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Editorial

Link between Personality and Physical Health: Scope for interventions

Rajesh Sagar

The current issue of the Journal of Mental Health and Human Behaviour carries a paper[1] focusing on role of personality factors in Myocardial Infacrction.[1] Suggestions that personality factors can influence disease had initially met with resistance and indeed, were dismissed a few times as folklore.[2] While it is known that many chronic medical conditions have a multi-factorial etiology, but personality factors may carry an explanatory or perhaps, even a predictive value in at least some of physical illnesses.[3] This link of personality to health has several important implications for practice and research, and there is a need to pay closer attention to personality factors in the context of assessment, management or even prevention of physical illnesses.

Franz Alexander, in the psychoanalytic era, proposed the role of personality factors in seven common medical disorders, such as peptic ulcer and neurodermatitis. Though the psychoanalytic approaches are no longer widely accepted, but an increasing amount of epidemiologic and clinical evidence points to the influence of personality factors on onset, course and outcome of certain medical disorders. The famous study by Freidman et al[4] linked type A behavioral styles (competitiveness, achievement striving, impatience, hostility, excessive job involvement, and emphatic speech) with increased risk of coronary artery disease. Subsequent research on Stressful Life Events by Holmes and other researchers also indirectly raised the issue of differential individual susceptibility based on one's stress appraisal, coping and personality disposition.

There is considerable epidemiologic evidence to link certain personality factors to risk of physical illnesses. In a U.S. nationally representative sample (n = 34,653), the presence of Borderline personality disorder, after adjustment for Axis I and Axis II disorders, was significantly associated with atherosclerosis, hypertension, hepatic disease, cardiovascular disease, gastrointestinal disease, arthritis and venereal disease.[5] A recent meta-analysis examined the empirical literature on the effect of personality traits on the medical outcome of cardiac illness. It found that Type D personality, which is characterized by the tendency to experience negative emotions, inhibit these emotions and avoid social contact, is a strong predictor (odd's ratio: 3.76) of poor medical outcome of cardiac disease.[6] Another 20-year longitudinal study showed that the participants with a personality disorder, either with or without an Axis I disorder, reported significantly more pain and more rapid decline in physical health in this duration.[7] Thus, over past few decades, psychosomatic medicine has gradually expanded in its scope and evidence base, though in clinical situations/ medical settings, the role of personality factors continue to remain under-recognized.

How does the personality tend to influence the onset or exacerbation of certain medical

disorders? Some research studies have tried to explore the nature of mechanisms responsible for this association. Certain personality traits may increase the stress reactivity of an individual. Flaa et al[8] found that the muscular tension, irritability, detachment, psychasthenia and somatic anxiety were significant predictors of stress reactivity (as evident in the Cold Pressor Test). Possible mechanisms behind this psycho-physiological hyperreactivity may be located at a cognitive-emotional level or a biological level. A recent f MRI study, exposing low- and high systolic blood pressure reactors to a stroop stress test revealed increased activity of the posterior cingulate cortex in the high reactors.[9]

In general, four broad models have been proposed in order to explain the link,[10] summarized as follows:

(a) *Health behavior model*: personality traits influence health behaviors e.g smoking, exercise or sleep, thereby influencing health.

(b) *Interactional stress moderation model*: personality factors influence appraisal and coping in response to stressful circumstances, which may influence physiological responses contributing to illness.

(c) *Transactional stress moderation model*: is similar to the above interactional model, but extends it further by proposing that personality itself may influence exposure to stressful circumstances. e.g. hostility and neuroticism as a trait are linked to increased exposure to interpersonal stressors and reduced levels of social support.

(d) *Constitutional predisposition model*: underlying genetic or other psychobiologic factors influence both personality characteristics and the development of illness

Personality can influence the illness perception, reporting of physical symptoms, adherence and overall quality of life. Neuroticism is directly associated with reports of functional physical symptoms in individuals.[11] The lifestyle and behaviors associated with cluster B personality disorders may lead to medical problems and enhance preexisting physical problems.[12] There may be disruption of medical treatment, compliance and follow-up, negatively influencing the life expectancy and quality of life. The disordered personality traits are significantly predictive of worse physical functioning, role limitations, fatigue, and pain, even when current health problems, depression, and health behaviors were controlled.[13]

Chronic anger/hostility and neuroticism/ negative affectivity are the best established personality risk factors for poor health. [10] It is imperative that clinicians of all medical specialties are aware of the influence of personality disorders and certain personality traits such as impulsivity which can have influence on the outcome of the physical illness.[14]

