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Where is the disability?

R. Thara

It is well known that most countries of the world recognize psychiatric disability and have programmes to support and empower the mentally disabled. In the USA, those disabled by mental illness are the largest beneficiaries of the social welfare system. In India, however, this disability is marginalized as much as the persons with it.

After a lot of lobbying by many agencies, this disability was included in the Persons with Disabilities Act, 1996 of the Govt. of India. In response to the need for an instrument to measure disability, the IPS developed the IDEAS (Indian Disability Evaluation and assessment scale) in 2002 and this was gazetted by the Ministry of Human Resources and Empowerment, Govt. of India in the same year. Six years have gone by and disability of mental disorders is being certified in very few states. Psychiatrists seem to be reluctant to do this for many reasons, although the instrument itself is quite simple.

Although I had asked for feedback about IDEAS which will enable us to modify it, if necessary, there have been none in writing. If modifications/changes were required, much could have been done in 6 years. So, where lies the problem? Is it the mind set of mental health professionals or a reluctance to take on additional work? The lobby group for the mentally retarded is so strong and stay united and have been able to make many advances in policies and programmes for the intellectually disabled. Unfortunately, the mental health lobby remains fragmented and unable to make an impact.

We all know that we are able to do precious little for a sub sample of persons with schizophrenia who are very disabled. Why should they be denied small benefits like transport subsidies, transfer of pensions and other small benefits they can reap under the umbrella of disability benefits?

I think it is time that all mental health professionals work towards reaching some benefits for the mentally disabled, and do whatever possible, be it modifying IDEAS, talking to policy makers in the individual states or working with other disability groups. Otherwise we will just let other newer disability groups take an upper hand and the already marginalized mentally ill will continue to languish and be neglected.

Dr. R. Thara
Schizophrenia Research Foundation, Chennai
India

E-mail: scarf.@vsnl.com
Presidential Address

Change in lifestyle: Increase in demand for stress reducing methods

Whatever is there in front of us now will soon perish and become a thing of the past. Even as we adapt to the present, there are new situations and conditions to be faced the next moment. I mean who can truly say “I was totally free from all tensions at some point of time“ . Our relation to tension or stress has now more or less become like that of human and his shadow . Looking at our daily schedule: Waking up we have tension to reach at workplace on time, reached at workplace, well the tension of work or stress of conflicts with boss and colleagues , tension of the ever increasing competition , and the stress of ever rising prices ; for students the tension of submissions , stress of exams ; for the house wife the stress to run the home in budget and somehow squeeze savings from it and the list never gets an end . Just like our shadows our tensions and stress stay with us from dawn till dusk and sometimes even in our dreams. These all are nothing but the signs of changing lifestyle and the tension which it brings along as a parcel.

“Nothing Is Constant Except Change”. This saying can never have been more apt in any other time except today. In today’s world it is not only important to adapt to changes but to adapt at the pace at which these changes occur. Until and unless one learns to adapt himself to these changes he is more vulnerable to Psychological problems. The increase in the numbers of reports of suicides in India is exponential. The old man hanging himself in the house due to loneliness or the farmers dying due to the draught and debt; situation may be different but the cause of death in both cases being feeling of severe Depression. Looking at the current situation, India is divided into two prominent lifestyles: Rural and Urban. In rural India the things are a bit simple as the people are striving for their daily needs and tend to live with simplicity but in the last decade due to the increasing industrialization and less opportunity for better jobs have increased the patients...
suffering from Stress. In urban India the situation is quite complex as compared to rural parts, as there are many factors like status in the society, partying culture, work load, etc. which play a key part in defining the lifestyle of a person. In the race to increase their status in the society people tend to incline towards drinking alcohol, may consume drugs and end up becoming addicts. The ever increasing competition in the multinational companies has lead to progress of the country but has pushed the workers into the darkness of depression and the constant stress to keep, be at the top, I cannot stop myself from recalling the dialogue from the movie 3 idiots “Life is a race if you don’t run fast someone else will thrash you and go ahead”. The rise in consumerism has lead to price hike of many basic necessities causing depressed mindedness to the rural and urban citizens alike. The process of adapting oneself to this ever changing lifestyle is itself quite stressful.

People have started now understanding this and are finding their ways to fight against stress in conventional as well as unconventional ways.

Meditation in the form of Art of living or Vipasyana, Pyramid therapy, Aromatherapy and Music therapy are some of the ways people have chosen to reduce their stress and the laughter clubs and yoga centers have become prominent place in people’s everyday schedule. Some people have opted to go for the spiritual path and have taken shelter under Gurus and Saints, some frequently visit Faith healers and many a times get cheated in the lure of immediate solutions to their stress problems. All of us must be having lots of patients referred by Faith healers too. People are likely to get frustrated by these alternative or complementary therapies as the benefit offered is likely to be short-term in nature like a placebo and there is usually no insight offered into the problems that one is facing. And here, is where we, as Psychiatrists, come into the picture.

So, what role do we have to play then? Even in a country like India, the demands placed on the Psychiatrist go beyond prescribing right drugs in right doses. Many people using the alternate therapies will be having milder problems and the reaction to the suggestion of meeting a psychiatrist is likely to be negative as it is seen as a way for serious problems involving long-term treatment. Therefore, we have to create awareness that the psychiatrist is a friendly person with whom problems can be shared by “talking the things over”. Moreover, majority of the problems coming to our attention arise out of difficulties in interpersonal relationships and these involve the family, school or workplace.

These are amenable to counseling. Counseling is also preferred by persons who are educated, aware, sophisticated and have some definite insight. The psychiatrist also has to do homework and has to give the patients knowledge about the alternate therapies along with prescription of drugs and plan a roadmap for the recovery of the patient. Sharing with you my personal experience – after suggesting one patient to start light physical exercise and also learn Meditation and do relaxation technique on regular bases apart from counseling and medication, he had very good improvement, and he asked my permission to stay in my waiting room and motivate other patients to be regular in taking treatment and make the appropriate use of alternative therapies. I allowed him and astonishingly after a few days I found out many of my patients in the waiting room had followed his footsteps and had a speedy recovery.

No discussion of the role of Psychiatry can be complete without mention of an omnipresent 24 by 7 entity: Media. Media – print and electronic alike, is an integral part of today’s lifestyle and has a tremendous influence on everything that a person does or thinks. Having Laughter shows daily on electronic media along with the yoga and meditation archives.

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shows in the morning are proving to be real stress busters for masses. Articles in print media about the increasing level of stress in Indian workers, mental stress in people after natural calamities, interviews of doctors, etc. help the people to identify their problem and offer solution to it. There is no stigma attached to visiting a ‘shrink’ or discussing issues like rehab from drugs in USA. Likewise, we in India have to work towards that time when the role of Psychiatrists will not only be accepted but also be appreciated. I remember a report published in one of the leading newspapers of New Delhi, where the Editor discussed a case of Suicide by an old aged man who never consulted a Psychiatrist before as he did not have any such problems due to which his relatives felt a need to consult a Psychiatrist, that was what told by the relatives. Only one matter was found that the old man who committed suicide was remaining disturbed for last couple of weeks after the declarations of price hike, he was constantly thinking about the pace of the change in lifestyle and how his children will face the newer situation. A Psychiatrist was interviewed how this can happen, what reasons can be there, what kind of stress he must have undergone that lead to complete the suicide. Entire matter was published in such an informative way that a lay man can easily make out the earliest signs of increased stress and can start thinking about what to do at the early stage to prevent further serious consequences.

Thus, in present times for proper sustenance of the society it is important for the media and the mental health professional to go hand in hand to reach the masses and make them aware about the increasing levels of stress in society. Hence the theme of this conference is “Media and mental health”. Hope we make most of it.

Dr. Kaushik Ramakant Gupte,  
M.B.B.S., D.P.M.

Clinical Practice For Last 20 Yrs  
General Psychiatry and Substance Use Disorders

Attached to multispeciality hospitals of surat-BAPS Swaminarayan hospital and Mahaveer Hospital as Hon.Psychiatrist.  
Attached to Shree Sardar Smarak Hospital-Bardoli as visiting psychiatrist and running Taluka Mental Health Program of Govt. Of Gujarat

Past president – IPS, Gujarat State Branch  
Past Secretary, IPS, Western Zonal Branch

Correspondence:  
Dr. Kaushik Ramakant Gupte,  
“Manoshanti”,  
202 & 203, Prime Chambers,  
Opp. S. B. I. Nanpura,  
Surat  
e-mail: kaushikgupte@hotmail.com  
Cell:+919824101936 k
Early intervention of psychosis and reflections for programmes in Indian
Amresh K Shrivastava

Abstract
Mental illness is perhaps the most common and most debilitating among non-communicable diseases. Schizophrenia, for example, normally occurs before the age of 25, affect the most productive years of life. The World Economic Forum graphically illustrates that mental illnesses will be a major contributor to the erosion of gross domestic product over the next 20 years. The developed world has established programs that have proven to be clinically and economically effective and sustainable.[1] Early intervention has played an important role in demonstrating that outcome can be improved if patients are treated in the early phase of illness. It is believed to be potentially effective in arresting or delaying the progress of psychosis.

In these programs, boundaries between hospital and community care overlap, and provide much needed continuous, convenient, and safe therapeutic environments. Criticisms of cost-effectiveness and investments in program development are outweighed by the clinical benefits. These programs rely on an integration of a variety of facets tailored toward local culture, and specific needs are required. Although under evaluation, there needs to be a high degree of optimism and confidence in developing these services. Developing EI programs in India and other low and middle income countries is challenging due to number of problems most important being available funding. Such programs in these countries need to be culture specific. EI of psychosis is a preventative program administered through community based treatments that are effective, feasible and successful. The future of schizophrenia care lies in early, patient-centric and economic treatment.

Keywords: Early intervention, schizophrenia, psychosis, prevention, programs. Services

Introduction
Prevention of psychiatric disorders is relatively a new initiative due to recent evidence that these disorders can be effectively treated, and the patient’s life can be significantly improved.[2, 3] Early intervention (EI) has played an important role in demonstrating that outcome can be improved if patients are treated in the early phase of illness using program-based intervention. By itself it is not a new concept. Back in 1938, Cameron observed that the outcome of therapies obtained in schizophrenia, are considerably better in patients who do not progress towards chronicity.[4] Over the last 20 years early intervention programs (EIP) have been developed in several countries across the world though not without controversy. These programs have been shown to be both clinically and economically beneficial, and such benefits have also been sustained for long periods of time.[5, 6] Despite its proven effectiveness, development and implementation of such programs in Indian context remains challenging.

In this paper, we examine EIP, and also discuss relevant issues in program development in Indian context.
The program

EI represents an interface between biological, and social psychiatry that firmly demonstrates the success of a community-based psychiatric intervention.[7] Most neurobiological changes take place during the early phase of the illness, thus delay in intervention, in a highly sensitive developmental period, is inherently damaging. EI may delay, if not prevent further deterioration. In these programs, boundaries between hospital and community care overlap, and provide much needed continuous, convenient, and safe therapeutic environments.[8, 9]

The objective of these programs goes beyond EI as, ‘there is more to early intervention than merely intervening early’. [10] These interventions strategies are phase-specific and consist of comprehensive and multidisciplinary treatment. Both early detection and phase-specific treatment may be offered as supplements to standard care, treatment as usual (TAU), or may be provided through a specialized EI team. Successful programs have incorporated components of service, education, and research and have integrated four other dimensions to the development of a qualitative program: hospitalized care, community outreach, awareness drive, and marketing and networking. EIP offers a client-centric approach which typically implements psychotherapy, various forms of group therapy, case-manager based approaches, psycho-education, recreational therapy, rehabilitation, suicide prevention, assertive community programs, and shared care.[11, 12]

These programs depend upon referrals from communities, therefore a strong public awareness campaign, and networking is required to overcome these difficulties in obtaining referrals in a timely manner. There are two important aspects for a public campaign which can be developed to surmount these issues. Firstly, a public awareness campaign has to be implemented to shorten the interval between the onset of illness, to first help-seeking behaviour.

Secondly, professionals need to have a greater knowledge, and awareness of identification of psychosis in its early phase.[13] As such, partnerships between the health care providers and voluntary agencies in the community have become an increasing priority.[14] Langeveld et al. studied the referral pattern of teachers, and reported that most were able to recognize psychotic symptoms from a case vignette, but they displayed little awareness of the psychiatric implications.[15] It is essential to target such professionals, who are in continual, direct contact with young individuals, which may require constant training and education. The key to the success of EIP lies in effective networking and developing a people oriented outreach programs.

Achievements and Merits of EIP

There has been a growth in research surrounding the areas of improving services for better outcome and enhancing clinical and neurobiological research. One of the advantages concerns clinical benefits for clients which ensures certainty of support to patients within the community. These programs seek to reduce the burden of care, which may become severe, particularly in cases where care-giving by family is challenging.[16] Clinical research has demonstrated that there is a ‘critical period’, or window of opportunity, for intervention before psychosis is established and good outcome is likely.[17] This hypothesis proposes that deterioration occurs aggressively in the first 2 to 5 years of psychosis, therefore it is crucial to intervene within this period to ensure a functional recovery.

Another significant finding has been the role of ‘duration of untreated psychosis’ (DUP) and its relation to short and long term outcome. [18, 19] Evidence now suggests that reducing DUP can result in better symptomatic and functional recovery, which has been further suggested to be a clinical marker of outcome.[20] Studies have shown that effective EIP can reduce delay in treatment seeking within a given community,[21]and lead to good short term
outcome, reduces re-hospitalization, decreases burden of care, reduces suicide attempts, and increases possibilities for gainful employment. [22, 23]

One of the outcomes of research in EI has been involved in re-conceptualizing phenomenology and psychopathology of schizophrenia for diagnostic purposes. Thus far, diagnostic criteria of schizophrenia are based upon a categorical model which concludes that a person either has schizophrenia, or does not have schizophrenia. Due to the longitudinal nature of the illness, just as stages of cancer or hypercholesterimia, there has been a shift in conceptualizing the framework for diagnosis from a categorical one, to a dimensional one. EI research has found main support for development of a ‘staging model’ of psychosis. [24] According to this model, symptoms of schizophrenia can be classified on a range of symptoms from stage 0 to 5, where stage 1 is earliest symptoms seen in ‘high risk, help seeking individuals’ and stage 4 and 5 constitute full blown schizophrenia.[25, 26]

Neurobiological research in EI has provided an opportunity for examining the brain changes throughout the progression of the illness using advancements in new technologies. [27] These findings have shown that neurobiological changes take place during early childhood and adolescence primarily involving, but not limited to, the prefrontal cortex. These findings have strengthened biological theories, and have attempted to explain the role environmental factors play in genetic expression. Detailed description of advances in neurobiological understanding of schizophrenia is out of the scope of this paper, (for details please see Keshavan et al. 2005; Keshavan & Jindal[28, 29]). These findings provide strong support for the benefits of developing EIP.

**Controversies (Economic and Clinical Effectiveness)**

There is lack of agreement amongst researchers and scholars regarding the clinical and economic benefit of EIP. Although the aforementioned findings and characteristics have made EIP highly valued by consumers, implementation of these services is threatened unless sufficient and consistent funding is made available.[30] A recent report highlighted that an investment of one pound sterling saves 40 in suicide prevention programs, 18 for EIP, and 4 for awareness programs for depression.[31] However, funding agencies fail to perceive this. A ‘lack of demonstrable evidence of success’ has been overcome to some extent with the advancement in research findings, but poor investments in these programs prevent clinicians from developing evidence on larger numbers of patients.[32, 33]

Whilst there is a growing body of evidence concerning the effectiveness of early detection and EI services, some argue that cost-effectiveness of EI for first-episode psychosis (FEP) is a waste of clinical resources. Valmaggia et al. suggests it is possible to offer help in the early stages of psychosis in a cost-effective manner.[34] The Early Assessment Service for Young People with Early Psychosis (EASYPEP), developed in Hong Kong, reported this EI program likely to be more cost-effective in improving outcomes, specifically in reducing hospitalizations and clinical symptoms.[10] Similarly, an Italian study also reported significant changes in initial assessments which were recorded from the Health of National Outcome Scale.[35] They also reported larger effect sizes in EIPs than in the standard care group, and suggested a net saving of €-1204 for every incremental reduced score of severity.

An Australian group showed that specialized early psychosis programs can deliver a higher recovery rate at one-third the cost of standard public mental health services.[36] Direct public mental health service costs incurred subsequent to the first year of treatment. Results showed that 56% of the Early Psychosis Prevention and Intervention Centre (EPPIC) cohort was in paid employment over the last 2 years, compared with 33% of controls. Each
EPPIC patients cost, on average, was $3445 per annum, compared with controls who each cost $9503 per annum. Similarly, an EI service offered in London, UK examined the cost-effectiveness using a net-benefit approach. [37] Their results showed that these services did not increase costs, but were likely to be cost-effective when compared to standard care practices. Although hospitalization was reduced, the overall cost difference in favour of EI was not significant. These results suggest that it could be possible for these services to be cost-effective by reducing inpatient stays, and preventing relapse in a more effective manner than TAU.

An argument cited against EIP development comes from studies suggesting improvement in outcome due to EIP is modest, at best, lasting for the duration of the intervention only, and these benefits are not sustainable after five years. A recent Cochrane data base concluded that there is emerging, yet inconclusive evidence, to suggest that people in the prodromal stage of psychosis can be helped by some interventions. [38] A meta-analytical approach examined the benefits of EI and standard care for patients with recent onset psychosis.[39] They reported that EI was significantly more effective than standard care in improving symptoms within a one-year period. Although most EIP last for about two years, fewer studies have looked at long term outcomes. A recent study examining the Early Intervention Program for Psychosis (PEPP) from London, Ontario, Canada demonstrated the benefits of a specialized EIP for two years which had sustained benefits in the long term, for at least five years.[40] In addition to this, one of our own studies from a long-term, ten year follow-up from Mumbai, showed good outcome in 61% of first episode schizophrenia patients using a semi-structured program which appears a modest outcome, but not better than what has been reported from India in TAU programmes.[41]

Despite criticisms of cost-effectiveness, the clinical benefits of the EIP outweigh the investments in program development. It should be noted that these cost-effective factors have only been evaluated only in developed countries. Little is known about what will be cost-effective in low to middle income countries.[42] Therefore, the criticisms of the cost-effectiveness being poor, does not apply universally. Future evaluations are required in developing countries, which should involve scaling up study sizes and testing conceptual frameworks.

**EIP in Indian conditions**

There are three main questions regarding developing EIP for psychosis in India: 1) Is this program necessary? 2) Are there similar programs already developed? 3) If not, how do we develop such programs? Though there has been significant advancement in mental health services, education, and research in India, including Indian Mental Health Policy and Indian Mental Health Act, the need of the patients are far from fulfilled. Ground realities in India regarding funding resources, manpower, awareness and poor governmental involvement are far too well known.[43] At the same time, there are newer strengths which these communities have acquired. There has been an increased interest in mental health which has resulted in an increased awareness and available training services, involvement of voluntary agencies, and psychiatric education, which is already incorporated into undergraduate curriculum.[44] Furthermore, this growing interest provides an opportunity to develop, integrate and tailor programs to local needs.

Mental health programs developed, in India specifically, have shown encouraging results. Although these programs are not as structured as many EIP in western countries, they are consistent with the objectives of EIP.[45, 46] Many of these programs are based upon the Health Service Research model which appears to be a feasible option for community services.[47] There are a number of innovative models of care which have been tried for service delivery, namely mobile community services and tele-mental health services.

[51] In most of the community based programs visits from mental health professionals to rural communities provide an effective pathway between referrals from rural to urban centres, which have been a successful avenue in the development of treatment programs. This diversity in practice and services should not be seen as limitation but strength and opportunities for newer public private partnership.

Although these programs have been found to be successful, there are two ways we can develop more effective EIP in India; 1) by strengthening existing community mental health services by focusing on identification, treatment, and continuity of care; 2) by incorporating the program contents within the services which are going to be developed. There are no straightforward answers to setting up these programs in the background of limited resources; nonetheless, the possibilities exist due to forthcoming change in Indian mental health systems.

There are some key points which need to be remembered for success in setting up these programs, which rely heavily on a significant change in the role of the psychiatrist. Continued training, education and professional development on the part of the clinician, and the community workers, is required to evolve these programs on an ongoing basis.[52] It is important to set up achievable goals, and to develop visible evidence of success to earn confidence of stakeholders. By keeping the program within a small, well defined catchment, the clinicians are better able to cope with practical challenges, and educate both the patient and relatives throughout recovery. It is beneficial to keep structured assessments and develop clear outcome parameters and incorporate psychosocial, crisis intervention, and family support as much as possible. It is vital that these programs are evaluated frequently throughout their evolution, in order to increase effectiveness.

The most important aspect of these programs is successful networking. Newer services such as ‘telepsychiatry’ offer care to professionally deprived regions. Such methods may offer hope for unique program development in the future for Indian society.[53] EIP are about breaking the boundaries of independent private practices and mental health institutions. A number of privately owned centers which offer excellent care, with a service oriented team, will be effectively able to tailor their functioning into the requirements of these EIP.[54]

The Next Step

We have seen that EIP can improve outcome and help in unfolding the complexity of schizophrenia. The task ahead is developing treatment which can facilitate social integration of these individuals into society. Another challenge for the future is to develop models of prevention. Since the illness is multifactorial in nature, with a significant genetic and environmental interplay in its pathogenesis, it appears that a primary preventive measure is almost impossible,[55, 56] therefore, the option of secondary and tertiary prevention measures should be optimized.[57, 58] There have been advances in identifying at-risk candidates, despite being faced with severe opposition from many scientists and advocacy groups on account of stigma and ethical issues. These groups are concerned about ‘labeling’ an individual with a mental illness; however, this research is unavoidable for learning about prevention, and the patients can benefit immensely.[59, 60] EIP have improved and
evolved significantly over time and is one of the initiatives which can minimize the impact and consequences of psychosis in an individual.

**Conclusion**

Finally, pessimism in care of schizophrenia from hundreds of years is over. These EIP initiatives are based on the fact that mental illness is a treatable condition, and care needs to reach those affected at the earliest stages of the illness. There needs to be a high degree of optimism and confidence in our knowledge, wisdom and commitment; however, regrettably, there are academics thoughts that reject not only the benefits, but the value of the program itself. [61]

To summarize, EIP of psychosis is a preventative program administered through community-based treatments that are effective, feasible and successful. These programs are cost-effective, needs-based, multidisciplinary, and can be developed in many communities by incorporating the necessary changes to suit the local requirements. The future of schizophrenia care lies in early, patient-centric and economic treatment.

**References**


**Acknowledgment:** Kristen J. Terpstra, Department of Psychology, University of Western Ontario, London, Ontario, Canada N6A 5C1,

**Amresh K Shrivastava**

Physician lead, Elgin Early Intervention Program for Psychosis, Department of Psychiatry, Associate Scientist, Lawson Health Research Institute. The University of Western Ontario, London, Ontario, Canada, and Director, Mental Health Resource Foundation, Mumbai, Maharashtra, India

**Correspondence:** Regional Mental Health Care, 467 Sunset Drives, St. Thomas, Ontario, N5H 3V9, the University of Western Ontario, London, Canada
E-mail: dr.amresh@gmail.com
Original Article

Problem gambling by Chinese people in different countries

Mohammad Khalid
Gabriele Columbini
Dinesh Bhugra

Abstract
Background: Gambling has existed for thousands of years and impacts on a wide spectrum of people ranging in ages, cultures and socioeconomic backgrounds. The emotions that come with winning or losing aid in facilitating an addiction which is often damaging on a personal, familial and society level. This paper explores some of the issues related to gambling in this ethnic group.
Results: Literature review shows that the Chinese are the largest ethnic group in the world with a huge migrant population. Gambling has a deep seated place in Chinese culture where there is a strong belief in luck and fate. This, combined with many other factors including its use as an acceptable form of entertainment, provides the background for the worsening of problem gambling and cloaking of the extent of such issues.
Conclusions: Gambling is a predominant affliction in some ethnic groups and cultural factors may play a role in this. Clinicians must be aware of cultural differences in patterns of gambling as well as cultural expectations.

Introduction
Gambling dates back thousands of years and is accepted variably in different parts of the world but has a significant influence upon culture. It occurs amongst all ages, levels of society and social strata. It is defined as the ‘wager of any type of item or possession of value upon a game or event of uncertain outcome in which chance, of variable degree, determines such outcome.’ There are many forms of gambling including horses, slot machines, lotteries, table games and card games; the latter has become the most widespread and popular form of gambling over the recent decade. Man has always been fascinated by the factors surrounding events such as chance, fate, cause and effect and this stimulates many emotions when a gambler wins or loses. For many the thrill from gambling is only achieved from the ‘pleasurable-painful tension’ based around excess and uncertainty. This leads to the cycle of gambling seen today at the expense of individual and society.

The Chinese are the largest ethnic group in the world, counting for at least 20% of the world’s population. The 2010 population of China was 1.34 billion2 with 40 million living elsewhere, making them one of the largest migrant groups setting up communities all over the world. Gambling has a significant place in Chinese history, first being recorded over 3000 years ago around the time of the construction of the Great Wall of China. 3 It has been a pastime of the rich but also the ‘favourite amusement of the lower classes, in spite of official prohibitions.’4 It is seen as an acceptable social activity in Chinese communities, especially in festive seasons such as weddings and birthday celebrations where social gambling occurs between friends and family. However, social gambling is not reported as an issue or sought help for but can often be used as a cover for serious problematic gambling behaviour that worsens when it is not recognized.

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### Table 1: Factors affecting Problem Gambling Behaviour

<table>
<thead>
<tr>
<th>Authors</th>
<th>Design</th>
<th>Participants</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victorian Casino and Gaming Authority (2000)(^{32})</td>
<td>Telephone interviews assessing gambling behaviours of cultural groups</td>
<td>664 people, equally split from Arab, Chinese, Greek, Vietnamese groups in community sample</td>
<td>Chinese were proportionally biggest group (11%) Rates of problem gambling (PG) service seeking help did not match rates of PG.</td>
</tr>
<tr>
<td>Chen et al (1993)(^{36})</td>
<td>Community survey in Hong Kong Self-reporting Questionnaire and DIS-3</td>
<td>7229 residents</td>
<td>Chinese community higher rates of PG than locals and Caucasians. Males more than females</td>
</tr>
<tr>
<td>Fong and Ozorio (2005)(^{31})</td>
<td>1121 telephone interviews assessing gambling in Macau residents Chinese DSM-IV Gambling Behaviour Index</td>
<td>1121 residents between ages 15-64 years</td>
<td>67.9% of sample have gambled in last year 1.78% probable pathological gamblers 2.5% probable PGs 'Social gambling' most common form. Males with lowest income most vulnerable to PG. Underreporting of problems.</td>
</tr>
<tr>
<td>Blaszczynski et al (1998)(^{32})</td>
<td>Survey exploring PG and pathological gambling rates in metropolitan Chinese community in South Western Sydney Chinese translation of the South Oaks Gambling Screen (SOGS)</td>
<td>249 males, 259 females= 508 total Average age 40.3 years</td>
<td>Prevalence estimate of 2.9% found, males higher than females Rates similar to PG rates of Chinese in other countries e.g. Chen at al 1993 Rate higher than 1.2% reported for Australian population. Underreporting (2.9 %) compared to third party estimate of 16.7 %.</td>
</tr>
<tr>
<td>Oei and Raylu (2007)(^{34})</td>
<td>Comparing gambling behaviours of Chinese and Caucasians in Australia. Questionnaires translated into Mandarin and back. SOGS and Motivation Towards Gambling Scale (MTGS)</td>
<td>199 Chinese (mean age 30.22 years) and 306 Caucasians (mean age 20.22 years)</td>
<td>Chinese gambled more frequently than Caucasians. Chinese more likely to report gambling &gt;$100 in a day. Chinese had greater chasing behaviour and claiming to win when not. No sig difference in PG between two groups.</td>
</tr>
<tr>
<td>Chinese Family Service of Greater Montreal (1997)(^{30})</td>
<td>Comparing Australian Chinese and Taiwanese Chinese. Questionnaire using the demographic part of the SOGS.</td>
<td>84 Australian Chinese and 201 Taiwanese Chinese.</td>
<td>Taiwanese Chinese had increased frequency of gambling. No sig diff in amount gambled Sig increased ‘guilt’ and ‘hiding gambling’ in Australia.</td>
</tr>
<tr>
<td>Chinese Family Services of Quebec (2007)(^{35})</td>
<td>Survey using the SOGS to a non-random sample of 229 clients looking at gambling in Chinese residents compared to locals of Quebec.</td>
<td>Response of 76.3%</td>
<td>PG as 4.7 % of Chinese vs 3 % Caucasians.</td>
</tr>
<tr>
<td>Sin (1997)(^{35})</td>
<td>Gambling and PG in Chinese in Quebec.</td>
<td>229 users of Chinese Family Services, 56 Chinese restaurant workers. Non- random sample</td>
<td>3% PGs and 1.7% pathological gamblers SOGS score increased with time in Canada, increased with lower education. Motivations= entertainment, gain wealth, excitement, social. Low help seeking behaviour.</td>
</tr>
</tbody>
</table>
The studies showed that rates of PG were higher in the Chinese sample than Caucasians e.g. in Australia. VCGA highlighted the trend of the Chinese speaking communities having the highest rates of PG, even when compared to other ethnic groups in the general Victorian sample achieving the highest score on the SOGS (numerous studies discuss ethnic groups having higher rates of gambling than Caucasians, possibly due to poor economic status, lower incomes, genetic differences and/or culture specific factors e.g. cultural norms, beliefs or values). Oei et al reported Chinese gambling more frequently than the Caucasian sample in Australia with higher rates of chasing behaviour and a willingness to gamble more money (over AUD100/day). However, there was no reported significant different in PG between the two samples. This infers that there is a presence of gambling problems in the Chinese community and that a lack of self reporting may have affected the results. The contradictory reports of Oie et al and VCGA on significant differences in PG may be explained by the sample groups assessed and the criteria. Oie et al used the difference in the mean SOGS scores between the two sample groups while the VCGA studied the proportion of the sample with a SOGS score equal to or greater than 5. Also, the first study assessed people reporting themselves as ‘Caucasian’ whereas the latter used the general population including other ethnic groups.

Fong et al and Sin reported epidemiology studies showing males to be more prone to developing problematic gambling behaviours than females and they usually had low education and poor to middle income. Older participants were more likely to gamble, with the age limit in casinos as one plausible explanation.

Despite Chinese speaking communities forming the largest proportion of problem gamblers internationally, the table also shows little discrepancies between countries. Taiwanese Chinese were shown by Oei et al to gamble more than Australian Chinese and that the latter group reported a greater feeling of guilt and hiding their problem. One explanation for this may be that gambling is less accepted in Australia and hence it is important to assess an individual country’s cultural and social values when comparing gambling in Chinese communities. However, this also highlights the issue of self reporting, which may give false results.

Chen et al highlighted that PG and pathological gambling interlink with psychiatric disorders. Mood disorders, substance abuse and dependence are the biggest issues, with 11% in one study reporting attempted suicide due to gambling problems. More research is needed examining the reasons between psychiatric comorbidity in Chinese gamblers and the contribution of financial stress, interpersonal relationship problems and physical issues.

