psychological interventions designed to reduce pain [25]. In the present study it was found that at pre-intervention assessment, the participants reported moderate pain on the VAS ($M = 7.05$) and so did the parents ($M = 6.5$). Post the intervention phase, there was a significant reduction in pain intensity. Logan and Simons in their study with 40 adolescents and parents found that 4 weeks CBT resulted in reduced pain intensity, negative mood/self-esteem, and improved school functioning at post-treatment [26].

The Functional Disability Inventory (FDI) is one of the most widely used measures of functional impairment among children and adolescents with chronic pain. In a consensus statement on measures recommended for use in clinical trials in paediatric chronic pain, the FDI was recommended for assessment of physical functioning outcomes [16]. It has been used with a wide range of paediatric pain conditions in children and adolescents 8-18 years of age [27].

Despite the financial burden, most of these children had visited multiple medical specialists and undergone invasive medical investigations prior to being referred for psychological intervention. As a result, they and their families frequently presented with considerable frustration regarding lack of clear explanation for the persisting pain and dissatisfaction with prior health care evaluations and interventions and the amount of time given in listening to their concerns. Certain strategies have been found to be useful in engaging the reluctant child/family [28]. The present study found empathizing with their distress, stating the belief that pain was real, enquiring about physical symptoms, acknowledging the patient's views, and encouraging experiment with an alternative explanation of pain to be useful in encouraging the child and his parents towards accepting a biopsychosocial view of pain. It was important to reflect with them that till now they had been told what their symptoms were not, but psychological interventions would involve a collaborative effort to find what the symptoms mean.

It is important to appreciate that assessment is an ongoing endeavour in any psychotherapeutic process and has major implications for formulation and management. The children and their family members use their own common-sense formulations to solve the problem of chronic pain. Most of the time, their formulations are based on the obvious facts related to the immediate past. They may accept the first available explanation and if it is accepted by significant others, then there is no looking beyond [29]. In the present study, certain common-sense formulations revolved around supernatural beliefs, visit to faith healers, and previous labelling by medical professionals of the pain being all in the head, which led to the denial of seeking psychological treatment for pain.

With respect to interventions, the evidence for effectiveness is strongest for CBT which has been evaluated in RCTs for over three decades. It is an Evidence Based Practice (EBP). But in the Indian context, the real-world issue is not one of efficacy; rather it is one of access. In the present study, a major area of concern for most parents and children was absenteeism from school. Thus, focus of treatment was to improve children's functioning and reintegration into their daily activities (e.g., school, and social activities) despite their pain. Emphasis was placed on normalization, practice, and the maintenance and promotion of change. Thus, the outcome evaluation was based on a functional restoration approach.

Pain Neuroscience Education (PNE) has been found to be the most important part of any pain management program in multiple researches. It is described as an educational intervention that clearly explains "the neurobiology and neurophysiology of pain and pain processing in the nervous system" [30]. Research suggests that restructuring cognitions about pain through PNE can produce immediate and long-term improvement in pain severity, physical activity, fear, and catastrophic thinking [31-33]. Additionally, it can prepare the child for cognitive-behavioural strategies and how they can effectively reduce pain and restore function. Various studies have shown, through the use of PNE, reductions in pain [34], improved function [35], decreased fear of movement [36] and less catastrophizing [37]. In the present study, the aim of PNE was to make the child and family understand that not all pain is due to tissue damage or muscle injury. It could be due to extra sensitive nerves which could be a result of faulty cognitions about pain. The goal was

to change their perception of pain which resulted in greater sense of competence in the children and their families, in the context of SDT.

Relaxation strategies form the backbone of all lot of our work in mental health as it aims at the mind body homeostasis. Benefits include slowed heart rate, increased blood flow to muscles, reduced muscle tension, greater sense of efficacy in coping and hopefulness for trying out other cognitive strategies. The basic techniques used were diaphragmatic breathing, progressive muscle relaxation and imagery. The children maintained a star chart for the same which in turn increased their sense of autonomy (with respect to SDT). The decreased physiological state of arousal that resulted from the practice of different relaxation-based strategies also served to diminish pain and its emotional symptoms associated with it. This is also supported by previous studies [38-39].

It was seen that many parents did not view psychological treatments favourably mainly because they focused on finding a medical “cure” for chronic pain in their children and consequently viewed psychological treatments as undesirable and unnecessary. Parent training into operant principles was the mainstay of treating PCP and sense of relatedness through therapeutic alliance was found to be important for this. Sessions with parents focussed on encouraging normal activity during pain episodes of the child and reinforcing it, eliminate status checks (asking time and again if the child was fine), reduce response to pain behaviours (giving pain killers) reinforce use of pain management skills (e.g. relaxation), point system, increase positive and encouraging words; decrease complaints, warnings and commands. Research on intensive interdisciplinary pain treatment examining the effects of including parents in children’s treatment found that parents made reductions in protective parenting responses (e.g., more encouragement of normal activity) [40], in their own emotional status and coping efforts (e.g., reduction in depressive symptoms less pain catastrophizing, and improved psychological flexibility) [41-42], and decreased protective and monitoring, responses during treatment (e.g., fewer instances of checking in about symptoms and more recognition of children’s positive behaviours) [43].

Challenging the child’s and the family’s beliefs, worries and fears about pain and its recurrence were dealt with through core cognitive strategies like detective thinking, thought stopping, positive appraisals, and exposure-based exercises. Positive self-statements were provided in written format which assisted the children to cope positively with pain. These techniques are widely applied, as persistent negative thinking, referred to as ‘catastrophizing’, is commonly associated with chronic pain and can contribute to increased pain and disability. Modifying catastrophic thinking—for children with pain and their parents—helped to foster adaptive recovery [44-45].

This process of management resulted in children reporting greater self-efficacy in managing pain, improved school attendance, reduced impairment in activities requiring physical exertion and reduced pain catastrophizing. Family members reported reduced behaviours of protection and monitoring towards the child, better involvement in daily chores and improved interpersonal relationships. Our study was limited by a high dropout rate and lack of long term follow up.

CONCLUSION

The study concludes that adhering to a psychotherapeutic management process of PCP results in pain reduction and increased functional capacity in children and adolescents. PCP is a global issue and requires consistent research-based efforts on our part in its management. Accessibility remains a major issue for children and their families from rural and suburban areas. We can contribute by engaging in efforts to integrate psychosocial interventions, not only for chronic pain but across the spectrum of health problems, into routine health care. Psychologists are well poised to play central roles in health care teams and organizations confronting the problem of chronic pain, as clinicians, researchers, administrators, and policymakers.

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A study on the extent of Eating Disorders amongst adolescents

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ABSTRACT

Background: Eating disorders are characterized by severe disturbances in eating behavior and adolescents is a stage in which individuals are more affected by fitness ideals hence more prone to eating disorders. Eating disorders are serious emotional and physical problems that can have life-threatening consequences for females and males. The present study examined the extent level of Eating disorder and gender differences for Eating disorder among adolescents.

Methodology: This study involved 300 adolescents (150 male and 150 female) studying in 11th and 12th class in age range of 15-18 years, has been selected from various inter college in Gorakhpur city through random sampling. Two questionnaire were administered first was a general demographical questionnaire and second was the short version of the Eating Attitudes Test (EAT-26) was used to assess the respondents attitude toward and preoccupation with food, dieting, eating, physical appearance and personal control over eating.

Results: Based on the scoring, respondents were categories into low risk (0-19) and high risk (20 or more). The result showed that, 30.67% female and 18% male showed a high risk of Eating Disorder and scored above the recommended cut-off point on Eating Attitude Test- 26, and females had higher EAT-26 scores compare to males.

Conclusion: Eating Disorder is growing problem among adolescents and the results indicate a high extent of disturbed eating attitudes among adolescents.

Keywords: Eating Disorder, Adolescents, Extent.

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INTRODUCTION

According to the American Psychiatric Association [1], eating disorder are characterized by severe disturbance in eating behavior of the individual intended to control body weight and accompanied by distorted body image. Furthermore, ED are diagnosed by the criteria of Diagnostic and Statistical Manual of Mental Disorders fourth edition-text revised on (DSM-IV-TR) and include two specific types: anorexia nervosa (AN) and bulimia nervosa (BN).

Eating disorder mostly begin during adolescence, they constitute a rather small but a most serious group of mental disturbances with elevated risk for Chronicity or death [2-3]. Krause and others [4] point out that “a sense of depression, loss and helplessness is often associated with eating disorders. Eating disorders play important role in adolescent development during puberty nutritional behavior can however change. Eating disorders and anorexia nervosa in particular are among the deadliest psychiatric disorders [5].

The aims of the following study was -

1. To examine the extent level of eating disorders among adolescents in Gorakhpur city
2. To examine the gender differences for eating disorder among adolescents in Gorakhpur city.

METHODOLOGY

Respondents: Respondents of the present study consisted of 300 adolescents (150 male and 150 female) studying in 11th and 12th class in age range of 15-18 years, has been selected from various inter college in Gorakhpur city. The sampling method adopted for the present study was random sampling technique.

Tools: Two questionnaires were administered to the respondents, first was a general demographical questionnaire regarding their age, class, gender etc. The second was the short version of the Eating Attitude Test (EAT-26) was used to assess the respondent's attitudes toward and their preoccupation with food, dieting, eating, physical appearance and personal control over eating. Eat-26 index has two categories: 0-19 is low risk and 20 or more indicate high risk [6].

RESULTS

Table 1 - Distribution of respondents according to the Age and Gender

Age	Male (N=150)	Percentage	Female (N=150)	Percentage
15	16	10.67	21	14
16	44	29.33	55	36.67
17	65	43.33	53	35.33
18	25	16.67	21	14

The above table shows that majority of respondents were 16 and 17 years.

Table 2 - Extent of Eating Disorder among Adolescents

High risk	Percentage	Low risk	Percentage
73	24.33	227	75.67

The above table shows that 24.33% adolescents were High risk category for Eating Disorder, whereas 75.67% adolescents were Low risk category.

Table 3 - Extent of Eating Disorder among Adolescents

Gender	High risk	Percentage	Low risk	Percentage
Male	27	18	123	82
Female	46	30.67	104	69.33

The above table shows that 18% of male and 30.67% of female were High risk category for Eating Disorder, whereas 82% male and 69.33% female were Low risk category.

The table below shows that majority of 16 and 17 years respondents were high risk category for Eating Disorder and 12.33% of high risk category respondents were 15 years.