Interestingly, personality can be a *risk factor* as well as provide *resilience*. The tendency to hold optimistic- as opposed to negative or pessimistic- beliefs about the future has been found to be associated with better health in several prospective studies. These effects include lower incidence of coronary heart disease, better prognosis following heart surgery and greater longevity. [10] *Conscientiousness* , as a personality trait, has been found to predict longevity, even when this trait is measured right from childhood, as well as a variety of other positive health variables.[15] Conscientiousness is also associated with longer survival among patients with chronic medical illnesses. [16] Over

a 4-year follow up, the increases in conscientiousness and extraversion were associated with improved mental and physical health, whereas increased neuroticism was linked with poorer health.[17]

In light of above association, the next question is: Is there a scope of intervention/s to modify certain personality traits/behavior patterns to improve the physical health and treatment outcomes in medical disorders? Is there a role of early intervention for personality risk factors to prevent onset of physical illnesses? There is no easy answer, and little, if any, research is available to guide interventions. There is a need to study such preventive interventions which take into account the personality factors. To give an example from a study to prevent alcohol misuse in adolescents, personality-matched cognitive behavioral interventions were delivered to target specific personality risk factors (negative-thinking, anxiety-sensitivity, impulsivity and sensation-seeking).[18] In medical settings, the individuals with chronic medical illnesses having certain personality risk factors (e.g. neuroticism, low conscientiousness) may be candidates for more intensive sessions to improve adherence or make lifestyle changes to manage chronic illness. Interventions targeting personality traits and behaviours may also focus on health promotion and disease prevention. Accumulated evidence supports greater integration of conscientiousness into public health, epidemiological, and medical research, with the ultimate aim of understanding how facilitating more optimal trait standing might foster better health.[19]

Clinically, it is important to assess personality risk factors and their link to physical illness. Both physicians and psychiatrists, especially working in consultation-liaison settings, need to identify the patients with personality traits interfering in the management of chronic illnesses. The cognitive or behavioral interventions delivered to patients with chronic medical illness can be matched to the personality, for optimum results.

From a research perspective, it is important to pay more attention to the link of personality to health. The mechanisms linking personality to disease predisposition are only preliminary at this stage, and requires more detailed investigation. For example, health behavior model, which has been extensively studied so far, explains only some contribution of personality through unhealthy lifestyles, but fails to provide a complete explanation for association between personality and health, stressing on need to investigate more meditational pathways. More clear elucidation of these mechanisms shall be effective in planning risk reducing interventions in individuals with personality risk factors. Three major approaches to personality risk factors have been used to study their link to health: five factor model (e.g. neuroticism, conscientiousness), social cognitive constructs (e.g. optimism) and inter-personal approach (hostility vs friendliness) There is a need to systematically document the role of these personality factors in management of chronic physical disorders, especially in Indian context and explore the areas of possible interventions to improve outcomes.

The effects of personality on health are nearly ubiquitous; personality explains nearly half the variance in happiness and more than one-third of the variance in wellness.[20] It is time to pay more clinical and research attention to the link between personality and physical health.

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Presidential Address

Changing Faces of Indian Family

PD Garg

A family is a kinship unit, essentially of primary kin of the household head, but it allows for extension, either patrilineal or matrilineal, both vertical and horizontal. Even when its members do not share a common household, the unit may exist as a sociological reality. As per UNESCO[1], a 'household' is a commensal and residential unit, and may consist of not only primary relatives (family of orientation or family of procreation) but also of some distant kin and non-kin. Broadly, a family can be of following five types:

(a) A nuclear family – a two-generation family consisting of a father and mother and their children or a single, possibly widowed, parent and his/her children;
(b) A stem family – a three-generation family consisting of a father and mother, a married child, their spouse and their children;
(c) A lineal family – several married siblings who are linked to their common family of orientation, that is, to the family of their parents. Usually, it dissolves with the death of the parents and become a laterally extended family, where links are maintained, or split into individual nuclear families.
(d) An extended/joint family – three or more generations live together with both vertical and lateral extensions, with a single line of authority, either patrilineal or matrilineal
(e) A compound family: when two families combine after divorce.

The broad areas of family functions include those for the society, the sub-systems within a family and individual family members. There are several dyadic relationships in the family: Filial Relation: parent-child relation; Fraternal Relation: relation among siblings; Conjugal Relations: relation between husband and wife; In-law Relation: relation between family members related through marriage and not by blood.