The main reasons for the taking up and maintenance of gambling behaviour are to win back money lost quickly, experience the thrill of a wager, influence from other gamblers, stress, boredom and emotional issues. There are also certain predictors that are linked to the gambling behaviour such as social setting and acceptance of behaviour, self control and also intention. ‘Gambling behaviour and motivation have also been linked to stimulating and instrumental risk taking and lower probabilistic thinking leading to riskier gambling decisions. In other words, Chinese gamblers may be predisposed to seek both exciting sensations and the opportunity to attain wealth from gambling’.

Female Chinese migrants in the UK reported psychological stress due to economic hardship, familial stress (possibly due to gambling spouses) violence, language and cultural barriers. Gambling provides a way to relax, especially if working unsocial hours (eg in
Chinese takeaway restaurants). Marriage is a key reason for Chinese women to emigrate; there is a familiar story of the promise of a better life, only to be disappointed when faced with poor employment prospects, difficulties in learning the local language and poor housing opportunities. The availability of casinos in certain areas can predispose to developing gambling habits as a result of stress, and too much spare time with little other social activities, especially if there are language barriers. Scull et al. argue that migrant workers were most vulnerable to PG for similar reasons.

Social reasons may be the initial motivation, but with economic hardship and poor employment prospects, the desire for money takes over. Especially in Western countries, advertisements for gambling are becoming more accepted and widely available, encouraging gambling with the false belief of winning; this is coupled with easy access to casinos, a lack of limit as to what can be lost and easy access to credit. The desire for money becomes replaced with a need for money as gambling is perceived as the solution. The impacts of PG are the same irrespective of culture. Increasing debts, bankruptcy and possible homelessness drive the cycle of the need to gamble to make money to cover lost money. Chinese people are more inclined to turn from social to problematic gambling.

Cognitive errors and states of psychological thinking affected PGs in Chinese gamblers similarly to Western gamblers. Chinese gamblers reported they were winning more often than Caucasians when they were actually losing; and they display strong beliefs that they were in control, which stems from traditional Chinese cultural beliefs. In Chinese, ming, or fate, is predetermined in heaven and hao ming, or favourable fate, means lots of money with minimal labour. However, the Chinese have a reputation as hard working people and have a proverb - ‘God helps those who help themselves’. Therefore, gambling is almost a way of testing fate and luck and a combination of ‘prediction and prayer’ that can precipitate the delusion that there is no such thing as a gambling problem.

Basu discussed that Chinese immigrants to Calcutta were perfect examples of the Chinese viewing gambling as a vehicle for allowing the interaction between intention and fate. In that particular culture, status is based entirely upon wealth and therefore economic toil is seen as crucial. There is a common view amongst the Chinese that business is always preferable to work since there is an unlimited output potential dependent upon one’s input. This entrepreneurial ethic involves luck and skill. The Chinese place importance on maximising profit, minimising losses and adapting to the situation so even if it’s gambling for low stakes, Mahjong will always be found at celebrations etc. ‘When gambling breaks through the boundaries in which it is usually confined and becomes unrestrained, it becomes a symbol not of the interplay of fate and control, but of total failure and lack of discipline’. Gambling ingrained as a part of Chinese culture and a heavy emphasis placed on self control can explain the high rates of PG with low rates of self report.

Family influence is a big factor on gambling behaviours where up to one third of pathological gamblers have gambling problems running in the family, giving exposure that may precipitate such behaviour. Socialising in families and at family events has been shown to influence preference for certain gambling forms eg dice, and may attract Chinese people to casinos. One in five respondents in a study conducted amongst Chinese sample reported a family member with gambling problems. It is possible that there is an unwillingness to admit to personal gambling issues whereas there is a readiness to admit on behalf of relatives, out of respect and the desire to avoid admitting failure. This is consistent with the lower rate of PGs found on SOGS in relation to the estimates offered. The Chinese try and avoid conflict and believe that the behaviour and health of the collective is of more importance than the individual. Hong Kong Chinese have a belief...
model that problems are influenced by external and internal factors but the internal factors are the key for the cure.

When Chinese children and adolescents develop gambling problems, the detrimental effect is exacerbated. Asian communities place great importance upon studying. As pointed out by study in Quebec, a child’s education is the path to social integration, stability and acceptance. Problem gambling leads to poor educational performance and these feelings of failure may be increased in their communities.

Future Direction

There are issues that need to be addressed when studying gambling and gambling problems in Chinese speaking communities. PG and pathological gambling is often used without a clear definition separating the two. In this study PG, where under five categories of the DSM-1V is met, is being used since this may not qualify as pathological gambling but people still present with many of the same problems. Also as highlighted in the study by Oei et al 13 the differences in PG between Taiwanese Chinese and Australian Chinese, is the importance of incorporating specific cultural values and practices when looking at gambling trends between international communities. Lastly, the measurement scales used have been adapted from Western samples to Chinese samples and must be correctly validated. Where questionnaires have been translated into Chinese and back into English it is essential to note the degree of understanding and any loss of communication.

Raylu et al 6 validated the Gambling Related Cognitions Scale (GRCS-C) with a Chinese sample showing its reliability and validity. Similarly, another study confirmed the Gambling Urges Scale (GUS-C) to be valid for measuring gambling urges in the Chinese. Despite these efforts, scales and measuring tools currently used need to be validated for use with Chinese participants and there need to be tools developed specifically for Chinese people, as currently none exist. These would be used for looking at the severity of PG, motivations behind the behaviour eg sensation-seeking, familial, personal and cultural attitudes to gambling, psychological state and cognition, willingness to seek help and compliance with treatment. There are many factors that link gambling with problem gambling in the Chinese and these need to be taken into consideration within a framework when developing intervention programmes as the efficacy may be affected. The Chinese beliefs in fate, luck, winning and superstitions are a concern, and education about the matter may be helpful.

Conclusion

The studies discussed all have their positive and negative points and varying findings. A common report is that the Chinese form the largest group of problem gamblers in different cultures eg in Australia, and despite this self-reporting shows no significant difference in ethnic groups, indicating that help seeking behaviour is low. Future research needs to look at problem gambling and validate tools specifically for the Chinese to incorporate affecting factors when developing a framework for intervention. Chinese beliefs and culture strongly lend to gambling behaviour and the shame of ‘losing control’ means that social gambling can lead to problem gambling without seeking help. PG
behaviour has numerous detrimental effects; and with increasing migration of the Chinese to countries where there is easy access to gambling, it is essential that these countries tackle this issue and ensuing social problems. Some countries in Asia have already legalized gambling, such as in Macau, highlighting the urgency of the matter as PG could require heavy funding from the government and intervention. Psychological issues that cause and are caused by PG are another potentially damaging issue that needs to be tackled to reduce PG.

References

7. Cai S. Gambling is the opium of the 21st century. Shanghai Star 2005; February 17
13. Victorian Casino and Gaming Authority. The impact of gaming on specific cultural groups report, Victoria, Melbourne 2000
22. Hong YY, Chiu CY. Sex, locus of control, and illusion of control in Hong Kong as correlates of gambling involvement. J of Social Psychology 1988; 128:55

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Mohammad Khalid
King's College Medical School
UK

Gabriele Columbini
Department of Applied Health and Behavioural Sciences
Section of Psychiatry
University of Pavia
Pavia, Italy and
Honorary Researcher
Health Service and Population Research Department
Institute of Psychiatry, King's College London
London SE5 8AF, UK

Dinesh Bhugra *
Professor of Mental Health and Cultural Diversity
Health Service and Population Research Department
Institute of Psychiatry, King's College London
London SE5 8AF
UK

Tel +44 20 7848 0500
Fax: +44 20 7848 5056
Dinesh.bhugra@kcl.ac.uk

* For correspondence
Original Research Paper

Study of Academic Stress and Coping Strategies in Std X Students

Omkar Mate
Riddhish K. Maru
Bindoo Jadhav
H.S. Dhavale
Sunitha Shanker

Abstract
Early adolescence can be a stressful time for children dealing with the challenges of growing & puberty, meeting with changing expectations of significant others, peer pressure and coping with feelings that they may not have had before. In recent times, one of the major sources of stress is the academic demands made of them. Keeping this in mind the current study was undertaken to assess the level of academic stress in Std. X students and their coping strategies and to study the relationship between the coping strategies used and the level of stress.

A total of 400 students from metropolitan schools were included. Socio demographic data was collected using a semi-structured proforma. The coping strategies and level of stress was assessed using the Ways of coping checklist by Folkman and Lazarus, 1985 and Bisht battery of stress scales, 1987 respectively. The data thus obtained was pooled and subjected to statistical analysis using SPSS software.

In our study, high academic stress was in 18%, average stress in 53% & low stress in 29% students. Students showed an overall equal use of various coping strategies. The coping strategies of wishful thinking, distancing emphasizing the positive, self-blame and keeping to self showed slightly higher correlation with academic stress.

Keywords: Adolescence, Standard X, Coping Strategies, Academic Stress.

Introduction

Early adolescence can be a stressful time for children and those who deal with them. Early adolescence is characterized by rapid and significant changes in an individual’s physical, social, emotional and cognitive domains. They are dealing with the challenges of growing and puberty, meeting with changing expectations of significant others, peer pressure and coping with feelings that they may not have had before. In recent times, one of the major sources of stress is the academic demands made of them.

In Asian cultures, higher education tends to be particularly associated with higher income, social status and better career prospects.[1,2] In India, one of the major stressful life events in an early adolescent’s life is the standard X (SSC). High marks demanded by colleges and pressure from parents and society put these teenagers under tremendous pressure to perform well and acquire excellent marks.

Stress associated with academic activities has been linked to various negative outcomes such as poor health[3,4], depression[5], suicidal behavior & poor academic performance[6,7]. From various previous studies it has been learnt that:

A “pile up” of many stressful life events in a small amount of time is more difficult for
adolescents than dealing with just one event.

Ongoing, day-to-day stresses and strains are harder on adolescents than major life events. If a major event causes stress, it is often because it sets off a chain of events that change the ongoing, day-to-day conditions of their lives.

SSC examination is a classic example of a pile up of many small stressors, which begins in 9th standard itself and continues for one entire year.

Coping has been viewed as an important component of psychosocial competence by which an adolescent is able to balance and manage the developmental tasks of this stage of the lifecycle. Coping strategies are assumed to have two primary functions: managing the problem causing stress and governing emotions related to those stressors. Most adolescents are able to cope with academic stress using a variety of coping strategies; however, some do succumb to the pressure and suffer a myriad of ill effects of the same.

Consequently, learning about adolescent’s adjustment to school and helping them establish adaptive coping strategies is of immense significance today. Keeping this in mind, the current study was undertaken.

**Aims and objectives**

1. To study the level of academic stress in students of Std. X.
2. To study the coping strategies used by students of Std. X.
3. To study the relationship between the coping strategies used and the level of stress.

**Materials**

A semi-structured proforma was designed specially for the study to collect the data about the student’s name (optional), age, sex, name of school, type of family, parent’s education and parent’s occupation.

**Bisht Battery Of Stress Scales (BBSS)** [*Abha Rani Bisht, 1987*][10]:


Each of the thirteen types of stress measures four components of stress: frustration, conflict, pressure and anxiety. All the thirteen scales of the battery were developed and standardized simultaneously. Six approaches were adopted for the standardization purpose, viz. Methodical Approach, Theoretical Approach, Static Approach, Rational Approach, Empirical Approach, Normative Approach.

Reliability of the scales of the battery was calculated in three ways for knowing dependability, stability and internal consistency. For Academic Stress scale dependability is 0.87, Stability is 0.82 and Internal Consistency 0.88. All the scales have content validity and item validity. These battery scales can be used on adolescents and adult students only. Percentile norms are established for the scales of the battery for Indian population. The grouping of high, average and low stress in terms of percentile for interpretation is: High stress: P70 and above, Average stress: P60 to P31, Low stress: P30 or below.

**Ways Of Coping (revised)** [*Folkman and Lazarus, 1985*]:

A revised version (1985) of the ways of coping checklist was used to assess coping strategies. This checklist was standardized and revised by Folkman and Lazarus in 1985.
based on a study of the ways students coped with a college examination. It consists of 66 items describing a broad range of eight coping strategies as subscales viz.

1. Problem focused coping (PF): The person deals directly with the problem by acting or thinking about it.
2. Wishful thinking (WT): It is a coping strategy which describes hoping and anticipating a positive outcome without actually making any effort to solve the problem.
3. Detachment (DET): It implies a cognitive effort to distance oneself & to minimize the significance of the situation.
4. Seeking social support (SSS): The person looks for emotional support or information from someone else.
5. Focusing on the positive (F-POS): Person searches for a positive meaning to a situation.
6. Self-blame (SB): It is a coping style where students see themselves as guilty for the concern and take responsibility for it.
7. Tension reduction (TR): It is a coping strategy where patient deliberately makes efforts (cognitive, emotional & behavioral) to decrease tension experienced by him.
8. Keeping to self (KS): It is used, when one withdraws and keeps others from knowing the problem.

Out of these eight subscales, the first is problem focused, 2-7 subscales are emotion focused and the last subscale consists of both problem and emotion focused items. Respondents rated each of the 66 items on a four point Likert scale. Each item was scored on the following points ‘not used’ = 0; ‘used somewhat’ = 1; ‘used quite a bit’ = 2; ‘used a great deal’ = 3.

Knussen et al. (1992)[11], using the Ways of coping, demonstrated that questionnaire subscales representing different coping strategies showed adequate internal reliability and psychometric properties. The WC-R has also been shown to have validity in its pattern of associations with outcome variables such as stress and satisfaction with life [12,13]

Methods

Approval of the Ethics Committee was taken prior to commencing the study.

The study was conducted in 3 schools affiliated to Maharashtra State Board of Secondary Education (S.S.C.), in different suburbs of Mumbai.

Students and their parents were informed of the research objectives and assured of the confidentiality of their responses. Informed consent was taken.

Four hundred students from the above mentioned schools were included.

The various socio-demographic variables were recorded using the specially designed proforma.

Academic stress was assessed using the Bisht Battery of Stress Scales (BBSS).

The Ways Of Coping Checklist was administered to evaluate the coping strategies used by the students.

The data thus obtained was pooled and analyzed using SPSS software. The level of academic stress was calculated using the percentile method.

Final score on every coping mechanism was calculated separately using sum of the scores of items belonging to each coping strategy.

The coping strategies used by the students were correlated with the perceived academic stress using Pearson’s co-efficient.

Inclusion criteria:

1. Students appearing for standard X (SSC Board) examinations from English medium co-education schools.
2. Students willing to be enrolled in the study.

Exclusion criteria:
2. Students appearing externally / privately for the SSC examinations.

Results and discussion

Socio-demographic data:

The students in Standard X were mostly in the early adolescent age group of 14-16 years. The sample studied had an almost equal distribution of male (52.7%) & female (47.7%) students.

Chandra et al[14] cite family stress as a frequent source of adolescent stress. The current study shows that more than 2/3rd students ie. 84.1%, belonged to a nuclear family and 15.9% to joint family. This might mean a lesser amount of family stress. However, it might also mean a lesser amount of social support.

Nearly half of the parents of students were graduate (ie 49.5% mothers & 48.6% of fathers), while about 2/3rd of remaining had completed their postgraduate studies themselves ie 44.1% mothers & 42.1% of fathers). These findings might be a pointer towards parental expectations from their children, to excel academically.

As seen from previous studies by Ang and Huan[15], Chen and Stevenson[16] and Wong et al[17] parental expectations might be a source of academic stress in students. Pressure to succeed academically reflects a stress to excel in studies and to get a high paying job with high status; as shown in a study of Singaporean adolescents by Ho and Yip[18].

Table 1: Types of coping strategies used and level of academic stress

<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th></th>
<th>Moderate</th>
<th></th>
<th>Low</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Problem focused coping</td>
<td>104</td>
<td>26</td>
<td>236</td>
<td>59</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>(PF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wishful thinking (WT):</td>
<td>116</td>
<td>29</td>
<td>216</td>
<td>54</td>
<td>64</td>
<td>16</td>
</tr>
<tr>
<td>Detachment (DET):</td>
<td>100</td>
<td>25</td>
<td>256</td>
<td>64</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Seeking social support</td>
<td>80</td>
<td>20</td>
<td>272</td>
<td>68</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td>(SSS):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focusing on the positive</td>
<td>120</td>
<td>30</td>
<td>252</td>
<td>63</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>(F-POS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-blame (SB)</td>
<td>108</td>
<td>27</td>
<td>264</td>
<td>66</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Tension reduction (TR)</td>
<td>96</td>
<td>24</td>
<td>280</td>
<td>70</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Keeping to self (KS)</td>
<td>76</td>
<td>19</td>
<td>284</td>
<td>71</td>
<td>36</td>
<td>9</td>
</tr>
</tbody>
</table>
Table 2: Correlation between coping strategies and academic stress

<table>
<thead>
<tr>
<th>Academic Stress</th>
<th>Problem focused coping (PF)</th>
<th>Wishful thinking (WT)</th>
<th>Detachment (DET)</th>
<th>Seeking social support (SSS)</th>
<th>Focusing on the positive (F-POS)</th>
<th>Self-blame (SB)</th>
<th>Tension reduction (TR)</th>
<th>Keeping to self (KS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 2 tail</td>
<td>0.239</td>
<td>0.249</td>
<td>0.192</td>
<td>0.076</td>
<td>0.201</td>
<td>0.258</td>
<td>0.164</td>
<td>0.334</td>
</tr>
<tr>
<td>p</td>
<td>0.656</td>
<td>0.003</td>
<td>0.025</td>
<td>0.331</td>
<td>0.019</td>
<td>0.002</td>
<td>0.056</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>

keeping with studies done by Janet[20] and Sajjan Kumar[21], that showed 86% and 69% students respectively perceived higher academic stress levels.

Also, several studies have suggested that Asian adolescents develop academic self-expectations based on their parent’s and teacher’s expectations from them[16,22], these academic self- expectations might be another source of academic stress.

Types of coping strategies used and their relationship to academic stress:

As seen in Table no.1, the students showed equal distribution of use of 8 coping strategies. In a review of studies on coping strategies used by adolescents; Fields and Prinz[23] mention that the studies varied considerably on whether emotion focused or problem focused strategies predominated. This means at the time of stress use faulty coping strategy instead of problem solving. Similarly, Aldwin[24] and Boekarts[25] in their work on adolescents coping, concluded that, adolescents use both problem focused and emotion focused coping. This is in keeping with the current study which shows use of both problem and emotion focused strategies by the students.

The correlation between coping strategies used and the level of academic stress (Table no.2), reveals that the correlation co-efficient for certain coping strategies are higher than the rest, though the correlation strength is weak and results are not statistically significant. These coping strategies belong to the emotion focused category. This is in keeping with the study by Kariv and Heimen[26], which indicates students experiencing academic stress, utilize emotion- oriented coping strategies while disfavoring task-oriented approaches. This means at the time of stress students use faulty coping strategy instead of problem solving; like an escape avoidance & emotion focused approach which refers to indirect efforts to adjust to a stressor by distancing oneself either by focusing on one’s feelings or else avoiding solving the problem. Fields and Prinz[23] on the other hand, mentioned the use of problem focused strategies in adolescents facing academic stressors. However, their review also found that younger adolescents tend to use more emotion focused strategies than problem focused strategies. Mischel and Mischel[27] found that with age, there was an increase in that availability of alternative self control strategies that involved cognitive distraction, cognitive reappraisal of the challenge or cognitions about enjoyment of the delayed reward.

Recommendations

It is impossible to make everyday stress free, where no adjustment is required. Adolescence is a period of stress and storm. Adolescents with the help of different coping strategies face a variety of stressors including academic stress. Unrealistic parental expectations and self worth based on academic performance...
contributes significantly to academic stress. Identifying and minimizing factors contributing to academic stress will help in the development of emotionally balanced and mentally stable adults in society.

A change in the use of coping strategies from emotion focused to problem focused strategy would aid adolescents in dealing with problems. Emergence of formal operational thinking may aid adolescents to think abstractly, to consider various points of view and to evaluate consequences. SSC exam performance should not be the only gateway to higher education opportunities at universities and colleges. Lastly, a collective effort from the society is important to give adolescents a healthy environment to live, grow & flourish as they are the future of our country.

References


Omkar Mate, DNB, DPM, Senior Resident
Omkar Mate, DNB, DPM, Senior Resident
Riddhish K. Maru, DPM, Resident,
Bindoo Jadhav, MD, DPM Assoc.Prof
Hemangini S.Dhavale, Prof.&H.O.D *
Sunita Shanker, PhD, MA, Clinical Psychologist
Department of Psychiatry, K.J.Somaiya Medical College and Research Centre,
Somaiya Ayurvihar, Sion, Mumbai 400022

* Correspondence

Hemangini S.Dhavale, 
Prof.&H.O.D
Department of Psychiatry,
K.J.Somaiya Medical College and Research Centre,
Somaiya Ayurvihar, Sion, Mumbai 400022
e-mail kjspsydept@gmail.com
**Abstract**
Caregiving for people with schizophrenia is a demanding and stressful task, and may provide a source of chronic stress. Nevertheless, the caregiver’s role is acknowledged as essential for good prognosis and coping in the person with schizophrenia (Shubharthi).

This study attempts to provide an evidence base for rational emotive therapy based intervention specifically targeting burnout in the caregiver, attempting to show the unique contribution of this intervention over and above more generic interventions such as psycho-education and problem solving approaches which are often used.

Findings reveal that the targeted intervention was able to bring about significant change in burnout post-intervention as against no significant change brought about solely by the other interventions, with the sum total of all of the above yielding significant change in burnout scores on the Maslach Burnout Inventory.

**Key words:** burnout, schizophrenia, caregivers

**Introduction**
Burnout is a variable prominently used in organisational settings, and defined as a “disorder of professional individuals engaged in helping others, characterized by impaired performance, loss of concentration, poor morale, emotional problems and occasionally drug abuse.” Burnout is presumed to be the result of prolonged high levels of demand and stress suffered by the victim. (Atkinson et al, 1992)

Caring for persons with schizophrenia (Shubharthi) is a demanding and stressful task (Winefield and Harvey, 1993) often requiring patience, resilience and calm handling of unexpected situations by relatively untrained caregivers. The condition is by definition unpredictable in its various manifestations, and caregivers are often on edge not knowing what to expect from the persons under their care. Caregiving has thus been conceptualized a source of chronic stress (Rammohan et al, 2002) and attempts have been made to fit the process of caregiving into a stress model (Lefley, 1989, Potasznik et al, 1984). Chan (2011) quotes the World Federation of Mental Health report published in 2010 viz. “caring for those with a chronic condition requires tireless effort, energy, and empathy, and greatly impacts daily lives of caregivers. As caregivers struggle to balance work, family and caregiving, their own physical and emotional health is often ignored.”

Cuijpers and Stam (2000) studied burnout among relatives of psychiatric patients attending psycho-educational support groups and found burnout levels to be high in spite of the group support offered. Martens and Addington (2001) concluded that respondents in their research study were significantly distressed as a result of having a family member with schizophrenia.

While studying caregivers of elderly people, Hattori et al (2001) reported that need for nocturnal care and attention and continuous
observation as well as rejection of aid, burned out caregivers. Mizuno et al (2011) content analyzed subjective experiences of men whose spouse suffered from schizophrenia, and found six themes, namely identification and acceptance of the condition, past and present experiences with wives, roles and burdens of husbands, marital relations, social resources and participation in the community, and lastly, perspectives on the future.

Burnout in caregivers may be caused by a lack of acceptance by family members. The realization that one’s relative may never be the same again may be too unbearable to contemplate. Feelings of chronic fatigue, utter exhaustion, lack of interest in life, lack of self esteem and loss of empathy for the person with schizophrenia have been commonly reported. Health Canada’s publication, “Schizophrenia - A Handbook for families” dubs caregivers as the ‘walking wounded’. The manual advises caregivers to take care of their own health, take regular breaks, avoid self blame and self criticism, and not neglect other relationships. They are advised to share their problems and grief, develop a team approach, keep religious beliefs if any, use humor and never lose hope.

Previous research on burnout in caregivers of persons with schizophrenia has shown a number of modalities to be effective for dealing with the same. These approaches include problem solving, cognitive behavioral interventions, as well as supportive interventions. However, there are few studies attempting to provide an evidence base for the relative efficacy of each, so as to tailor intervention for specific cases and save on already scarce therapeutic resources. This study aims are teasing out the relative efficacy of this single targeted intervention as against the full package of other intervention modalities.

Material and Method

Sample : The participants in this study were 96 caregivers of people with schizophrenia, who consented to participate in the study. Due consent was obtained and they were asked to attend group intervention sessions. The initial 96 participants were classified into three groups based on whether they were more prominently affected by stigma associated with mental illness of their family member, by the burnout associated with the care of this person, or the sheer burden of care. The work reported in this paper pertains to those who were primarily affected by burnout, i.e. those who scored highest on this variable as compared with the other two, thereby expressing a need for intervention designed to handle burnout, viz. REBT based modules. Initially 55 of the total group of 96 fell into this category, but only 37 were able to attend all the contact sessions, and also satisfactorily completed all the proformas, and only their data is presented here.

Tools and operational definitions: Burnout was defined as total score on the MBI (1996) which has 14 direct and 8 reverse scored items and satisfactory reliability and validity. Intervention comprised of REBT modules to deal with burnout, which were standardized to remain similar across groups of caregivers. Caregivers were defined as family members who had 4 to 5 hours of contact per day with the person with schizophrenia.

Procedure: After assessing the caregivers for stigma, burden and burnout as a part of a larger study, those caregivers with the highest scores of the three being the burnout score (ie, burnout was evidently their primary problem) were chosen for targeted intervention using rational emotive behavior therapy principles. 55 of the initial group of 96 fell into this category and 37 from the finally selected group of 70, who completed the proforma satisfactorily and also went through the requisite number of intervention sessions were included in the final analysis.

After being assessed for any change in Burnout scores after offering the targeted intervention, the caregivers were given the entire package of interventions for ethical reasons, and reassessed for change. Interestingly, caregivers
staying away from the patient also showed burnout, and there were more people in the currently presented Burnout group than in the groups that had Burden or Stigma as their primary problem. (Findings from these groups are presented elsewhere.) It is interesting to note however that the greatest problem faced by caregivers of people with schizophrenia appears to be that of burnout.

**REBT Modules for burnout:** Rational Emotive Therapy and dealing with appropriate and inappropriate emotions; Link between activating events, Belief systems and Consequences; Understanding your own thought patterns, eg Must, Should, Demand v/s Expectation; “Terriblizing” relapse and non compliance. Emotion regulation rather than stability. Each of these modules are outlined in a little more detail after the results section, in a brief appendix.

**Analysis:** Analysis of Burnout scores on the Maslach Burnout Inventory(1996) was carried out pre-intervention, then post targeted intervention and finally after the entire intervention package had been delivered to the participant. The findings were analyzed using a repeated measures ANOVA for the three time points at which burnout was assessed. Post hoc tests were carried out for burnout scores before and after completing the targeted intervention, viz REBT sessions as per pre-defined standardized modules, as well as a result of the remaining two additional interventions for burden and stigma. Subscale scores of the MBI were not analyzed as part of the present study but may yield some valuable insights.

**Results**

Findings are presented as demographic descriptors in Tables 1 to 4 below, and the F value and post hoc t values are also presented below. It seems clear that targeted intervention, tailored to deal with burnout yielded significant change in burnout scores, whereas the other combined interventions yielded no specific additional merit.

It is no doubt true that a large portion of emotional problems having been dealt with by the REBT modules, perhaps fewer problems were left behind for the remaining two sets of modules to address. Nevertheless, statistical analysis does point to significant change having been brought about by the specifically targeted intervention.

Table 1 shows the demographic distribution of the sample of 37 caregivers (15 male, 22 female) who continued in the study after cleaning out cases with missing data, or those who did not attend the requisite number of intervention sessions. Table 2 presents characteristics of the people with schizophrenia whose caregivers were being studied. Table 3 presents the findings of the ANOVA and the post hoc t tests comparing the Mean values and standard deviation of Burnout scores at all stages of the study.

**Discussion**

In general, some interesting observations are noted below. This group of people, whose caregivers had Burnout as their primary problem, had a mean age of onset of schizophrenia at 25.11 years and this group also had the largest number of poor compliance cases. There were twice as many male as female patients in the group.

Many caregivers attending the intervention groups for burnout were female (22 in all, as against 15 male caregivers). Most were over 50 years in age, and most were parents of the persons with schizophrenia, the Shubharthis (a term coined to imply a person on the path to wellness (Sovani, 2009). Most of these parents were mothers of patients, with the second most frequent group being wives. They were at least XIIth educated, and most were graduates. 90% were residing with the Shubharthi. Many were...
retired, or had been housewives, so they had no steady income. Those working reported practical difficulties in attending. The highest dropout rate was thus among the caregivers from the age group that was 41-50 years. It was evident that REBT interventions specifically targeted at reducing burnout did in help reduce burnout scores. Stigma and Burden scores did drop after other inputs were given, but not significantly so. Overall, pre-to post-

Table 1: Demographic data of caregivers who consented to participate in the study.

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Years</td>
<td></td>
</tr>
<tr>
<td>24-40 years</td>
<td>19</td>
</tr>
<tr>
<td>41-54 years</td>
<td>15</td>
</tr>
<tr>
<td>55-70 years</td>
<td>12</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>07</td>
</tr>
<tr>
<td>Married</td>
<td>30</td>
</tr>
<tr>
<td>Residing with patient</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>32</td>
</tr>
<tr>
<td>No</td>
<td>05</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>12</td>
</tr>
<tr>
<td>Unemployed</td>
<td>25</td>
</tr>
<tr>
<td>Relationship with patient</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>13</td>
</tr>
<tr>
<td>Father</td>
<td>10</td>
</tr>
<tr>
<td>Spouse</td>
<td>10</td>
</tr>
<tr>
<td>Brother</td>
<td>1</td>
</tr>
<tr>
<td>Sister</td>
<td>1</td>
</tr>
<tr>
<td>Daughter</td>
<td>1</td>
</tr>
<tr>
<td>Son</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>&lt; SSC</td>
<td>11</td>
</tr>
<tr>
<td>11th to graduate</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 2: Demographic and disease related characteristics of the patients (N-37)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>24</td>
</tr>
<tr>
<td>Females</td>
<td>13</td>
</tr>
<tr>
<td>age at onset : years</td>
<td></td>
</tr>
<tr>
<td>Mean(sd)</td>
<td>25.19(7.89)</td>
</tr>
<tr>
<td>Current age: years</td>
<td></td>
</tr>
<tr>
<td>Mean(sd)</td>
<td>33.54(11.52)</td>
</tr>
<tr>
<td>15-30 years</td>
<td>14</td>
</tr>
<tr>
<td>32-45 years</td>
<td>13</td>
</tr>
<tr>
<td>50-65 years.</td>
<td>05</td>
</tr>
<tr>
<td>Marital status :</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>20</td>
</tr>
<tr>
<td>Married</td>
<td>14</td>
</tr>
<tr>
<td>Divorced</td>
<td>03</td>
</tr>
<tr>
<td>duration of illness years</td>
<td></td>
</tr>
<tr>
<td>Mean(sd)</td>
<td>8.27 (6.48)</td>
</tr>
<tr>
<td>Treatment compliance :</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>25</td>
</tr>
<tr>
<td>Poor</td>
<td>12</td>
</tr>
<tr>
<td>Prior hospitalizations:</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
</tr>
<tr>
<td>Prior ECTs :</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
</tr>
<tr>
<td>No.</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3: Burnout scores at three stages of intervention

<table>
<thead>
<tr>
<th>Burnout score</th>
<th>Mean(sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>56.30 (19.70)</td>
</tr>
<tr>
<td>Midline</td>
<td>50.97 (20.39)</td>
</tr>
<tr>
<td>Endline</td>
<td>47.89 (20.85)</td>
</tr>
</tbody>
</table>

Across all three conditions, F = 10.82, p< 0.002
Baseline Vs Midline, t = 2.40, p< 0.05
Baseline Vs Endline, t = 3.29, p< 0.005
Midline Vs Endline ,Non-significant
intervention, there was significant change as the ANOVA findings reflect (F=10.82; p<0.002). It is no doubt true that working on stigma and burden cannot be so compartmentalized, as all 3 are interrelated, but this was done in the interests of the study which aimed to assess value of need-targeted intervention. However, the researchers accept as a potential limitation of the study that although the effort may not be explicit, caregivers would have worked on their own burden and self-stigma as well using REBT principles, and so effects of later sessions might be less apparent. An ideal experimental design may have been a crossover study.