Table 4- Eating Disorder based on Age

Age	High risk	Percentage	Low risk	Percentage
15	9	12.33	28	12.33
16	24	32.88	75	33.04
17	29	39.72	89	39.21
18	11	15.07	35	15.42

DISCUSSION

According to the obtained results in this study, 30.67% female and 18% male showed a high risk of Eating Disorder and scored above the recommended cut-off point on Eating Attitude Test- 26, and it is considered as a high figure according to the previous researches.

In their study in the United States, Fisher and others [7] found that 17.5% suburban females and 15% urban females achieved pathologic EAT-26. Researchers have investigated that prevalence of eating disorder through a cross sectional survey in which 1990 adolescent boys and girls, and they found that 24.2% adolescents were at risk of Eating Disorder and scored above the recommended cut-off point on EAT-26 [8]. 15% male in this study had a high EAT-26 score, while in an Israeli study [9] found that 1.5% of urban males had a high score. However, there is a very few study on eating attitudes among males.

As expected, significant differences were found between male and female in the total scores of disturbed eating attitudes, female having the highest score. These results are in line with previous research [10].

Eating Disorder and disturbed eating attitudes and behavior are well-documented problems, in particular among females [11-13]. However, in the past four decades, the prevalence of eating disorders has also risen among adolescent boys [14-16]. Although the prevalence of eating disorders is still higher among females, there are many similarities in risk factors for eating disorders shared by both genders [17].

CONCLUSION

The obtained extent of Eating Disorder was higher in our study compare than previous studies. Females were high risk of EAT-26 cut off score compare to males. Further research is needed to develop intervention programs to prevent eating disorder among adolescents.

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Effectiveness of Peer Assisted Learning Strategies in solving Mathematical Word Problems

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ABSTRACT

Background: The purpose of this study is to test the effectiveness of peer assisted learning strategy, a peer-mediated instructional method in solving mathematical word problems by standard IV students in a general classroom.

Methodology: A quasi-experimental study was carried out with a two-group post test design. There were 60 participants from two divisions of a school with 30 each assigned randomly to the treatment group and control groups. The instructional strategy used was Peer Assisted Learning strategy (PALS). Data was collected through a base level test and post-test for both the groups. One tailed 't' test was conducted to determine whether there was any significant difference in the base level scores between the groups and also to determine the effectiveness of PALS.

Results: Results of this study indicated the effectiveness of PALS and this reaffirms that collaborative strategies such as peer mediated instructions can be a feasible option in inclusive mainstream schools for improving student performance and engagement.

Conclusions: Peer mediated strategies such as PALS can be effectively deployed to develop and promote academic and social skills.

Keywords: Peer-mediated instruction, Peer assisted learning strategies, mathematics, word problem solving

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INTRODUCTION

Mathematics is a universal language, a symbolic language for all cultures and civilizations. Math skills are required in every walk of life throughout a lifespan. The foundation for mathematics is laid in the early years of elementary school [1]. Mathematics is a subject that includes a variety of skills and concepts that are often related and build on one another. Students may master some and may struggle to understand others. Whether one understands mathematics or not, the importance of this subject cannot be denied in one's daily life. The foundation for mathematical performance is innate and there appears to be a natural tendency for humans to build upon this foundation from simple arithmetic to more complex algorithms [2]. Children's quantitative competencies upon entry into school can have lifelong consequences. Children who start behind generally stay behind, and mathematical skills at school completion influence employment prospects and wages in adulthood [3]. At a psychological level, exposure to mathematics helps in developing an analytic mind and assists in better organization of ideas and accurate expression of thoughts. Arithmetic skills and the underlying concepts that constitute mathematics are generally considered part of a basic educational curriculum. Wilson [1] lists the five basic building blocks of elementary mathematics as numbers, place value system, whole numbers, fractions and decimals and problem solving. Moursund [4] breaks math expertise

into two components - math content and math maturity. Math content includes the arithmetic, algebraic and geometric procedures and how to use these procedures whereas math maturity includes understanding and solving problems that have not been encountered before, mathematical logic and reasoning, precise mathematical communication, knowing how to learn math, problem posing, transfer of learning, and interest and intrinsic motivation in math.

Language is an essential cognitive tool of all learning. Proficiency in language or lack of it can influence one's progress to a great extent. The language used in mathematics is slightly different in a mathematical context. The students need a lot of exposure and experience in using language to develop mathematical language. Word problems in mathematics are narratives that provide some background information on the problem in ordinary language than in mathematical notation as defined in the digital source of Wikipedia. Researchers [5] studied whether word problem solving is a form of text comprehension and concluded that text comprehension was a significant indicator of word problem solving and word problem language processing skills and arithmetic skills was a strong indicator of calculation / computation. Word problem solving performance is strongly related to text comprehension and arithmetic skills [6]. The word problem solving of difficult items required both text comprehension and arithmetic skills in good measure.

Students may understand the concepts being taught, and acquire the computational abilities, however to acquire fluency, accuracy and feel confident about their mathematical competency, practicing what is learnt is critical. Lack of immediate practice cannot establish the learning firmly and confidently in the student and therefore more likely to be forgotten. Also, with practice, the students get to know whether they are progressing in the right direction and areas of improvement.

Today's classrooms are increasingly diverse and the teacher has to strive to keep each student engaged, motivated and knowledgeable. There are many inclusive instructional practices available to meet this objective. With inclusive instructional practices gaining importance and an unmanageable pupil teacher ratio in most of the schools in India, teachers are under tremendous pressure to fulfil the completion of this need, the need for students to practice the math skills taught by the teacher. Unfortunately, while some parents take care of this need at home, many do not. Many a times, this critical aspect of mathematical learning may be compromised due to sheer lack of time and support. Teachers need to go beyond their comfort zones, move away from traditional one-way tutoring models to collaborative strategies. Collaboration means the act of working together to achieve something. When we extend collaboration to the teaching-learning environment, we not only refer to collaboration between teachers, but also collaboration between students. Collaboration happens when two or more individuals work together towards achieving a common objective. Collaboration can either happen at teachers' level or the teachers can organize students to work in collaboration. Collaborative strategies are used to make the learners become more active, autonomous and self-responsible. Collaborative learning includes a set of instructional methods in which learners work in small, mixed ability learning groups.

Peer tutoring is a collaborative approach, in which learners work in pairs or small groups to provide explicit teaching support. Peer tutoring is an organized learning experience in which the learners take on the responsibility for aspects of teaching and for evaluating the success of their peer(s). Peer tutoring provides a platform for the students to use their knowledge in a meaningful, social experience. One student serves as the teacher or tutor, and one is the learner or tutee. Peer tutoring can be varied depending on who will be paired and what will be their roles. The peer could be same age, cross age, reciprocal tutoring and so on [7]. Such collaborative teaching practices help us refine one's ideas and better the solutions. It promotes teamwork relieving student isolation in a learning situation. Ultimately, it helps in achieving the learning objective. The diverse needs of students can be better met with peer-mediated instructions that involves students working together on structured tasks. Peer assisted learning strategy (PALS) is a version of class wide peer tutoring, where students are paired as 'coaches' and 'players' with role reversal to work together on a particular topic. PALS, is a scientific-based peer-mediated instructional program. Clear instructional activities are planned in advance by the teacher and based on material that has been taught; Procedures and routines for working in pairs are taught by the teacher in advance of peer work; Members of pairs may differ in ability levels (reading, math, or English proficiency) Peers work together approximately for a stipulated time period [8]. Peer tutoring has not only been effective in reading [9-10] but has been found effective in

the area of mathematics too both in primary school children as low as in grade 1 and in secondary students [11-12].

METHODOLOGY

Research Objective: To examine whether the use of peer assisted learning strategy (PALS) in solving word problems in addition and subtraction will improve the performance of standard IV students in mathematics.

Design: A quasi experimental design study was carried out with a treatment group and control group in a Mumbai suburban school with Standard IV students. There were two divisions of standard IV students who were included in the study. One division was subjected to the treatment and the second division was not subjected to treatment and considered as control group. The students were from different socio-economic background with diverse profile and background, their parents' educational and professional background were varied and none of these intervening variables have been controlled by the investigator. The language proficiency of students for text comprehension was not controlled or measured by the investigator.

Sample: Convenience sampling was followed since the school agreed to cooperate with the investigator for this study. The school was located in Mumbai in one of the Western suburbs and followed Maharashtra State Board Curriculum and was privately managed. It was a co-educational school. Sixty students of standard IV were included in the study and were randomly placed in experimental and control group. The students were totally 76; the data pertaining to students who were absent at different levels was eliminated and not considered for the study.

Tools:

Instructional strategy - Peer assisted Learning Strategies (PALS): PALS strategy supplements the classroom instructions and is aimed to improve on fluency through guided practice. It monitors for accuracy, provides immediate feedback, helps to take immediate corrective steps and motivates and sustains the engagement level of the students. PALS encourages the students who work in a pair to verbalize / think aloud the steps / process involved with each other before they begin to practice independently. Students are made to work in pairs and such pairs are formed on the basis of their abilities. It envisages a reciprocal one-on-one relationship between students where they play and reverse their roles as coach and player. The PALS document comprising the manual, PALS script for the word problems, illustration and the scoring sheet was referred to two experts in the field of mathematics for content validation. The documents were modified on the basis of the common suggestions received from the experts.

Teacher made Achievement Test: The investigator prepared two sets of tests, the base level test examined all the participants on their computational skills of addition and subtraction and there was no language element involved. The post treatment evaluation on word problems was conducted for students under both the groups after the 4 instructional sessions each on word problems. In addition, there were practice problems that were solved during the session using the appropriate planned strategy.

Materials used: The teacher investigator used the black board to a large extent, supplemented with charts displaying the mnemonic 'CUBES', the word map giving the cue words in the class rooms, charts displaying the PALS script for word problems.

Data Collection

Students were paired based on their abilities. The pairing was maintained for all the sessions as much as possible. In the pair, one student acted as a coach and the other as tutee and reversed their roles midway through the session. The peer pairing was done with assistance from the class teacher based on the mathematics scores of the students in the previous unit test and a student with higher grade was paired with a student at the lower end of the scale. The investigator explained to the students how they would be solving the word problems in pairs. The students were briefed with a set of instructions like "Talk only to your

partner, in a low voice and only about the work given. Appreciate your partner when they complete every step. Encourage your partner to complete the work. Both you and your partner should take turns". They were provided a script to focus on during the interaction with each other. The investigator prepared this script and the script had questions and statements that would guide the player to carry on with the next steps and interactive hints and motivating words for completing each step. The teacher and the investigator enacted a role-play as the coach and the player respectively using the script to the class.