The Family life cycle, as described by Evelyn Duvell [2], has following eight stages:

1. Married couples (without children)
2. Childbearing families (oldest child, birth-30 months)
3. Families with pre-school children (oldest child, 2 1/2-6 years)
4. Families with schoolchildren (oldest child, 6-13 years)
5. Families with teenagers (oldest child, 13-20 years)
6. Families as launching centers (first child gone to last child leaving home)
7. Middle-age parents ('empty nest' to retirement)
8. Aging family members (retirement to death of both spouses)

In recent times, several changes have started affecting Indian family. These include migration to urban areas and change from caste oriented and hereditary occupations to new patterns of employment offered by a technological revolution. More members of the family are moving away from the larger family circle and living as members of a nuclear unit in urban areas. Many

functions performed by the traditional family are being taken over by other agencies such as schools, day care centers, commercial and entertainment centers etc. Similarly, the setting of moral standards for the growing children and adolescents has been taken over by the peer group culture, mass media or by commercial entertainment. The traditional role allocation based on sex, age, or kinship has changed. With more and more women taking up jobs outside the home, the traditional role of the wife has changed too. The respective roles of the father, the mother, the husband, the child and the elders in the family have undergone changes.

The joint family, which has been considered to be one of the salient features of the Indian society is on a decline. Even in the rural areas, the joint family is on its way out as evident from some of recent research.[3] In villages, the size of joint family has reduced or fragmented. The adult children have migrated to cities either to pursue higher education or to secure more lucrative jobs. Urban households appear to be offshoots of rural extended or joint families; joint family in the village is the fountainhead of nuclear families in towns. Rise of the nuclear family is now the characteristic feature of the modern Indian society, comprising 70% of households in India. Families with a single member or more than one member households without spouse (eroded families) comprise another 11% and extended/ joint family form 20% of all households.[4] The process of family formation and dissolution also appear to have become relatively faster as there is a trend towards the households being headed by relatively younger people as evident from census data from 1971 onwards. Over 3/5th of the households are headed by persons aged less than 50 years of age.

Earlier, the authority within the family was primarily in the hands of family elders. The general attitude of members of the family towards the traditional patriarch was of respect, loyalty, submissiveness, and deference. The elder was consulted on all important family matters like building a house, buying and selling of property and arranging marriages, etc. Among women, patriarch's wife was the paramount authority. Young women in the family were expected to be dutiful and obedient. Self-assertion, even in bringing up their own children, was blasphemy. Widows were assured of the family roof, though mostly as voiceless members. These cultural norms have shown some change in the recent decades. Parents encourage their educated sons and daughters-in-law to take independent decision in a joint and extended family situation. Boys and girls are beginning to assert their wishes in mate selection and parental decisions are no more supreme. Approximately 14% of households are headed by females.[5] Unlike the traditional practice of early marriage or child marriage, there has been a steady increase in the age of marriage. As per third round of National Family Health Survey (NFHS-3),[5] the mean age of marriage has increased to 17.2 years among females and 23.4 years among males.

The practice of consanguineous marriage has also shown a decline in recent decades. The Hindu Marriage Act of 1955 prohibits marriage among close relatives known as sapinda marriage. The dissolution of marriage was earlier uncommon and rare in India. In case of any crisis or threat to stability of marriage, caste, community, kinsmen, tended to have played a dominant say. Even in the event of frequent mental and physical torture, most Indian women persisted in marriage. The situation has changed somewhat now with marriage no longer holding a place as a 'divine match' or a 'sacred union'. Though, India continues to have an overall low divorce rates compared to western societies, but

the divorce rates in India's urban sphere are slowly mounting. There is a general disenchantment with the system of arranged marriages. There is now lesser reliance on marriage as a definer of sex and living arrangements throughout life. In urban parts, the 'live-in-arrangements' are steadily emerging as a new kind of family life. A high rate of remarriages is being observed with people sacrificing their marriages because of unsatisfactory relationships. The alternative family patterns such as single parent families, female headed households, dual earner/ career families, childless families, adoptive families are increasing.

Above changes in roles have inevitably affected the relationships among the members of the family. There are emerging attitudes of self-centeredness, assertion of individual rights, clamor for equality and right for self-determination. In the realm of values, today's family is moving towards materialism, individualism and liberalism. The cherished values such as respect for age, concern for the weak, devotion to one's duty, co-operation are being replaced by competition and 'getting ahead'. Some of the consequences (albeit unintended!) of these sociocultural changes are in the form of a rise in child neglect, behaviour problems in children, indiscipline among the youth, alcoholism and drug addiction, marital disharmony and neglect of the elderly.