The results also showed that the most marked drop in Burnout scores was achieved from Baseline to Midline (Table 4 above) reflecting the appropriateness of the tailored package for reducing Burnout. Other than this evidence base, subsequent workshops held for caregivers of people with schizophrenia have always shown the need to address the emotional issues of the caregivers before approaching problems with specific solutions, or even de-mystifying the illness and reducing stigma with psycho-education. It is often thought that psycho-educational caregiver workshops must begin with facts about schizophrenia, but in reality the researchers’ experience over many such workshops has shown that caregivers respond better and are more satisfied with inputs if their emotional issues are addressed first. Burnout scores post intervention were assessed soon after the intervention modules were completed, and this could be a short term impact which may not sustain. However, once again, the researchers’ subsequent experience with caregivers’ training workshops has shown fairly sustained impact of REBT driven inputs.

One may thus conclude from these findings, that although giving the full package of intervention comprising of an eclectic mix of psycho-education, problem solving, as well as CBT and REBT based emotion management did indeed help the caregivers, an adequate effect could be obtained with merely administering the latter. This may prove useful in situations where either time or available trainers are few, and maximum effect needs to be accomplished in the given time and personnel. Where it is amply evident, thus, that the primary problem faced by a group of caregivers is burnout, one may choose to save precious trained manpower and inputs by tailoring intervention, and nevertheless achieve results.

References

7. World Federation of Mental Health (2010) Caring for the caregivers- why your mental health matters when you are caring for others. Woodbridge: VA:WFMH.
Appendix

REBT modules in brief:

Rational Emotive Therapy and dealing with appropriate and inappropriate emotions
The principle underlying the REBT model, that certain emotions persistently disturb us, and interfere with the way we handle stressful situations, was highlighted. Rather than introduce the A-B-C format at the outset, participants were encouraged to share “disturbing” or “upsetting” emotions and helped to categorize these as “inappropriate” as per the REBT model, showing how other, healthier alternatives were available and would render one less disturbed. Eg. Anxiety may interfere with the caregiver looking after patient well being, but concern would disturb the caregiver less and also aid efforts taken toward patient well being.

Link between Activating events, Belief systems and Consequences
Here the A-B-C model was outlined, and the popular belief that events lead to emotions was addressed, attempting to promote the understanding that events lead to thoughts, which IN TURN lead to emotions. Hence, changing thoughts can help handling emotion.

Understanding your own thought patterns,
eg Must, Should, Demand v/s Expectation
The semantics behind rational thinking was addressed. Must and should statements indicate a demand and if this is unmet, which usually happens, the person is left emotionally disturbed. Rather, if expectations are expressed, there is less emotional distress if they are as yet unmet, and efforts can be stepped up to achieve the desired goal.

“Terriblizing” relapse and non compliance
Relapse of the illness in the Shubharthi usually leads to a lot of distress in caregivers, who hope for longer symptom-free spells. Non compliance with medication by the patient renders them disturbed and angry. This emotional disturbance may lead to sharp words and bitter quarrels between Shubharthi and caregiver, and may not achieve the goal that the latter is aiming for, viz. compliance with medical regimens, but may in contrast lead to rebellion and total non-compliance. Hence, treating relapse or occasional non-compliance as “terrible and unacceptable” does not help caregivers to achieve their goals. Rather, an expectation that the Shubharthi takes medicines on time, and acceptance of occasional relapse as part of the illness condition, would render the caregiver less disturbable and hence better able to help the Shubharthi.

Emotion regulation rather than stability.
This module aimed at underlining that
emotional stability is not the goal, and is often not achievable by anybody, since it is human to experience emotional ups and downs. Much of burnout occurs because caregivers are battling to keep their emotions stable. Rather, ability to regulate them with a view to achieving the goals they have set for themselves, may be overall more beneficial. Hence, there is no need to have a “mastery” or “control” model in mind.

Anuradha Sovani, M.Phil., Ph.D., *  
Associate Professor, Department of Applied Psychology,  
University of Mumbai  
Consultant and Trustee, Institute for Psychological Health,  
Thane, Maharashtra.

Savita Apte, Ph.D.,  
Consulting Psychologist,  
Institute for Psychological Health,  
Thane, Maharashtra.

*Correspondence:  
Om, Shreesh Society,  
LIC Cross road,  
Off Eastern Express Highway  
Thane 400604, Maharashtra, India  
Phone: 25833661, Cell: 9821050528  
e-mail: anuradhasovani@gmail.com
A Randomized Double Blind Placebo Controlled Crossover Trial of Dapoxetine in Treatment of Premature Ejaculation

Ketan Parmar
Vinesh Chandramaniya
Nilesh Shah
Avinash De Sousa

Abstract

Background: Premature ejaculation is a common sexual problem causing distress to many patients worldwide. Dapoxetine as a drug has been reported in various studies to be effective in the management of premature ejaculation.

Method: This was a randomized double blind placebo controlled crossover study of Dapoxetine in the management of premature ejaculation. Thirty two subjects participated in the study. The dose of Dapoxetine in the study was 30 mg as needed 1-3 hours prior to sexual activity. The placebo was recommended similarly. Patients were randomized to receive either Dapoxetine on demand or Placebo on demand for treatment period. After day 14, patients were on washout period of 1 week. On completion of the washout period, as per crossover design, patients on Dapoxetine were given Placebo and those on placebo were given Dapoxetine for the treatment period.

Results: Various primary and secondary efficacy variables along with safety assessments were carried out. Dapoxetine showed greater efficacy than placebo on all variables that were evaluated in the study. Dapoxetine has a short initial half-life of 1–2 hours and a short time to maximum serum concentration of approximately 1 hour. These pharmacokinetic properties are suitable for on demand effect.

Conclusions: Thus, Dapoxetine seems to lead to improvements in ejaculatory function for men with premature ejaculation and their partners.

Key words: Dapoxetine, Premature ejaculation.

Introduction

Premature Ejaculation (PE) is most common sexual problem reported amongst a number of problems related to the sexual health of men.[1] It can occur at virtually any age and is most common in younger men (aged 18-30 years), but it also may occur inconcurrence with secondary impotence in men aged 45-65 years.[2] An estimated 30% of men suffer from PE on a consistent basis whereas in the US the prevalence rate of PE is estimated to range from 30-70%.[3] Adequate data is not available from Asian countries. In men who are affected by this problem, premature ejaculation can adversely affect self-image, interfere with sexual satisfaction and the sexual relationship and negatively affect the overall quality of life of men and their partners.[4-5]

Although the condition is highly undertreated, selective serotonin reuptake inhibitors (SSRIs), which were developed to treat depression and other psychiatric disorders are being used increasingly as off-label treatment.
for premature ejaculation, on the basis of their side-effect of delayed ejaculation.[6-8] However, these compounds were not developed to treat premature ejaculation, are long acting, and are associated with drawbacks. [9] SSRI adverse effects include psychiatric and neurological issues, dermatological reactions, anticholinergic side-effects, changes in bodyweight, cognitive impairment, drug-drug interactions, and sexual side-effects (viz. erectile dysfunction and loss of libido).[10-12]

The underlying pathophysiology of premature ejaculation is not completely understood, although both physiological and psychological components could contribute to the condition. Psychopharmacological studies suggest that premature ejaculation might be related to diminished serotonergic neurotransmission through pathways that control ejaculation.[13-14] Dapoxetine is a short acting SSRI developed specifically for the treatment of premature ejaculation.[15] The drug's mechanism of action is thought to be related to inhibition of neuronal reuptake of serotonin and subsequent potentiation of serotonin activity.[16] By contrast with SSRIs approved for depression, which take 2 weeks or longer to reach steady-state concentration, Dapoxetine has a unique pharmacokinetic profile, with a short time to maximum serum concentration (about 1 hour) and rapid elimination (initial half-life of 1-2 hours).[17] This makes it a favourable agent for the management of PE. Dapoxetine is available internationally and recent clinical trials in patients with premature ejaculation have shown dapoxetine to be effective in improving the time to ejaculation.[18-20] The present randomized double blind placebo controlled, cross over study aims to find out the efficacy of Dapoxetine in the management of Indian males with PE. It is one of the few Indian studies available on the subject.

**Methodology**

A randomized, double-blind, placebo-controlled, crossover study was conducted to evaluate the efficacy and safety of Dapoxetine in PE. A comparative study design was done in which this was evaluated. Male subjects aged between 21-64 years having premature ejaculation and fulfilled all the inclusion criteria were enrolled. 32 patients with a confirmed diagnosis of PE and fulfilling all the inclusion criteria were enrolled.

**Inclusion and Exclusion Criteria:**

Patients who fulfilled the following inclusion criteria were enrolled in the study viz.

- Male patients aged between 21 and 64 years.
- Patients are in a stable, monogamous sexual relationship with the same woman for at least 6 months and plans to maintain this relationship for the duration of the study.
- Diagnosis of PE according to the criteria of Diagnostic and Statistical Manual of for the Classification of Mental Disorders, 4th edition, text revision (DSM-IV-TR), diagnosed at least 6 months prior to the study.
- Patients who would have a minimum of 2 sexual experiences in a week (with their regular partner).
- Patients who were willing to give consent for participation in the study.
- Patients who were in any of the following categories were excluded from the study viz.
  - Patients with erectile dysfunction or other forms of sexual dysfunction and or partner sexual dysfunction.
  - Patients who were using SSRIs or tricyclic antidepressant as concomitant medication.
  - Patients with a past history of mania, hypomania or bipolar disorder.
  - Patients with history of uncontrolled hypertension or cardiac impairment.
  - Patients with a history of epilepsy.
  - Patients who were using other forms of therapy for premature ejaculation (pharmacological or behavioral).
  - Patients who had taken Dapoxetine previously or participated in another study investigating any pharmacological treatment of PE.
  - Patients diagnosed previously with Alcohol Dependence.
  - Patients with a known drug allergy or hypersensitivity to SSRIs or SNRIs.
  - Patients with history of malignancy.
Patients with moderate to severe hepatic impairment.
Patients having orthostatic hypotension.
Patients whose partners had problems with self-reported female sexual dysfunction.
Patients that had been using recreational drugs with serotonergic activity such as ketamine, methylenedioxymethamphetamine (MDMA) and lysergic acid diethylamide (LSD).
Patients whose treatment for ongoing depression or anxiety were discontinued, in order to initiate Dapoxetine for the treatment of PE.
Patients diagnosed with bleeding or blood coagulation disorders.
Patients with severe renal impairment.
Patients on neurological active medicinal products.
Patients currently on phosphodiesterase inhibitors like tadalafil and sildenafil.
Patients who were using alpha adrenergic receptor antagonists.
Patients on chronic warfarin therapy.
Patients using the following medication as concomitant medication or having discontinued such medication within 7 days of screening for the trial i.e. MAOIs, Thioridazine, SSRIs, SNRIs, TCAs, Phenothiazine, acetylsalicylic acid, NSAIDs, antiplatelet agents or anticoagulants (e.g., Warfarin) and herbal products with serotonergic effects.
Patients on potent CYP3A4 inhibitors such as ketoconazole, itraconazole, ritonavir, aquinavir, telithromycin, nefazadone, nelfinavir and atazanavir.

Dosage Schedule
The recommended dose of Dapoxetine for all patients was one tablet of Dapoxetine 30mg as needed, approximately 1 to 3 hours prior to sexual activity. The placebo of Dapoxetine for all patients was recommended similarly. The maximum recommended dosing frequency was one tablet every 24 hr. Maximum six tablets in 14±2 days was allowed in the trial for both the treatment groups.
In this double blind, crossover study, patients were randomized to receive either Dapoxetine 30mg (1 tablet) on demand or Placebo (1 tablet) on demand for treatment period 1 (day 0 to day 14 ±2). After day 14, patients were on washout period of 1 week (day 14 ±2 to day 21 ±2). On completion of the washout period, as per crossover design, patients on Dapoxetine (1 tablet on demand) were given Placebo (1 tablet on demand) and those on placebo (1 tablet on demand) were given Dapoxetine (1 tablet on demand) for treatment period 2 (day 21 ±2 to day 35 ±2).

Efficacy Assessment
The primary efficacy variables were evaluated by a validated tool of average individual Premature Ejaculation Profile (PEP) score between treatment groups; i.e. Perceived control over ejaculation, Personal distress related to ejaculation, Satisfaction with sexual intercourse, Interpersonal difficulty related to ejaculation and evaluation of PEP Index score (Mean of all four measures). These variables were evaluated by using five point likert scoring system i.e., 0= Very poor, 1= Poor, 2= Fair, 3= Good, 4= Very good.21
Secondary efficacy variables like patients impression of severity by “severity” scale was evaluated by using severity score; 0= None, 1= Mild, 2= Moderate, 3= Severe [22]. The Patient’s global impression of change in their condition was evaluated by using scoring system. -3=Much worse, -2= Worse, -1= Slightly worse, 0= No change, 1= Slightly better, 2= Better, 3= Much better.22

Safety Assessment
At the follow-up visit, the patients were asked for any possible adverse events. Any reported adverse events were recorded in the adverse event form. The number and percentage of patients experiencing each specific event for Treatment-Emergent-Signs and Symptoms (TESS) (defined as experience that appeared for the first time during the study) were calculated.

Statistical Analysis
Basic statistical analysis was performed on all efficacy measures. The data was analysed by an independent bio-statistician and the mean data was subjected to statistical analysis using
paired Student’s t-test for significance between groups and the significance level was P < 0.001.

Results

Table 1: Baseline data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dapoxetine / Placebo (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>43.19 ± 12.16</td>
</tr>
<tr>
<td>Body weight</td>
<td>65.16 ± 10.64</td>
</tr>
<tr>
<td>Perceived control over ejaculation</td>
<td>0.59 ± 0.61</td>
</tr>
<tr>
<td>Personal distress related to ejaculation</td>
<td>1.63 ± 0.69</td>
</tr>
<tr>
<td>Satisfaction with sexual intercourse</td>
<td>0.47 ± 0.67</td>
</tr>
<tr>
<td>Interpersonal difficulty related to ejaculation</td>
<td>1.66 ± 0.55</td>
</tr>
<tr>
<td>PEP Index Score</td>
<td>1.09 ± 0.39</td>
</tr>
<tr>
<td>Patients impression of severity</td>
<td>2.75 ± 0.51</td>
</tr>
</tbody>
</table>

65 patients had undergone screening.

32 patients that fulfilled the inclusion/exclusion criteria were enrolled for the study. This trial was designed as two period crossover treatments, so total 32 patients received Dapoxetine treatment (16 patients in period I and 16 patients in period II) and 32 patients received Placebo treatment (16 patients in period I and 16 patients in period II) during the trial by periodical manner. The study had a 100% completion rate. The baseline data of all patients at the time of initiation in the study has been described in table 1. The dosage schedule has already been described in the methodology section. 3 patients were diabetic of which 2 were on Metformin and one was one Glibenclamide. One subject had hypertension and was on an Atenolol – Amlodipine combination.

Efficacy assessment

Evaluation of perceived control over ejaculation

Men with PE who were treated with Dapoxetine reported significant improvement in perceived control over ejaculation compared with placebo. According to the scoring system in perceived control over ejaculation 46.88% (n = 15) of men were reported as very poor, 46.88% (n = 15) were poor and 6.25% (n = 2) were reported as fair at baseline. At the end of the treatment 43.75% (n= 14) were reported as good and 56.25% (n = 18) were reported as very good in the Dapoxetine group. Similarly 50.00% (n = 16) of men were reported as very poor, 43.75% (n = 14) of men were reported as poor and 6.25% (n = 2) were reported as good in the placebo group at the end of treatment.

Evaluation of personal distress related to ejaculation –

When Dapoxetine was given to men with PE they reported significant improvement in personal distress related to ejaculation compared with placebo. 37.50% (n = 12) were reported as poor, 62.50% (n = 20) were reported as fair in personal distress related to ejaculation at baseline. However at the end of the treatment, 6.25% (n = 2) of men were reported as poor, 81.25% (n = 26) of men were reported as fair and 12.50% (n = 16) of men were reported as good in Dapoxetine treatment group. In the placebo treatment group, 6.25% (n = 2) of men were reported as very poor, 40.63% (n = 13) of men were reported as poor and 53.13% (n = 17) were reported as fair at the end of treatment. The comparative analysis of personal distress related to ejaculation between the Dapoxetine and placebo groups showed that the percentage of patient rated as good or very good was 12.50% (n = 4) in Dapoxetine which was 0% (n = 0) in the placebo treatment group.

Evaluation of satisfaction with sexual intercourse

Results demonstrated that Dapoxetine group reported significant improvement in satisfaction with sexual intercourse compared with placebo. 62.5% (n = 20) of men were reported as very poor, 28.1% (n = 9) were reported as poor and 9.3% (n = 3) were reported as fair in satisfaction with sexual intercourse at baseline,
however at the end of treatment 3.1% (n = 1) of men were reported as fair - poor, 43.7% (n = 14) of men were reported as good and 53.13% (n = 17) of men were reported as very good in Dapoxetine treatment group. Similarly 62.5% (n = 20) of men were reported as very poor, 28.1% (n = 9) of men were reported as poor and 9.38% (n = 3) were fair in placebo at the end of treatment. The comparative analysis of satisfaction with sexual intercourse between the Dapoxetine and Placebo groups showed that the percentage of patient rated as good and very good was 96.8% (n = 31) in Dapoxetine whereas it was none in Placebo treatment group.

**Evaluation of interpersonal difficulty related to ejaculation:**

Dapoxetine demonstrated clinical improvement as compared to placebo in interpersonal difficulty related to ejaculation. Dapoxetine reduced interpersonal difficulty related to ejaculation which was major impact on patient personal life. Results demonstrated as 3.13% (n = 1) of men were reported as very poor, 28.13% (n = 9) of men were reported as poor and 68.75% (n = 22) were reported as fair in interpersonal difficulty related to ejaculation at baseline, however at the end of treatment 3.13% (n = 1) of men were reported as poor, 90.63% (n = 29) of men were reported as fair and 6.25% (n = 2) were good in Dapoxetine treatment group.

**Evaluation of PEP Index**

PEP Index score was measured as mean of all above four variables of PE profile. When Dapoxetine was given to men with PE they reported significant improvement in PEP index score compared with placebo. In PEP index score 78.13% (n = 25) of men were reported as poor and 21.88% (n = 7) of men were reported as fair at baseline. However, 6.25% (n = 2) of men were reported as fair and 93.75% (n = 30) of men were reported as good in Dapoxetine treatment group at the end of treatment. Similarly at the end of the treatment with Placebo 6.25% (n = 2) of men were reported as very poor, 75.00% (n = 24) of men were reported as poor and 18.75% (n = 6) of men were reported as fair.

Comparative analyses of both groups revealed that 93.75% (n = 30) of patient rated as good or very good in the Dapoxetine group whereas it was 0% (n = 0) in Placebo treatment group at the end of treatment.

Evaluation of the patient's impression of severity –

In the Dapoxetine treatment group patients impression in severity score was 2.75 (mean) ± 0.51 (SD) at baseline which was reduced to 0.13 (mean) ± 0.34 (SD) by end of the treatment period. Evaluation of patients impression in severity score during the trial showed that treatment with the Dapoxetine significantly reduced severity of premature ejaculation (p < 0.0002).

**Evaluation of the patient's Global Impression of Change**

As per the patients feedback global impression on change of their condition of premature ejaculation by Dapoxetine, 15.63% (n = 5) of the patients were reported as better, 84.38% (n = 27) of the patients were reported as much better at the end of treatment. This was significantly better than the placebo where no major improvement was reported.

The safety profile of both Dapoxetine and placebo was evaluated in terms of occurrence of any serious non-serious adverse events. Adverse events reported with Dapoxetine and Placebo were mild to moderate in nature. In the Dapoxetine treatment group <6.25% (n = 2) of patients reported dyspepsia, epigastric discomfort, diarrhoea, vomiting and nausea. There were no adverse events reported in the placebo group.

Blood pressure and pulse rate were recorded at baseline and at the end of study and there was no significant change from baseline. Laboratory testing done at the screening visit and at the end of the treatment revealed no significant change from baseline (Table 3).
Table 2: Evaluation of the PEP Index score, n (%)

<table>
<thead>
<tr>
<th>Score</th>
<th>Dapoxetine (n = 32)</th>
<th>Placebo (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Poor</td>
<td>Baseline (n = 32)</td>
<td>End of treatment (n = 32)</td>
</tr>
<tr>
<td>Poor</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Fair</td>
<td>25 (78.1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Good</td>
<td>7 (21.8)</td>
<td>30 (93.7)</td>
</tr>
<tr>
<td>Very Good</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

Table 3: Safety assessment: Adverse events profile

<table>
<thead>
<tr>
<th>Types of adverse events</th>
<th>Dapoxetine (n = 32)</th>
<th>Placebo (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Nausea</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Epigastric discomfort</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Vomiting</td>
<td>2 (6.25)</td>
<td>0</td>
</tr>
</tbody>
</table>

Discussion

Our analyses show that Dapoxetine, given 1 hour before intercourse improved patients' perception of control over ejaculation, satisfaction with sexual intercourse, and overall impression of change in condition. Partners benefited through improved satisfaction with sexual intercourse. Thus, Dapoxetine seems to lead to improvements in ejaculatory function that have meaning for men with premature ejaculation and their partners. For many men, premature ejaculation is associated with substantial psychological effects like interpersonal distress, decreased self-confidence and relationship difficulties. Thus, an effective treatment that can be used as needed would offer an important new option for men with premature ejaculation and their partners.

The effect of Dapoxetine on the single-item patient-reported outcome measures also showed clinically important differences. By the end of study, less than a quarter of placebo-treated individuals achieved fair or better control over ejaculation. By contrast, at least thrice as many achieved that level with Dapoxetine. Moreover, the Dapoxetine had fair or better satisfaction with sexual intercourse.

Non-sexual side-effects with Dapoxetine were transient and characteristic of compounds with serotoninergic effects. Most of the events were mild to moderate and transient not resulting in study discontinuation. Cardiovascular changes were not reported.

One major limitation of the study was that the partner's perspective on the patient report and perceptions were not taken into account. We also did not have any laboratory or biological method to measure delay in ejaculation. This trial has shown that Dapoxetine is effective and generally well tolerated for the treatment of premature ejaculation when given on demand. Dapoxetine improves multiple patient-reported variables in premature ejaculation. In view of the distress and interpersonal difficul-
ties generally associated with this condition, availability of an effective treatment, especially for those with the most severe premature ejaculation, might encourage men with premature ejaculation to seek a physician diagnosis, and could provide a substantial benefit for men and their partners.

References


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Dr. Ketan Parmar, Consultant Psychiatrist
Mumbai

Dr. Vinesh Chandaramaniya, Consultant Psychiatrist
Mumbai

Dr. Nilesh Shah
Prof and Head,
Department of Psychiatry,
Lokmanya Tilak Municipal Medical College & General Hospital,
Mumbai.

Dr. Avinash De Sousa*
Consultant Psychiatrist,
Founder Trustee, De sousa Foundation
Mumbai.

* Corresponding Author

Dr. Avinash De Sousa
Carmel, 18 St Francis Avenue,
Off SV Road,
Santacruz West,
Mumbai 400054.
Tel – 91-22-26460002
E-mail – avinashdes999@yahoo.co.uk
ATTITUdINAL IMPedIMENTS IN THE PRACTICE OF CONSULTATION-LIAISON PSYCHIATRY

Nilamadhab Kar
P.S.V.N. Sharma

Abstract

Context: Psychiatric morbidity in the medically ill prolongs hospital stay of these patients and influences the prognosis of physical conditions. However, utilization of consultation liaison psychiatric services is marginal in general hospitals.

Aims: We attempted to study the attitude of non-psychiatric medical professionals and 30 nurses compared with that of psychiatrists to reflect upon the factors associated with inadequate utilization of psychiatric liaison services.

Settings and Design: It was a cross-sectional study in a Medical College Hospital.

Methods and Material: A self-rated, semi-structured 13-item, 5-point scale was used. Perceptions of the psychiatrists on the attitude of physicians and surgeons were also assessed.

Statistical analysis: Percentages, Chi-Square and t-tests

Results: Most clinicians felt that having a psychiatric label is disadvantageous. Physicians and surgeons were aware of their lack of awareness regarding psychiatric problems. Psychiatrists more often than physicians and surgeons felt that the poor physical health status of patients precluded referral reflecting their own uncertainty in assessing and handling physical illness. Poor working relation between psychiatrists and the physicians and surgeons was also reported. The patients’ emotions were perceived as difficult to handle by considerable proportion of non-psychiatric professionals. They also believed that psychiatric disorders were incurable, and reported that many patients refused psychiatric referral.

Conclusions: There was a concern how the physician and surgeons perceived psychiatric illnesses and interventions. It is also worrying to observe how psychiatrists perceived the attitude of their colleagues in general hospital. Need for interactive multi-disciplinary physician education in liaison psychiatry can not be overemphasized.

Key words: liaison psychiatry, perception of doctors, psychiatric illness, attitude, general hospital

Introduction

Prevalence of psychiatric morbidity is high in general hospital inpatients. Two major epidemiological studies using standardized instruments for diagnosis have revealed that the prevalence of mental disorders in general hospital inpatients range from 41.3% to 46.5%.[1] Another study reported a 68.5% prevalence rate of psychiatric disorders in medicine, surgery and obstetrics wards.[2] Psychiatric morbidity influences the prognosis of many medical conditions and prolongs hospital stay of these patients. A review of 26 articles found that in 80% there was significant correlation between psychiatric or psychological comorbidity and increased length of stay in general hospital inpatients.[3]

A general hospital admission provides window of opportunity to identify and initiate treatment...
for a previously unrecognized mental disorder. Unrecognized comorbid psychiatric disorders adversely affect both the immediate hospital course and the post-discharge prognosis of the physical disorders;¹⁴,⁵,⁶ and contribute to higher rehospitalisation rates and use of outpatient medical services after discharge.⁷,⁸ This results in higher management costs in hospitals and outpatients.³ It is known that psychiatric treatments are clinically effective and these interventions are cost effective in the management of psychiatric morbidity of the physically ill patients.⁹ These will decrease overuse of general medical services and in some cases provide cost offset.³ However, utilization of consultation liaison psychiatric services is marginal in most general hospitals settings.

A major obstacle to such endeavors has been the stubborn fact that most psychiatric disorders in general hospital are under-recognized and under-referred.¹⁰,¹¹,¹² In nearly half of the studied general hospital inpatients receiving a psychiatric diagnosis, consultation-liaison psychiatry interventions were found to be necessary. However, psychiatric consultation rates found in most recently presented studies in Germany and Austria range from 2.66% to 3.30%, and remain low when compared to the reported prevalence figures of psychiatric disorders.¹¹ It another study it was found that while 30-60% of admitted patients have diagnosable psychiatric disorders only 1-3% of admissions are likely to be referred.³

On the above background, it was intended to evaluate the attitude of the non-psychiatric clinicians on the psychiatric illness, to compare it with that of psychiatrists and to find out the attitudinal factors affecting the psychiatric liaison services in a general hospital.

Method

The study was conducted in the Kasturba Hospital, Manipal, India. It is a multi-specialty tertiary level hospital attached to Kasturba Medical College. A self-rated, semi-structured questionnaire with 5-point Likert type of responses was used for the survey. The questionnaire had 13 statements. There was scope for expression of further open ended views. Medical faculties, postgraduate medical trainees of various clinical departments in the university level teaching hospital involved in referral of patients to psychiatry and nurses in that hospital participated in the study. Responses from the psychiatrists and postgraduate psychiatric trainees on these statements were also assessed. In addition, psychiatric group were also asked to provide their perceptions of other clinicians’ attitudes based on the same statements. Besides age and gender of the responders, years of experience in clinical practice were noted. Anonymity of the responses was maintained.

For statistical reasons all the referring departments were considered as either medicine or surgery. The ‘agree’ and ‘strongly agree’ responses were clubbed together; so also the disagreeing responses. The do-not-know responses were not considered during the statistical evaluation. Most of the results were provided in percentages, the categorical variables were compared by chi-square tests and the means in t-tests. Significance level was set at standard 0.05 levels.

Results

The sample consisted on 54 from medical departments (14 faculties and 40 postgraduate trainees); 37 from surgical departments (27 faculties and 10 postgraduate trainees); 22 from psychiatry (8 faculties and 14 postgraduate trainees); and 30 nurses. There was male preponderance (84%) in all three groups of doctors. The mean age of the doctors did not differ in the groups. Years of experience in clinical practice were comparable between medical and psychiatric participants, whereas it was more in the surgery group (p< 0.05).
<table>
<thead>
<tr>
<th>Statements</th>
<th>P</th>
<th>M</th>
<th>S</th>
<th>N</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient is disadvantaged by being labeled as psychiatric case.</td>
<td>68.2</td>
<td>72.2</td>
<td>75.7</td>
<td>100.0</td>
<td>95.5</td>
</tr>
<tr>
<td>Psychiatric service is dissatisfactory.</td>
<td>13.6</td>
<td>7.4</td>
<td>24.3</td>
<td>30.0</td>
<td>36.4</td>
</tr>
<tr>
<td>Psychiatric language is incomprehensible.</td>
<td>4.5</td>
<td>14.8</td>
<td>16.2</td>
<td>0.0</td>
<td>59.1</td>
</tr>
<tr>
<td>There is unawareness of the need for psychiatric intervention.</td>
<td>77.3</td>
<td>61.1</td>
<td>70.0</td>
<td>100.0</td>
<td>72.7</td>
</tr>
<tr>
<td>Psychiatric disorders are incurable.</td>
<td>31.8</td>
<td>44.4</td>
<td>32.4</td>
<td>10.0</td>
<td>59.1</td>
</tr>
<tr>
<td>Patient’s emotions are difficult to handle.</td>
<td>9.1</td>
<td>42.6</td>
<td>56.8</td>
<td>100.0</td>
<td>81.8</td>
</tr>
<tr>
<td>Physicians/surgeons do not know the patient well enough.</td>
<td>54.4</td>
<td>31.5</td>
<td>32.4</td>
<td>83.3</td>
<td>40.9</td>
</tr>
<tr>
<td>The significance of the psychological issue is denied by physicians and surgeons.</td>
<td>72.7</td>
<td>37.0</td>
<td>54.1</td>
<td>73.3</td>
<td>63.6</td>
</tr>
<tr>
<td>There is poor working relationship between physicians / surgeons and psychiatrists.</td>
<td>50.0</td>
<td>42.6</td>
<td>56.8</td>
<td>36.7</td>
<td>54.5</td>
</tr>
<tr>
<td>The patients in medicine/surgery departments refuse psychiatric referral.</td>
<td>50.0</td>
<td>51.8</td>
<td>35.1</td>
<td>60.0</td>
<td>77.3</td>
</tr>
<tr>
<td>Physicians / surgeons consider patients are too physically ill to be referred to psychiatry.</td>
<td>27.3</td>
<td>22.2</td>
<td>21.6</td>
<td>50.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Every doctor should be able to treat psychiatric disorders.</td>
<td>22.7</td>
<td>50.0</td>
<td>43.2</td>
<td>46.7</td>
<td>31.8</td>
</tr>
<tr>
<td>Physicians and surgeons can not spare time for psychological issues.</td>
<td>63.6</td>
<td>35.2</td>
<td>40.5</td>
<td>76.7</td>
<td>81.8</td>
</tr>
</tbody>
</table>

M: Medicine; N: Nurses; P: Psychiatry; PP: Perception of Psychiatrists; S: Surgery;

The response to various statements in the questionnaire is given in table 1. Open ended views were expressed by 18.2% of psychiatrists, 16.7% of medicine specialists and 32.4% of surgeons which formed the basis of the qualitative analysis. There were many areas where consensus was evident; however there were considerable differences in opinion and attitude in other areas.