RESULTS

The investigator conducted a total of 8 sessions of 40 minutes. The treatment group was made to solve the problems along with the teacher followed by solving problems with a peer (using PALS strategy). The 30 students in the treatment group were grouped into pairs and given 2 sample problems to practice the interaction. They practiced the problems with one being the coach and the other being the player or tutee in a pair. They reversed their roles and practiced the problems again. The investigator and the teacher moved around in the class and offered help and advice to the students during the practice session. The treatment group had 15 pairs of students working with each other to solve the word problems in addition and subtraction that were given to them. The script to be followed was detailed on two sets of charts and displayed on two sides of the classroom for students to refer. The investigator and the teacher supervised the interaction. The control group solved the problems along with the teacher and was not paired with a peer for problem solving. However, both the groups were given the same amount of total practice time to solve word problems. Both the groups were given independent practice work.

The base level test mean scores of the treatment and control group were 7 and 7.2 respectively. The base level score of the treatment and control groups were subjected to the one tailed 't' test to verify whether there was any significant difference in the mean scores of both the groups. The computed 't' value of base level scores of the treatment and control group obtained was 0.278. The 't' critical value at 0.05 significant level is 1.671. Since the computed value (0.278) is less than the 't' critical value (1.671), there was no significant difference observed in the mean scores of base level scores of the control group and the treatment group.

The Post test mean scores of the treatment group and control group were 7.78 and 6.73 respectively. The absolute difference in the mean scores is 1.05. The mean scores of the treatment group and control group were compared using the one tailed 't' test for independent samples and the obtained 't' value was 2.249. The 't' critical value at 0.05 significant level is 1.671. Since the computed value (2.249) is more than the 't' critical value (1.671), there was a significant difference observed in the mean scores of the treatment group and control group. The mean scores of the treatment and control groups show a progressive difference of 1.05, and there was also a statistically significant difference observed between the two scores. This implies that the difference in the strategy used, i.e. PALS strategy made a significant improvement in the scores of students in the treatment group when compared to the mean scores of students who were not supported with PALS. It is pertinent to note that even though there was no significant difference observed in the mean scores of the base level scores between the groups, there was a significant difference observed in the mean scores of the post treatment test between the groups. This implies that the use of PALS strategy was effective.

DISCUSSION

The Pupil Teacher ratio in India is unmanageable in most of the schools and the draft National Education Policy 2019 envisages the ratio to be curtailed below 30:1, meaning 30 or lesser pupils per teacher [13]. The path to achieve this ideal ratio is expected to be strenuous and challenging. One cannot wait until this ratio is achieved and neglect the issues and challenges in the current teaching-learning environment. The students were engrossed in their interaction and worked with such focus and concentration that the pairs completed the problems that were given for practice during the sessions. Group or Partner arrangements are useful for enhancing student engagement [14]. The study shows that use of PALS in an inclusive setup can be effective and can improve the mathematics performance of students. Class wide peer intervention increases the mean achievement of the class [15]. The treatment group of 30 students were paired in such a way that a student who was proficient in mathematics worked with another student who was not as proficient or had difficulties

in mathematics. But both the students in each pair were successful in completing the task, as contrasted in the performance of control group where students who had difficulties in mathematics had incomplete work. Peer assisted learning strategies in mathematical development is effective, feasible and benefits children with and without disabilities [16]. With every session, students who worked in pairs gained more confidence and worked with more speed and accuracy. Students who had earlier struggled in doing mathematics showed more determination to complete with their partner's encouragement and support. Moreover, these students had an opportunity to ask questions using a guideline that helped in improving their own understanding of the problem. Peer assisted learning strategies challenges students' mindset of perceived helplessness in mathematics [7] and is effective for all types of learners [8]. Such class wise peer tutoring promotes social skills amongst students in a natural setting along with academic skills. The students began to look forward to mathematics class where they can work with a peer and the general mood of the class was observed to be cheerful. Peer assisted learning interventions also improve social skills [17]. When students worked in pairs, it was not only beneficial to those students who needed support in solving mathematical problems, but also to those students who guided them. These students displayed patience, determination and extended full-fledged support to their peer(s) until completion of task. Besides academic achievement, it also gave confidence, sense of responsibility, better communication, empathy, understanding and increased self-esteem. Peer learning not only promotes cognitive gains but social and emotional gains too [6]. Teachers should be provided means and resources to keep every child engaged in class by adequately challenging the talented while ensuring participation of all children in classroom. When teachers become mediators, the learning environment changes [18]. Some viable learning strategies that may fit into the new learning environment are collaborative rather than competitive, learner centred rather than teacher centred, and discovery learning rather than expository learning. Cooperative learning, classroom management, motivation programs hold promise than those that deal primarily with curriculum or technology alone [19]. There are certain variables that the investigator did not control or interfere with. Language proficiency of the students, cognitive and motivational factors, socio economic status, parents' education, was not measured and therefore not included as a variable in the study.

CONCLUSION

The relevance and effectiveness of PALS in an inclusive set up cannot be undermined due to its performance enhancing potential, as seen through the significant differences observed in the mathematical performance of the students' who were given PALS intervention in the study. When the teachers are challenged with larger class size and diversity of learner's they need such stimulating strategies to keep the learners engaged, motivated and knowledgeable. The peer tutoring strategies such as PALS allow teachers to tackle the challenges in mathematics curriculum and support student diversity in inclusive classrooms. The importance of Peer assisted or peer tutored programs is such that the draft National Educational Policy 2019 (MHRD, 2019) talks about instituting a National Tutors Program where students will be trained to provide 5 hours of tutoring per week during the school to younger students who need help.

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A Survey of the Awareness and Attitudes of an Adult Population towards Clinical Hypnosis

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ABSTRACT

Background: Clinical hypnosis has been used as a primary and a supplementary treatment modality for various diseases. We conducted a cross-sectional survey of 600 adults living in the state of Maharashtra, India, over two months to assess their awareness about and attitudes towards clinical hypnosis.

Methodology: Using a pre-validated questionnaire containing 26 items, we evaluated the awareness of the subjects in two principal domains- the practice of clinical hypnosis, and the therapeutic uses of clinical hypnosis. The aggregate of the correctly answered questions under these domains was designated as the awareness score for each subject. We assessed the attitudes and willingness of the subjects to accept clinical hypnosis under a separate domain, the attitudes. A separate set of questions addressed the experiences of subjects who had visited a hypnotherapist before.

Results: Although the study population had poor awareness about clinical hypnosis (Mean awareness score = 45.53%, SD = 18.61%), 82.5% of subjects had a positive attitude towards it. The awareness scores correlated positively with the attitude scores (chi-square = 48.561, $p = 0.000$). Four of the five subjects who had experienced clinical hypnosis found it beneficial for their respective indications, three of which would be willing to approach a hypnotherapist again and refer people to hypnotherapists.

Conclusion: Greater awareness about clinical hypnosis is associated with a positive attitude towards it. Hence, increasing the awareness of people regarding clinical hypnosis is likely to improve their attitude towards the same.

Keywords: Hypnosis, Hypnotherapy, Survey, Awareness, Attitude

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INTRODUCTION

The world of medicine and health sciences has seen a surge in the global utilization and recognition of various treatment modalities over the last few decades. Many of these therapies are yet to be utilised on a wide scale. One such clinically relevant therapy is clinical hypnosis. The American Psychological Association defines hypnosis as “A state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion” [1].

Hypnosis as a mode of therapy, referred to as “Hypnotherapy” and “Clinical hypnosis” is used to treat various diseases for which conventional therapy is often unsatisfactory, like irritable bowel syndrome [2]. In the prophylaxis and treatment of migraine and headaches, clinical hypnosis is found to be efficacious, relatively brief and cost-effective. In comparison with widely used medical treatments, it is virtually free of side effects and adverse reactions [3]. The use of clinical hypnosis instead of local anaesthesia in dental surgery is described in case reports [4]. However, clinical hypnosis is being routinely used as a complement rather than an alternative to modern, safe techniques of anaesthesia, primarily to minimize anxiety and stress. It has been shown to reduce pain, anxiety, and the consumption of analgesics and sedatives to a statistically significant extent in patients undergoing operations under local or regional anaesthesia [5]. It

has also been implemented in psychotherapy for pain management, both chronic non-cancer and cancer pain [5-6].

Although hypnotherapy is a treatment modality with immense potential, misconceptions may bridle its widespread use. Palsson, Twist, & Walker in their study found that receiving information about hypnosis from television, magazines, or stage hypnosis promoted misconceptions about clinical hypnosis, while credible sources such as health professionals and non-fiction books helped increase positive views of hypnosis as a therapy [7]. Some common myths regarding clinical hypnosis include that it is a passive state most commonly being likened to sleep, that hypnotic subjects show inevitable amnesia for what went on in hypnosis, people of strong will power cannot be hypnotised and that there are gender differences in hypnotisability [8]. People often believe that the subject is forced to reveal information or thoughts that one would not normally reveal, while in the state of hypnosis. There is a prevalent fear of handing complete control of themselves to the hypnotherapist and becoming robot-like and being made to do things against their will [9].

There is evidence that people prefer the hypnotherapist to be connected with a medical or psychological establishment, either through qualification or via referral. There is a clear perception that the hypnotherapist's skill is a factor in the success of clinical hypnosis [10]. When used by a person who is inexperienced or untrained, or a person uncaring in his relationship with the hypnotised subject, clinical hypnosis can cause psychopathological symptoms in the subject. The subject may experience anxiety or it may revoke an earlier trauma and enhance the related stress. In such scenarios, it is also known to precipitate brief psychotic episodes in subjects. The medical professionals who use hypnotic techniques must evaluate the patient's motivation to undergo clinical hypnosis, and their goals must be specific to their area of competence [11]. In India, clinical hypnosis is practised by a variety of professionals, some with doubtful qualifications. Hence, efforts to standardize its practice may make the modality more acceptable among people [12]. There is no overall picture regarding the views and experiences of clinical hypnosis amidst the general public in the existing literature. Hence, we conducted this survey to assess the awareness of the general population and their attitudes towards clinical hypnosis in our country and to establish whether the awareness influences the attitudes of the people.

METHODOLOGY

We carried out the cross-sectional, electronic survey over two months after approval by the Institutional Ethics Committee.

Inclusion criteria:

All the subjects included in the study were

1. Capable of reading and writing in English, Hindi, or Marathi
2. Adults (above the age of 18 years)
3. Living in the state of Maharashtra

Study design and sample size:

Based on a national survey conducted in the adult population of the United States, we considered the prevalence of positive views towards clinical hypnosis as 38.6% [7].