Families with a member having disability, chronic illness or substance use especially have no other support system. Families in conflict with other systems e.g. having unemployment/ indebtedness, inadequate or no land/housing, victims of political violence, environmental disasters or uprooted/refuge/migrant families are especially vulnerable. Destitute or homeless population (children, adults, aged) is on the rise.

The abuse and violence in the families is a serious issue. The incidents of child abuse in family, violence against women, elderly abuse or abuse of the disabled is on the rise. Violence within family settings is primarily a male activity; prime targets being women and children. As many as 40% women experience violence by an intimate partner.[5] There is not much abatement in gender related violence in spite of recent legislation against domestic violence. On the other hand, the anti-dowry laws and domestic violence act have been misused at times to harass the husband and in-laws.

With an estimated 12.6 million children engaged in hazardous occupations,[4] India has the largest number of child labourers under 14 in the world. The juvenile delinquency has emerged as an important issue. There are serious problems in the form of child trafficking and commercial sexual exploitation. Children from well-off sections may face problems such as lack of adequate care/attention from working parents, heavy expectations from them by their parents , diminished role of family as an agent of socialization e.g. surrogate mothers and kindergarten systems of schooling.

With an increase in life expectancy, the number of elderly people increased more than fourfold Elderly people, 60 years or above, constitute about 7.5% of the total population in India and the percentage is steadily rising with each decade.[4] There is also an increased prevalence of chronic diseases and disability. In the past, joint family system provided a suitable umbrella to manage personal risks. The elderly played a significant role in decision making regarding household matters, while the younger people were entrusted with the responsibility of ensuring well-being of their ageing parents Now, many young people consider the old member of their family as an obstacle to the advancement of their career as well as an economic burden for their family life.

Similarly, for women the career and

occupation has added up to responsibilities. It is not unusual to see women working as clerks, typists, receptionists, nurses, doctors, school and college teachers, lawyers, police, etc. Deep resentments tend to surface when the husbands are reluctant to take part in the household chores, leading to marital disharmony and tensions. However, women are now much freer now to come out of their homes and can contribute to meeting the family expenses. The urban woman is in a position to exercise much greater authority than before.

The changes in family structure have several implications for mental health professionals. A substantial number of individuals are subjected to an increasing amount of stress linked to these changes and may seek help. The range of disorders and deviancies associated with urbanization include adjustment disorders, depression, sociopathy, substance abuse, alcoholism, crime, delinquency, vandalism, family disintegration, and alienation.[6] In India, while the mental healthcare needs have increased, but the role of family as a strong and important resource in the care of the mentally ill persons is diminishing gradually. Mental health professionals in India have an important role in promoting the preservation of family.[7]

To conclude, the Indian family has come a long way, with both positive and negative changes seen over past few decades. There is an increasing role of mental health professionals who need to have a good understanding of these sociocultural and family changes to be in a position to offer help.

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Dr A K Kala Award Paper

A longitudinal study of change in prevalence of metabolic syndrome and metabolic disturbances 3 months after Clozapine therapy

Naresh Nebhinani, Sandeep Grover, Subho Chakrabarti, Natasha Kate, Ajit Avasthi

Abstract

Background: *Studies which have evaluated prevalence of metabolic syndrome (MetS) in patients with clozapine has done so in patients receiving clozapine for a significant duration and have not taken into account the pre-existing metabolic syndrome while considering the prevalence rate.* ***Aim:*** *To evaluate the prevalence of MetS among patients of schizophrenia prior to starting clozapine and changes in the prevalence of MetS after 3 months of clozapine therapy.* ***Methods:*** *All the inpatients with diagnosis of schizophrenia and considered for clozapine therapy were eligible for the study. MetS was assessed twice, first just prior to starting clozapine and after 3 months (± 1 week) of clozapine treatment.* ***Results:*** *Prior to clozapine 33.3% of the patients fulfilled the criteria of MetS. Additionally significant proportion of patients (53.3%) had atleast 1 or 2 metabolic abnormalities which are used to define MetS. With 3 months of treatment with clozapine, additional 33.3% patients fulfilled the MetS criteria (13 out of 40 patients). In one patient there was reversal of MetS. Overall the prevalence of MetS during clozapine therapy was 53.3%.* ***Conclusion:*** *Nearly half of the prevalence of MetS in patients receiving clozapine is attributable to the pharmacotherapy prior to starting of clozapine and half of the prevalence rate of MetS can be specifically attributed to clozapine.*

Key words: *Metabolic syndrome, schizophrenia, clozapine*

Introduction

In general, it is reported that metabolic disturbances occur more frequently in patients receiving atypical antipsychotics compared to first generation antipsychotics (FGAs). Among the atypical antipsychotics, metabolic disturbances appear to be greatest with clozapine and olanzapine, intermediate with quetiapine and risperidone and lowest with aripiprazole and ziprasidone.[1-5]