**Areas of agreement**

There were no significant differences among clinicians (psychiatrists, physicians and surgeons) in the following areas. Most of the clinicians felt that it was disadvantageous for the patient to be labeled as psychiatric patient. Only a small minority felt that psychiatric services were unsatisfactory. Most of the doctors agreed to the fact that there is lack of awareness regarding the need for psychiatric intervention. A considerable proportion (39.6%) of the physicians and surgeons believed that psychiatric disorders are incurable. Almost half (48.4%) of the physicians and surgeons felt that there was poor working relationship with psychiatrists. One of the reasons for non-referral to psychiatry was brought forward as 46% of clinicians felt that patients refuse psychiatric referral. However, about one-fifth

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Areas of disagreement

Difference in opinion was evident in the following areas. Significantly more number of physicians and surgeons felt that patient's emotions are difficult to handle. While more psychiatrists (54.5%) felt that physicians and surgeons do not know the patient well enough; only 31.5% of physicians (p<0.05) and 32.4% of surgeons felt so. Most (72.7%) of the psychiatrists felt that the significance of psychological issue is denied in contrast to 37% (p<0.05) of physicians and 54.1% of surgeons. While only 22.7% of psychiatrists felt that every doctor should be able to treat psychological disorders 50.0% (p<0.05) of physicians and 43.2% of surgeon considered so. More (63.6%) psychiatrists felt that physicians and surgeons can not spare time for psychological issues in contrast to 35.2% (p<0.05) of physicians and 40.5% of surgeons.

How psychiatrists perceived the attitude of the physicians and surgeons

Most (95.5%) of psychiatrists perceived that physicians and surgeons consider it is disadvantageous for their patients to be labeled as psychiatric case in contrast to 73.6% of physicians. Significantly more (36.4%) psychiatric professionals perceived that physicians consider psychiatric service is dissatisfactory as against 7.4% of the later; and similarly 59.1% of psychiatrists believed that physicians and surgeons feel psychiatric language is useless and incomprehensible compared to much lower proportions (14.8% and 16.2% respectively) of the later groups. Compared to 81.1% of psychiatrists who thought that physicians and surgeons consider patient's emotions are difficult to handle; only 42.6% physicians (p<0.05) and 56.8% surgeons reported so. Psychiatrists perceived that 77.3% of other clinicians feel that patients refuse psychiatric referral against only 35.1% (p<0.05) of surgeons. Only 22.2% of physicians and 21.6% of surgeons felt that patients are too ill to be referred against 50% of psychiatrist who considered this as the reason of non-referral by the physicians and surgeons. Majority (81.8%) of psychiatrists perceived that physicians and surgeons can not spare time in contrast to 35.2% physicians (p<0.001) and 40.5% surgeons (p<0.01).

In summary, perceptions of psychiatrists regarding views of medical and surgical consultants interestingly differed significantly from the actual observations of these non-psychiatric professionals in many areas. The areas were: i. patient is disadvantaged by being labeled as psychiatric case; ii. psychiatric service is dissatisfactory; iii. psychiatric language is incomprehensible; iv. psychiatric disorders are incurable; and v. patient's emotions are difficult to handle by the physicians and surgeons.

Nurses' observations

The attitude of nurses were mostly similar to the doctors with a few interesting differences. Most striking was their optimistic view regarding curability of psychiatric disorder; and none of them felt psychiatric language was incomprehensible. Poor working relationship was noted in a relatively smaller proportion of nurses compared to doctors.

Discussion

The present study explored the attitudes of clinicians related to liaison psychiatry in a general hospital set up. There are various interesting observations which would explain reported inadequacy in recognition and referral for psychiatric illnesses in medically ill inpatients.

Most clinicians felt that having a psychiatric label is disadvantageous; however, psychiatrists felt the physicians and surgeons subscribe to the disadvantageous effects of labeling to a greater extent than it was felt by the physicians and surgeons. This leaves one wondering whether psychiatrist themselves contribute to the labeling to an extent? It is important to
be aware of inadvertent contribution to the prevailing stigma against mental illness.

A considerable proportion of physicians and surgeons acknowledged their lack of awareness regarding psychiatric problems. They also felt that many psychiatric disorders were incurable, and psychiatric patient refused help or referral. They recognized the inadequate interaction with psychiatrists.

Psychiatrists less often than physicians and surgeons believed that all doctors should deal with psychological problem. Psychiatrists felt that the surgeons and physicians can not spare time for psychological issues; considering how busy they are dealing with other physical conditions. As more than half of the psychiatrists felt that physicians and surgeons do not know the patient well enough, it reflected that considering the nature of psychiatric assessments, psychiatrists believed that other physicians were unaware of emotional issues. It was interesting that more psychiatrists felt it difficult for physicians and surgeons to handle patient’s emotions than the physicians and surgeons themselves! It could be the attributions by psychiatrists to the perceived lack of interest of physicians and surgeons in psychological problems of the patients.

Psychiatrists more often than physicians and surgeons felt that the poor physical health status of patients precluded referral reflecting their own uncertainty in assessing and handling physical illness. It has been a recurring theme in recent years that the psychiatrists do lose touch with medical disorders and the assessment of their seriousness. It has been stressed that the psychiatrists retain the skills for physical examinations;\textsuperscript{13},\textsuperscript{14} and remain involved in evaluations for physical illnesses. Belief of incurability of psychiatric disorders; poor working relation by the physicians and surgeons; psychiatrists' notion that other clinicians do not want to handle emotions or having psychiatric label is disadvantageous were identified as the core issues in the practice of liaison psychiatry. These attitudinal differences between psychiatrists and other clinicians may affect consultation-liaison practices in a general hospital set up.

A combination of interactive discourse on psychiatric disorders in physically ill, continuing medical education of all clinical departments on site, maintaining knowledge base and assessment skills for physical disorders by the psychiatrists, and active psychiatric liaison will in all likelihood be needed to change the attitudinal impediments to recognize and refer appropriate patients to psychiatric intervention in general hospital setting.

References


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Nilamadhab Kar, MD, DPM, DNB, MRCpsych, *
Consultant Psychiatrist and College Tutor, Black Country Partnership NHS Foundation Trust, Steps to Health, Showell Circus, Low Hill, Wolverhampton, WV10 9TH, UK.
Email: kar.nilamadhab@yahoo.com;
Phone: 0044-1902-445371;
Fax: 0044-1902-444514

P.S.V.N. Sharma, MD, DPM,
Professor and Head,
Department of Psychiatry,
Kasturba Medical College, Manipal, India.

*Correspondence
Regression Analysis in Mental Health Research: Concept and Interpretation

Pallavi Shidhaye
Rahul Shidhaye

Regression Analysis: basic concept

In the field of quantitative research we are interested in some characteristics such as who will suffer from depression, change in the severity of depression, attitude of people towards mental illness, recovery from schizophrenia, treatment-seeking behavior for psychosis and so on. These usually are termed as response variables and variables such as age, sex, socio-demographic factors, gender disadvantage factors, physical health factors, and influence of ‘significant others’ become important explanatory factors.

Regression analysis is all about exploring the association between the outcome variable and the exposure variable. These are also interchangeably termed as response/dependent variable and explanatory/independent variable. In a nutshell we can say that it is all about relationships.

If we find a strong association between an explanatory variable and a response variable, then we can act on that explanatory variable to bring the change in response variable. Let’s say if we do a regression analysis for a response variable; presence of common mental disorder and the explanatory variable; inter-personal violence (one of the gender disadvantage factors) and we find a strong association between inter-personal violence and presence of common mental disorders, then we can direct our policies and programs towards reduction of inter-personal violence which will in effect reduce the occurrence of common mental disorder.
of common mental disorder. This effect will certainly depend on the strength of association which we obtained in our regression analysis.

Thus the nature and strength of relationship between variables is examined by regression analysis and correlation analysis. These two statistical techniques are related but serve different purposes; we will see this in detail a little later.

Regression analysis is based on the pioneering work of Sir Francis Galton who first used this term. He plotted height of off-springs against height of their fathers and observed that average height of off-springs tends to shift (or ‘regress’) towards the average population height; i.e. taller fathers have shorter off-springs and shorter fathers have taller.

Before we move on to interpretation of regression analysis we will focus on two core concepts; statistical inference and equation of simple line.

**Statistical Inference**

Researchers wish to address a particular health problem and the best way to do this is to study every individual suffering from that problem. This is practically not feasible; hence we study some people having that problem. This ‘sample’ observations forms the basis of our conclusion or inference for the entire set of individuals who suffer from that problem which we term as ‘population’. Thus statistical inference is the procedure by which we reach a conclusion about a population on the basis of the information contained in a sample drawn from that population.

**Equation of simple line**

In order to understand regression analysis it is important that we understand the equation of a simple line.

Let’s consider a point a1 whose x-coordinate is 1 and y-coordinate is also 1. This point is represented as a1 (1,1). Similarly there are four other points; a2 (2,2), a3 (3,3), a4 (4,4) and a5 (5,5).

![Figure 1: Equation of simple line (y=x)](image-url)
We can draw a line passing through all these points and the equation of that line will be \( y = x \) i.e. if the value of \( x \) is 2 then value of \( y \) is 2, if \( x \) is 3 then \( y \) is 3, so on and so forth.

There is another set of 5 points; \( b_1(1,2) \), \( b_2(2,4) \), \( b_3(3,6) \), \( b_4(4,8) \) and \( b_5(5,10) \).

Figure 2: Equation of simple line (\( y = 2x \))

In this case if \( x \) is 2 then \( y \) is 4, if \( x \) is 3 then \( y \) is 6.
So, the equation of the line will be \( y=2x \).

The third set of 5 points is \( c_1(1,4) \), \( c_2(2,6) \), \( c_3(3,8) \), \( c_4(4,10) \) and \( c_5(5,12) \).

Figure 3: Equation of simple line (\( y = 2x+2 \))

In this case if \( x \) is 2 then \( y \) is \( 2 \times 2 + 2 = 6 \), if \( x \) is 3 then \( y \) is \( 2 \times 3 + 2 = 8 \), so the equation of the line will be \( y=2x+2 \).

Here (as well as in the above example) we notice that the value of \( y \) changes by 2 for every unit change in \( x \) i.e. if \( x \) changes from 2 to 3 or 3 to 4 or 4 to 5, \( y \) changes from 6 to 8 or 8 to 10 or 10 to 12. This change in \( y \) per unit change is \( x \) is termed as the slope of the simple line.

In general the equation of the simple line is represented as

\[
y = a + bx
\]

\( y \) is the \( y \) coordinate or the value on the \( y \)-axis
\( x \) is the \( x \) coordinate or the value on the \( x \)-axis
\( b \) is the slope of the line
\( a \) is the intercept or in simple terms value of \( y \) when \( x \) is 0 or the value of \( y \) at which this simple line cuts the \( y \)-axis

In regression analysis \( y \) is the dependent variable, \( x \) is the independent variable, \( b \) is the slope of best fitted line between various data points and \( a \) is the value of the dependent variable when the value of the independent variable is 0.

\( b \) is also termed as regression coefficient and we can also say that \( b \) is nothing but change in the dependent variable per unit change in independent variable.

In the above example what we see is the perfect linear relationship between \( y \) and \( x \), i.e. if you know the value of \( x \) then you can perfectly predict the value of \( y \) based on the equation of simple line. Any value of \( x \) needs to multiplied by slope and once you add the intercept, you get the value of \( y \).

The real world is far more different than this where perfect linear relationship between \( y \) (dependent variable) and \( x \) (independent variable) is a very rare thing.

Below is the scatter plot for birth-weight and age of mother.
Figure 4: Scatter-plot for birth-weight and maternal age
In this example we can observe that as the maternal age is increasing the birth-weight is also increasing and it seems that the points are scattered around some invisible straight line passing through these points. Our aim is then to find a line which best describes the relationship between birth-weight and maternal age and the way to do this is by using the ‘method of least squares’. This line is termed as regression line (best fitted line) and we can say that, it is the straight line passing through the data that minimizes the sum of the squared differences between the original data and fitted points. Fitted point is the average y for that particular value of x.

The red points in this graph are the fitted values and the line passing through it is the regression line or best fitted line.

The equation of this regression line or best fitted line is also termed as the regression model, the interpretation of which we will see below.

**Regression Analysis: Interpretation**

In the example discussed above our dependent variable is child birth-weight and independent variable is maternal age. We fitted a regression line for this data and the equation of that regression line is

\[
\text{Average (birth-weight)} = 2657.3 + 12.36 \times \text{maternal age}
\]

It means that for every one unit increase in maternal age in years, the average birth-weight increases by 12.36 grams. This, 12.36 grams is the regression coefficient or slope of the best fitted line.

Coming back to the principle of statistical inference we can say that this slope or the strength of association between birth-weight and maternal age is based on this sample and our estimate for population level association will be based on this.

Now let us consider another example to have better understanding of regression output. The table below represents the direct output from statistical software, STATA.

The outcome of interest (or response variable) here is the score on GHQ-12 (General Health Questionnaire). More the GHQ score more likely is the diagnosis of Common Mental Disorder in that person.

The explanatory variable here is age of marriage (for woman).

```
regress totalghq agem
```

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 5693</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F( 1, 5691) = 27.33</td>
</tr>
<tr>
<td>Model</td>
<td>222.475468</td>
<td>1</td>
<td>222.475468</td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td>Residual</td>
<td>46319.8481</td>
<td>5691</td>
<td>8.13914041</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adj R-squared = 0.0046</td>
</tr>
<tr>
<td>Total</td>
<td>46542.3236</td>
<td>5692</td>
<td>8.17679613</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Root MSE = 2.8529</td>
</tr>
</tbody>
</table>

| totalghq | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------|-------|-----------|------|------|---------------------|
| agem     | .2647028 | .0506299  | 5.23 | 0.000 | .165449 .3639567   |
| _cons    | 9.20558 | .0557069  | 165.25 | 0.000 | 9.096373 9.314787 |

**Box 1:**
Regression output from STATA
Thus GHQ score is regressed on age at which woman gets married.
(This dataset contains observations only for females.)

The coefficient for age of marriage is 0.26 which means that for every unit increase in age of marriage for woman, the GHQ score increases by 0.26 points. This slope thus represents the strength of association between the response variable, GHQ score and explanatory variable, age of marriage of woman.

Thus, there is a positive association between these two variables but it is important to know if this association is statistically significant or not or in other words is this association just due to chance. This is assessed using the hypothesis test. The null hypothesis in this case is that there is no association between the response variable and the explanatory variable. The decision on null hypothesis is taken after looking at the p-value which is given in the column depicted by ‘P>|t|’. The p-value in this case is <0.05 so we reject the null hypothesis and conclude that the association between GHQ score and the age of marriage is statistically significant.

It is also very important to interpret 95% confidence interval which is presented in the last two columns. Here the 95% confidence interval is 0.16 to 0.36 which means that if the study was conducted several times with same sample size then 95% of the times the interval [0.16-0.36] covers the true population level association between the GHQ score and age of marriage. We are thus 95% confident that the interval [0.16-0.36] covers the true population level association.

This also means that there is a 5% chance that the true population level association will be outside this interval. This 5% chance refers to Type I error which we set at the start of the study.

If we keep Type I error only at 1% then we get 99% confidence interval and if the Type I error is 10% then we get 90% confidence interval. More the Type I error less confident we are in terms of our estimates. In terms of the range, 99% confidence interval is wider than 95% confidence interval. Usually most of the journal articles report 95% confidence interval. Type I error of 5% is also termed as level of significance (alpha). Type I error of 5% indicates that the results will be considered statistically significant if the p-value is less than 0.05 (5% corresponds to 0.05).

In the table, below the coefficient for age for marriage the value for the constant is given which is 9.20. This value represents the GHQ score if age of marriage is zero!!!!

It is mentioned above that intercept (or the constant) is the value of Y when value of X is zero. Here our Y is GHQ score and X is age of marriage. In the current analysis this value of constant doesn’t make much sense and in order to make that interpretable X variable can be centered at zero.

The first table in the output is the Analysis of Variance table. If we look at GHQ score then every person in this sample (5693 women) is not having the same GHQ score. There is variability in the GHQ score which is represented by Sum of Squares. The total variability is partitioned as the ‘between’ variability and ‘within’ variability and expressed as Mean Square Between (MSB) and Mean Square Within (MSW). In simple words we can say that Mean Square Between (MSB) or simply ‘between’ variability is the amount of variability which is explained by the explanatory variable (age of marriage) in this case and Mean Square Within (MSW) or ‘within’ variability is the amount of variability which is not explained by the current variable in the model.

The most important figure to look for in the Anova table is the R-squared. This number tells us the proportion of variability in the outcome which is explained by the factors in the regression model. In this case the R-squared is 0.0048, which means that only 0.48% of the variability in GHQ score is explained by age of marriage.

The equation of the regression line in this case is

\[
\text{Average [GHQ score]} = \text{Constant} + \text{slope} \times \text{age of marriage}
\]

The above equation represents the values for fitted
Assumptions underlying regression analysis

It is critical to understand that regression models are based on certain assumptions and if they are not fulfilled then the regression output needs to be interpreted with lot of caution and in some cases it is better not to use these models at all.

**Linearity**

The first important assumption is that of linearity. We can fit a regression line or best fit line to data only when the y values have a linear distribution. If y is curvilinear then it makes no sense fitting linear regression. This needs to be checked before, using the scatter plot.
### Table 1: Types of regression models

<table>
<thead>
<tr>
<th>Type of Dependent variable</th>
<th>Example</th>
<th>Regression Model</th>
<th>Interpretation of coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous</td>
<td>Birth-weight GHQ score HAM-D score PANNS score</td>
<td>Linear</td>
<td>Change in y per unit change in x</td>
</tr>
<tr>
<td>Binary</td>
<td>Live/dead Recovered/not recovered Presence of depression/absence of depression</td>
<td>Logistic</td>
<td>odds ratio</td>
</tr>
<tr>
<td>Binary</td>
<td>Live/dead Recovered/not recovered Presence of depression/absence of depression</td>
<td>Log-binomial</td>
<td>Relative risk</td>
</tr>
<tr>
<td>Count data</td>
<td>Number of new cases of depression Number of new cases of schizophrenia Number of seizure episodes</td>
<td>Log-linear</td>
<td>Incidence rate</td>
</tr>
<tr>
<td>Time to event data</td>
<td>Time to death after initiation of treatment Time till relapse</td>
<td>Survival analysis</td>
<td>Hazard ratio</td>
</tr>
</tbody>
</table>

distribution. If $y$ is curvilinear then it makes no sense fitting linear regression. This needs to be checked before, using the scatter plot.

In the graph above the relationship between $y$ an $x$ is curvilinear and linear regression should not be tried in this case.

**Normal distribution and equal variance**

For each value of $x$ there are many values of $y$ (as shown in fig. 4). In order to have valid statistical inference it is essential that these sub-populations of $y$ should be normally distributed or in other words $y$ variable should be normally distributed. Also, the variance of each sub-population of $y$ should be equal.

**Independence**

When we select the sample it is assumed that value of $y$ chosen at some value of $x$ is not dependent on value of $y$ chosen at another value of $x$. Thus all the values of $y$ are independent of each other. This needs to be particularly taken care of when outcome is measured over two or more time points like when it is done in pre-post evaluation.

---

**Figure 6**: Curvilinear relationship between $y$ and $x$
Correlation analysis

Regression is not same as correlation. In correlation analysis we are concerned with measuring the strength of relationship between variables while in regression analysis one variable is a dependent variable and it is ‘regressed’ on independent variable. In correlation analysis both y and x are random variables and are on equal footing and neither is dependent variable on another variable. Here we calculate the correlation coefficient which measures the strength of linear relationship between y and x. Correlation analysis is symmetric, it doesn’t matter if we change position of y and x while regression of y is x is different than regression of x on y.

Conclusion

Preliminary knowledge regarding the basic concepts and interpretation of regression analysis will help readers better utilize the research which is currently published in the medical literature.

Understanding of concepts related to statistical inference, hypothesis testing, analysis of variance and equation of a simple line will greatly help in interpretation of regression analysis output. It is critical to note that use of regression models on a given data set is based on statistical assumptions and it is necessary to check these assumptions while performing regression analysis. This paper attempts to briefly elucidate the concepts of regression analysis, but we recommend a further extensive reading for readers who wish to know more about various types of regression analysis and those who intend to use it on a dataset.

Bibliography

1. Norman GR, Streiner DL. Biostatistics: The Bare Essentials: Pmph USA Ltd; 2008.

Pallavi Shidhaye
Resident Medical Officer,
Department of Community Medicine (PSM),
Rural Medical College and Pravara Rural Hospital of Pravara Institute of Medical Sciences (Deemed University), Ahmednagar, India

Rahul R. Shidhaye, M.D.(Psy) M.H.S.(Mental Health)
Faculty
Public Health Foundation of India
Hyderabad
e-mail: rahulshidhaye@yahoo.com
cell: +919848520340
Case Report

Lithium Induced Reversible Renal Damage

Divya Pal
Pratibha B.
Rashmin Cholera
Sanjiv Kale

Abstract
Lithium has been in use as a mood stabilizer from as early as 1949(1). It is widely used for treatment in bipolar disorders and various other psychiatric disorders. Lithium use is associated with myriad of side effects, notorious being nephrotoxicity. Various factors influence the detection and management of the renal damage induced by lithium. We present a case of lithium induced renal damage with functional reversal without active treatment.

Key words: lithium, renal toxicity, reversible

Introduction
Lithium, a time tested mood stabilizer, has been tainted with the occurrence of varied adverse effects. Lithium toxicity and lithium induced renal damage were once the major deterrents to its use in clinical practice. Lithium induced nephrotoxicity was first documented at the end of nineteenth century (2). The predominant form of chronic renal disease associated with lithium therapy is a chronic tubulointerstitial nephropathy. Relatively less is known about potential glomerular toxicity of lithium, particularly nephrotic syndrome (3).

Case Report
A 38 years old man, a case of bipolar disorder, was brought to our outpatient department for manic features in view of which he was treated with lithium 1200mg/day after a thorough laboratory investigation. The patient was maintained on 1200mg of lithium for next 8 years with regular serum lithium monitoring which were within normal limits. After a period of nine months of irregular follow up, the patient presented to the causality with the chief complaints of slurred speech, disorientation, gait abnormalities, agitation and bilateral pedal edema. Lithium was immediately discontinued.

Investigations done revealed Serum Lithium: 3.5 mEq/lit. The lithium toxicity was managed conservatively. Routine investigations done in the ward revealed serum creatinine: 1.6mg/dl, blood urea: 41.3 and proteinuria. A 24 hour urinary analysis was done which revealed a Volume of 6400ml (n: 600-1600ml) and a nephrotic range proteinuria of 6600 mg (n: 20-120 mg). Nephrology opinion was sought and the patient was diagnosed as a case of nephrotic syndrome with Diabetes Insipidus. The renal biopsy was suggestive of mesangiproliferative glomerulonephritis. No active treatment was advised for the renal impairment. A serial monitoring of patient's renal and urinary analysis was done for next 4 years which showed a gradual reversal of the renal dysfunction. 24hrs urinary volume and proteins was reduced to 2250ml and 289mg respectively. The patient was maintained on Sodium Valproate 1gm/day with regular valproate level monitoring.

Discussion
The risk of lithium induced renal damage demands a constant suspicion and regular monitoring as missing an early detection could lead to the calamity of an end stage
Lithium nephrotoxicity ranges from acute impairment to chronic irreversible damage and is known to even occur at normal therapeutic levels (4). Renal damage commonly reported during long term lithium therapy are nephrogenic diabetes insipidus, chronic interstitial nephropathy and tubular insipidus (5) and less known are the rare occurrences of glomerular damage.

Thus lithium can target the kidney at both the tubular and the glomerular level. Nephrogenic Diabetes Insipidus, a known entity caused by chronic lithium use is characterized by polyuria secondary to reversible inhibition of anti diuretic hormone at the tubular level (3). Nephrotic syndrome is a rare but recognized complication of the toxic effects of lithium on the renal glomeruli. It was described for the first time by Duflot et al in 1973 (6). This complication is observed to occur in first year of treatment within therapeutic blood levels of lithium (5). There have been case reports which have demonstrated the occurrence of lithium induced nephrotic syndrome even as late as 20 years with complete reversal on lithium discontinuation (5). Some authors theorize that lithium interacts with anionic sites of the glomerular capillaries known to limit the passage of macromolecules and thus causes proteinuria (2, 3). Renal biopsies done in studies have revealed minimal change disease as one of the most commonly found pathology followed by membranous nephropathy (5).

In our case, the patient did not have any comorbid illness or any concomitant medications. Hence, the renal damage was linked to chronic use of lithium. In the earlier stages, lithium induced tubular and glomerular damage has been found to reverse functionally with the discontinuation of lithium (5). This is in keeping with our case where lithium discontinuation led to reversal of the renal dysfunction without any pharmacotherapeutic intervention. This further confirmed our diagnosis of lithium induced renal damage as the other known etiological factors of glomerulonephritis are irremediable and progressive. Structural reversibility remained unanswered in our case as a repeat biopsy was deferred in view of normal renal functioning. Active treatment in the form using steroids, amiloride or low dose azathioprine has been advocated when renal dysfunction persists despite lithium discontinuation (3, 5). The risk factors for failure of the renal functions to revert to normalcy are chronic use of lithium, doses above 750 mg/day (8, 1). It hence becomes imperative to detect impending renal disease during lithium use as at an early stage no active intervention would be required and progression to irreversible damage can be averted. Studies reveal that the urinary concentrating ability is the first to be affected and hence is a best indicator of impending renal damage (7).

Conclusion

In the earlier stages, mere stoppage of lithium leads to reversal of renal dysfunction and no active intervention is needed. We recommend the use of a simple test as the 24 hour urinary volume, denoting loss of the renal concentrating ability and imminent renal damage, in conjunction to the other routine monitoring to help psychiatrist save the patient from long term repercussions of irreversible renal damage.

References

Case Report

Successful use of Risperidone in a Woman with Hypersexual Behavior

Kedar T.
Pratibha B.
Rashmin C.
S. Kale

Abstract

Hypersexual behavior is a known but rarely reported entity in women. Though various medications have been advocated for use in this disorder, few studies have dwelled upon the use of risperidone. We present an interesting case of a 35 year old female with hypersexual behavior resulting in a dyadic crisis and marital disharmony. The treatment strategy included risperidone which showed a remarkable response.

Key Words: hypersexual behavior, risperidone, women

Introduction

Sexuality is an aspect of daily life which is frequently ignored and is a taboo in most parts of our country. Consequently patients suffering from sexual disorders are often missed leading to serious and often irreversible damage to their family and social life. Hypersexual behavior...
is characterized by a driven sexual behavior which is recurrent and uncontrollable despite significant harmful consequences to the patient and his/her relationships. Our case report depicts a similar patient with a few important differences.

Case

A 38 year old married male had presented in our outpatient department with complaints of irritability, sadness of mood and loss of confidence due to a perceived inability to satisfy his wife’s sexual desire. The patient reported the use of tablet Taldalifil 20mg as a self medication. He was treated for his depressive features but the inability to satisfy his partner’s desire persisted. As a component of our protocol for evaluation, the wife was interviewed for sexual history. Though initially reluctant she gradually revealed experiencing increased urges for sexual gratification upto 3-4 times a day for almost two years. This had resulted in her initiating two extra marital relations. These events had subsequently led to a severe dyadic crisis with serious straining of familial and marital relations. Despite the relational injuries, her sexual urges persisted to occur at the same frequency. Mental status examination did not reveal any psychotic, mood or obsessive features. A detailed systemic and gynecological examination revealed no abnormalities. Laboratory investigations were found to be within normal limits. A four week trial of Tab. Clonazepam 1 mg and behavior therapy of stimulatory exercises by the husband failed to alleviate the symptoms. The patient and husband were reluctant to continue behavioral therapy and hence a decision to start medications was made. Treatment with Risperidone one mg was initiated. Over three weeks, a remarkable improvement was reported in the form of ability to have satisfactory intercourse with her husband with a frequency of two to three times a week, including a decrease in the urges. Cessation of medications by the patient led to an exacerbation of symptoms six months later. Reinstatement of treatment with Risperidone 2mg resulted in symptom resolution and a substantial improvement in marital relationship. Patient is currently maintained on the same and has not reported any side effects till date. Discussion

Hypersexual behavior, according to statistics, is prevalent in 6% of the total population with another 5% remaining undiagnosed. 80% of the patients are male(1). Despite the prevalence, it has failed to be classified as a coded diagnosis. A proposed modification in the Diagnostic Statistical Manual – V, is the introduction of “Hypersexual disorder” as a coded diagnosis [2]. Clinically our patient fulfilled the criteria for sexual disorder NOS as per DSM IV TR. The treatment approaches recommended in this disorder are varied. The treatment of choice is cognitive behavioral therapy & environment modification techniques ; Pharmacotherapy is reserved for those who fail to benefit or do not cooperate for therapy. The first line medications include SSRIs such as Sertraline, Escitalopram and Paroxetine. Use of Leuprolide, Goserelin – LHRH agonists, mood stabilizers like Topiramate and antipsychotics like Thoridazine [3,4,5,6] has also been evidenced to be efficacious. Risperidone, an atypical antipsychotic, produces its action by blockade at D2 receptors (>65%) and 5 HT-2A receptors. It has been associated with hyperprolactinemia especially at doses more than 6mg.[7,8] The resultant increased levels of prolactin inhibit secretion of Gonadotrophin releasing Hormone causing galactorrhea, amenorrhea and decreased libido in females and gynaecomastia, anorgasmia and erectile dysfunction in males. Loss of libido is a resultant of modulation of prolactin levels. It is however not imperative that the prolactin levels exceed normal limits to generate this effect. Prolactin has been proposed as an indicator of sexual gratification and relaxation and is known to increase the sexual refractory period [9]. The probability of a minor increase in prolactin levels leading to loss of libido, without the clinical manifestation of signs / symptoms of hyperprolactinemia, could explain the action of risperidone in this situation. The use and mechanism of isperidone in hypersexuality
remains an enigma and warrants further research.