We calculated the sample size using an online calculator, at a 99% confidence interval with the desired precision of the estimate being 0.05 [13]. The calculated sample size was 629. We received 630 responses. Amongst those who responded, we had to exclude 30 responses as they did not meet our inclusion criteria. Hence, our final sample size was 600.

Questionnaire development and validation

Based on our literature search regarding clinical hypnosis and the various myths and misconceptions harboured by the general population, we designed a questionnaire comprising 26 questions [2-4,14-17]. A summary of the questionnaire has been provided below. The details regarding each question and its response have been mentioned in separate tables in the annexure.

NUMBER OF QUESTIONS	DOMAIN	INCLUSION IN ANY SCORE CALCULATION
2	Sociodemographic data	-
6	Awareness regarding the practice of clinical hypnosis (Table 1)	The aggregate of these two domains was considered as the awareness score (Maximum score = 13)
7	Awareness regarding the therapeutic uses of clinical hypnosis (Table 1)	
3	Other questions regarding awareness (Table 1)	-
1	Initial source of information regarding clinical hypnosis (Table 3)	-
4	Attitudes towards clinical hypnosis (Table 4)	Three out of these four questions were considered in the attitude score (Maximum score = 3)
2	Additional questions (Table 7)	-
1 (9 sub-questions)	Experience of hypnotherapy (For those subjects who had visited a hypnotherapist before) (Table 8)	-

We used a self-designed pre-validated questionnaire as our primary objective was to perform a preliminary assessment of the awareness and attitudes about clinical hypnosis in an Indian population, without evaluating practical factors such as hypnotisability of the subjects. Pre-validated questionnaires and scales that have been published previously did not satisfy this objective entirely. The questionnaire was validated by ten people including medical professionals like psychiatrists and also members of the general population. We designed the questionnaire and the accompanying informed consent document in English, Hindi and Marathi. A snowball non-random sampling approach was used to reach a large and diverse population. The questionnaire was sent as a Google form link via social media (WhatsApp®, Facebook®) and email to the subjects, including students at various colleges within the state of Maharashtra, and other professionals. Upon opening the Google form link, the subjects completed a click-through form which mentioned that the subject should live in the state of Maharashtra. After this, they proceeded directly to complete the questionnaire. After completion of the questionnaire, the subjects were requested to share the google form link to two more people above the age of 18 years living within the state of Maharashtra.

Data analysis

We performed descriptive statistics including frequencies, percentages, and chi-square analysis using IBM SPSS 16.0.

RESULTS

Sociodemographic Data

Amongst the total sample of 600 subjects, 58.87% were females, 38.5% were males and 2.67% preferred not to mention their gender. The age of the subjects ranged from 18 years to 77 years, the mean age being 23.13 years.

Awareness about clinical hypnosis (Table 1)

Calculation of awareness score (As mentioned in the Methodology section). We grouped the subjects into four categories based on their awareness score. (Table 2)

Awareness score distribution. (Figure 1) No subject answered all thirteen questions correctly, with the maximum score being twelve. The Mean awareness score was 45.53%, with a standard deviation of 18.61%. Some questions regarding awareness which need to be mentioned separately are as follows -

- Only 40% of subjects had heard about clinical hypnosis
- Only 9% of subjects were aware of hypnotherapists in their area
- The major misconceptions regarding clinical hypnosis that are evident in our survey are:
 1. One might get stuck in the state of hypnosis if something goes wrong, which only 35.17% of subjects believed to be false
 2. When in the hypnotized state, one might reveal a secret that they are not willing to, which only 11.33% of subjects believed to be false

Differences in awareness concerning gender: A chi-square test was performed to compare the awareness scores of males and females (chi-square = 4.332, $p = 0.632$). The test depicted that there was no statistically significant difference in the awareness scores of males and females.

Sources of information: The most common sources of information regarding hypnosis reported by our subjects were movies/television (68.17%) and magic shows/stage hypnosis (29.5%). (Table 3). Further, we assessed the association of awareness with the two most common sources of information in our study- movies and magic shows/stage hypnosis.

A chi-square test performed to compare the awareness scores of subjects reporting movies as a source of information versus those not reporting movies as a source of information (chi-square = 1.032, $p = 0.794$) depicted no statistically significant difference in the awareness scores. A chi-square test performed to compare the awareness scores of subjects reporting magic shows/stage hypnosis as a source of information versus those not reporting magic shows/stage hypnosis as a source of information (chi-square = 1.032, $p = 0.794$) depicted no statistically significant difference in the awareness scores.

Attitudes towards clinical hypnosis (Table 4)

Calculation of attitude score: (As mentioned in the Methodology section). We grouped the subjects into four categories based on their attitude score.

Attitude score distribution (Figure 2): The mean attitude score was 1.8 out a maximum attainable score of three, with a standard deviation of 0.926. 66.2% of the subjects showed positive attitudes towards clinical hypnosis, considering that the categories “likely” and “very likely” represent positive attitudes since they include attitude scores over 50%. This shows an overall positive attitude amongst the subjects towards clinical hypnosis. Our survey also revealed that 71.4% males showed positive attitudes, while 63.7% females showed positive attitudes, though the difference was insignificant according to the chi-Square test (chi-Square = 12.552; $p = 0.051$). Significant questions regarding attitudes which need to be mentioned separately are as follows-

1. 82.5% of the surveyed population reported some likelihood to try hypnosis as a complementary form of treatment under a trained professional.
2. However, only 35% of the sample was willing to try self-hypnosis.
3. Only 62% of the population was willing to accept clinical hypnosis as a field if proof of its use is provided to them.

Association of awareness about clinical hypnosis with attitudes towards it (Table 6): Based on the chi-square analysis of the comparison between awareness scores and attitude scores, we found that amongst the 15.5% subjects with good awareness, 76.4% were very likely or likely to accept clinical hypnosis. Further, 57.2% of subjects with very poor awareness were reluctant to accept clinical hypnosis. An increase in awareness score correlated with an increase in attitude score (chi-square = 48.561, $p = 0.0001$). This was also evidenced by the values of unstandardized residuals in the chi-square table described above. A positive residual value represents an excess of frequency in a particular cell of the table as compared to the expected value of frequency in that cell, whereas a negative value represents a deficit. Some important residual values are mentioned below:

1. In the not at all likely group: +9 in the poor awareness category and -10.2 in moderate
2. In the hesitant group: +14 in the very poor awareness group
3. In the likely group: -9.2 in the very poor awareness group
4. In the very likely group: -8.7 in the very poor awareness group, -12.5 in the poor awareness group, +15.4 in the good awareness group

Association of awareness with attitudes - comparison of individual questions

82.5% of subjects were likely to accept clinical hypnosis as a supplementary form of treatment. A chi-square test comparing the likelihood of accepting clinical hypnosis as a supplementary treatment between the subjects who believed it to be a normal and natural state of mind versus those who did not believe so was statistically significant (chi-square = 8.430, $p = 0.004$).

58.8% of the subjects who were likely to accept clinical hypnosis as a supplementary treatment believed that there is scientific evidence to prove its use, whereas 41.9% of the subjects who were not at all likely to accept clinical hypnosis believed that there is scientific evidence to prove its usefulness. A chi-square test comparing the likelihood of accepting clinical hypnosis as a supplementary treatment between the subjects who believed in the existence of scientific evidence versus those who did not was statistically significant (chi-square = 10.013, $p = 0.002$). Subjects who believed in the existence of scientific evidence also depicted more positive attitudes towards clinical hypnosis (chi-square = 14.093, $p = 0.003$).

Additional questions (Table 7): We asked two questions about the perceptions of the subjects regarding clinical hypnosis, which did not relate directly to their awareness or attitudes.

Experience of clinical hypnosis (Table 8): Out of the 600 subjects in our survey, only five stated that they had visited a hypnotherapist before. The sources that suggested a visit to the hypnotherapist included friends, physicians and psychiatrists. Most subjects reported that they felt nervous before undergoing hypnosis, and few felt some discomfort or foggy sensation after their session. Four out of the five subjects found clinical hypnosis beneficial for their respective indications while three of the above four subjects said that they would be willing to approach a hypnotherapist again and refer people to hypnotherapists. Clinical variables influencing severity of the alcohol dependence such as duration of alcohol intake, mean SADQ score, comorbid substance abuse and family history of alcohol dependence did not differ significantly between the two groups. But there were some significant differences in terms of certain clinical variables which may have influenced the results and this has been looked at under the discussion part of the paper. [Table 2]

DISCUSSION

From the results of our state-wide survey, we found that the overall attitudes of the subjects towards clinical hypnosis were positive. Very few subjects were aware of hypnotherapists in their area, suggesting either an imbalance in the sample to hypnotherapist ratio or a lack of awareness of the same. The awareness scores revealed certain misconceptions prevalent in a majority of our sample, including the fear of getting stuck in hypnosis, losing control under hypnosis and revelation of secrets involuntarily while in hypnosis. These apprehensions highlight the importance of educating the population regarding clinical hypnosis, providing them with accurate information, filtering the sources of information and providing scientific backing to the information being communicated to the people. This may be achieved by addressing these misconceptions via certified training programs for medical professionals and sensitisation programmes for the public.

While comparing the awareness scores concerning the gender distribution of the sample, we found that no statistically significant relationship occurred between awareness scores and gender. However, previous studies have shown that the perceptions of people about clinical hypnosis may vary with gender, with females being less likely than males to associate hypnosis with mental instability [9]. However, another article mentioned that there was little information on gender or age-group related differences in the views or attitudes regarding clinical hypnosis, which we found to be in line with our study [15]. Thus, similarities in the attitudes and awareness regarding clinical hypnosis in both genders indicate that both need to be addressed equally while taking steps to improve awareness.

Literature suggests that the sources of information regarding clinical hypnosis can influence the perceptions of people towards clinical hypnosis. Hollywood's portrayal of hypnosis involving a "Svengali-like" figure exerting complete control over a passive and compliant subject is likely to lead to common misconceptions and negative attitudes towards clinical hypnosis, and may also undermine the public's confidence in the clinical utility of hypnosis [14]. It had been observed that patients who obtained their knowledge from newspapers, books and television were more likely to request further information about clinical hypnosis than those patients who obtained information via stage hypnosis or from other people [18]. They also reported that patients who procured information about hypnosis mainly through television or stage shows held unfavourable views about clinical hypnosis. However, we did not observe any differences in the awareness or attitudes of subjects concerning their sources of information.

Since we identified that movies, television and magic shows were the chief sources of information regarding hypnosis amongst our subjects, we believe that there is a need for an accurate representation of clinical hypnosis through these media. This will help reach out to most of the population, while simultaneously reducing the prevalence of popular myths.

The overall positive attitude amongst the subjects may be directly associated with better outcomes of clinical hypnosis in them, as is suggested experimentally that the manipulation of a subject's attitude can significantly affect the level of hypnotisability [18]. A positive attitude increases hypnotisability and predisposes an individual toward a satisfactory hypnotherapeutic experience [18]. A positive attitude may also increase the likelihood of accepting clinical hypnosis in the future. Furthermore, over 80% of the population that we surveyed showed some likelihood to try hypnosis as a complementary form of treatment under a trained professional indicating a widespread acceptance of clinical hypnosis. However, less than half of the sample was willing to try self-hypnosis. This may be attributed to a lack of complete knowledge regarding the procedures or the effectiveness of self-hypnosis.

On comparing the awareness and attitudes we found that amongst the subjects with good awareness, the majority were very likely or likely to accept clinical hypnosis, highlighting the importance of spreading accurate and scientifically backed information to the people to improve their awareness.

Analysis of some individual questions revealed that the correct perception that hypnosis is a normal and natural state of mind seems to have a significant impact on the acceptance of hypnosis as a supplementary treatment as was evidenced by greater acceptability amongst those who considered it so. Furthermore, we found a statistically significant association between acceptance of clinical hypnosis and the perception of it having scientific evidence, which suggests that dissemination of such information can help promote clinical hypnosis amongst the people.

Limitations

Because of the lack of availability of adequate literature on the prevalence of awareness in the Indian population, we could not calculate a sample size specifically for the Indian scenario. We did not obtain a detailed socio-demographic profile of the subjects as it was not amongst the primary objectives of this study. Since we circulated the questionnaire online, we were unable to target the segment of the population who were unable to use an electronic device. More detailed statistical analysis using ANOVA and structural equations could have been performed.

For future studies, a particular target population with a detailed socio-demographic profile may be defined for assessing the awareness and attitudes in specific population groups. Analysis based on these parameters may reveal significant relationships.

CONCLUSION

One of the best ways to improve the attitudes of a population towards an idea is to generate more awareness regarding the same. Thus, it is important to improve awareness regarding the practice of clinical hypnosis in Indian society, which would then manifest as an increase in the overall positive attitude of people. Improving the awareness and increasing the credibility of information provided to the public by improving and monitoring both, the sources of information, as well as the scientific basis of disseminated information, will also improve the overall perception. Coupled with this is the need to provide more options for reliable

and efficient clinical hypnosis services at various levels of healthcare, which would give the public the option of utilising clinical hypnosis effectively.

ANNEXURE – TABLE 1

Practice of hypnosis	Yes	No	Uncertain
1. Hypnosis is a normal and natural state of mind where we are more prone to suggestions	(Correct)		
2. It is a state similar to meditation	(Correct)		
3. It is a state similar to unconsciousness		(Correct)	
4. It is a form of communication using suggestions	(Correct)		
5. Are you aware of any Hypnotherapists in your area	(Regarded as correct)		
6. Who do you think can practice hypnosis? (Multiple options) (Both correct = +1; either one correct = +0.5; any incorrect option mentioned = 0)	A) Psychiatrists (Correct) B) General physicians C) Hypno-therapists (Correct) D) Other trained professionals		
Therapeutic uses of hypnosis			
1. Have you heard about clinical hypnosis	(Regarded as correct)		
2. It is a non-invasive therapy complementary to conventional medicine	(Correct)		
3. Hypnotherapy has scientific evidence to prove its use	(Correct)		
4. One might get stuck in the state of hypnosis if something goes wrong		(Correct)	
5. Through hypnosis, a disease can be cured in one session		(Correct)	
6. When in the hypnotic state, one might reveal a secret they are not willing to		(Correct)	
7. It can be used to recall long-forgotten memories.	(Correct)		
Other questions (Not included in the awareness score)			
1. It is a very time-consuming process			
2. Hypnotherapy is a comparatively costly treatment			
3. Hypnosis has long term effects			

**Questions regarding the awareness of the subjects about clinical hypnosis*

Table 2

Awareness category	Score range (out of 13)	Number of subjects	Percentage of subjects
Very Poor	0-3	77	12.8
Poor	3-6	257	42.8
Moderate	6-8	173	28.8
Good	8-13	93	15.5

**Categorization of the subjects based on their awareness scores*

Table 3

Question- Where were you initially introduced to hypnosis? (Multiple choices)	%
Movie/TV	68.17
Magic shows (stage hypnosis)	29.5
Newspaper	5.5
Friend/Relative/ Associate (who have undergone hypnosis)	11
Internet	19.67
Don't know	5.83
Other	2.33

*Question asked about the source of information through which the subject was initially introduced to clinical hypnosis. More than one option could be chosen

Table 4

Included in the attitude score	Responses		
1. How comfortable will you be accepting hypnosis as a supplementary treatment under the supervision of a trained professional?	A) Extremely likely B) Very likely C) Moderately likely D) Not at all likely		
(Extremely likely, very likely and moderately likely; each was given a score of 1 in the attitude score. Not at all likely was given a score of 0)			
2. Self-hypnosis or auto-hypnosis is a form, process or result of hypnosis which is self-induced, and normally makes use of self-suggestion. Would you most likely try self-hypnosis?	Yes	No	Uncertain
3. Like psychiatry and psychology, if proven to be useful, will you accept hypnotherapy as a field in itself?	Yes	No	Uncertain
Not included in the attitude score			
4. While undergoing hypnosis as a treatment what will your apprehensions be? (Multiple options could be chosen)	A). I might forget things that I remember normally (Amnesia) B) I might reveal things that I don't want to C) I might not be able to concentrate on routine activities D) I won't be able to come out of hypnosis		

*Questions regarding the attitudes of the subjects towards clinical hypnosis

Table 5

Attitude Category	Corresponding Scores	Frequency	Percentage
Not at all	0	63	10.5%
Hesitant	1	140	23.3%
Likely	2	251	41.8%
Very Likely	3	146	24.3%

*Categorization of the subjects into 4 groups based on their attitude scores

Table 6

			Awareness category				
			Very poor	Poor	Moderate	Good	Total
Attitude category	Not at all	Frequency	12	36	8	7	63
		Residual	3.9	9.0	-10.2	-2.8	
	Hesitant	Frequency	32	59	34	15	140
		Residual	14.0	-1.0	-6.4	-6.7	
	Likely	Frequency	23	112	83	33	251
		Residual	-9.2	4.5	10.6	-5.9	
	Very likely	Frequency	10	50	48	38	146
		Residual	-8.7	-12.5	5.9	15.4	
Total	Frequency		77	257	173	93	600

*Chi-square test performed to evaluate the association between awareness scores and attitude scores of the subjects

Table 7

1. Do you think there is a stigma associated with Hypnotherapy in society?	Yes	No	Uncertain
2. Why would you be hesitant to use hypnotherapy? (Multiple options could be chosen)	A) Fear of being judged by society B) Lack of faith in the hypnotherapist C) Unaware about the procedure D) Bad experience with another hypnotherapist		

*Questions within the questionnaire that did not pertain to the awareness and attitudes of the subjects

Table 8

Have you been to a hypnotherapist before?	Yes 0.833% (5/600 subjects)	No 99.167% (595/600 subjects)
If yes (Answer to the question above), 1. What was the reason? 2. Who recommended the hypnotherapist 3. How many sessions did you take 4. Did you experience any dizziness or discomfort after the session? Please specify in case of any other post hypnotic experience. 5. Were you nervous about it initially? 6. Did it prove to be helpful? 7. During hypnosis, were you aware of your actions? 8. Would you go to a hypnotherapist again? 9. Will you recommend hypnotherapy to other people? These 9 questions were subjective in nature, where the subjects had to fill their answers in a blank space provided		

*Questions regarding prior experience with clinical hypnosis

Annexure 2: Figures

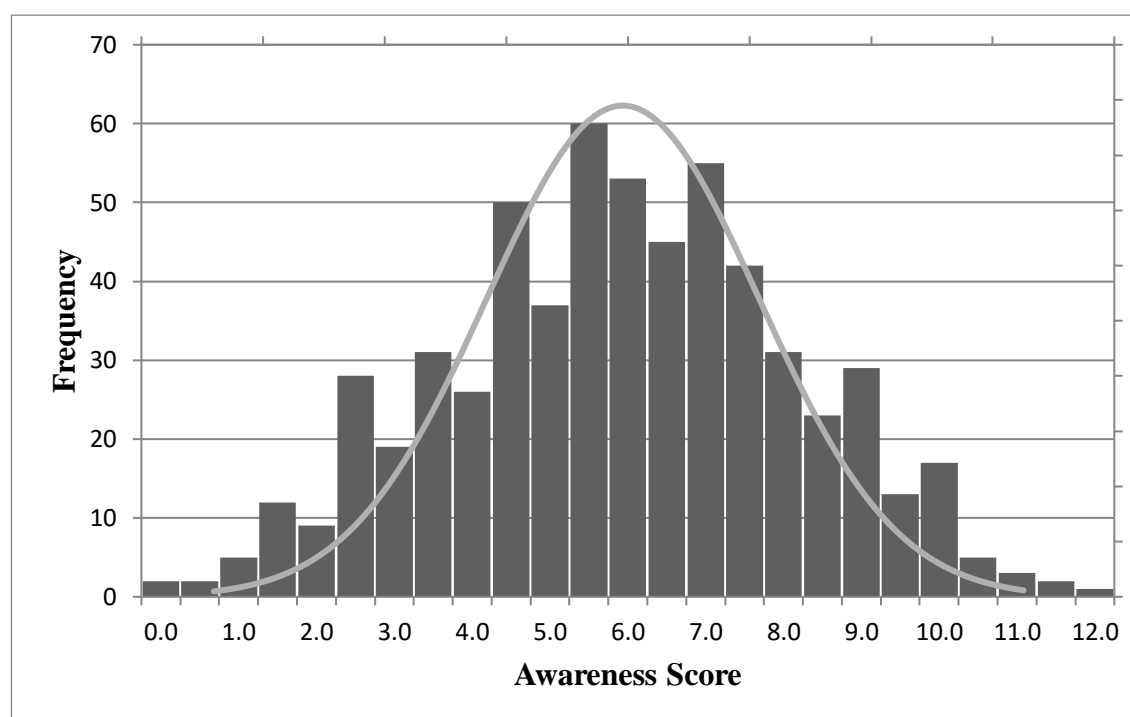
Figure 1

Histogram with frequency polygon depicting the distribution of the awareness score of the subjects