**Conclusion**

Female sexual disorders and more importantly hypersexuality are often overlooked in the Indian scenario. We would recommend that a balanced screening of both the partners be undertaken in sexual disorders. Though cognitive and behavioral modification technique and SSRIs are the primary line of intervention, Risperidone can be tried as a first line drug but this definitely requires further research.

**References**


Kedar Tilwe, Resident
Pratibha B, Assistant Professor
Rashmin Cholera, Professor
Sanjiv Kale, Professor and Head
Dept of Psychiatry,
Dr D.Y.Patil Medical College, Navi Mumbai

**Correspondence:**
Sanjiv Kale, Professor and Head
Dept of Psychiatry,
Dr D.Y.Patil Medical College, Navi Mumbai
e-mail: sanjiv_kale@yahoo.co.in
cell: +919820547252
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Where is the disability?

R. Thara

It is well known that most countries of the world recognize psychiatric disability and have programmes to support and empower the mentally disabled. In the USA, those disabled by mental illness are the largest beneficiaries of the social welfare system. In India, however, this disability is marginalized as much as the persons with it.

After a lot of lobbying by many agencies, this disability was included in the Persons with Disabilities Act, 1996 of the Govt. of India. In response to the need for an instrument to measure disability, the IPS developed the IDEAS (Indian Disability Evaluation and assessment scale) in 2002 and this was gazetted by the Ministry of Human Resources and Empowerment, Govt. of India in the same year. Six years have gone by and disability of mental disorders is being certified in very few states. Psychiatrists seem to be reluctant to do this for many reasons, although the instrument itself is quite simple.

Although I had asked for feedback about IDEAS which will enable us to modify it, if necessary, there have been none in writing. If modifications/changes were required, much could have been done in 6 years. So, where lies the problem? Is it the mind set of mental health professionals or a reluctance to take on additional work? The lobby group for the mentally retarded is so strong and stay united and have been able to make many advances in policies and programmes for the intellectually disabled. Unfortunately, the mental health lobby remains fragmented and unable to make an impact.

We all know that we are able to do precious little for a sub sample of persons with schizophrenia who are very disabled. Why should they be denied small benefits like transport subsidies, transfer of pensions and other small benefits they can reap under the umbrella of disability benefits?

I think it is time that all mental health professionals work towards reaching some benefits for the mentally disabled, and do whatever possible, be it modifying IDEAS, talking to policy makers in the individual states or working with other disability groups. Otherwise we will just let other newer disability groups take an upper hand and the already marginalized mentally ill will continue to languish and be neglected.

Dr. R. Thara
Schizophrenia Research Foundation, Chennai
India

E-mail: scarf@vsnl.com
Presidential Address

Change in lifestyle: Increase in demand for stress reducing methods

Kaushik Gupte
President, Indian Psychiatric Society, Western Zonal Branch
2011-12

“Nothing Is Constant Except Change”. This saying can never have been more apt in any other time except today. In today’s world it is not only important to adapt to changes but to adapt at the pace at which these changes occur. Until and unless one learns to adapt himself to these changes he is more vulnerable to Psychological problems. The increase in the numbers of reports of suicides in India is exponential. The old man hanging himself in the house due to loneliness or the farmers dying due to the draught and debt; situation may be different but the cause of death in both cases being feeling of severe Depression. Looking at the current situation, India is divided into two prominent lifestyles: Rural and Urban. In rural India the things are a bit simple as the people are striving for their daily needs and tend to live with simplicity but in the last decade due to the increasing industrialization and less opportunity for better jobs have increased the patients

Whatever is there in front of us now will soon perish and become a thing of the past. Even as we adapt to the present, there are new situations and conditions to be faced the next moment. I mean who can truly say “I was totally free from all tensions at some point of time “. Our relation to tension or stress has now more or less become like that of human and his shadow. Looking at our daily schedule: Waking up we have tension to reach at workplace on time, reached at workplace, well the tension of work or stress of conflicts with boss and colleagues, tension of the ever increasing competition, and the stress of ever rising prices; for students the tension of submissions, stress of exams; for the house wife the stress to run the home in budget and somehow squeeze savings from it and the list never gets an end. Just like our shadows our tensions and stress stay with us from dawn till dusk and sometimes even in our dreams. These all are nothing but the signs of changing lifestyle and the tension which it brings along as a parcel.
suffering from Stress. In urban India the situation is quite complex as compared to rural parts, as there are many factors like status in the society, partying culture, work load, etc. which play a key part in defining the lifestyle of a person. In the race to increase their status in the society people tend to incline towards drinking alcohol, may consume drugs and end up becoming addicts. The ever increasing competition in the multinational companies has lead to progress of the country but has pushed the workers into the darkness of depression and the constant stress to keep, be at the top, I cannot stop myself from recalling the dialogue from the movie 3 idiots “Life is a race if you don’t run fast someone else will thrash you and go ahead”. The rise in consumerism has lead to price hike of many basic necessities causing depressed mindedness to the rural and urban citizens alike. The process of adapting oneself to this ever changing lifestyle is itself quite stressful.

People have started now understanding this and are finding their ways to fight against stress in conventional as well as unconventional ways.

Meditation in the form of Art of living or Vipasyana, Pyramid therapy, Aromatherapy and Music therapy are some of the ways people have chosen to reduce their stress and the laughter clubs and yoga centers have become prominent place in people’s everyday schedule. Some people have opted to go for the spiritual path and have taken shelter under Gurus and Saints, some frequently visit Faith healers and many a times get cheated in the lure of immediate solutions to their stress problems. All of us must be having lots of patients referred by Faith healers too. People are likely to get frustrated by these alternative or complementary therapies as the benefit offered is likely to be short-term in nature like a placebo and there is usually no insight offered into the problems that one is facing. And here, is where we, as Psychiatrists, come into the picture.

So, what role do we have to play then? Even in a country like India, the demands placed on the Psychiatrist go beyond prescribing right drugs in right doses. Many people using the alternate therapies will be having milder problems and the reaction to the suggestion of meeting a psychiatrist is likely to be negative as it is seen as a way for serious problems involving long-term treatment. Therefore, we have to create awareness that the psychiatrist is a friendly person with whom problems can be shared by “talking the things over”. Moreover, majority of the problems coming to our attention arise out of difficulties in interpersonal relationships and these involve the family, school or workplace.

These are amenable to counseling. Counseling is also preferred by persons who are educated, aware, sophisticated and have some definite insight. The psychiatrist also has to do homework and has to give the patients knowledge about the alternate therapies along with prescription of drugs and plan a roadmap for the recovery of the patient. Sharing with you my personal experience – after suggesting one patient to start light physical exercise and also learn Meditation and do relaxation technique on regular bases apart from counseling and medication, he had very good improvement, and he asked my permission to stay in my waiting room and motivate other patients to be regular in taking treatment and make the appropriate use of alternative therapies. I allowed him and astonishingly after a few days I found out many of my patients in the waiting room had followed his footsteps and had a speedy recovery.

No discussion of the role of Psychiatry can be complete without mention of an omnipresent 24 by 7 entity: Media. Media – print and electronic alike, is an integral part of today’s lifestyle and has a tremendous influence on everything that a person does or thinks. Having Laughter shows daily on electronic media along with the yoga and meditation

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shows in the morning are proving to be real stress busters for masses. Articles in print media about the increasing level of stress in Indian workers, mental stress in people after natural calamities, interviews of doctors, etc. help the people to identify their problem and offer solution to it. There is no stigma attached to visiting a ‘shrink’ or discussing issues like rehab from drugs in USA. Likewise, we in India have to work towards that time when the role of Psychiatrists will not only be accepted but also be appreciated. I remember a report published in one of the leading newspapers of New Delhi, where the Editor discussed a case of Suicide by an old aged man who never consulted a Psychiatrist before as he did not have any such problems due to which his relatives felt a need to consult a Psychiatrist, that was what told by the relatives. Only one matter was found that the old man who committed suicide was remaining disturbed for last couple of weeks after the declarations of price hike, he was constantly thinking about the pace of the change in lifestyle and how his children will face the newer situation. A Psychiatrist was interviewed how this can happen, what reasons can be there, what kind of stress he must have undergone that lead to complete the suicide. Entire matter was published in such a informative way that a lay man can easily make out the earliest signs of increased stress and can start thinking about what to do at the early stage to prevent further serious consequences.

Thus, in present times for proper sustenance of the society it is important for the media and the mental health professional to go hand in hand to reach the masses and make them aware about the increasing levels of stress in society. Hence the theme of this conference is “Media and mental health”. Hope we make most of it.

Dr. Kaushik Ramakant Gupte,  
M.B.B.S., D.P.M.

Clinical Practice For Last 20 Yrs  
General Psychiatry and Substance Use Disorders

Attached to multispeciality hospitals of surat-BAPS Swaminarayan hospital and Mahaveer Hospital as Hon.Psychiatrist.  
Attached to Shree Sardar Smarak Hospital- Bardoli as visiting psychiatrist and running Taluka Mental Health Program of Govt. Of Gujarat

Past president – IPS, Gujarat State Branch  
Past Secretary, IPS, Western Zonal Branch

Correspondence:  
Dr. Kaushik Ramakant Gupte,  
“Manoshanti”,  
202 & 203, Prime Chambers,  
Opp. S. B. I. Nanpura,  
Surat  
e-mail: kaushikgupte@hotmail.com  
Cell:+919824101936 k
Early intervention of psychosis and reflections for programmes in Indian

Amresh K Shrivastava

Abstract
Mental illness is perhaps the most common and most debilitating among non-communicable diseases. Schizophrenia, for example, normally occurs before the age of 25, affect the most productive years of life. The World Economic Forum graphically illustrates that mental illnesses will be a major contributor to the erosion of gross domestic product over the next 20 years. The developed world has established programs that have proven to be clinically and economically effective and sustainable.[1] Early intervention has played an important role in demonstrating that outcome can be improved if patients are treated in the early phase of illness. It is believed to be potentially effective in arresting or delaying the progress of psychosis.

In these programs, boundaries between hospital and community care overlap, and provide much needed continuous, convenient, and safe therapeutic environments. Criticsm of cost-effectiveness and investments in program development are outweighed by the clinical benefits. These programs rely on an integration of a variety of facets tailored toward local culture, and specific needs are required. Although under evaluation, there needs to be a high degree of optimism and confidence in developing these services. Developing EI programs in India and other low and middle income countries is challenging due to number of problems most important being available funding. Such programs in these countries need to be culture specific. EI of psychosis is a preventative program administered through community based treatments that are effective, feasible and successful. The future of schizophrenia care lies in early, patient-centric and economic treatment.

Keywords: Early intervention, schizophrenia, psychosis, prevention, programs. Services
The program

EI represents an interface between biological, and social psychiatry that firmly demonstrates the success of a community-based psychiatric intervention.[7] Most neurobiological changes take place during the early phase of the illness, thus delay in intervention, in a highly sensitive developmental period, is inherently damaging. EI may delay, if not prevent further deterioration. In these programs, boundaries between hospital and community care overlap, and provide much needed continuous, convenient, and safe therapeutic environments.[8, 9]

The objective of these programs goes beyond EI as, ‘there is more to early intervention than merely intervening early’. [10] These interventions strategies are phase-specific and consist of comprehensive and multidisciplinary treatment. Both early detection and phase-specific treatment may be offered as supplements to standard care, treatment as usual (TAU), or may be provided through a specialized EI team. Successful programs have incorporated components of service, education, and research and have integrated four other dimensions to the development of a qualitative program: hospitalized care, community outreach, awareness drive, and marketing and networking. EIP offers a client-centric approach which typically implements psychotherapy, various forms of group therapy, case-manager based approaches, psycho-education, recreational therapy, rehabilitation, suicide prevention, assertive community programs, and shared care.[11, 12]

These programs depend upon referrals from communities, therefore a strong public awareness campaign, and networking is required to overcome these difficulties in obtaining referrals in a timely manner. There are two important aspects for a public campaign which can be developed to surmount these issues. Firstly, a public awareness campaign has to be implemented to shorten the interval between the onset of illness, to first help-seeking behaviour. Secondly, professionals need to have a greater knowledge, and awareness of identification of psychosis in its early phase.[13] As such, partnerships between the health care providers and voluntary agencies in the community have become an increasing priority.[14] Langeveld et al. studied the referral pattern of teachers, and reported that most were able to recognize psychotic symptoms from a case vignette, but they displayed little awareness of the psychiatric implications.[15] It is essential to target such professionals, who are in continual, direct contact with young individuals, which may require constant training and education. The key to the success of EIP lies in effective networking and developing a people oriented outreach programs

Achievements and Merits of EIP

There has been a growth in research surrounding the areas of improving services for better outcome and enhancing clinical and neurobiological research. One of the advantages concerns clinical benefits for clients which ensures certainty of support to patients within the community. These programs seek to reduce the burden of care, which may become severe, particularly in cases where care-giving by family is challenging.[16] Clinical research has demonstrated that there is a ‘critical period’, or window of opportunity, for intervention before psychosis is established and good outcome is likely.[17] This hypothesis proposes that deterioration occurs aggressively in the first 2 to 5 years of psychosis, therefore it is crucial to intervene within this period to ensure a functional recovery.

Another significant finding has been the role of ‘duration of untreated psychosis’ (DUP) and its relation to short and long term outcome.[18, 19] Evidence now suggests that reducing DUP can result in better symptomatic and functional recovery, which has been further suggested to be a clinical marker of outcome.[20] Studies have shown that effective EIP can reduce delay in treatment seeking within a given community,[21]and lead to good short term
outcome, reduces re-hospitalization, decreases burden of care, reduces suicide attempts, and increases possibilities for gainful employment. [22, 23]

One of the outcomes of research in EI has been involved in re-conceptualizing phenomenology and psychopathology of schizophrenia for diagnostic purposes. Thus far, diagnostic criteria of schizophrenia are based upon a categorical model which concludes that a person either has schizophrenia, or does not have schizophrenia. Due to the longitudinal nature of the illness, just as stages of cancer or hypercholesterimia, there has been a shift in conceptualizing the framework for diagnosis from a categorical one, to a dimensional one. EI research has found main support for development of a ‘staging model’ of psychosis. [24] According to this model, symptoms of schizophrenia can be classified on a range of symptoms from stage 0 to 5, where stage 1 is earliest symptoms seen in ‘high risk, help seeking individuals’ and stage 4 and 5 constitute full blown schizophrenia.[25, 26]

Neurobiological research in EI has provided an opportunity for examining the brain changes throughout the progression of the illness using advancements in new technologies.[27] These findings have shown that neurobiological changes take place during early childhood and adolescence primarily involving, but not limited to, the prefrontal cortex. These findings have strengthened biological theories, and have attempted to explain the role environmental factors play in genetic expression. Detailed description of advances in neurobiological understanding of schizophrenia is out of the scope of this paper, (for details please see Keshavan et al. 2005; Keshavan & Jindal[28, 29]). These findings provide strong support for the benefits of developing EIP.

**Controversies (Economic and Clinical Effectiveness)**

There is lack of agreement amongst researchers and scholars regarding the clinical and economic benefit of EIP. Although the aforementioned findings and characteristics have made EIP highly valued by consumers, implementation of these services is threatened unless sufficient and consistent funding is made available.[30] A recent report highlighted that an investment of one pound sterling saves 40 in suicide prevention programs, 18 for EIP, and 4 for awareness programs for depression.[31] However, funding agencies fail to perceive this. A ‘lack of demonstrable evidence of success’ has been overcome to some extent with the advancement in research findings, but poor investments in these programs prevent clinicians from developing evidence on larger numbers of patients.[32, 33]

Whilst there is a growing body of evidence concerning the effectiveness of early detection and EI services, some argue that cost-effectiveness of EI for first-episode psychosis (FEP) is a waste of clinical resources. Valmaggia et al. suggests it is possible to offer help in the early stages of psychosis in a cost-effective manner.[34] The Early Assessment Service for Young People with Early Psychosis (EASYPEP), developed in Hong Kong, reported this EI program likely to be more cost-effective in improving outcomes, specifically in reducing hospitalizations and clinical symptoms.[10] Similarly, an Italian study also reported significant changes in initial assessments which were recorded from the Health of National Outcome Scale.[35] They also reported larger effect sizes in EIPs than in the standard care group, and suggested a net saving of €-1204 for every incremental reduced score of severity.

An Australian group showed that specialized early psychosis programs can deliver a higher recovery rate at one-third the cost of standard public mental health services.[36] Direct public mental health service costs incurred subsequent to the first year of treatment. Results showed that 56% of the Early Psychosis Prevention and Intervention Centre (EPPIC) cohort was in paid employment over the last 2 years, compared with 33% of controls. Each
EPPIC patients cost, on average, was $3445 per annum, compared with controls who each cost $9503 per annum. Similarly, an EI service offered in London, UK examined the cost-effectiveness using a net-benefit approach. [37] Their results showed that these services did not increase costs, but were likely to be cost-effective when compared to standard care practices. Although hospitalization was reduced, the overall cost difference in favour of EI was not significant. These results suggest that it could be possible for these services to be cost-effective by reducing inpatient stays, and preventing relapse in a more effective manner than TAU.

An argument cited against EIP development comes from studies suggesting improvement in outcome due to EIP is modest, at best, lasting for the duration of the intervention only, and these benefits are not sustainable after five years. A recent Cochrane data base concluded that there is emerging, yet inconclusive evidence, to suggest that people in the prodromal stage of psychosis can be helped by some interventions. [38] A meta-analytical approach examined the benefits of EI and standard care for patients with recent onset psychosis.[39] They reported that EI was significantly more effective than standard care in improving symptoms within a one-year period. Although most EIP last for about two years, fewer studies have looked at long term outcomes. A recent study examining the Early Intervention Program for Psychosis (PEPP) from London, Ontario, Canada demonstrated the benefits of a specialized EIP for two years which had sustained benefits in the long term, for at least five years.[40] In addition to this, one of our own studies from a long-term, ten year follow-up from Mumbai, showed good outcome in 61% of first episode schizophrenia patients using a semi-structured program which appears a modest outcome, but not better than what has been reported from India in TAU programmes.[41]

Despite criticisms of cost-effectiveness, the clinical benefits of the EIP outweigh the investments in program development. It should be noted that these cost-effective factors have only been evaluated only in developed countries. Little is known about what will be cost-effective in low to middle income countries.[42] Therefore, the criticisms of the cost-effectiveness being poor, does not apply universally. Future evaluations are required in developing countries, which should involve scaling up study sizes and testing conceptual frameworks.

**EIP in Indian conditions**

There are three main questions regarding developing EIP for psychosis in India: 1) Is this program necessary? 2) Are there similar programs already developed? 3) If not, how do we develop such programs? Though there has been significant advancement in mental health services, education, and research in India, including Indian Mental Health Policy and Indian Mental Health Act, the need of the patients are far from fulfilled. Ground realities in India regarding funding resources, manpower, awareness and poor governmental involvement are far too well known.[43] At the same time, there are newer strengths which these communities have acquired. There has been an increased interest in mental health which has resulted in an increased awareness and available training services, involvement of voluntary agencies, and psychiatric education, which is already incorporated into undergraduate curriculum.[44] Furthermore, this growing interest provides an opportunity to develop, integrate and tailor programs to local needs.

Mental health programs developed, in India specifically, have shown encouraging results. Although these programs are not as structured as many EIP in western countries, they are consistent with the objectives of EIP.[45, 46] Many of these programs are based upon the Health Service Research model which appears to be a feasible option for community services.[47] There are a number of innovative models of care which have been tried for service delivery, namely mobile community
psychiatric clinics,[48] case identification by community health workers in primary health care centres,[49] community outreach programs within the psychiatric departments of teaching and non-teaching hospitals,[50] mental illness screening by family physicians trained for psychiatric care in their catchment to establish a referral network, identification, and intervention by means of telephone help-line. [51] In most of the community based programs visits from mental health professionals to rural communities provide an effective pathway between referrals from rural to urban centres, which have been a successful avenue in the development of treatment programs. This diversity in practice and services should not be seen as limitation but strength and opportunities for newer public private partnership.

Although these programs have been found to be successful, there are two ways we can develop more effective EIP in India; 1) by strengthening existing community mental health services by focusing on identification, treatment, and continuity of care; 2) by incorporating the program contents within the services which are going to be developed. There are no straightforward answers to setting up these programs in the background of limited resources; nonetheless, the possibilities exist due to forthcoming change in Indian mental health systems.

There are some key points which need to be remembered for success in setting up these programs, which rely heavily on a significant change in the role of the psychiatrist. Continued training, education and professional development on the part of the clinician, and the community workers, is required to evolve these programs on an ongoing basis.[52] It is important to set up achievable goals, and to develop visible evidence of success to earn confidence of stakeholders. By keeping the program within a small, well defined catchment, the clinicians are better able to cope with practical challenges, and educate both the patient and relatives throughout recovery. It is beneficial to keep structured assessments and develop clear outcome parameters and incorporate psychosocial, crisis intervention, and family support as much as possible. It is vital that these programs are evaluated frequently throughout their evolution, in order to increase effectiveness.

The most important aspect of these programs is successful networking. Newer services such as 'telepsychiatry' offer care to professionally deprived regions. Such methods may offer hope for unique program development in the future for Indian society.[53] EIP are about breaking the boundaries of independent private practices and mental health institutions. A number of privately owned centers which offer excellent care, with a service oriented team, will be effectively able to tailor their functioning into the requirements of these EIP.[54]

The Next Step

We have seen that EIP can improve outcome and help in unfolding the complexity of schizophrenia. The task ahead is developing treatment which can facilitate social integration of these individuals into society. Another challenge for the future is to develop models of prevention. Since the illness is multifactorial in nature, with a significant genetic and environmental interplay in its pathogenesis, it appears that a primary preventive measure is almost impossible,[55, 56] therefore, the option of secondary and tertiary prevention measures should be optimized.[57, 58] There have been advances in identifying at-risk candidates, despite being faced with severe opposition from many scientists and advocacy groups on account of stigma and ethical issues. These groups are concerned about 'labeling' an individual with a mental illness; however, this research is unavoidable for learning about prevention, and the patients can benefit immensely.[59, 60] EIP have improved and
evolved significantly overtime and is one of the initiatives which can minimize the impact and consequences of psychosis in an individual.

**Conclusion**

Finally pessimism in care of schizophrenia from hundreds of years is over. These EIP initiatives are based on the fact that mental illness is a treatable condition, and care needs to reach those affected at the earliest stages of the illness. There needs to be a high degree of optimism and confidence in our knowledge, wisdom and commitment; however, regrettably, there are academics thoughts that reject not only the benefits but the value of the program itself. [61]

To summarize, EI of psychosis is a preventative program administered through community based treatments that are effective, feasible and successful. These programs are cost-effective, needs-based, multidisciplinary, and can be developed in many communities by incorporating the necessary changes to suit the local requirements. The future of schizophrenia care lies in early, patient-centric and economic treatment.

**References**

21. Coentre R, Levy P, Figueira ML. Early intervention...


48. Murthy RS. From local to global - Contributions of Indian psychiatry to international psychiatry. Indian J Psychiatry 2010;52:30-37.


Acknowledgment: Kristen J. Terpstra, Department of Psychology, University of Western Ontario, London, Ontario, Canada N6A 5C1,

Amresh K Shrivastava

Physician lead, Elgin Early Intervention Program for Psychosis, Department of Psychiatry, Associate Scientist, Lawson Health Research Institute. The University of Western Ontario, London, Ontario, Canada, and Director, Mental Health Resource Foundation, Mumbai, Maharashtra, India

Correspondence: Regional Mental Health Care, 467 Sunset Drives, St. Thomas, Ontario, N5H 3V9, the University of Western Ontario, London, Canada
E-mail: dr.amresh@gmail.com
Problem gambling by Chinese people in different countries

Mohammad Khalid
Gabriele Columbini
Dinesh Bhugra

Abstract
Background: Gambling has existed for thousands of years and impacts on a wide spectre of people ranging in ages, cultures and socioeconomic backgrounds. The emotions that come with winning or losing aid in facilitating an addiction which is often damaging on a personal, familial and society level. This paper explores some of the issues related to gambling in this ethnic group.

Results: Literature review shows that the Chinese are the largest ethnic group in the world with a huge migrant population. Gambling has a deep seated place in Chinese culture where there is a strong belief in luck and fate. This, combined with many other factors including its use as an acceptable form of entertainment, provides the background for the worsening of problem gambling and cloaking of the extent of such issues.

Conclusions: Gambling is a predominant affliction in some ethnic groups and cultural factors may play a role in this. Clinicians must be aware of cultural differences in patterns of gambling as well as cultural expectations.

Introduction
Gambling dates back thousands of years and is accepted variably in different parts of the world but has a significant influence upon culture. It occurs amongst all ages, levels of society and social strata. It is defined as the ‘wager of any type of item or possession of value upon a game or event of uncertain outcome in which chance, of variable degree, determines such outcome.’ There are many forms of gambling including horses, slot machines, lotteries, table games and card games; the latter has become the most widespread and popular form of gambling over the recent decade. Man has always been fascinated by the factors surrounding events such as chance, fate, cause and effect and this stimulates many emotions when a gambler wins or loses. For many the thrill from gambling is only achieved from the ‘pleasurable-painful tension’ based around excess and uncertainty. This leads to the cycle of gambling seen today at the expense of individual and society.

The Chinese are the largest ethnic group in the world, counting for at least 20% of the world's population. The 2010 population of China was 1.34 billion2 with 40 million living elsewhere, making them one of the largest migrant groups setting up communities all over the world. Gambling has a significant place in Chinese history, first being recorded over 3000 years ago around the time of the construction of the Great Wall of China. 3 It has been a pastime of the rich but also the ‘favourite amusement of the lower classes, in spite of official prohibitions.’4 It is seen as an acceptable social activity in Chinese communities, especially in festive seasons such as weddings and birthday celebrations where social gambling occurs between friends and family. However, social gambling is not reported as an issue or sought help for but can often be used as a cover for serious problematic gambling behaviour that worsens when it is not recognized.
### Table 1: Factors affecting Problem Gambling Behaviour

<table>
<thead>
<tr>
<th>Authors</th>
<th>Design</th>
<th>Participants</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>Victorian Casino and Gaming Authority (2000)</td>
<td>Telephone interviews assessing gambling behaviours of cultural groups</td>
<td>664 people, equally split from Arab, Chinese, Greek, Vietnamese groups in community sample</td>
<td>Chinese were proportionally biggest group (11%) Rates of problem gambling (PG) service seeking help did not match rates of PG.</td>
</tr>
<tr>
<td>Chen et al (1993)</td>
<td>Community survey in Hong Kong Self-reporting Questionnaire and DIS-3</td>
<td>7229 residents</td>
<td>Chinese community higher rates of PG than locals and Caucasians. Males more than females</td>
</tr>
<tr>
<td>Fong and Ozorio (2005)</td>
<td>1121 telephone interviews assessing gambling in Macau residents</td>
<td>1121 residents between ages 15-64 years</td>
<td>67.9% of sample have gambled in last year 1.78% probable pathological gamblers 2.5% probable PGs 'Social gambling' most common form. Males with lowest income most vulnerable to PG. Underreporting of problems.</td>
</tr>
<tr>
<td>Blaszczynski et al (1998)</td>
<td>Survey exploring PG and pathological gambling rates in metropolitan Chinese community in South Western Sydney Chinese translation of the South Oaks Gambling Screen (SOGS)</td>
<td>249 males, 259 females= 508 total Average age 40.3 years</td>
<td>Prevalence estimate of 2.9% found, males higher than females Rates similar to PG rates of Chinese in other countries e.g. Chen et al 1993 Rate higher than 1.2% reported for Australian population. Underreporting (2.9 %) compared to third party estimate of 16.7 %.</td>
</tr>
<tr>
<td>Oei and Raylu (2007)</td>
<td>Comparing gambling behaviours of Chinese and Caucasians in Australia. Questionnaires translated into Mandarin and back. SOGS and Motivation Towards Gambling Scale (MTGS)</td>
<td>199 Chinese (mean age 30.22 years) and 306 Caucasians (mean age 20.22 years)</td>
<td>Chinese gambled more frequently than Caucasians. Chinese more likely to report gambling &gt;$100 in a day. Chinese had greater chasing behaviour and claiming to win when not. No sig difference in PG between two groups.</td>
</tr>
<tr>
<td>Sin (1997)</td>
<td>Survey using the SOGS to a non-random sample of 229 clients looking at gambling in Chinese residents compared to locals of Quebec.</td>
<td>Response of 76.3%</td>
<td>PG as 4.7 % of Chinese vs 3 % Caucasians.</td>
</tr>
</tbody>
</table>
The studies showed that rates of PG were higher in the Chinese sample than Caucasians e.g. in Australia. 12 VCGA highlighted the trend of the Chinese speaking communities having the highest rates of PG, even when compared to other ethnic groups in the general Victorian sample achieving the highest score on the SOGS (numerous studies discuss ethnic groups having higher rates of gambling than Caucasians, possibly due to poor economic status, lower incomes, genetic differences and/or culture specific factors e.g. cultural norms, beliefs or values). 13

Oei et al reported Chinese gambling more frequently than the Caucasian sample in Australia with higher rates of chasing behaviour and a willingness to gamble more money (over AUD100/day). 14 However, there was no reported significant different in PG between the two samples. This infers that there is a presence of gambling problems in the Chinese community and that a lack of self reporting may have affected the results. The contradictory reports of Oie et al 14 and VCGA 13 on significant differences in PG may be explained by the sample groups assessed and the criteria. Oie et al 14 used the difference in the mean SOGS scores between the two sample groups while the VCGA 13 studied the proportion of the sample with a SOGS score equal to or greater than 5. Also, the first study assessed people reporting themselves as ‘Caucasian’ whereas the latter used the general population including other ethnic groups.

Fong et al 11 and Sin 15 reported epidemiology studies showing males to be more prone to developing problematic gambling behaviours than females and they usually had low education and poor to middle income. Older participants were more likely to gamble, with the age limit in casinos as one plausible explanation.

Despite Chinese speaking communities forming the largest proportion of problem gamblers internationally, the table also shows little discrepancies between countries. Taiwanese Chinese were shown by Oei et al 14 to gamble more than Australian Chinese and that the latter group reported a greater feeling of guilt and hiding their problem. One explanation for this may be that gambling is less accepted in Australia and hence it is important to assess an individual country’s cultural and social values when comparing gambling in Chinese communities. However, this also highlights the issue of self reporting, which may give false results.

Chen et al 16 highlighted that PG and pathological gambling interlink with psychiatric disorders. Mood disorders, substance abuse and dependence are the biggest issues, with 11% in one study reporting attempted suicide due to gambling problems 17. More research is needed examining the reasons between psychiatric comorbidity in Chinese gamblers and the contribution of financial stress, interpersonal relationship problems and physical issues.

The main reasons for the taking up and maintenance of gambling behaviour are to win back money lost quickly, experience the thrill of a wager, influence from other gamblers, stress, boredom and emotional issues. There are also certain predictors that are linked to the gambling behaviour such as social setting and acceptance of behaviour, self control and also intention 18. ‘Gambling behaviour and motivation have also been linked to stimulating and instrumental risk taking and lower probabilistic thinking leading to riskier gambling decisions. In other words, Chinese gamblers may be predisposed to seek both exciting sensations and the opportunity to attain wealth from gambling’19.

Female Chinese migrants in the UK reported psychological stress due to economic hardship, familial stress (possibly due to gambling spouses) violence, language and cultural barriers. Gambling provides a way to relax, especially if working unsocial hours (eg in
Chinese takeaway restaurants). Marriage is a key reason for Chinese women to emigrate; there is a familiar story of the promise of a better life, only to be disappointed when faced with poor employment prospects, difficulties in learning the local language and poor housing opportunities. The availability of casinos in certain areas can predispose to developing gambling habits as a result of stress, and too much spare time with little other social activities, especially if there are language barriers. Scull et al. argued that migrant workers were most vulnerable to PG for similar reasons.

Social reasons may be the initial motivation, but with economic hardship and poor employment prospects, the desire for money takes over. Especially in Western countries, advertisements for gambling are becoming more accepted and widely available, encouraging gambling with the false belief of winning; this is coupled with easy access to casinos, a lack of limit as to what can be lost and easy access to credit. The desire for money becomes replaced with a need for money as gambling is perceived as the solution. The impacts of PG are the same irrespective of culture. Increasing debts, bankruptcy and possible homelessness drive the cycle of the need to gamble to make money to cover lost money. Chinese people are more inclined to turn from social to problematic gambling.

Cognitive errors and states of psychological thinking affected PGs in Chinese gamblers similarly to Western gamblers. Chinese gamblers reported they were winning more often than Caucasians when they were actually losing; and they display strong beliefs that they were in control, which stems from traditional Chinese cultural beliefs. In Chinese, ming, or fate, is predetermined in heaven and hao ming, or favourable fate, means lots of money with minimal labour. However, the Chinese have a reputation as hard working people and have a proverb - ‘God helps those who help themselves’. Therefore, gambling is almost a way of testing fate and luck and a combination of ‘prediction and prayer’ that can precipitate the delusion that there is no such thing as a gambling problem.

Basu discussed that Chinese immigrants to Calcutta were perfect examples of the Chinese viewing gambling as a vehicle for allowing the interaction between intention and fate. In that particular culture, status is based entirely upon wealth and therefore economic toil is seen as crucial. There is a common view amongst the Chinese that business is always preferable to work since there is an unlimited output potential dependent upon one’s input. This entrepreneurial ethic involves luck and skill. The Chinese place importance on maximising profit, minimising losses and adapting to the situation so even if it’s gambling for low stakes, Mahjong will always be found at celebrations etc. ‘When gambling breaks through the boundaries in which it is usually confined and becomes unrestrained, it becomes a symbol not of the interplay of fate and control, but of total failure and lack of discipline.’ Gambling ingrained as a part of Chinese culture and a heavy emphasis placed on self control can explain the high rates of PG with low rates of self report.

Family influence is a big factor on gambling behaviours where up to one third of pathological gamblers have gambling problems running in the family, giving exposure that may precipitate such behaviour. Socialising in families and at family events has been shown to influence preference for certain gambling forms eg dice, and may attract Chinese people to casinos. One in five respondents in a study conducted amongst Chinese sample reported a family member with gambling problems. It is possible that there is an unwillingness to admit to personal gambling issues whereas there is a readiness to admit on behalf of relatives, out of respect and the desire to avoid admitting failure. This is consistent with the lower rate of PGs found on SOGS in relation to the estimates offered. The Chinese try and avoid conflict and believe that the behaviour and health of the collective is of more importance than the individual. Hong Kong Chinese have a belief...
model that problems are influenced by external and internal factors but the internal factors are the key for the cure.

When Chinese children and adolescents develop gambling problems, the detrimental effect is exacerbated. Asian communities place great importance upon studying. As pointed out by study in Quebec, a child’s education is the path to social integration, stability and acceptance. Problem gambling leads to poor educational performance and these feelings of failure may be increased in their communities.

**Future Direction**

There are issues that need to be addressed when studying gambling and gambling problems in Chinese speaking communities. PG and pathological gambling is often used without a clear definition separating the two. In this study PG, where under five categories of the DSM-IV is met, is being used since this may not qualify as pathological gambling but people still present with many of the same problems. Also as highlighted in the study by Oei et al the differences in PG between Taiwanese Chinese and Australian Chinese, is the importance of incorporating specific cultural values and practices when looking at gambling trends between international communities. Lastly, the measurement scales used have been adapted from Western samples to Chinese samples and must be correctly validated. Where questionnaires have been translated into Chinese and back into English it is essential to note the degree of understanding and any loss of communication.

Raylu et al validated the Gambling Related Cognitions Scale (GRCS-C) with a Chinese sample showing its reliability and validity. Similarly, another study confirmed the Gambling Urges Scale (GUS-C) to be valid for measuring gambling urges in the Chinese. Despite these efforts, scales and measuring tools currently used need to be validated for use with Chinese participants and there need to be tools developed specifically for Chinese people, as currently none exist. These would be used for looking at the severity of PG, motivations behind the behaviour eg sensation-seeking, familial, personal and cultural attitudes to gambling, psychological state and cognition, willingness to seek help and compliance with treatment. There are many factors that link gambling with problem gambling in the Chinese and these need to be taken into consideration within a framework when developing intervention programmes as the efficacy may be affected. The Chinese beliefs in fate, luck, winning and superstitions are a concern, and education about the matter may be helpful.

**Conclusion**

The studies discussed all have their positive and negative points and varying findings. A common report is that the Chinese form the largest group of problem gamblers in different cultures eg in Australia, and despite this self-reporting shows no significant difference in ethnic groups, indicating that help seeking behaviour is low. Future research needs to look at problem gambling and validate tools specifically for the Chinese to incorporate affecting factors when developing a framework for intervention. Chinese beliefs and culture strongly lend to gambling behaviour and the shame of ‘losing control’ means that social gambling can lead to problem gambling without seeking help. PG
behaviour has numerous detrimental effects; and with increasing migration of the Chinese to countries where there is easy access to gambling, it is essential that these countries tackle this issue and ensuing social problems. Some countries in Asia have already legalized gambling, such as in Macau, highlighting the urgency of the matter as PG could require heavy funding from the government and intervention. Psychological issues that cause and are caused by PG are another potentially damaging issue that needs to be tackled to reduce PG.

References


7. Cai S. Gambling is the opium of the 21st century. Shanghai Star 2005; February 17


13. Victorian Casino and Gaming Authority. The impact of gaming on specific cultural groups report, Victoria, Melbourne 2000


22. Hong YY, Chiu CY. Sex, locus of control, and illusion of control in Hong Kong as correlates of gambling involvement. J of Social Psychology 1988; 128:55

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Mohammad Khalid
King’s College Medical School
UK

Gabriele Colombini
Department of Applied Health and Behavioural Sciences
Section of Psychiatry
University of Pavia
Pavia, Italy and
Honorary Researcher
Health Service and Population Research Department
Institute of Psychiatry, King’s College London
London SE5 8AF, UK

Dinesh Bhugra *
Professor of Mental Health and Cultural Diversity
Health Service and Population Research Department
Institute of Psychiatry, King’s College London
London SE5 8AF
UK

Tel +44 20 7848 0500
Fax: +44 20 7848 5056
Dinesh.bhugra@kcl.ac.uk

* For correspondence
Study of Academic Stress and Coping Strategies in Std X Students

Omkar Mate
Riddhish K. Maru
Bindoo Jadhav
H.S. Dhavale
Sunitha Shanker

Abstract
Early adolescence can be a stressful time for children dealing with the challenges of growing & puberty, meeting with changing expectations of significant others, peer pressure and coping with feelings that they may not have had before. In recent times, one of the major sources of stress is the academic demands made of them. Keeping this in mind the current study was undertaken to assess the level of academic stress in Std. X students and their coping strategies and to study the relationship between the coping strategies used and the level of stress.

A total of 400 students from metropolitan schools were included. Socio demographic data was collected using a semi-structured proforma. The coping strategies and level of stress was assessed using the Ways of coping checklist by Folkman and Lazarus, 1985 and Bisht battery of stress scales, 1987 respectively. The data thus obtained was pooled and subjected to statistical analysis using SPSS software.

In our study, high academic stress was in 18%, average stress in 53% & low stress in 29% students. Students showed an overall equal use of various coping strategies. The coping strategies of wishful thinking, distancing emphasizing the positive, self-blame and keeping to self showed slightly higher correlation with academic stress.

Keywords: Adolescence, Standard X, Coping Strategies, Academic Stress.

Introduction
Early adolescence can be a stressful time for children and those who deal with them. Early adolescence is characterized by rapid and significant changes in an individual’s physical, social, emotional and cognitive domains. They are dealing with the challenges of growing and puberty, meeting with changing expectations of significant others, peer pressure and coping with feelings that they may not have had before. In recent times, one of the major sources of stress is the academic demands made of them.

In Asian cultures, higher education tends to be particularly associated with higher income, social status and better career prospects.[1,2] In India, one of the major stressful life events in an early adolescent’s life is the standard X (SSC). High marks demanded by colleges and pressure from parents and society put these teenagers under tremendous pressure to perform well and acquire excellent marks. Stress associated with academic activities has been linked to various negative outcomes such as poor health[3,4], depression[5], suicidal behavior & poor academic performance[6,7]. From various previous studies it has been learnt that:

A “pile up” of many stressful life events in a small amount of time is more difficult for
adolescents than dealing with just one event. Ongoing, day-to-day stresses and strains are harder on adolescents than major life events. If a major event causes stress, it is often because it sets off a chain of events that change the ongoing, day-to-day conditions of their lives.

SSC examination is a classic example of a pile up of many small stressors, which begins in 9th standard itself and continues for one entire year.

Coping has been viewed as an important component of psychosocial competence by which an adolescent is able to balance and manage the developmental tasks of this stage of the lifecycle. Coping strategies are assumed to have two primary functions- managing the problem causing stress and governing emotions related to those stressors[8,9]. Most adolescents are able to cope with academic stress using a variety of coping strategies; however, some do succumb to the pressure and suffer a myriad of ill effects of the same.

Consequently, learning about adolescent’s adjustment to school and helping them establish adaptive coping strategies is of immense significance today. Keeping this in mind, the current study was undertaken.

**Aims and objectives**

1. To study the level of academic stress in students of Std. X.

2. To study the coping strategies used by students of Std. X.

3. To study the relationship between the coping strategies used and the level of stress.

**Materials**

A semi-structured proforma was designed specially for the study to collect the data about the student’s name (optional), age, sex, name of school, type of family, parent’s education and parent’s occupation.

**Bisht Battery Of Stress Scales (BBSS)[Abha Rani Bisht,1987] [10]:**


Each of the thirteen types of stress measures four components of stress ie. frustration, conflict, pressure and anxiety. All the thirteen scales of the battery were developed and standardized simultaneously. Six approaches were adopted for the standardization purpose, viz. Methodical Approach, Theoretical Approach, Static Approach, Rational Approach, Empirical Approach, Normative Approach.

Reliability of the scales of the battery was calculated in three ways for knowing dependability, stability and internal consistency. For Academic Stress scale dependability is 0.87, Stability is 0.82 and Internal Consistency 0.88. All the scales have content validity and item validity. These battery scales can be used on adolescents and adult students only. Percentile norms are established for the scales of the battery for Indian population. The grouping of high, average and low stress in terms of percentile for interpretation is: High stress: P70 and above, Average stress: P60 to P31, Low stress: P30 or below.

**Ways Of Coping (revised) [Folkman and Lazarus,1985]:**

A revised version (1985) of the ways of coping checklist was used to assess coping strategies. This checklist was standardized and revised by Folkman and Lazarus in 1985.
based on a study of the ways students coped
with a college examination. It consists of 66
items describing a broad range of eight coping
strategies as subscales viz.

1. Problem focused coping (PF): The person
deals directly with the problem by acting or
thinking about it.
2. Wishful thinking (WT): It is a coping strategy
which describes hoping and anticipating a
positive outcome without actually making any
effort to solve the problem.
3. Detachment (DET): It implies a cognitive
effort to distance oneself & to minimize the
significance of the situation.
4. Seeking social support (SSS): The person
looks for emotional support or information
from someone else.
5. Focusing on the positive (F-POS): Person
searches for a positive meaning to a situation.
6. Self-blame (SB): It is a coping style where
students see themselves as guilty for the
concern and take responsibility for it.
7. Tension reduction (TR): It is a coping
strategy where patient deliberately makes
efforts (cognitive, emotional & behavioral) to
decrease tension experienced by him.
8. Keeping to self (KS): It is used, when one
withdraws and keeps others from knowing the
problem.

Out of these eight subscales, the first is problem
focused, 2-7 subscales are emotion focused
and the last subscale consists of both problem
and emotion focused items. Respondents rated
each of the 66 items on a four point Likert
scale. Each item was scored on the following
points ‘not used’= 0; ‘used somewhat’ = 1;
‘used quite a bit’= 2; ‘used a great deal’ = 3.

Knussen et al. (1992)[11], using the Ways
of coping, demonstrated that questionnaire
subscales representing different coping
strategies showed adequate internal reliability
and psychometric properties. The WC-R has also been shown
to have validity in its pattern of associations with outcome variables such as stress and
satisfaction with life [12,13]

**Methods**

Approval of the Ethics Committee was taken
prior to commencing the study.

The study was conducted in 3 schools affiliated
to Maharashtra State Board of Secondary
Education (S.S.C.), in different suburbs of
Mumbai.

Students and their parents were informed of
the research objectives and assured of the
confidentiality of their responses. Informed
consent was taken.

Four hundred students from the above
mentioned schools were included.

The various socio-demographic variables
were recorded using the specially designed
proforma.

Academic stress was assessed using the Bisht
Battery of Stress Scales (BBSS).

The Ways Of Coping Checklist was
administered to evaluate the coping strategies
used by the students.

The data thus obtained was pooled and
analyzed using SPSS software. The level
of academic stress was calculated using the
percentile method.

Final score on every coping mechanism was
calculated separately using sum of the scores
of items belonging to each coping strategy.

The coping strategies used by the students
were correlated with the perceived academic
stress using Pearson’s co-efficient.

**Inclusion criteria:**

1. Students appearing for standard X (SSC
Board) examinations from English medium
col-education schools.
2. Students willing to be enrolled in the study.

Exclusion criteria:
2. Students appearing externally / privately for the SSC examinations.

Results and discussion

Socio-demographic data:

The students in Standard X were mostly in the early adolescent age group of 14-16 years. The sample studied had an almost equal distribution of male (52.7%) & female (47.7%) students.

Chandra et al[14] cite family stress as a frequent source of adolescent stress. The current study shows that more than 2/3rd students ie. 84.1%, belonged to a nuclear family and 15.9% to joint family. This might mean a lesser amount of family stress. However, it might also mean a lesser amount of social support.

Nearly half of the parents of students were graduate (ie 49.5% mothers & 48.6% of fathers), while about 2/3rd of remaining had completed their postgraduate studies themselves ie 44.1% mothers & 42.1% of fathers). These findings might be a pointer towards parental expectations from their children, to excel academically.

As seen from previous studies by Ang and Huan[15], Chen and Stevenson[16] and Wong et al[17] parental expectations might be a source of academic stress in students. Pressure to succeed academically reflects a stress to excel in studies and to get a high paying job with high status; as shown in a study of Singaporean adolescents by Ho and Yip[18].

Level Of Academic Stress:
The percentile cut offs for academic stress in Bisht Battery Of Stress Scales (BBSS) showed that 18% students had high stress, 53% students had average and 29% students had low stress levels respectively. These

<table>
<thead>
<tr>
<th>Table 1: Types of coping strategies used and level of academic stress</th>
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<tbody>
<tr>
<td>High</td>
</tr>
<tr>
<td>No.</td>
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<tr>
<td>---</td>
</tr>
<tr>
<td>Problem focused coping (PF)</td>
</tr>
<tr>
<td>Wishful thinking (WT):</td>
</tr>
<tr>
<td>Detachment (DET):</td>
</tr>
<tr>
<td>Seeking social support (SSS):</td>
</tr>
<tr>
<td>Focusing on the positive (F-POS):</td>
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<tr>
<td>Self-blame (SB):</td>
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<tr>
<td>Tension reduction (TR):</td>
</tr>
<tr>
<td>Keeping to self (KS):</td>
</tr>
</tbody>
</table>
Table 2: Correlation between coping strategies and academic stress

<table>
<thead>
<tr>
<th>Academic Stress</th>
<th>Problem focused coping (PF)</th>
<th>Wishful thinking (WT)</th>
<th>Detachment (DET)</th>
<th>Seeking social support (SSS)</th>
<th>Focusing on the positive (F-POS)</th>
<th>Self-blame (SB)</th>
<th>Tension reduction (TR)</th>
<th>Keeping to self (KS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 2 tail</td>
<td>0.239</td>
<td>0.249</td>
<td>0.192</td>
<td>0.076</td>
<td>0.201</td>
<td>0.258</td>
<td>0.164</td>
<td>0.334</td>
</tr>
<tr>
<td>p</td>
<td>0.656</td>
<td>0.003</td>
<td>0.025</td>
<td>0.331</td>
<td>0.019</td>
<td>0.002</td>
<td>0.056</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>

keeping with studies done by Janet[20] and Sajjan Kumar[21], that showed 86% and 69% students respectively perceived higher academic stress levels.

Also, several studies have suggested that Asian adolescents develop academic self-expectations based on their parent’s and teacher’s expectations from them[16,22], these academic self-expectations might be another source of academic stress.

**Types of coping strategies used and their relationship to academic stress:**

As seen in Table no.1, the students showed equal distribution of use of 8 coping strategies. In a review of studies on coping strategies used by adolescents; Fields and Prinz[23] mention that the studies varied considerably on whether emotion focused or problem focused strategies predominated. This means at the time of stress use faulty coping strategy instead of problem solving. Similarly, Aldwin[24] and Boekarts[25] in their work on adolescents coping, concluded that, adolescents use both problem focused and emotion focused coping. This is in keeping with the current study which shows use of both problem and emotion focused strategies by the students.

The correlation between coping strategies used and the level of academic stress (Table no.2), reveals that the correlation co-efficient for certain coping strategies are higher than the rest, though the correlation strength is weak and results are not statistically significant. These coping strategies belong to the emotion focused category. This is in keeping with the study by Kariv and Heimen[26], which indicates students experiencing academic stress, utilize emotion-oriented coping strategies while disfavoring task-oriented approaches. This means at the time of stress students use faulty coping strategy instead of problem solving; like an escape avoidance & emotion focused approach which refers to indirect efforts to adjust to a stressor by distancing oneself either by focusing on one’s feelings or else avoiding solving the problem. Fields and Prinz[23] on the other hand, mentioned the use of problem focused strategies in adolescents facing academic stressors. However, their review also found that younger adolescents tend to use more emotion focused strategies than problem focused strategies. Mischel and Mischel[27] found that with age, there was an increase in that availability of alternative self control strategies that involved cognitive distraction, cognitive reappraisal of the challenge or cognitions about enjoyment of the delayed reward.

**Recommendations**

It is impossible to make everyday stress free, where no adjustment is required. Adolescence is a period of stress and storm. Adolescents with the help of different coping strategies face a variety of stressors including academic stress. Unrealistic parental expectations and self worth based on academic performance...
contributes significantly to academic stress. Identifying and minimizing factors contributing to academic stress will help in the development of emotionally balanced and mentally stable adults in society.

A change in the use of coping strategies from emotion focused to problem focused strategy would aid adolescents in dealing with problems. Emergence of formal operational thinking may aid adolescents to think abstractly, to consider various points of view and to evaluate consequences. SSC exam performance should not be the only gateway to higher education opportunities at universities and colleges. Lastly, a collective effort from the society is important to give adolescents a healthy environment to live, grow & flourish as they are the future of our country.

References


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Omkar Mate, DNB, DPM, Senior Resident
Omkar Mate, DNB, DPM, Senior Resident
Riddhish K. Maru, DPM, Resident,
Bindoo Jadhav, MD, DPM Assoc.Prof
Hemangini S.Dhavale, Prof.&H.O.D *
Sunitha Shanker, PhD, MA, Clinical Psychologist
Department of Psychiatry, K.J.Somaiya Medical College and Research Centre,
Somaiya Ayurvihar, Sion, Mumbai 400022

* Correspondence

Hemangini S.Dhavale,
Prof.&H.O.D
Department of Psychiatry,
K.J.Somaiya Medical College and Research Centre,
Somaiya Ayurvihar, Sion, Mumbai 400022
e-mail kjspsydept@gmail.com
Intervention for burnout experienced by caregivers of people with schizophrenia-
An evidence based study

Anuradha Sovani
Savita Apte

Abstract
Caregiving for people with schizophrenia is a demanding and stressful task, and may provide a source of chronic stress. Nevertheless, the caregiver’s role is acknowledged as essential for good prognosis and coping in the person with schizophrenia (Shubharthi).

This study attempts to provide an evidence base for rational emotive therapy based intervention specifically targeting burnout in the caregiver, attempting to show the unique contribution of this intervention over and above more generic interventions such as psycho-education and problem solving approaches which are often used.

Findings reveal that the targeted intervention was able to bring about significant change in burnout post-intervention as against no significant change brought about solely by the other interventions, with the sum total of all of the above yielding significant change in burnout scores on the Maslach Burnout Inventory.

Key words: burnout, schizophrenia, caregivers

Introduction
Burnout is a variable prominently used in organisational settings, and defined as a“disorder of professional individuals engaged in helping others, characterized by impaired performance, loss of concentration, poor morale, emotional problems and occasionally drug abuse.” Burnout is presumed to be the result of prolonged high levels of demand and stress suffered by the victim. (Atkinson et al, 1992)

Caring for persons with schizophrenia (Shubharthi) is a demanding and stressful task (Winefield and Harvey, 1993) often requiring patience, resilience and calm handling of unexpected situations by relatively untrained caregivers. The condition is by definition unpredictable in its various manifestations, and caregivers are often on edge not knowing what to expect from the persons under their care. Caregiving has thus been conceptualized a source of chronic stress (Rammohan et al, 2002) and attempts have been made to fit the process of caregiving into a stress model (Lefley, 1989, Potasznik et al, 1984). Chan (2011) quotes the World Federation of Mental Health report published in 2010 viz. “caring for those with a chronic condition requires tireless effort, energy, and empathy, and greatly impacts daily lives of caregivers. As caregivers struggle to balance work, family and caregiving, their own physical and emotional health is often ignored.”

Cuijpers and Stam (2000) studied burnout among relatives of psychiatric patients attending psycho-educational support groups and found burnout levels to be high in spite of the group support offered. Martens and Addington (2001) concluded that respondents in their research study were significantly distressed as a result of having a family member with schizophrenia.

While studying caregivers of elderly people, Hattori et al (2001) reported that need for nocturnal care and attention and continuous...
observation as well as rejection of aid, burned out caregivers. Mizuno et al (2011) content analyzed subjective experiences of men whose spouse suffered from schizophrenia, and found six themes, namely identification and acceptance of the condition, past and present experiences with wives, roles and burdens of husbands, marital relations, social resources and participation in the community, and lastly, perspectives on the future.

Burnout in caregivers may be caused by a lack of acceptance by family members. The realization that one’s relative may never be the same again may be too unbearable to contemplate. Feelings of chronic fatigue, utter exhaustion, lack of interest in life, lack of self esteem and loss of empathy for the person with schizophrenia have been commonly reported. Health Canada’s publication, “Schizophrenia - A Handbook for families” dubs caregivers as the ‘walking wounded’. The manual advises caregivers to take care of their own health, take regular breaks, avoid self blame and self criticism, and not neglect other relationships. They are advised to share their problems and grief, develop a team approach, keep religious beliefs if any, use humor and never lose hope.

Previous research on burnout in caregivers of persons with schizophrenia has shown a number of modalities to be effective for dealing with the same. These approaches include problem solving, cognitive behavioral interventions, as well as supportive interventions. However, there are few studies attempting to provide an evidence base for the relative efficacy of each, so as to tailor intervention for specific cases and save on already scarce therapeutic resources. This study aims are teasing out the relative efficacy of this single targeted intervention as against the full package of other intervention modalities.

Material and Method

Sample: The participants in this study were 96 caregivers of people with schizophrenia, who consented to participate in the study. Due consent was obtained and they were asked to attend group intervention sessions. The initial 96 participants were classified into three groups based on whether they were more prominently affected by stigma associated with mental illness of their family member, by the burnout associated with the care of this person, or the sheer burden of care. The work reported in this paper pertains to those who were primarily affected by burnout, i.e. those who scored highest on this variable as compared with the other two, thereby expressing a need for intervention designed to handle burnout, viz. REBT based modules. Initially 55 of the total group of 96 fell into this category, but only 37 were able to attend all the contact sessions, and also satisfactorily completed all the proformas, and only their data is presented here.

Tools and operational definitions: Burnout was defined as total score on the MBI (1996) which has 14 direct and 8 reverse scored items and satisfactory reliability and validity. Intervention comprised of REBT modules to deal with burnout, which were standardized to remain similar across groups of caregivers. Caregivers were defined as family members who had 4 to 5 hours of contact per day with the person with schizophrenia.

Procedure: After assessing the caregivers for stigma, burden and burnout as a part of a larger study, those caregivers with the highest scores of the three being the burnout score (ie, burnout was evidently their primary problem) were chosen for targeted intervention using rational emotive behavior therapy principles. 55 of the initial group of 96 fell into this category and 37 from the finally selected group of 70, who completed the proforma satisfactorily and also went through the requisite number of intervention sessions were included in the final analysis.

After being assessed for any change in Burnout scores after offering the targeted intervention, the caregivers were given the entire package of interventions for ethical reasons, and reassessed for change. Interestingly, caregivers...
staying away from the patient also showed burnout, and there were more people in the currently presented Burnout group than in the groups that had Burden or Stigma as their primary problem. (Findings from these groups are presented elsewhere.) It is interesting to note however that the greatest problem faced by caregivers of people with schizophrenia appears to be that of burnout.

**REBT Modules for burnout:** Rational Emotive Therapy and dealing with appropriate and inappropriate emotions; Link between activating events, Belief systems and Consequences; Understanding your own thought patterns, eg Must, Should, Demand v/s Expectation; “Terriblizing” relapse and non compliance. Emotion regulation rather than stability. Each of these modules are outlined in a little more detail after the results section, in a brief appendix.

**Analysis:** Analysis of Burnout scores on the Maslach Burnout Inventory(1996) was carried out pre-intervention, then post targeted intervention and finally after the entire intervention package had been delivered to the participant. The findings were analyzed using a repeated measures ANOVA for the three time points at which burnout was assessed. Post hoc tests were carried out for burnout scores before and after completing the targeted intervention, viz REBT sessions as per pre-defined standardized modules, as well as a result of the remaining two additional interventions for burden and stigma. Subscale scores of the MBI were not analyzed as part of the present study but may yield some valuable insights.

**Results**

Findings are presented as demographic descriptors in Tables 1 to 4 below, and the F value and post hoc t values are also presented below. It seems clear that targeted intervention, tailored to deal with burnout yielded significant change in burnout scores, whereas the other combined interventions yielded no specific additional merit.

It is no doubt true that a large portion of emotional problems having been dealt with by the REBT modules, perhaps fewer problems were left behind for the remaining two sets of modules to address. Nevertheless, statistical analysis does point to significant change having been brought about by the specifically targeted intervention.

Table 1 shows the demographic distribution of the sample of 37 caregivers (15 male, 22 female) who continued in the study after cleaning out cases with missing data, or those who did not attend the requisite number of intervention sessions.

Table 2 presents characteristics of the people with schizophrenia whose caregivers were being studied.

Table 3 presents the findings of the ANOVA and the post hoc t tests comparing the Mean values and standard deviation of Burnout scores at all stages of the study.

**Discussion**

In general, some interesting observations are noted below. This group of people, whose caregivers had Burnout as their primary problem, had a mean age of onset of schizophrenia at 25.11 years and this group also had the largest number of poor compliance cases. There were twice as many male as female patients in the group.

Many caregivers attending the intervention groups for burnout were female (22 in all, as against 15 male caregivers). Most were over 50 years in age, and most were parents of the persons with schizophrenia, the Shubharthis (a term coined to imply a person on the path to wellness (Sovani, 2009) . Most of these parents were mothers of patients, with the second most frequent group being wives. They were at least XIIth educated, and most were graduates. 90% were residing with the Shubharthi. Many were
retired, or had been housewives, so they had no steady income. Those working reported practical difficulties in attending. The highest dropout rate was thus among the caregivers from the age group that was 41-50 years. It was evident that REBT interventions specifically targeted at reducing burnout did in help reduce burnout scores. Stigma and Burden scores did drop after other inputs were given, but not significantly so. Overall, pre-to post-

<table>
<thead>
<tr>
<th>Demographic data of caregivers who consented to participate in the study.</th>
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<tbody>
<tr>
<td>Demographic</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td><strong>Age Years</strong></td>
</tr>
<tr>
<td>24-40 years</td>
</tr>
<tr>
<td>41-54 years</td>
</tr>
<tr>
<td>55-70 years</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td><strong>Residing with patient</strong></td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
</tr>
<tr>
<td>Employed</td>
</tr>
<tr>
<td>Unemployed</td>
</tr>
<tr>
<td><strong>Relationship with patient:</strong></td>
</tr>
<tr>
<td>Mother</td>
</tr>
<tr>
<td>Father,</td>
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<tr>
<td>Spouse</td>
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<td>Sister</td>
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<td>Daughter</td>
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<td>Son</td>
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<tr>
<td><strong>Education</strong></td>
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<tr>
<td>&lt; SSC</td>
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<tr>
<td>11th to graduate</td>
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<tr>
<td><strong>Table 2: Demographic and disease related characteristics of the patients (N-37)</strong></td>
</tr>
<tr>
<td>Characteristic</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Males</td>
</tr>
<tr>
<td>Females</td>
</tr>
<tr>
<td>age at onset : years</td>
</tr>
<tr>
<td>Mean(sd)</td>
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<tr>
<td>Current age: years</td>
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<tr>
<td>Mean(sd)</td>
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<tr>
<td>15-30 years</td>
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<tr>
<td>32-45 years</td>
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<tr>
<td>50-65 years.</td>
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<tr>
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<td>Single</td>
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<tr>
<td>Married</td>
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<tr>
<td>Divorced</td>
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<tr>
<td>duration of illness years</td>
</tr>
<tr>
<td>Mean(sd)</td>
</tr>
<tr>
<td>Treatment compliance :</td>
</tr>
<tr>
<td>Good</td>
</tr>
<tr>
<td>Poor</td>
</tr>
<tr>
<td>Prior hospitalizations:</td>
</tr>
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<td>Yes</td>
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<tr>
<td>Prior ECTs :</td>
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<tr>
<td>Yes</td>
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<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Burnout scores at three stages of intervention</th>
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<tbody>
<tr>
<td>Burnout score</td>
</tr>
<tr>
<td>Baseline</td>
</tr>
<tr>
<td>Midline</td>
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<tr>
<td>Endline</td>
</tr>
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</table>

Across all three conditions, F = 10.82, p< 0.002
Baseline Vs Midline, t = 2.40, p< 0.05
Baseline Vs Endline, t = 3.29, p< 0.005
Midline Vs Endline, Non-significant
intervention, there was significant change as the ANOVA findings reflect (F=10.82 ; p< 0.002). It is no doubt true that working on stigma and burden cannot be so compartmentalized, as all 3 are interrelated, but this was done in the interests of the study which aimed to assess value of need-targeted intervention. However, the researchers accept as a potential limitation of the study that although the effort may not be explicit, caregivers would have worked on their own burden and self-stigma as well using REBT principles, and so effects of later sessions might be less apparent. An ideal experimental design may have been a crossover study.