Mean = 5.92

SD = 2.42

Total questions = 13



Maximum score = 12

Minimum score = 0

Figure 2

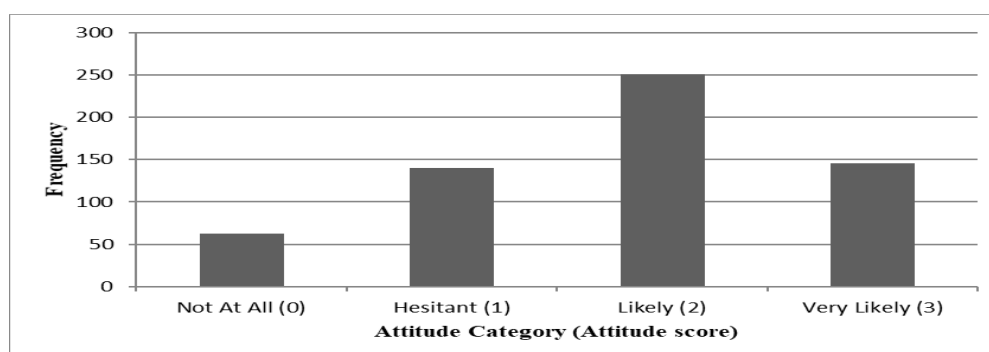
Bar chart depicting the distribution of the subjects across the four attitude categories

1. Not at all likely to accept clinical hypnosis

2. Hesitant to accept clinical hypnosis

3. Likely to accept clinical hypnosis

4. Very likely to accept clinical hypnosis (Also refer to table 5)



Mean = 1.8, SD = 0.926, Total questions = 3, Maximum score = 3, Minimum score = 0

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Mental Well-Being Is Important Now – More Than Ever

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Since the outbreak of COVID-19 till date, we have come a long way. While the health Care workers throughout the world are racing to provide the best available supportive care and treatment to patients, we are actually somewhere between hopeful and tired of the pandemic being in this long-drawn scenario than many of us might have imagined. To make something very clear, we are hoping this would end and are eagerly collecting information on the worldwide progress of making all of this come to an end. So, with all the physical stress that is being added by staying at our homes in the state of lockdown and getting updates about the cases of ever-rising spread each day, it takes a heavy toll on our minds and to overcome that is the biggest challenge of our times. We have started cursing the year 2020 with the thought that the blame game would satisfy our panicked minds.

In the past we have pandemics go on from 2-3 years (H1N1 Swine Flu Pandemic) to even more than hundred years. The credibility of healthcare system lies in the fact, how fast a treatment can be implemented and the curves of rise can be curbed. Not all Pandemics are same, a viral causative agent will pose far greater risks of an exponential spread like we are seeing now. At this point of time. We thought of focusing on certain issues that would have marked effects on our minds. Added to the fear of coming in contact with the virus, restricted flow of life is having a serious impact that is worthy of some addressal.

Understanding the importance of lockdown and abiding by it, Handling Social Isolation, Filtered Information, handling at personal and interpersonal levels, Ignoring the Rumours and addressing the emotional issues, Post Recovery Patient Assessment, Better Recognition to mental problems. Supporting near and dear ones, Dealing with the Financial crisis. My studies have come up with the conclusion that these issues seem to be the hardest combat-arenas.

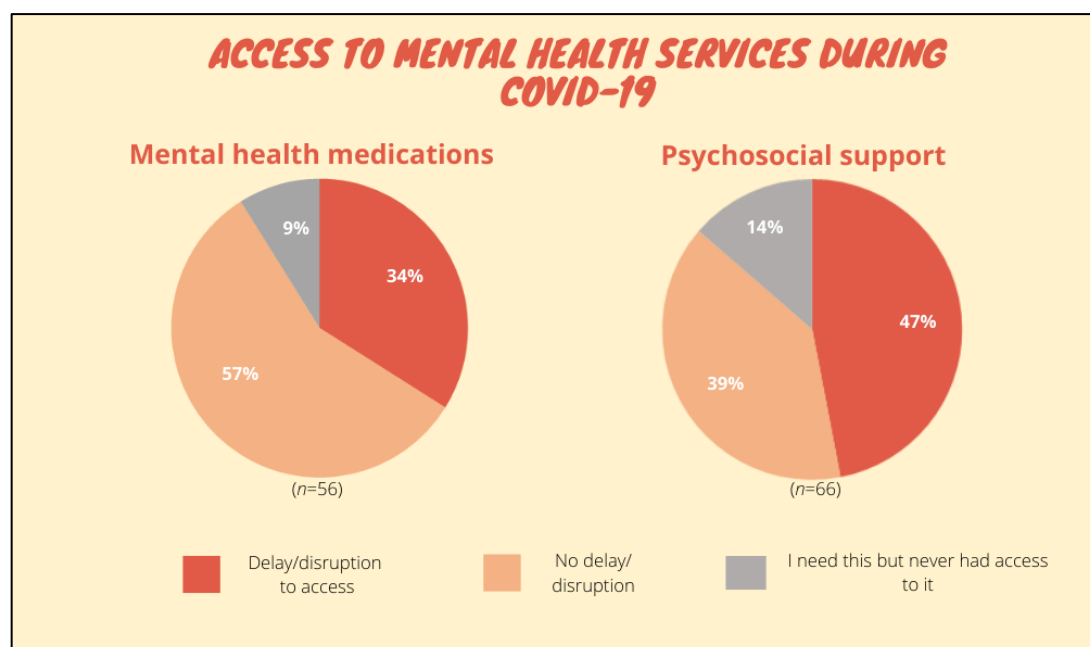
Looking Closer at It

The psychological effects of the pandemic are best understood in terms of psychiatric and psychological problems that were present before the pandemic and the patho-plastic effects of the pandemic on these problems; the responses to social isolation and lockdown; the psychological response to the diagnosis, public responses to those with symptoms suggestive of COVID-19 infection, as well as the aftermath of the infection. We have to understand that lockdown is strictly a way of stopping the spread of this rapid infecting RNA Virus. The Healthcare Workers and Researchers are racing against time and trying to make the most out of the limited knowledge we have gathered and continue to gather throughout. This means, staying indoor except for buying necessities and ideally only one healthy family member making the trips when it is absolutely necessary.

Social Isolation is a major aspect that is hard to be dealt with, while the increasing use of smart phones and internet can be thanked at this hour of need to waive off that factor. Connectivity is the Key. This current period of social isolation will also exacerbate the epidemic of loneliness identified by a 2019 University of Michigan study on healthy aging in which 34% of adults aged 50 to 80 years reported feeling lonely. Studies have shown increased delusions, suicidal attempts and psychosis in recent times. But relating to that, we should make the most of what is available to us. Telemedicine is an important use of internet where the one in need could seek some professional help without a physical doctor's visit. The medicine and healthcare world is fearing the onset of a 'loneliness epidemic'.

Societal maturity will play a very important factor for this cause. Now to handle that, we have to take care of the society and stay safe at the same time. Small endeavours like, making sure every news you are

spreading has a silver-lining of positivity within it, not harming any class of people on a personal level because he or she has caught Covid-19 infection, making your peace with the fact that the news that we are getting to hear will not always be comforting yet not panicking and dealing with them in the right way. Helping anyone and everyone in need and most importantly, if you know someone is going through a crisis that you can address and bring in some form of remedy.



Source: UNICEF

The focus speaks for itself

The healthcare workers are taking a heavy toll of stress on their minds too. To stand and work for hours tirelessly with the fact of acceptance that supportive care is all that's available at the moment. That takes some serious attitude driven strength to carry on and keep at it. Indeed COVID-19 has impacted the mental health of the entire community in one or another manner. This has created an unprecedented mental health challenge in the face of limited specialist resources. This also means that we need to think beyond conventional strategies. We need to manage with what is available, but constantly update ourselves, almost daily. Simultaneously, we need to engage with non-psychiatric medical professionals to facilitate the psychiatric management of patients with COVID-19 infection and co-morbid physical illnesses. Digital-enabled learning and support for mental health issues need to be considered for all non-psychiatric medical professionals and frontline personnel. Online learning are equally useful for regular updates for psychiatrists as well.

Hearing it from experts

I have had the chance to gather some words of wisdom from Psychiatrist Dr. Bappaditya Chowdhury, he says, "In this trying time, we're going through three parallel epidemics simultaneously. Along with Corona virus, Economics and Psychological epidemic creating a havoc on every section of society. We don't know to what extent and how long this crisis is going to stay. Accordingly, people are trying their best to adjust to this 'New Normal'. Here the painstaking courage shown by front line health worker, security persons and other public service personnel should be highlighted more. Their exemplary story of struggle and success should motivate and guide general population in this fightback. It's time to show solidarity, shake off ignorance, follow health advisory meticulously. Share and care together with keeping our Hopes high should be the principal in this 'New Normal' period."

Taking all fronts under consideration, I had a chance to take some valuable inputs from renowned Psycho-Counsellor Mr. Subrata Bhattacharyya on the current scenario, “Everyone has had a hard time coming to terms with the new normal of social isolation. To add to it, habitual life has been severely disrupted by the lockdown, leading to a sharp rise in anxiety, frustration, and depression among people. India has witnessed a 20% increase in the number of psychological disorders solely in the past few months of lockdown. It is of utmost importance now to focus on the very present and work to make it beautiful. We have to keep trying to think right, remain positive, and hope for the best.”

Hearing it from the warriors

“Being a Covid-19 patient is very stigmatizing, it involves separation from loved ones and living with fear and anxiety as there is always a fear of infecting other people, especially the family members who are not quarantined. In this situation, support of family is of utmost important. And always remember that it is a collective fight, and by maintaining the rules and following proper guidelines and with support, self-isolation will not be too much difficult, keeping aside the society.”, says Debanwita Roy Burman, 22, who has successfully recovered after being treated at CNCI, Rajarhat, Kolkata.

“Support from your family and nearest is required. Social boycotting is unhealthy. Doctors and specially nurses are unparrallel. I have seen losing two of my fellow COVID warriors. It was hurting and created fear in mind. Those recovered and released gave me a ray of hope for future live together work together.”, says Ajit Sarkar, 50, who is a Bank Employee and a victim of Workplace Contact Infection treated at Desun Hospital, Kolkata.