The results also showed that the most marked drop in Burnout scores was achieved from Baseline to Midline (Table 4 above) reflecting the appropriateness of the tailored package for reducing Burnout. Other than this evidence base, subsequent workshops held for caregivers of people with schizophrenia have always shown the need to address the emotional issues of the caregivers before approaching problems with specific solutions, or even de-mystifying the illness and reducing stigma with psycho-education. It is often thought that psycho-educational caregiver workshops must begin with facts about schizophrenia, but in reality the researchers’ experience over many such workshops has shown that caregivers respond better and are more satisfied with inputs if their emotional issues are addressed first. Burnout scores post intervention were assessed soon after the intervention modules were completed, and this could be a short term impact which may not sustain. However, once again, the researchers’ subsequent experience with caregivers’ training workshops has shown fairly sustained impact of REBT driven inputs.

One may thus conclude from these findings, that although giving the full package of intervention comprising of an eclectic mix of psycho-education, problem solving, as well as CBT and REBT based emotion management did indeed help the caregivers, an adequate effect could be obtained with merely administering the latter. This may prove useful in situations where either time or available trainers are few, and maximum effect needs to be accomplished in the given time and personnel. Where it is amply evident, thus, that the primary problem faced by a group of caregivers is burnout, one may choose to save precious trained manpower and inputs by tailoring intervention, and nevertheless achieve results.

References
7. World Federation of Mental Health (2010) Caring for the caregivers- why your mental health matters when you are caring for others. Woodbridge: V A:WFHM.


Appendix

REBT modules in brief:

Rational Emotive Therapy and dealing with appropriate and inappropriate emotions
The principle underlying the REBT model, that certain emotions persistently disturb us, and interfere with the way we handle stressful situations, was highlighted. Rather than introduce the A-B-C format at the outset, participants were encouraged to share “disturbing” or “upsetting” emotions and helped to categorize these as “inappropriate” as per the REBT model, showing how other, healthier alternatives were available and would render one less disturbed. Eg. Anxiety may interfere with the caregiver looking after patient well being, but concern would disturb the caregiver less and also aid efforts taken toward patient well being.

Link between Activating events, Belief systems and Consequences Here the A-B-C model was outlined, and the popular belief that events lead to emotions was addressed, attempting to promote the understanding that events lead to thoughts, which IN TURN lead to emotions. Hence, changing thoughts can help handling emotion.

Understanding your own thought patterns, eg Must, Should, Demand v/s Expectation The semantics behind rational thinking was addressed. Must and should statements indicate a demand and if this is unmet, which usually happens, the person is left emotionally disturbed. Rather, if expectations are expressed, there is less emotional distress if they are as yet unmet, and efforts can be stepped up to achieve the desired goal.

“Terriblizing” relapse and non compliance Relapse of the illness in the Shubharthi usually leads to a lot of distress in caregivers, who hope for longer symptom-free spells. Non compliance with medication by the patient renders them disturbed and angry. This emotional disturbance may lead to sharp words and bitter quarrels between Shubharthi and caregiver, and may not achieve the goal that the latter is aiming for, viz. compliance with medical regimens, but may in contrast lead to rebellion and total non-compliance. Hence, treating relapse or occasional non-compliance as “terrible and unacceptable” does not help caregivers to achieve their goals. Rather, an expectation that the Shubharthi takes medicines on time, and acceptance of occasional relapse as part of the illness condition, would render the caregiver less disturbable and hence better able to help the Shubharthi.

Emotion regulation rather than stability. This module aimed at underlining that
emotional stability is not the goal, and is often not achievable by anybody, since it is human to experience emotional ups and downs. Much of burnout occurs because caregivers are battling to keep their emotions stable. Rather, ability to regulate them with a view to achieving the goals they have set for themselves, may be overall more beneficial. Hence, there is no need to have a “mastery” or “control” model in mind.

**Anuradha Sovani**, M.Phil., Ph.D., *
Associate Professor, Department of Applied Psychology,
University of Mumbai
Consultant and Trustee, Institute for Psychological Health,
Thane, Maharashtra.

**Savita Apte**, Ph.D.,
Consulting Psychologist,
Institute for Psychological Health,
Thane, Maharashtra.

*Correspondence:
Om, Shreesh Society,
LIC Cross road,
Off Eastern Express Highway
Thane 400604, Maharashtra, India
Phone: 25833661, Cell: 9821050528
e-mail: anuradhasovani@gmail.com
A Randomized Double Blind Placebo Controlled Crossover Trial of Dapoxetine in Treatment of Premature Ejaculation

Ketan Parmar
Vinesh Chandramaniya
Nilesh Shah
Avinash De Sousa

Abstract

Background: Premature ejaculation is a common sexual problem causing distress to many patients worldwide. Dapoxetine as a drug has been reported in various studies to be effective in the management of premature ejaculation.

Method: This was a randomized double blind placebo controlled crossover study of Dapoxetine in the management of premature ejaculation. Thirty two subjects participated in the study. The dose of Dapoxetine in the study was 30 mg as needed 1-3 hours prior to sexual activity. The placebo was recommended similarly. Patients were randomized to receive either Dapoxetine on demand or Placebo on demand for treatment period. After day 14, patients were on washout period of 1 week. On completion of the washout period, as per crossover design, patients on Dapoxetine were given Placebo and those on placebo were given Dapoxetine for the treatment period.

Results: Various primary and secondary efficacy variables along with safety assessments were carried out. Dapoxetine showed greater efficacy than placebo on all variables that were evaluated in the study. Dapoxetine has a short initial half-life of 1–2 hours and a short time to maximum serum concentration of approximately 1 hour. These pharmacokinetic properties are suitable for on demand effect.

Conclusions: Thus, Dapoxetine seems to lead to improvements in ejaculatory function for men with premature ejaculation and their partners.

Key words: Dapoxetine, Premature ejaculation.

Introduction

Premature Ejaculation (PE) is most common sexual problem reported amongst a number of problems related to the sexual health of men.[1] It can occur at virtually any age and is most common in younger men (aged 18-30 years), but it also may occur in concurrence with secondary impotence in men aged 45-65 years.[2] An estimated 30% of men suffer from PE on a consistent basis whereas in the US the prevalence rate of PE is estimated to range from 30-70%.[3] Adequate data is not available from Asian countries. In men who are affected by this problem, premature ejaculation can adversely affect self-image, interfere with sexual satisfaction and the sexual relationship and negatively affect the overall quality of life of men and their partners.[4-5]

Although the condition is highly undertreated, selective serotonin reuptake inhibitors (SSRIs), which were developed to treat depression and other psychiatric disorders are being used increasingly as off-label treatment...
for premature ejaculation, on the basis of their side-effect of delayed ejaculation. [6-8] However, these compounds were not developed to treat premature ejaculation, are long acting, and are associated with drawbacks. [9] SSRI adverse effects include psychiatric and neurological issues, dermatological reactions, anticholinergic side-effects, changes in bodyweight, cognitive impairment, drug-drug interactions, and sexual side-effects (viz. erectile dysfunction and loss of libido).[10-12]

The underlying pathophysiology of premature ejaculation is not completely understood, although both physiological and psychological components could contribute to the condition. Psychopharmacological studies suggest that premature ejaculation might be related to diminished serotonergic neurotransmission through pathways that control ejaculation. [13-14] Dapoxetine is a short acting SSRI developed specifically for the treatment of premature ejaculation. [15] The drug's mechanism of action is thought to be related to inhibition of neuronal reuptake of serotonin and subsequent potentiation of serotonin activity.[16] By contrast with SSRIs approved for depression, which take 2 weeks or longer to reach steady-state concentration, Dapoxetine has a unique pharmacokinetic profile, with a short time to maximum serum concentration (about 1 hour) and rapid elimination (initial half-life of 1.2 hours).[17] This makes it a favourable agent for the management of PE. Dapoxetine is available internationally and recent clinical trials in patients with premature ejaculation have shown dapoxetine to be effective in improving the time to ejaculation.[18-20] The present randomized double blind placebo controlled, cross over study aims to find out the efficacy of Dapoxetine in the management of Indian males with PE. It is one of the few Indian studies available on the subject.

**Methodology**

A randomized, double-blind, placebo-controlled, crossover study was conducted to evaluate the efficacy and safety of Dapoxetine in PE. A comparative study design was done in which this was evaluated. Male subjects aged between 21-64 years having premature ejaculation and fulfilled all the inclusion criteria were enrolled. 32 patients with a confirmed diagnosis of PE and fulfilling all the inclusion criteria were enrolled.

**Inclusion and Exclusion Criteria:**

Patients who fulfilled the following inclusion criteria were enrolled in the study viz.

- Male patients aged between 21 and 64 years.
- Patients are in a stable, monogamous sexual relationship with the same woman for at least 6 months and plans to maintain this relationship for the duration of the study.
- Diagnosis of PE according to the criteria of Diagnostic and Statistical Manual of for the Classification of Mental Disorders, 4th edition, text revision (DSM-IV-TR), diagnosed at least 6 months prior to the study.
- Patients who would have a minimum of 2 sexual experiences in a week (with their regular partner).
- Patients who were willing to give consent for participation in the study.
- Patients who were in any of the following categories were excluded from the study viz.
  - Patients with erectile dysfunction or other forms of sexual dysfunction and or partner sexual dysfunction.
  - Patients who were using SSRIs or tricyclic antidepressant as concomitant medication.
  - Patients with a past history of mania, hypomania or bipolar disorder.
  - Patients with history of uncontrolled hypertension or cardiac impairment.
  - Patients with a history of epilepsy.
  - Patients who were using other forms of therapy for premature ejaculation (pharmacological or behavioral).
  - Patients who had taken Dapoxetine previously or participated in another study investigating any pharmacological treatment of PE.
  - Patients diagnosed previously with Alcohol Dependence.
  - Patients with a known drug allergy or hypersensitivity to SSRIs or SNRIs.
  - Patients with history of malignancy.
Patients with moderate to severe hepatic impairment.
Patients having orthostatic hypotension.
Patients whose partners had problems with self-reported female sexual dysfunction.
Patients that had been using recreational drugs with serotonergic activity such as ketamine, methylenedioxymethamphetamine (MDMA) and lysergic acid diethylamide (LSD).
Patients whose treatment for ongoing depression or anxiety were discontinued, in order to initiate Dapoxetine for the treatment of PE.
Patients diagnosed with bleeding or blood coagulation disorders.
Patients with severe renal impairment.
Patients on neurological active medicinal products.
Patients currently on phosphodiesterase inhibitors like tadalafil and sildenafil.
Patients who were using alpha adrenergic receptor antagonists.
Patients on chronic warfarin therapy.
Patients using the following medication as concomitant medication or having discontinued such medication within 7 days of screening for the trial i.e. MAOIs, Thoridazine, SSRIs, SNRIs, TCAs, Phenothiazine, acetylsalicylic acid, NSAIDs, antiplatelet agents or anticoagulants (e.g., Warfarin) and herbal products with serotonergic effects.
Patients on potent CYP3A4 inhibitors such as ketoconazole,itraconazole,ritonavir,aquinavir,telithromycin, nefazadone, nelfinavir andatazanavir.

Dosage Schedule
The recommended dose of Dapoxetine for all patients was one tablet of Dapoxetine 30mg as needed, approximately 1 to 3 hours prior to sexual activity. The placebo of Dapoxetine for all patients was recommended similarly. The maximum recommended dosing frequency was one tablet every 24 hr. Maximum six tablets in 14±2 days was allowed in the trial for both the treatment groups.
In this double blind, crossover study, patients were randomized to receive either Dapoxetine 30mg(1 tablet) on demand or Placebo(1 tablet) on demand for treatment period 1 (day 0 to day 14 ± 2). After day 14, patients were on washout period of 1 week (day 14 ± 2 to day 21 ± 2). On completion of the washout period, as per crossover design, patients on Dapoxetine (1 tablet on demand) were given Placebo (1 tablet on demand) and those on placebo (1 tablet on demand) were given Dapoxetine (1 tablet on demand) for treatment period 2 (day 21 ± 2 to day 35 ± 2).

Efficacy Assessment
The primary efficacy variables were evaluated by a validated tool of average individual Premature Ejaculation Profile (PEP) score between treatment groups; i.e. Perceived control over ejaculation, Personal distress related to ejaculation, Satisfaction with sexual intercourse, Interpersonal difficulty related to ejaculation and evaluation of PEP Index score (Mean of all four measures). These variables were evaluated by using five point likert scoring system i.e., 0= Very poor, 1= Poor, 2= Fair, 3= Good, 4= Very good.
Secondary efficacy variables like patients impression of severity by “severity” scale was evaluated by using severity score; 0= None, 1= Mild, 2= Moderate, 3= Severe [22]. The Patient’s global impression of change in their condition was evaluated by using scoring system. -3= Much worse, -2= Worse, -1= Slightly worse, 0= No change, 1= Slightly better, 2= Better, 3= Much better.

Safety Assessment
At the follow-up visit, the patients were asked for any possible adverse events. Any reported adverse events were recorded in the adverse event form. The number and percentage of patients experiencing each specific event for Treatment-Emergent-Signs and Symptoms (TESS) (defined as experience that appeared for the first time during the study) were calculated.

Statistical Analysis
Basic statistical analysis was performed on all efficacy measures. The data was analysed by an independent bio-statistician and the mean data was subjected to statistical analysis using
paired Student’s t-test for significance between groups and the significance level was $P < 0.001$.

Results

<table>
<thead>
<tr>
<th>Table 1: Baseline data</th>
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<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Body weight</td>
</tr>
<tr>
<td>Perceived control over ejaculation</td>
</tr>
<tr>
<td>Personal distress related to ejaculation</td>
</tr>
<tr>
<td>Satisfaction with sexual intercourse</td>
</tr>
<tr>
<td>Interpersonal difficulty related to ejaculation</td>
</tr>
<tr>
<td>PEP Index Score</td>
</tr>
<tr>
<td>Patients impression of severity</td>
</tr>
</tbody>
</table>

65 patients had undergone screening. 32 patients that fulfilled the inclusion/exclusion criteria were enrolled for the study. This trial was designed as two period crossover treatments, so total 32 patients received Dapoxetine treatment (16 patients in period I and 16 patients in period II) and 32 patients received Placebo treatment (16 patients in period I and 16 patients in period II) during the trial in a periodical manner. The study had a 100% completion rate. The baseline data of all patients at the time of initiation in the study has been described in table 1. The dosage schedule has already been described in the methodology section. 3 patients were diabetic of which 2 were on Metformin and one was one Glibenclamide. One subject had hypertension and was on an Atenolol – Amlodipine combination.

Efficacy assessment
Evaluation of perceived control over ejaculation
Men with PE who were treated with Dapoxetine reported significant improvement in perceived control over ejaculation compared with placebo. According to scoring system in perceived control over ejaculation 46.88% (n = 15) of men were reported as very poor, 46.88% (n = 15) were poor and 6.25% (n = 2) were reported as fair at baseline. At the end of the treatment 43.75% (n = 14) were reported as good and 56.25% (n = 18) were reported as very good in the Dapoxetine group. Similarly 50.00% (n = 16) of men were reported as very poor, 43.75% (n = 14) of men were reported as poor and 6.25% (n = 2) were reported as good in the placebo group at the end of treatment.

Evaluation of personal distress related to ejaculation –
When Dapoxetine was given to men with PE they reported significant improvement in personal distress related to ejaculation compared with placebo. 37.50% (n = 12) were reported as poor, 62.50% (n = 20) were reported as fair in personal distress related to ejaculation at baseline. However at the end of the treatment, 6.25% (n = 2) of men were reported as poor, 81.25% (n = 26) of men were reported as fair and 12.50% (n = 16) of men were reported as good in Dapoxetine treatment group. In the placebo treatment group, 6.25% (n = 2) of men were reported as very poor, 40.63% (n = 13) of men were reported as poor and 53.13% (n = 17) were reported as fair at the end of treatment.

The comparative analysis of personal distress related to ejaculation between the Dapoxetine and placebo groups showed that the percentage of patient rated as good or very good was 12.50% (n = 4) in Dapoxetine which was 0% (n = 0) in the placebo treatment group.

Evaluation of satisfaction with sexual intercourse
Results demonstrated that Dapoxetine group reported significant improvement in satisfaction with sexual intercourse compared with placebo. 62.5% (n = 20) of men were reported as very poor, 28.1% (n = 9) were reported as poor and 9.3% (n = 3) were reported as fair in satisfaction with sexual intercourse at baseline,
however at the end of treatment 3.1% (n = 1) of men were reported as fair - poor, 43.7% (n = 14) of men were reported as good and 53.13% (n = 17) of men were reported as very good in Dapoxetine treatment group. Similarly 62.5% (n = 20) of men were reported as very poor, 28.1% (n = 9) of men were reported as poor and 9.38% (n = 3) were fair in placebo at the end of treatment. The comparative analysis of satisfaction with sexual intercourse between the Dapoxetine and Placebo groups showed that the percentage of patient rated as good and very good was 96.8% (n = 31) in Dapoxetine whereas it was none in Placebo treatment group.

**Evaluation of interpersonal difficulty related to ejaculation:**

Dapoxetine demonstrated clinical improvement as compared to placebo in interpersonal difficulty related to ejaculation. Dapoxetine reduced interpersonal difficulty related to ejaculation which was major impact on patient personal life. Results demonstrated as 3.13% (n = 1) of men were reported as very poor, 28.13% (n = 9) of men were reported as poor and 68.75% (n = 22) were reported as fair in interpersonal difficulty related to ejaculation at baseline, however at the end of treatment 3.13% (n = 1) of men were reported as poor, 90.63% (n = 29) of men were reported as fair and 6.25% (n = 2) were good in Dapoxetine treatment group.

**Evaluation of PEP Index**

PEP Index score was measured as mean of all above four variables of PE profile. When Dapoxetine was given to men with PE they reported significant improvement in PEP index score compared with placebo. In PEP index score 78.13% (n = 25) of men were reported as poor and 21.88% (n = 7) of men were reported as fair at baseline however, 6.25% (n = 2) of men were reported as fair and 93.75% (n = 30) of men were reported as good in Dapoxetine treatment group at the end of treatment. Similarly at the end of the treatment with Placebo 6.25% (n = 2) of men were reported as very poor, 75.00% (n = 24) of men were reported as poor and 18.75% (n = 6) of men were reported as fair.

Comparative analyses of both groups revealed that that 93.75% (n = 30) of patient rated as good or very good in the Dapoxetine group whereas it was 0% (n = 0) in Placebo treatment group at the end of treatment.

Evaluation of the patient’s impression of severity –

In the Dapoxetine treatment group patients impression in severity score was 2.75 (mean) ± 0.51 (SD) at baseline which was reduced to 0.13 (mean) ± 0.34 (SD) by end of the treatment period. Evaluation of patients impression in severity score during the trial showed that treatment with the Dapoxetine significantly reduced severity of premature ejaculation (p < 0.0002).

**Evaluation of the patient’s Global Impression of Change**

As per the patients feedback global impression on change of their condition of premature ejaculation by Dapoxetine, 15.63% (n = 5) of the patients were reported as better, 84.38% (n = 27) of the patients were reported as much better at the end of treatment. This was significantly better than the placebo where no major improvement was reported.

The safety profile of both Dapoxetine and Placebo was evaluated in terms of occurrence of any serious or non-serious adverse events. Adverse events reported with Dapoxetine and Placebo were mild to moderate in nature. In the Dapoxetine treatment group <6.25% (n = 2) of patients reported dyspepsia, epigastric discomfort, diarrhoea, vomiting and nausea. There were no adverse events reported in the placebo group.

Blood pressure and pulse rate were recorded at baseline and at the end of study and there was no significant change from baseline. Laboratory testing done at the screening visit and at the end of the treatment revealed no significant change from baseline (Table 3).
Table 2: Evaluation of the PEP Index score, n (%)  

<table>
<thead>
<tr>
<th>Score</th>
<th>Dapoxetine (n = 32)</th>
<th>Placebo (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (n = 32)</td>
<td>End of treatment (n = 32)</td>
</tr>
<tr>
<td>Very Poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>25 (78.1)</td>
<td>0</td>
</tr>
<tr>
<td>Fair</td>
<td>7 (21.8)</td>
<td>2 (6.2)</td>
</tr>
<tr>
<td>Good</td>
<td>0</td>
<td>30 (93.7)</td>
</tr>
<tr>
<td>Very Good</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3: Safety assessment: Adverse events profile  

<table>
<thead>
<tr>
<th>Types of adverse events</th>
<th>Dapoxetine (n = 32)</th>
<th>Placebo (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyspepsia</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Nausea</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Epigastric discomfort</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>1 (3.12)</td>
<td>0</td>
</tr>
<tr>
<td>Vomiting</td>
<td>2 (6.25)</td>
<td>0</td>
</tr>
</tbody>
</table>

Discussion  
Our analyses show that Dapoxetine, given 1 hour before intercourse improved patients’ perception of control over ejaculation, satisfaction with sexual intercourse, and overall impression of change in condition. Partners benefited through improved satisfaction with sexual intercourse. Thus, Dapoxetine seems to lead to improvements in ejaculatory function that have meaning for men with premature ejaculation and their partners. For many men, premature ejaculation is associated with substantial psychological effects like interpersonal distress23-24, decreased self-confidence and relationship difficulties.25 Thus, an effective treatment that can be used as needed would offer an important new option for men with premature ejaculation and their partners. The effect of Dapoxetine on the single-item patient-reported outcome measures also showed clinically important differences. By the end of study, less than a quarter of placebo-treated individuals achieved fair or better control over ejaculation. By contrast, at least thrice as many achieved that level with Dapoxetine. Moreover, the Dapoxetine had fair or better satisfaction with sexual intercourse.

Non-sexual side-effects with Dapoxetine were transient and characteristic of compounds with serotoninergic effects.26 Most of the events were mild to moderate and transient not resulting in study discontinuation. Cardiovascular changes were not reported.

One major limitation of the study was that the partner’s perspective on the patient report and perceptions were not taken into account. We also did not have any laboratory or biological method to measure delay in ejaculation. This trial has shown that Dapoxetine is effective and generally well tolerated for the treatment of premature ejaculation when given on demand. Dapoxetine improves multiple patient-reported variables in premature ejaculation. In view of the distress and interpersonal difficul-
ties generally associated with this condition, availability of an effective treatment, especially for those with the most severe premature ejaculation, might encourage men with premature ejaculation to seek a physician diagnosis, and could provide a substantial benefit for men and their partners.

References


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Conflict of interest: Dr. Ketan Parmar and Dr. Vimesh Chandaramaniya conducted the trial for Sun Pharmaceuticals.

Dr. Ketan Parmar, Consultant Psychiatrist
Mumbai
Dr. Vimesh Chandaramaniya, Consultant Psychiatrist
Mumbai
Dr. Nilesh Shah
Prof and Head, Department of Psychiatry, LokmanyaTilak Municipal Medical College & General Hospital, Mumbai.
Dr. Avinash De Sousa*
Consultant Psychiatrist, Founder Trustee, De sousa Foundation, Mumbai.

* Corresponding Author

Dr. Avinash De Sousa
Carmel, 18 St Francis Avenue, Off SV Road, Santacruz West, Mumbai 4000054.
Tel – 91-22-26460002
E-mail – avinashdes999@yahoo.co.uk
Attitudinal impediments in the practice of consultation-liaison psychiatry

Nilamadhab Kar
P.S.V.N. Sharma

Abstract

Context: Psychiatric morbidity in the medically ill prolongs hospital stay of these patients and influences the prognosis of physical conditions. However, utilization of consultation liaison psychiatric services is marginal in general hospitals.

Aims: We attempted to study the attitude of non-psychiatric medical professionals and 30 nurses compared with that of psychiatrists to reflect upon the factors associated with inadequate utilization of psychiatric liaison services.

Settings and Design: It was a cross-sectional study in a Medical College Hospital.

Methods and Material: A self-rated, semi-structured 13-item, 5-point scale was used. Perceptions of the psychiatrists on the attitude of physicians and surgeons were also assessed.

Statistical analysis: Percentages, Chi-Square and t-tests

Results: Most clinicians felt that having a psychiatric label is disadvantageous. Physicians and surgeons were aware of their lack of awareness regarding psychiatric problems. Psychiatrists more often than physicians and surgeons felt that the poor physical health status of patients precluded referral reflecting their own uncertainty in assessing and handling physical illness. Poor working relation between psychiatrists and the physicians and surgeons was also reported. The patients’ emotions were perceived as difficult to handle by considerable proportion of non-psychiatric professionals. They also believed that psychiatric disorders were incurable, and reported that many patients refused psychiatric referral.

Conclusions: There was a concern how the physician and surgeons perceived psychiatric illnesses and interventions. It is also worrying to observe how psychiatrists perceived the attitude of their colleagues in general hospital. Need for interactive multi-disciplinary physician education in liaison psychiatry can not be overemphasized.

Key words: liaison psychiatry, perception of doctors, psychiatric illness, attitude, general hospital

Introduction

Prevalence of psychiatric morbidity is high in general hospital inpatients. Two major epidemiological studies using standardized instruments for diagnosis have revealed that the prevalence of mental disorders in general hospital inpatients range from 41.3% to 46.5%.[1] Another study reported a 68.5% prevalence rate of psychiatric disorders in medicine, surgery and obstetrics wards.[2]

Psychiatric morbidity influences the prognosis of many medical conditions and prolongs hospital stay of these patients. A review of 26 articles found that in 80% there was significant correlation between psychiatric or psychological comorbidity and increased length of stay in general hospital inpatients.[3]

A general hospital admission provides window of opportunity to identify and initiate treatment
for a previously unrecognized mental disorder. Unrecognized comorbid psychiatric disorders adversely affect both the immediate hospital course and the post-discharge prognosis of the physical disorders; and contribute to higher rehospitalisation rates and use of outpatient medical services after discharge. This results in higher management costs in hospitals and outpatients. It is known that psychiatric treatments are clinically effective and these interventions are cost effective in the management of psychiatric morbidity of the physically ill patients. These will decrease overuse of general medical services and in some cases provide cost offset. However, utilization of consultation liaison psychiatric services is marginal in most general hospitals settings.

A major obstacle to such endeavors has been the stubborn fact that most psychiatric disorders in general hospital are under-recognized and under-referred. In nearly half of the studied general hospital inpatients receiving a psychiatric diagnosis, consultation-liaison psychiatry interventions were found to be necessary. However, psychiatric consultation rates found in most recently presented studies in Germany and Austria range from 2.66% to 3.30%, and remain low when compared to the reported prevalence figures of psychiatric disorders. It another study it was found that while 30-60% of admitted patients have diagnosable psychiatric disorders only 1-3% of admissions are likely to be referred.

On the above background, it was intended to evaluate the attitude of the non-psychiatric clinicians on the psychiatric illness, to compare it with that of psychiatrists and to find out the attitudinal factors affecting the psychiatric liaison services in a general hospital.

Method

The study was conducted in the Kasturba Hospital, Manipal, India. It is a multi-specialty tertiary level hospital attached to Kasturba Medical College. A self-rated, semi-structured questionnaire with 5-point Likert type of responses was used for the survey. The questionnaire had 13 statements. There was scope for expression of further open ended views. Medical faculties, postgraduate medical trainees of various clinical departments in the university level teaching hospital involved in referral of patients to psychiatry and nurses in that hospital participated in the study. Responses from the psychiatrists and postgraduate psychiatric trainees on these statements were also assessed. In addition, psychiatric group were also asked to provide their perceptions of other clinicians’ attitudes based on the same statements. Besides age and gender of the responders, years of experience in clinical practice were noted. Anonymity of the responses was maintained.

For statistical reasons all the referring departments were considered as either medicine or surgery. The ‘agree’ and ‘strongly agree’ responses were clubbed together; so also the disagreeing responses. The do-not-know responses were not considered during the statistical evaluation. Most of the results were provided in percentages, the categorical variables were compared by chi-square tests and the means in t-tests. Significance level was set at standard 0.05 levels.

Results

The sample consisted on 54 from medical departments (14 faculties and 40 postgraduate trainees); 37 from surgical departments (27 faculties and 10 postgraduate trainees); 22 from psychiatry (8 faculties and 14 postgraduate trainees); and 30 nurses. There was male preponderance (84%) in all three groups of doctors. The mean age of the doctors did not differ in the groups. Years of experience in clinical practice were comparable between medical and psychiatric participants, whereas it was more in the surgery group (p< 0.05).
The response to various statements in the questionnaire is given in table 1. Open ended views were expressed by 18.2% of psychiatrists, 16.7% of medicine specialists and 32.4% of surgeons which formed the basis of the qualitative analysis. There were many areas where consensus was evident; however there were considerable differences in opinion and attitude in other areas.

### Areas of agreement

There were no significant differences among clinicians (psychiatrists, physicians and surgeons) in the following areas. Most of the clinicians felt that it was disadvantageous for the patient to be labeled as psychiatric patient. Only a small minority felt that psychiatric services were unsatisfactory. Most of the doctors agreed to the fact that there is lack of awareness regarding the need for psychiatric intervention. A considerable proportion (39.6%) of the physicians and surgeons believed that psychiatric disorders are incurable. Almost half (48.4%) of the physicians and surgeons felt that there was poor working relationship with psychiatrists. One of the reasons for non-referral to psychiatry was brought forward as 46% of clinicians felt that patients refuse psychiatric referral. However, about one-fifth
(21.9%) of physicians and surgeons felt that patients are too physically ill to be referred.

**Areas of disagreement**

Difference in opinion was evident in the following areas. Significantly more number of physicians and surgeons felt that patient's emotions are difficult to handle. While more psychiatrists (54.5%) felt that physicians and surgeons do not know the patient well enough; only 31.5% of physicians (p<0.05) and 32.4% of surgeons felt so. Most (72.7%) of the psychiatrists felt that the significance of psychological issue is denied in contrast to 37% (p<0.05) of physicians and 54.1% of surgeons. While only 22.7% of psychiatrists felt that every doctor should be able to treat psychological disorders 50.0% (p<0.05) of physicians and 43.2% of surgeon considered so. More (63.6%) psychiatrists felt that physicians and surgeons can not spare time for psychological issues in contrast to 35.2% (p<0.05) of physicians and 40.5% of surgeons.