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*Case Report***Lithium induced Bruxism: A Case Report**Prashant Chaudhari¹, Sagar Karia², Nilesh Shah³, Avinash De Sousa⁴¹Resident Doctor²Assistant Professor³Professor and Head⁴Research Associate and Consultant Psychiatrist

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Corresponding author: Sagar Karia**Email** – kariabhai117@gmail.com**ABSTRACT**

Lithium has been widely used in the management of bipolar disorder and is the gold standard for the management of mania. It has been used for over 7 decades now and a number of side effects have been reported with the drug. The notable side effects have been acne, skin reactions, thyroid problems and its effects on the renal system. We report a case in which a 18 year girl that developed bruxism due to lithium with raised serum lithium levels which stopped on stoppage of the drug.

Keywords: lithium, bruxism, teeth grinding.

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INTRODUCTION

Lithium has been used for the past 7 decades as a drug of choice in the treatment of bipolar mood disorder [1]. It has a narrow therapeutic index with therapeutic range varying from 0.4-1.2 meq/L and with toxicity seen mostly beyond 1.5 meq/L [2]. Bruxism is defined as a parafunctional activity of stomatognathic system including clenching, bracing, gnashing, and grinding of the teeth' [3]. Some evidence suggests that one of the important proposed causes of bruxism is an alteration in neurotransmission in the brain [4]. The use of various psychotropic agents have long been associated with oral movement disorders such as bruxism, orofacial dystonia, oromandibular dyskinesia etc. and are related to extrapyramidal effects of antipsychotic drugs because of their antagonist activity on the dopaminergic receptors [5]. Lithium has been noted to cause orofacial dyskinesias, bruxism in few case studies resolved with anticholinergic drugs but there have been no biological explanations for why it occurs [6]. We report a case of an 18 years old girl that developed lithium induced bruxism which was correlated with elevated serum lithium levels and resolved after discontinuation of the drug and subsequent shifting to valproate as a mood stabilizer.

CASE REPORT

An 18 years old girl was diagnosed as having Bipolar I Mood Disorder and was taking treatment from our outpatient department since the past 2 years. She was well maintained on Lithium Carbonate 400mg once a day and Olanzapine 10mg in divided doses. There was an exacerbation in her symptoms in form of talking excessively, grandiose ideations and a reduced need for sleep. The dose of lithium was increased to 800mg/day in divided doses. Within 8 days of increasing the dose, she developed complaints of grinding of the teeth, throughout the day which would stop only when she would be asleep. This teeth grinding was

present even while eating, speaking and even when her attention was distracted. Her behavioral complaints had reduced, and her mood symptoms were resolved with the increase in dose. The patient said that all efforts made to control the grinding, failed to control it. She also developed coarse tremors and gait disturbances. There was no evidence of rigidity, excessive salivation, slurring in speech or any other evidence of extrapyramidal reaction and on examination her physical examination and central nervous system examination was normal except for the findings mentioned above.

As her parents were worried and as the symptom was distressing to the patient she was admitted in our ward. Her Lithium was stopped immediately, and blood was sent for measuring serum Lithium levels. Divalproate Sodium 500mg/day was added, and olanzapine 10 mg was continued as before. All other routine blood investigations were within normal limits. Even serum Creatinine Phosphokinase (CPK) levels was within normal range. Her serum Lithium level was 1.7mEq/L (Therapeutic range 0.6 -1.2 mEq/L). Her bruxism improved over 8 days and she was 90% better. Her dose of Divalproate Sodium was increased to 1gm/day in divided doses. At the time of discharge, we repeated the serum Lithium levels which came down to 0.9mEq/L.

There was no history suggestive of similar complaints in the past. Her developmental history was unremarkable. A diagnosis of Lithium induced Bruxism was made owing to available evidence. The Naranjo's algorithm was applied and the score was +5 which indicated lithium to be a cause of the bruxism.[7] We offered a rechallenge with Lithium but the patient and her parents refused for the same, hence it was not done. A note was made about the same in patient's clinical record for future warning to clinicians that may handle the case. The patient is currently maintained on Divalproate Sodium 1gm/day and olanzapine 10mg/day both in divided doses.

DISCUSSION

Bruxism has been reported in literature with antipsychotics, SSRIs and lithium [8]. Although literature review reports a few cases of lithium induced bruxism, no known mechanism is provided or proposed [9]. In this case, bruxism in our patient was correlated with raised serum lithium levels and relief was noted on stopping lithium and thus decreased serum concentrations. The same was confirmed using Naranjo's algorithm. It is important for clinicians to be aware of this rare but distressing side effect of lithium as it is one of the most widely prescribed drugs for the maintenance of bipolar mood disorder and also due to huge array of differential diagnoses that are considered when bruxism arises. Lithium is a drug that has been widely over the past 5 decades in psychiatry and it is important that clinicians be aware of various side effects that may occur when the patient is on this drug. Prudent clinical monitoring and questioning will help in early detection and treatment of side effects when on Lithium therapy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. The patient has consented for; his clinical information will be used to report in a journal. The patient also understands that his name and other initials will not be disclosed, and due efforts will be made to conceal his identity.

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Case Report

Schizophrenia in a patient with Spinocerebellar Ataxia-6: a case report

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ABSTRACT

Spinocerebellar ataxias (SCAs) are a group of heterogeneous genetic disorders involving neurodegeneration of the cerebellum. Almost 30 distinct genetic causes of SCA are known, numbered chronologically in order of discovery. Here we present a case of schizophrenia in a 46 years old male diagnosed with SCA-6 with onset of psychotic symptoms 2 years after the onset of motor symptoms and treated with olanzapine. The purpose of this case report is to explore the relationship between schizophrenia and a neurodegenerative disease like SCA-6 and whether schizophrenia is a concomitant diagnosis or it is a part of the neurodegenerative process.

Key words: spinocerebellar ataxia, schizophrenia, neurodegenerative illness

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INTRODUCTION

SCAs are progressive neurodegenerative disorders primarily involving the cerebellum with additional involvement of the spinal cord, brainstem, basal ganglia and other parts of the nervous system. They are Autosomal Dominant disorders and 27 have been discovered till date with possibility of rarer variants [1]. SCAs display classic cerebellar signs along with the presence of disabling noncerebellar signs, most commonly brainstem dysfunction. Symptoms typically begin with gait imbalance followed by appendicular ataxia. Following this, dysarthria begins and visual problems can occur. SCA-6 which constitutes nearly 15% of SCAs typically occurring in the 40s-50s represents a milder form, most often manifesting as a pure cerebellar ataxia accompanied by dysarthria and gaze-evoked nystagmus. It is caused by a uniquely small CAG repeat expansion (19-30) in the CACNA1 gene encoding a voltage-dependent calcium channel alpha subunit [2]. Significant cognitive impairment among SCA patients has been noted in 25–50% of cases and depression in up to 30%. There exist case reports of psychosis co-occurring with SCA 2/3/7/10/17 but there is lack of such an occurrence with SCA-6 [2]. While the co-occurrence of both psychiatric and neurodegenerative conditions in our patient may be coincidental, it may also indicate to an underlying neurodegenerative process.

CASE REPORT

A 46 year old male was brought to our outpatient department by his wife with complaints of suspiciousness towards his neighbours, fearfulness and muttering to self since 2 months. On further interview the wife

claimed that the symptoms started without any apparent stressor, with the patient expressing concerns regarding his neighbour's activities. He would claim that one of his neighbours was keeping a watch on him so as to kill him at the right moment. On being confronted, the patient would point to the newly installed dish antenna at their house which he claimed was used for spying on him. Gradually the patient stopped going out, interacting with friends or family, would ask the wife to keep the windows shut and doors bolted. He would further question the wife whether she was involved in their plans. On being questioned about the cause for spying he would claim that his neighbour was under the orders of some higher authority and carrying out their plans. He would further claim to hear voices of those people who would threaten him, often mocking him for not doing enough to save himself. The patient would consequently be seen talking to them back, perceived as self muttering by the wife. The patient would be firm on his belief and not be influenced by any reasoning. The symptoms worsened over the next 2 months with the patient isolating himself in a room, remaining awake throughout the night. The patient did not have any past history of similar complaints. No history of any other psychiatric illness or substance use in a dependent pattern was noted.

The wife revealed that the patient quit his job around 2 years back due to difficulty in maintaining balance, stiffness, repeated falls, and tremulousness of both hands which made it difficult for him to work on ship. The symptoms developed over a period of 6 months, with gradual progression following which Neurology opinion was taken. Magnetic Resonance Imaging (MRI) of the Brain revealed moderate cerebellar atrophy, most prominently in the superior vermis noted with no abnormal signal intensity and blood investigations including genetic testing were done leading to a diagnosis of SCA-6. Symptomatic management with Propranolol 40mg and Baclofen 30mg was given and the patient was explained about the prognosis of his illness. Apart from the motor symptoms, the patient was apparently alright till the onset of suspiciousness 2 months back.

He had no other, medical or surgical illness. In his family history, patient recollected his maternal grandfather of having similar symptoms of incoordination, loss of balance and dysarthria. On neurological examination, the patient had mild scanning dysarthria, dysmetria, and dysidiadochokinesia. His gait was wide-based and tandem walking was impaired. There was diminished joint position and vibration sense in his toes and fingers bilaterally. Deep tendon reflexes were absent throughout, and plantar responses were bilaterally flexor. His eye movements revealed nystagmus.

On Mental Status Examination, the patient was well oriented to time, place & person. His active attention was arousable but ill sustained and passive attention increased. He conveyed his mood as fearful and had a hyper vigilant affect. Speech was scanning, and thinking revealed persecutory and referential delusions. He further conveyed 2nd and 3rd person auditory hallucinations, which were continuous and threatening in nature. He had no memory impairments.

A provisional diagnosis of Paranoid Schizophrenia was made as per ICD10 and he was started on Tab. Olanzapine 5mg, which was gradually up-titrated to 15mg over the next 14 days. Presently the patient is well maintained on Olanzapine 15mg and denies suspiciousness or hallucinations and has good functional recovery. He has further started teaching arithmetic to a group of high school students at his home.

DISCUSSION

SCA-6 is an Autosomal Dominant disorder caused by a pathological expansion of a CAG repeat sequence on chromosome 19. It presents clinically as a pure cerebellar ataxia accompanied by dysarthria and gaze-evoked nystagmus. While most of the 27 types of SCAs reported to date involve some degree of neuropsychological deficit including depression and personality change, psychosis appears to be less common [3-4]. Although it is seen that SCA-17 may appear with psychosis with or without chorea, however, to our knowledge, there are no cases of SCA-6 in which psychosis was either the presenting symptom or a development during the course of the disease [5]. In this case hence we must ask whether SCA-6 is responsible for the development of psychotic symptoms or whether a concomitant diagnosis of schizophrenia is warranted. Neurodegenerative diseases which predominantly affect the striatum like Huntington's disease often have predominant psychiatric disturbances [6-7].