**How psychiatrists perceived the attitude of the physicians and surgeons**

Most (95.5%) of psychiatrists perceived that physicians and surgeons consider it is disadvantageous for their patients to be labeled as psychiatric case in contrast to 73.6% of physicians. Significantly more (36.4%) psychiatric professionals perceived that physicians consider psychiatric service is dissatisfactory as against 7.4% of the later; and similarly 59.1% of psychiatrists believed that physicians and surgeons feel psychiatric language is useless and incomprehensible compared to much lower proportions (14.8% and 16.2% respectively) of the later groups. Compared to 81.1% of psychiatrists who thought that physicians and surgeons consider patient's emotions are difficult to handle; only 42.6% physicians (p<0.05) and 56.8% surgeons reported so. Psychiatrists perceived that 77.3% of other clinicians feel that patients refuse psychiatric referral against only 35.1% (p<0.05) of surgeons. Only 22.2% of physicians and 21.6% of surgeons felt that patients are too ill to be referred against 50% of psychiatrist who considered this as the reason of non-referral by the physicians and surgeons. Majority (81.8%) of psychiatrists perceived that physicians and surgeons can not spare time in contrast to 35.2% physicians (p<0.001) and 40.5% surgeons (p<0.01).

In summary, perceptions of psychiatrists regarding views of medical and surgical consultants interestingly differed significantly from the actual observations of these non-psychiatric professionals in many areas. The areas were: i. patient is disadvantaged by being labeled as psychiatric case; ii. psychiatric service is dissatisfactory; iii. psychiatric language is incomprehensible; iv. psychiatric disorders are incurable; and v. patient's emotions are difficult to handle by the physicians and surgeons.

**Nurses' observations**

The attitude of nurses were mostly similar to the doctors with a few interesting differences. Most striking was their optimistic view regarding curability of psychiatric disorder; and none of them felt psychiatric language was incomprehensible. Poor working relationship was noted in a relatively smaller proportion of nurses compared to doctors.

**Discussion**

The present study explored the attitudes of clinicians related to liaison psychiatry in a general hospital set up. There are various interesting observations which would explain reported inadequacy in recognition and referral for psychiatric illnesses in medically ill inpatients.

Most clinicians felt that having a psychiatric label is disadvantageous; however, psychiatrists felt the physicians and surgeons subscribe to the disadvantageous effects of labeling to a greater extent than it was felt by the physicians and surgeons. This leaves one wondering whether psychiatrist themselves contribute to the labeling to an extent? It is important to
be aware of inadvertent contribution to the prevailing stigma against mental illness.

A considerable proportion of physicians and surgeons acknowledged their lack of awareness regarding psychiatric problems. They also felt that many psychiatric disorders were incurable, and psychiatric patient refused help or referral. They recognized the inadequate interaction with psychiatrists.

Psychiatrists less often than physicians and surgeons believed that all doctors should deal with psychological problem. Psychiatrists felt that the surgeons and physicians can not spare time for psychological issues; considering how busy they are dealing with other physical conditions. As more than half of the psychiatrists felt that physicians and surgeons do not know the patient well enough, it reflected that considering the nature of psychiatric assessments, psychiatrists believed that other physicians were unaware of emotional issues. It was interesting that more psychiatrists felt it difficult for physicians and surgeons to handle patient’s emotions than the physicians and surgeons themselves! It could be the attributions by psychiatrists to the perceived lack of interest of physicians and surgeons in psychological problems of the patients.

Psychiatrists more often than physicians and surgeons felt that the poor physical health status of patients precluded referral reflecting their own uncertainty in assessing and handling physical illness. It has been a recurring theme in recent years that the psychiatrists do lose touch with medical disorders and the assessment of their seriousness. It has been stressed that the psychiatrists retain the skills for physical examinations;¹³,¹⁴ and remain involved in evaluations for physical illnesses. Belief of incurability of psychiatric disorders; poor working relation by the physicians and surgeons; psychiatrists’ notion that other clinicians do not want to handle emotions or having psychiatric label is disadvantageous were identified as the core issues in the practice of liaison psychiatry. These attitudinal differences between psychiatrists and other clinicians may affect consultation-liaison practices in a general hospital set up.

A combination of interactive discourse on psychiatric disorders in physically ill, continuing medical education of all clinical departments on site, maintaining knowledge base and assessment skills for physical disorders by the psychiatrists, and active psychiatric liaison will in all likelihood be needed to change the attitudinal impediments to recognize and refer appropriate patients to psychiatric intervention in general hospital setting.

References


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Nilamadhab Kar, MD, DPM, DNB, MRCPsych, *
Consultant Psychiatrist and College Tutor, Black Country Partnership NHS Foundation Trust, Steps to Health, Showell Circus, Low Hill, Wolverhampton, WV10 9TH, UK.
Email: kar.nilamadhab@yahoo.com;
Phone: 0044-1902-445371;
Fax: 0044-1902-444514

P.S.V.N. Sharma, MD, DPM,
Professor and Head,
Department of Psychiatry,
Kasturba Medical College, Manipal, India.

*Correspondence
Regression Analysis in Mental Health Research: Concept and Interpretation

Pallavi Shidhaye
Rahul Shidhaye

Introduction

The decision making in the field of health care delivery is now becoming more and more dependent on evidence-based practices. Evidence-based medicine relies heavily on quantitative methods and statistical analysis is one of the core elements of these quantitative methods. Researchers who wish to generate evidence-base need a firm grounding in statistical methods but even for the consumers/users of research (readers to say in simple language) it is essential to interpret and understand the statistical methods used in the current literature.

Most of the readers are familiar with descriptive statistics such as measures of central tendency (mean, median, mode) and dispersion (variance, standard deviation), but when it comes to statistical inference, hypothesis testing, analysis of variance or regression analysis then many readers find it difficult to interpret the results. The availability of many powerful and user-friendly statistical softwares has made the job of statistical analysis easy for the researchers but interpretation of the outputs from these softwares still remains a challenge. There are many basic statistics textbooks which cover fundamental concepts in statistical inference and regression analysis.

Regression analysis is one of the statistical methods which is far too frequently used in the current medical literature and the literature in mental health is not an exception to this. In this paper we attempt to elucidate some core concepts underlying regression analysis and interpretation of regression output from a statistical program STATA.

Regression Analysis: basic concept

In the field of quantitative research we are interested in some characteristics such as who will suffer from depression, change in the severity of depression, attitude of people towards mental illness, recovery from schizophrenia, treatment-seeking behavior for psychosis and so on. These usually are termed as response variables and variables such as age, sex, socio-demographic factors, gender disadvantage factors, physical health factors, and influence of ‘significant others’ become important explanatory factors.

Regression analysis is all about exploring the association between the outcome variable and the exposure variable. These are also interchangeably termed as response/dependent variable and explanatory/independent variable. In a nutshell we can say that it is all about relationships.

If we find a strong association between an explanatory variable and a response variable, then we can act on that explanatory variable to bring the change in response variable. Let’s say if we do a regression analysis for a response variable; presence of common mental disorder and the explanatory variable; inter-personal violence (one of the gender disadvantage factors) and we find a strong association between inter-personal violence and presence of common mental disorders, then we can direct our policies and programs towards reduction of inter-personal violence which will in effect reduce the occurrence
of common mental disorder. This effect will certainly depend on the strength of association which we obtained in our regression analysis.

Thus the nature and strength of relationship between variables is examined by regression analysis and correlation analysis. These two statistical techniques are related but serve different purposes; we will see this in detail a little later.

Regression analysis is based on the pioneering work of Sir Francis Galton who first used this term. He plotted height of off-springs against height of their fathers and observed that average height of off-springs tends to shift (or ‘regress’) towards the average population height; i.e. taller fathers have shorter off-springs and shorter fathers have taller.

Before we move on to interpretation of regression analysis we will focus on two core concepts; statistical inference and equation of simple line.

**Statistical Inference**

Researchers wish to address a particular health problem and the best way to do this is to study every individual suffering from that problem. This is practically not feasible; hence we study some people having that problem. This ‘sample’ observations forms the basis of our conclusion or inference for the entire set of individuals who suffer from that problem which we term as ‘population’. Thus statistical inference is the procedure by which we reach a conclusion about a population on the basis of the information contained in a sample drawn from that population.

**Equation of simple line**

In order to understand regression analysis it is important that we understand the equation of a simple line.

Let’s consider a point $a_1$ whose x-coordinate is 1 and y-coordinate is also 1. This point is represented as $a_1 (1,1)$. Similarly there are four other points; $a_2 (2,2)$, $a_3 (3,3)$, $a_4 (4,4)$ and $a_5 (5,5)$.

Figure 1: Equation of simple line ($y=x$)
We can draw a line passing through all these points and the equation of that line will be \( y = x \) i.e. if the value of \( x \) is 2 then value of \( y \) is 2, if \( x \) is 3 then \( y \) is 3, so on and so forth.

There is another set of 5 points; \( b_1 (1,2) \), \( b_2 (2,4) \), \( b_3 (3,6) \), \( b_4 (4,8) \) and \( b_5 (5,10) \).

In this case if \( x \) is 2 then \( y \) is 4, if \( x \) is 3 then \( y \) is 6.
So, the equation of the line will be \( y = 2x \).

The third set of 5 points is \( c_1 (1,4) \), \( c_2 (2,6) \), \( c_3 (3,8) \), \( c_4 (4,10) \) and \( c_5 (5,12) \).

Here (as well as in the above example) we notice that the value of \( y \) changes by 2 for every unit change in \( x \) i.e. if \( x \) changes from 2 to 3 or 3 to 4 or 4 to 5, \( y \) changes from 6 to 8 or 8 to 10 or 10 to 12. This change in \( y \) per unit change is \( x \) is termed as the slope of the simple line.

In general the equation of the simple line is represented as

\[
y = a + bx
\]

\( y \) is the \( y \) coordinate or the value on the \( y \)-axis
\( x \) is the \( x \) coordinate or the value on the \( x \)-axis
\( b \) is the slope of the line
\( a \) is the intercept or in simple terms value of \( y \) when \( x \) is 0 or the value of \( y \) at which this simple line cuts the \( y \)-axis

In regression analysis \( y \) is the dependent variable, \( x \) is the independent variable, \( b \) is the slope of best fitted line between various data points and \( a \) is the value of the dependent variable when the value of the independent variable is 0.

\( b \) is also termed as regression coefficient and we can also say that \( b \) is nothing but change in the dependent variable per unit change in independent variable.

In the above example what we see is the perfect linear relationship between \( y \) and \( x \), i.e. if you know the value of \( x \) then you can perfectly predict the value of \( y \) based on the equation of simple line. Any value of \( x \) needs to multiplied by slope and once you add the intercept, you get the value of \( y \).

The real world is far more different than this where perfect linear relationship between \( y \) (dependent variable) and \( x \) (independent variable) is a very rare thing.

Below is the scatter plot for birth-weight and age of mother.
Figure 4: Scatter-plot for birth-weight and maternal age
In this example we can observe that as the maternal age is increasing the birth-weight is also increasing and it seems that the points are scattered around some invisible straight line passing through these points. Our aim is then to find a line which best describes the relationship between birth-weight and maternal age and the way to do this is by using the ‘method of least squares’. This line is termed as regression line (best fitted line) and we can say that, it is the straight line passing through the data that minimizes the sum of the squared differences between the original data and fitted points. Fitted point is the average y for that particular value of x.

The red points in this graph are the fitted values and the line passing through it is the regression line or best fitted line.

The equation of this regression line or best fitted line is also termed as the regression model, the interpretation of which we will see below.

**Regression Analysis: Interpretation**

In the example discussed above our dependent variable is child birth-weight and independent variable is maternal age. We fitted a regression line for this data and the equation of that regression line is

\[ \text{Average (birth-weight)} = 2657.3 + 12.36 \times \text{maternal age} \]

It means that for every one unit increase in maternal age in years, the average birth-weight increases by 12.36 grams. This, 12.36 grams is the regression coefficient or slope of the best fitted line.

Coming back to the principle of statistical inference we can say that this slope or the strength of association between birth-weight and maternal age is based on this sample and our estimate for population level association will be based on this.

Now let us consider another example to have better understanding of regression output. The table below represents the direct output from statistical software, STATA.

The outcome of interest (or response variable) here is the score on GHQ-12 (General Health Questionnaire). More the GHQ score more likely is the diagnosis of Common Mental Disorder in that person.

The explanatory variable here is age of marriage (for woman).

```
regress totalghq agem

Source | SS    df    MS         Number of obs = 5693
----------------------------------------------------------------------------------
Model   | 222.475468 1 222.475468
Residual| 46319.8481 5691 8.13914041
----------------------------------------------------------------------------------
Total   | 46542.3236 5692 8.17679613

Box 1: Regression output from STATA
```

```
totalghq | Coef.  Std. Err.  t    P>|t|     [95% Conf. Interval]
----------------------------------------------------------------------------------
agem     | .2647028  .0506299  5.23 0.000    .165449  .3639567
_cons    | 9.20558   .0557069 165.25 0.000    9.096373 9.314787
```

The table above represents the direct output from statistical software, STATA. It provides an overview of the regression model, including the coefficients, standard errors, t-values, and p-values. The model suggests a positive association between age of marriage and totalghq scores, with a coefficient of 0.2647028 indicating that for every one unit increase in age of marriage, the totalghq score increases by approximately 0.265 grams. The model's R-squared value of 0.0048 suggests a weak association, while the Adjusted R-squared of 0.0046 adjusts for the number of predictors in the model, providing a more accurate measure of the model's explanatory power. The Root MSE of 2.8529 indicates the average deviation of the fitted values from the actual values.
Thus GHQ score is regressed on age at which woman gets married.
(This dataset contains observations only for females.)

The coefficient for age of marriage is 0.26 which means that for every unit increase in age of marriage for woman, the GHQ score increases by 0.26 points. This slope thus represents the strength of association between the response variable, GHQ score and explanatory variable, age of marriage of woman.

Thus, there is a positive association between these two variables but it is important to know if this association is statistically significant or not or in other words is this association just due to chance. This is assessed using the hypothesis test. The null hypothesis in this case is that there is no association between the response variable and the explanatory variable. The decision on null hypothesis is taken after looking at the p-value which is given in the column depicted by ‘P>|t|’. The p-value in this case is <0.05 so we reject the null hypothesis and conclude that the association between GHQ score and the age of marriage is statistically significant.

It is also very important to interpret 95% confidence interval which is presented in the last two columns. Here the 95% confidence interval is 0.16 to 0.36 which means that if the study was conducted several times with same sample size then 95% of the times the interval [0.16-0.36] covers the true population level association between the GHQ score and age of marriage. We are thus 95% confident that the interval [0.16-0.36] covers the true population level association.

This also means that there is a 5% chance that the true population level association will be outside this interval. This 5% chance refers to Type I error which we set at the start of the study. If we keep Type I error only at 1% then we get 99% confidence interval and if the Type I error is 10% then we get 90% confidence interval. More the Type I error less confident we are in terms of our estimates. In terms of the range, 99% confidence interval is wider than 95% confidence interval. Usually most of the journal articles report 95% confidence interval. Type I error of 5% is also termed as level of significance (alpha). Type I error of 5% indicates that the results will be considered statistically significant if the p-value is less than 0.05 (5% corresponds to 0.05).

In the table, below the coefficient for age for marriage the value for the constant is given which is 9.20. This value represents the GHQ score if age of marriage is zero!!!!

It is mentioned above that intercept (or the constant) is the value of Y when value of X is zero. Here our Y is GHQ score and X is age of marriage. In the current analysis this value of constant doesn’t make much sense and in order to make that interpretable X variable can be centered at zero.

The first table in the output is the Analysis of Variance table. If we look at GHQ score then every person in this sample (5693 women) is not having the same GHQ score. There is variability in the GHQ score which is represented by Sum of Squares. The total variability is partitioned as the ’between’ variability and ‘within’ variability and expressed as Mean Square Between (MSB) and Mean Square Within (MSW). In simple words we can say that Mean Square Between (MSB) or simply ‘between’ variability is the amount of variability which is explained by the explanatory variable (age of marriage) in this case and Mean Square Within (MSW) or ‘within’ variability is the amount of variability which is not explained by the current variable in the model.

The most important figure to look for in the Anova table is the R-squared. This number tells us the proportion of variability in the outcome which is explained by the factors in the regression model. In this case the R-squared is 0.0048, which means that only 0.48% of the variability in GHQ score is explained by age of marriage.

The equation of the regression line in this case is

Average [GHQ score] = Constant+ slope*age of marriage
Average [GHQ score] = 9.20+ 0.26*age of marriage

The above equation represents the values for fitted
Assumptions underlying regression analysis

It is critical to understand that regression models are based on certain assumptions and if they are not fulfilled then the regression output needs to be interpreted with lot of caution and in some cases it is better not to use these models at all.

Linearity

The first important assumption is that of linearity. We can fit a regression line or best fit line to data only when the y values have a linear distribution. If y is curvilinear then it makes no sense fitting linear regression. This needs to be checked before, using the scatter plot.

Regression Analysis: Types

A regression model in which there is one dependent variable and one independent variable (as in the above two illustrative examples) is termed as simple linear regression.

Simple linear regression model helps us to answer research questions such as “How does the average Y (average GHQ score) change with X (socio-economic status)?

Most of the times we also need to answer the research question such as ‘what is the change in average GHQ score for change in socio-economic status adjusting for third factor such as gender (male and female)?’

Thus, when we introduce third variable (gender) in the model along with dependent variable (GHQ score) and independent variable (socio-economic status), then this becomes multiple linear regression.

Some researchers also refer to simple linear regression as bivariate analysis and to multiple linear regression as multivariate analysis.

Till now we have focused only on dependent variable which is ‘continuous’ in nature such as GHQ score or birth-weight, but most of the times the data which we deal with has a dependent variable which is categorical/binary in nature. The examples of categorical variables are ‘live/dead’, ‘presence of common mental disorder/absence of common mental disorder’, ‘patient recovered, patient not recovered’.

Binary variables take only two possible values and in this scenario it is not possible to use linear regression techniques.

In case of binary outcome variable we use logistic regression. The underlying concept of regression analysis is same and rather than modeling average Y (as we do in linear regression), we model log of odds of Y and so the name of this function is logit and the regression is termed as logistic regression. If there is one independent variable then we have simple logistic regression and there are two or more independent variables then we have multiple logistic regression.

The type of the dependent/response variable determines the regression analysis model which needs to be used. This is depicted in the Table 1.
### Table 1: Types of regression models

<table>
<thead>
<tr>
<th>Type of Dependent variable</th>
<th>Example</th>
<th>Regression Model</th>
<th>Interpretation of coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous</td>
<td>Birth-weight GHQ score HAM-D score PANNS score</td>
<td>Linear</td>
<td>Change in y per unit change in x</td>
</tr>
<tr>
<td>Binary</td>
<td>Live/dead Recovered/not recovered Presence of depression/absence of depression</td>
<td>Logistic</td>
<td>odds ratio</td>
</tr>
<tr>
<td>Binary</td>
<td>Live/dead Recovered/not recovered Presence of depression/absence of depression</td>
<td>Log-binomial</td>
<td>Relative risk</td>
</tr>
<tr>
<td>Count data</td>
<td>Number of new cases of depression Number of new cases of schizophrenia Number of seizure episodes</td>
<td>Log-linear</td>
<td>Incidence rate</td>
</tr>
<tr>
<td>Time to event data</td>
<td>Time to death after initiation of treatment Time till relapse</td>
<td>Survival analysis</td>
<td>Hazard ratio</td>
</tr>
</tbody>
</table>

**distribution. If y is curvilinear then it makes no sense fitting linear regression. This needs to be checked before, using the scatter plot.**

In the graph above the relationship between y and x is curvilinear and linear regression should not be tried in this case.

**Normal distribution and equal variance**

For each value of x there are many values of y (as shown in fig. 4). In order to have valid statistical inference it is essential that these sub-populations of y should be normally distributed or in other words y variable should be normally distributed. Also, the variance of each sub-population of y should be equal.

**Independence**

When we select the sample it is assumed that value of y chosen at some value of x is not dependent on value of y chosen at another value of x. Thus all the values of y are independent of each other. This needs to be particularly taken care of when outcome is measured over two or more time points like when it is done in pre-post evaluation.
Correlation analysis

Regression is not same as correlation. In correlation analysis we are concerned with measuring the strength of relationship between variables while in regression analysis one variable is a dependent variable and it is ‘regressed’ on independent variable. In correlation analysis both y and x are random variables and are on equal footing and neither is dependent variable on another variable. Here we calculate the correlation coefficient which measures the strength of linear relationship between y and x. Correlation analysis is symmetric, it doesn’t matter if we change position of y and x while regression of y is x is different than regression of x on y.

Conclusion

Preliminary knowledge regarding the basic concepts and interpretation of regression analysis will help readers better utilize the research which is currently published in the medical literature.

Understanding of concepts related to statistical inference, hypothesis testing, analysis of variance and equation of a simple line will greatly help in interpretation of regression analysis output. It is critical to note that use of regression models on a given data set is based on statistical assumptions and it is necessary to check these assumptions while performing regression analysis. This paper attempts to briefly elucidate the concepts of regression analysis, but we recommend a further extensive reading for readers who wish to know more about various types of regression analysis and those who intend to use it on a dataset.

Bibliography

1. Norman GR, Streiner DL. Biostatistics: The Bare Essentials: Pmph USA Ltd; 2008.

Pallavi Shidhaye
Resident Medical Officer,
Department of Community Medicine (PSM),
Rural Medical College and Pravara Rural Hospital of Pravara Institute of Medical Sciences (Deemed University), Ahmednagar, India

Rahul R. Shidhaye, M.D.(Psy) M.H.S.(Mental Health)
Faculty
Public Health Foundation of India
Hyderabad
e-mail: rahulshidhaye@yahoo.com
cell: +919848520340
Lithium Induced Reversible Renal Damage

Divya Pal
Pratibha B.
Rashmin Cholera
Sanjiv Kale

Abstract
Lithium has been in use as a mood stabilizer from as early as 1949. It is widely used for treatment in bipolar disorders and various other psychiatric disorders. Lithium use is associated with myriad of side effects, notorious being nephrotoxicity. Various factors influence the detection and management of the renal damage induced by lithium. We present a case of lithium induced renal damage with functional reversal without active treatment.

Key words: lithium, renal toxicity, reversible

Introduction
Lithium, a time tested mood stabilizer, has been tainted with the occurrence of varied adverse effects. Lithium toxicity and lithium induced renal damage were once the major deterrents to its use in clinical practice. Lithium induced nephrotoxicity was first documented at the end of nineteenth century. The predominant form of chronic renal disease associated with lithium therapy is a chronic tubulointerstitial nephropathy. Relatively less is known about potential glomerular toxicity of lithium, particularly nephrotic syndrome.

Case Report
A 38 years old man, a case of bipolar disorder, was brought to our outpatient department for manic features in view of which he was treated with lithium 1200mg/day after a thorough laboratory investigation. The patient was maintained on 1200mg of lithium for next 8 years with regular serum lithium monitoring which were within normal limits. After a period of nine months of irregular follow up, the patient presented to the causality with the chief complaints of slurred speech, disorientation, gait abnormalities, agitation and bilateral pedal edema. Lithium was immediately discontinued. Investigations done revealed Serum Lithium: 3.5 mEq/lit. The lithium toxicity was managed conservatively. Routine investigations done in the ward revealed serum creatinine: 1.6mg/dl, blood urea: 41.3 and proteinuria. A 24 hour urinary analysis was done which revealed a Volume of 6400ml (n: 600-1600ml) and a nephrotic range proteinuria of 6600 mg (n: 20-120 mg). Nephrology opinion was sought and the patient was diagnosed as a case of nephrotic syndrome with Diabetes Insipidus. The renal biopsy was suggestive of mesangioproliferative glomerulonephritis. No active treatment was advised for the renal impairment. A serial monitoring of patient’s renal and urinary analysis was done for next 4 years which showed a gradual reversal of the renal dysfunction. 24hrs urinary volume and proteins was reduced to 2250ml and 289mg respectively. The patient was maintained on Sodium Valproate 1gm/day with regular valproate level monitoring.

Discussion
The risk of lithium induced renal damage demands a constant suspicion and regular monitoring as missing an early detection could lead to the calamity of an end stage
renal disease. Lithium nephrotoxicity ranges from acute impairment to chronic irreversible damage and is known to even occur at normal therapeutic levels(4). Renal damage commonly reported during long term lithium therapy are nephrogenic diabetes insipidus, chronic interstitial nephropathy and tubular insipidus(5) and less known are the rare occurrences of glomerular damage.

Thus lithium can target the kidney at both the tubular and the glomerular level. Nephrogenic Diabetes Insipidus, a known entity caused by chronic lithium use is characterized by polyuria secondary to reversible inhibition of anti diuretic hormone at the tubular level (3). Nephrotic syndrome is a rare but recognized complication of the toxic effects of lithium on the renal glomeruli. It was described for the first time by Duflot et al in 1973(6). This complication is observed to occur in first year of treatment within therapeutic blood levels of lithium (5). There have been case reports which have demonstrated the occurrence of lithium induced nephrotic syndrome even as late as 20 years with complete reversal on lithium discontinuation(5). Some authors theorize that lithium interacts with anionic sites of the glomerular capillaries known to limit the passage of macromolecules and thus causes proteinuria (2, 3). Renal biopsies done in studies have revealed minimal change disease as one of the most commonly found pathology followed by membranous nephropathy (5).

In our case, the patient did not have any comorbid illness or any concomitant medications. Hence, the renal damage was linked to chronic use of lithium. In the earlier stages, lithium induced tubular and glomerular damage has been found to reverse functionally with the discontinuation of lithium (5). This is in keeping with our case where lithium discontinuation led to reversal of the renal dysfunction without any pharmacotherapeutic intervention. This further confirmed our diagnosis of lithium induced renal damage as the other known etiological factors of glomerulonephritis are irremediable and progressive. Structural reversibility remained unanswered in our case as a repeat biopsy was deferred in view of normal renal functioning. Active treatment in the form using steroids, amiloride or low dose azathioprine has been advocated when renal dysfunction persists despite lithium discontinuation (3, 5). The risk factors for failure of the renal functions to revert to normalcy are chronic use of lithium, doses above 750 mg/day(8,1). It hence becomes imperative to detect impending renal disease during lithium use as at an early stage no active intervention would be required and progression to irreversible damage can be averted. Studies reveal that the urinary concentrating ability is the first to be affected and hence is a best indicator of impending renal damage (7).

Conclusion

In the earlier stages, mere stoppage of lithium leads to reversal of renal dysfunction and no active intervention is needed. We recommend the use of a simple test as the 24 hour urinary volume, denoting loss of the renal concentrating ability and imminent renal damage, in conjunction to the other routine monitoring to help psychiatrist save the patient from long term repercussions of irreversible renal damage.

References


Case Report

Successful use of Risperidone in a Woman with Hypersexual Behavior

Kedar T.
Pratibha B.
Rashmin C.
S. Kale

Abstract

Hypersexual behavior is a known but rarely reported entity in women. Though various medications have been advocated for use in this disorder, few studies have dwelled upon the use of risperidone. We present an interesting case of a 35 year old female with hypersexual behavior resulting in a dyadic crisis and marital disharmony. The treatment strategy included risperidone which showed a remarkable response.

Key Words: hypersexual behavior, risperidone, women

Introduction

Sexuality is an aspect of daily life which is frequently ignored and is a taboo in most parts of our country. Consequently patients suffering from sexual disorders are often missed leading to serious and often irreversible damage to their family and social life. Hypersexual behavior...
is characterized by a driven sexual behavior which is recurrent and uncontrollable despite significant harmful consequences to the patient and his/her relationships. Our case report depicts a similar patient with a few important differences.

Case

A 38 year old married male had presented in our outpatient department with complaints of irritability, sadness of mood and loss of confidence due to a perceived inability to satisfy his wife’s sexual desire. The patient reported the use of tablet Taldalifil 20mg as a self medication. He was treated for his depressive features but the inability to satisfy his partner’s desire persisted. As a component of our protocol for evaluation, the wife was interviewed for sexual history. Though initially reluctant she gradually revealed experiencing increased urges for sexual gratification upto 3-4 times a day for almost two years. This had resulted in her initiating two extra marital relations. These events had subsequently led to a severe dyadic crisis with serious straining of familial and marital relations. Despite the relational injuries, her sexual urges persisted to occur at the same frequency. Mental status examination did not reveal any psychotic, mood or obsessive features. A detailed systemic and gynecological examination revealed no abnormalities. Laboratory investigations were found to be within normal limits. A four week trial of Tab. Clonazepam 1 mg and behavior therapy of stimulatory exercises by the husband failed to alleviate the symptoms. The patient and husband were reluctant to continue behavioral therapy and hence a decision to start medications was made. Treatment with Risperidone one mg was initiated. Over three weeks, a remarkable improvement was reported in the form of ability to have satisfactory intercourse with her husband with a frequency of two to three times a week, including a decrease in the urges. Cessation of medications by the patient led to an exacerbation of symptoms six months later. Reinstatement of treatment with Risperidone 2mg resulted in symptom resolution and a substantial improvement in marital relationship. Patient is currently maintained on the same and has not reported any side effects till date. Discussion

Hypersexual behavior, according to statistics, is prevalent in 6% of the total population with another 5% remaining undiagnosed. 80% of the patients are male(1). Despite the prevalence, it has failed to be classified as a coded diagnosis. A proposed modification in the Diagnostic Statistical Manual – V, is the introduction of “Hypersexual disorder” as a coded diagnosis [2]. Clinically our patient fulfilled the criteria for sexual disorder NOS as per DSM IV TR. The treatment approaches recommended in this disorder are varied. The treatment of choice is cognitive behavioral therapy & environment modification techniques ; Pharmacotherapy is reserved for those who fail to benefit or do not cooperate for therapy. The first line medications include SSRIs such as Sertraline, Escitalopram and Paroxetine. Use of Leuproline, Goserelin – LHRH agonists, mood stabilizers like Topiramate and antipsychotics like Thoriodizine [3,4,5,6] has also been evidenced to be efficacious. Risperidone, an atypical antipsychotic, produces its action by blockade at D2 receptors (>65%) and 5 HT-2A receptors. It has been associated with hyperprolactinemia especially at doses more than 6mg.[7,8] The resultant increased levels of prolactin inhibit secretion of Gonadotrophin releasing Hormone causing galactorrhea, amenorrhea and decreased libido in females and gynaecomastia, anorgasmia and erectile dysfunction in males. Loss of libido is a resultant of modulation of prolactin levels. It is however not imperative that the prolactin levels exceed normal limits to generate this effect. Prolactin has been proposed as an indicator of sexual gratification and relaxation and is known to increase the sexual refractory period [9]. The probability of a minor increase in prolactin levels leading to loss of libido, without the clinical manifestation of signs / symptoms of hyperprolactinemia, could explain the action of risperidone in this situation. The use and mechanism of isperidone in hypersexuality
remains an enigma and warrants further research.

**Conclusion**

Female sexual disorders and more importantly hypersexuality are often overlooked in the Indian scenario. We would recommend that a balanced screening of both the partners be undertaken in sexual disorders. Though cognitive and behavioral modification technique and SSRIs are the primary line of intervention, Risperidone can be tried as a first line drug but this definitely requires further research.

**References**


Kedar Tilwe, Resident  
Pratibha B, Assistant Professor  
Rashmin Cholera, Professor  
Sanjiv Kale, Professor and Head  
Dept of Psychiatry,  
Dr D.Y.Patil Medical College, Navi Mumbai  
Correspondence:  
Sanjiv Kale, Professor and Head  
Dept of Psychiatry,  
Dr D.Y.Patil Medical College, Navi Mumbai  
e-mail: sanjiv_kale@yahoo.co.in  
cell: +919820547252