When psychiatric symptoms develop in cerebellar disorders, they are often associated with neurological symptoms suggestive of striatal involvement. This association suggests the possibility that psychosis in cerebellar disorders may actually be due to extra cerebellar pathology (striatal involvement). Alternately, the cerebellar atrophy seen in our patient may directly contribute to the psychotic features as cerebellar abnormalities have been implicated in various psychiatric disorders including psychosis, possibly by modulating the fronto-striatal circuits [8-10].

Points in favour of a concomitant diagnosis includes the symptomatology and course of illness, although the age of onset of symptoms were later than typically seen in schizophrenia. Thus, it is difficult to ascertain a relationship, if any, between a molecular diagnosis of SCA-6 and development of psychotic symptoms. Further study is warranted.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. The patient has consented for; his clinical information will be used to report in a journal. The patient also understands that his name and other initials will not be disclosed, and due efforts will be made to conceal his identity.

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Case Report

Atypical presentation of Neuroleptic Malignant Syndrome associated with Lurasidone: a case report

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ABSTRACT

Neuroleptic malignant syndrome (NMS) is a known life-threatening idiosyncratic reaction to antipsychotic drugs characterized by fever, altered mental status, muscle rigidity, and autonomic dysfunction. A vast literature is widely available on first generation antipsychotics causing NMS; however, it is also known that second generation antipsychotics are not spared from causing NMS. Drugs such as Olanzapine, Risperidone, Aripiprazole, Paliperidone causing NMS has been reported, although not much literature is currently available on NMS associated with Lurasidone. Hence to add to this literature, we present a case report of a patient who developed an atypical presentation of NMS associated with Lurasidone. Early recognition of the syndrome, immediate discontinuation of the offending agent, and prompt treatment with Bromocriptine produced a good recovery. The various features of the case are discussed in view of the potential lethality of the syndrome.

Keywords: Neuroleptic Malignant Syndrome, Lurasidone, Atypical antipsychotic

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INTRODUCTION

NMS can be caused by a wide range of drugs, mainly Haloperidol, Chlorpromazine (reported to be having the highest risk), Clozapine, Quetiapine, Ziprasidone [1], Levodopa [2], Metoclopramide [3], Amoxapine and Tetrabenazine [4]. The first reported case of NMS appeared in 1956, shortly after the introduction of the antipsychotic drug chlorpromazine (Thorazine) [5].

Only a few cases of NMS associated with Lurasidone have been reported worldwide, and having been recently launched in India, it lacks the post-marketing surveillance data on its association with NMS in our country. Hence, we report this case report of NMS associated with Lurasidone which, to the best of our knowledge, is the first such case report in India.

The underlying pathophysiologic mechanisms of NMS are known to be complex and are still a topic of debate amongst experts. However, the most agreed mechanism is of marked and sudden reduction in central dopaminergic activity resulting from the D2 receptor blockade within the nigrostriatal, hypothalamic, mesolimbic/cortical pathways, which explains the rigidity, hyperthermia, and altered mental status respectively [6-7]. However, D2 receptor antagonism on its own does not explain all the symptoms and signs of NMS. Neither does it explain its occurrence with antipsychotic medications without known antidopaminergic activity. Hence this has led to a proposal by some that there is sympathoadrenal hyperactivity, which happens due to removal of tonic inhibition within the sympathetic nervous system [8]. These abnormalities in the sympathetic system are supported by the frequent presence of autonomic

symptoms in NMS, and the changes in urine and plasma catecholamine levels in patients with NMS. One theory is that NMS shares pathophysiological similarities with malignant hyperthermia and a defect in calcium regulatory proteins within sympathetic neurons may be the key factor that brings about the onset of NMS [9]. Another theory also suggests the role of peripheral skeletal muscle system, the release of calcium has been shown to be increased from the sarcoplasmic reticulum of muscle cells with antipsychotic usage, possibly leading to increased muscle contractility and rigidity, breakdown of muscle and hyperthermia [6]. However, none of the theories stated above can explain why only a fraction of patients exposed to neuroleptics develop NMS.

The diagnosis of NMS is based on history and certain physical findings and laboratory investigations. Patients typically develop NMS within hours or days after exposure to a causative drug, with most exhibiting symptoms within 2 weeks and nearly all within 30 days [10]. NMS has classically been characterized by the presence of the triad of fever, muscle rigidity, and altered mental status, but its presentation can be quite heterogeneous and can include tachycardia, tachypnea, altered mental status, mutism, incontinence, diaphoresis, hyper salivation. However, all the features may not be present in every patient of NMS; a few of them could have only a few features giving a confusing picture of the situation.

Characteristic laboratory findings seen in NMS include elevated creatinine phosphokinase (CPK) due to rhabdomyolysis and leucocytosis, but these are neither specific for the syndrome nor present in all cases [11]. The cerebrospinal fluid (CSF) and imaging studies are usually normal, but an electroencephalogram (EEG) may show non-generalized slowing [10]. Lurasidone is an antagonist of dopamine D2 and D3 receptors, serotonin 5-HT2A and 5-HT7 receptors, and the alpha 2C adrenergic receptor, and a partial agonist of the serotonin 5-HT1A receptor. Although NMS occurs only rarely, it remains an unpredictable and potentially life-threatening neurological condition that clinicians must be able to recognize, since early identification and proper medical management are essential to ensure improved patient outcomes.

CASE REPORT

A 26-year-old male patient, native of Tamil Nadu was brought as Magistrate Order to our hospital in May 2020 as he had aggressive and destructive behaviour in the protective home that he was placed in. Upon admission the patient was started on Risperidone 2mg/day which was gradually increased to 6mg/day. Since the patient showed no improvement on Risperidone, it was tapered and stopped. Olanzapine was started which was gradually increased to 30mg/day. Patient developed persistent hypotension, hence Olanzapine was tapered and stopped. Subsequently the patient was started on Amisulpride 100mg/day to which he developed EPS at a dose of 150mg/day which was increased to 800mg/day and was continued for around 2 months. Due to partial response to Amisulpride, Lurasidone was added at the dose of 40mg/day, which was increased to 80mg/day after 4 days. The following day the patient had an episode of vomiting, urinary incontinence, neck stiffness, he appeared to be confused, in altered sensorium and was immediately shifted to Medicine casualty where meningitis was suspected. He was admitted under the Department of Medicine and was investigated for neurological causes. Lumbar puncture was done for cerebrospinal fluid analysis, which was within normal limits, Computerised Tomography of Brain was within normal limits, RT-PCR for SARS-CoV-2 was done which was negative. Injectable antibiotics were given, and antipsychotics were stopped. The patient was transferred back to Psychiatry three days later, for suspected catatonia. On examination he was found to be mute, he had mild rigidity, and urinary incontinence which aroused the suspicion of Neuroleptic Malignant Syndrome. Laboratory investigations showed normal leukocyte count (7,700) (normal range 4,000-11,000 WBCs per microliter), elevated Aspartate Aminotransaminase level (54U/L) (normal range 5-40U/L). The patient had marked elevation of Creatine Kinase (22526 U/L) (normal range 22-198 U/L), with elevated CK-MB fraction (28U/L) (normal range 5-25 U/L) and normal Cardiac Troponin I level (<0.40ng/ml). ECG revealed no acute ischaemic changes. Hence the patient was referred and readmitted under the Department of Medicine and was started on Bromocriptine 2.5mg twice a day. He was admitted for 8 days during which supportive treatment was given and he was discharged on Bromocriptine 2.5mg once a day for seven days. Patient recovered well, creatine kinase level at the time of discharge was 555U/L. Currently the patient is stable and maintaining well

DISCUSSION

NMS is not a dose-dependent phenomenon. Rather, it is an idiosyncratic reaction to antipsychotic drugs that may occur after a single dose or one taken in the same quantity for many years. It may also result from a dosage that is too high or increased too quickly. An idiosyncratic reaction, or type B reaction, is an unpredictable adverse reaction to a drug that is not the consequence of a known pharmacologic property or patient allergy. Instead, it is an abnormal response to normal drug dosages that occurs unexpectedly due to genetic factors [12-13]. Symptom onset from these reactions typically occurs between 4 and 14 days after the initiation of a pharmacologic therapy, with 90% of patients developing symptoms within 10 days [13].

Our patient was tried on Risperidone 6mg/day to which he did not respond, Olanzapine 30mg/day to which he developed persistent hypotension and hence was stopped. He was started on Amisulpride at the dose of 100mg/day to which he developed EPS at a dose of 150mg/day, which was gradually increased to 800mg/day for a duration of 2 months. Due to partial response to the same, Lurasidone was added at 40 mg. After 4 days of its initiation the dose was increased to 80 mg/day. The following day the patient had an episode of vomiting, appeared confused and delirious, had neck stiffness, and was transferred to the department of medicine. The patient then developed signs of catatonia and was referred to Psychiatry. Patient had developed mutism and rigidity due to which we suspected NMS and hence got the creatinine phosphokinase level which was found to be very high (22526U/L) and hence was readmitted in the medicine ward after the opinion of the neurologist was taken. Patient was treated as a case of NMS, after which he improved and was transferred to Psychiatry.

According to Naranjo's algorithm, a questionnaire designed by Naranjo et al, to determine the likelihood of whether an adverse drug reaction is due to the drug rather than the result of other factors, it fulfilled the criteria of 'probable' NMS associated with Lurasidone [14]. The possible risk factors for this patient to develop NMS could be due to the initiation or increase in the dose of Lurasidone with male gender and young age being the other risk factors [15-16]. The above patient recovered significantly after starting Bromocriptine (Dopamine agonist) and other supportive treatment. At the time of discharge from the medicine ward he was fully conscious, oriented, and had no rigidity. Patient has no psychotic symptoms. If patient develops any psychotic symptoms the plan is to start him on Clozapine, as the available literature states that recurrences of NMS do occur, especially when the patient is restarted with a neuroleptic with high potency or too quickly after the initial episode [6, 17-18]. We consider starting Clozapine as it is generally felt to be prudent to use a different neuroleptic agent than the one that was originally associated with the development of the syndrome [6, 19-20]. NMS is an idiosyncratic reaction and the percentage of NMS due to Lurasidone during the premarketing evaluation was found to be 0.1%.[21]. Hence it is imperative that when psychiatrists prescribe Lurasidone, they should be vigilant about the development of NMS even on lower doses, so that timely treatment can be given thus preventing mortality and reducing morbidity due to NMS.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. The patient has consented for; his clinical information will be used to report in a journal. The patient also understands that his name and other initials will not be disclosed, and due efforts will be made to conceal his identity.

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