Although, clozapine has been reported to have highest potential to cause metabolic syndrome (MetS), data specifically evaluating the same is limited to a handful of studies. These studies have reported MetS prevalence rates varying from 11-74% among patients receiving clozapine.[3-20] These studies have also evaluated potential predictors of MetS in patients receiving clozapine and have linked MetS with age,[4,12,13] body mass index,[3,4,7,10-12] duration of clozapine treatment,[4,13] use of concomitant antipsychotics with clozapine,[7,21] fasting insulin level,[3,7] HbA1c level,[3] serum adiponectin level[10] and smoking.[14] In most of these studies which have evaluated

the prevalence of MetS in patients on clozapine, the assessment has been more or less cross-sectional and limited to patients who are on clozapine for a period varying from 3 months to 8 years.[3-12,14-20]

However, it is well understood that clozapine is mostly used in patients who are considered to have treatment resistance schizophrenia,[22] for which it is required that patient must have received atleast 2 adequate trials of antipsychotics.[23] If one takes this fact into consideration, it is quite possible that many patients with schizophrenia would have developed MetS prior to starting of clozapine and this may be misattributed to clozapine. To have a better idea about the metabolic risks with clozapine evaluating the same prospectively at baseline in drug naive patients and then evaluating the same group of patients after being exposed to clozapine would give the best estimate. However, this has its own ethical problems, considering the risks anticipated with use of clozapine. Alternative method of evaluation of risk of metabolic disturbance with clozapine includes evaluating the prevalence of metabolic disturbances in patients prior to starting clozapine and then following up the cohort prospectively to see the changes in the metabolic parameters. Surprisingly such studies are lacking in literature. A small study evaluated 25 patients with either schizophrenia or schizoaffective disorder before and after clozapine treatment. Prior to clozapine patients were treated with FGAs only and 32% (N=8 out of 25) had MetS, which increased to 64% (N=16 out of 25) with the cumulative average daily dose 472 mg of clozapine upto the duration of 3 years.[13] Considering the limited data the present study attempted to evaluate the extent of MetS among patients of schizophrenia prior to starting clozapine and changes in the prevalence of MetS after 3 months of clozapine therapy.

Material and Methods

The study was approved by the Ethics Review Committee of the Institute. All patients were recruited after obtaining informed consent. The study was carried out at the inpatient/ outpatient unit of a multi-specialty tertiary-care hospital in North India from July 2010 to June 2012. The study group comprised of patients diagnosed to have schizophrenia as per International Classification of Diseases, Tenth Revision (ICD-10).[24]

All the inpatients with diagnosis of schizophrenia and considered for clozapine therapy were eligible for the study. They were explained about the nature and purpose of the study and those who provided informed consent were recruited. This study was conducted in a naturalistic setting where MetS was assessed twice, first just prior to starting clozapine and second after 3 months (± 1 week) of clozapine treatment.

Metabolic syndrome was diagnosed by using the Common criteria for clinical diagnosis of MetS.[25] According to this a person is considered to have metabolic syndrome if he fulfills 3 out of following 5 criteria: high waist circumference ($\geq$ 80 cm for females and $\geq$ 90 for males of Asian origin), systolic blood pressure $\geq$ 130 and/or diastolic blood pressure $\geq$ 85 mm of Hg (or on treatment for hypertension), triglyceride levels $\geq$ 150 mg/dl (or on specific treatment for this abnormality), HDL cholesterol < 40 mg/dl for male and < 50 mg/dl for females (or on specific treatment for this abnormality), fasting blood sugar $\geq$ 100 mg/dl (or on treatment for diabetes mellitus).[25]

All the patients, irrespective of presence or absence of MetS were explained about the need for proper diet and regular exercise, and referred for specialist care whenever required.

Statistical analysis

Analysis was done using the SPSS version 14.0 for Windows (Chicago, Illinois, USA). Frequencies with percentages were calculated for categorical variables and mean and standard deviation were calculated for continuous variables. Comparisons were done by using the Chi-Square test and t-test.

Results

The study included 63 patients, who were assessed at the baseline, of whom 60 completed the study. The results pertain to the 60 patients who completed both the assessments.

Demographic profile

Mean age of the study sample was 30 years and the mean duration of education was approximately 12 years. Majority of the patients were males (65%), single (76.5%), Hindu (78.4%), from urban (73.4%) and nuclear family (80%). Other details are shown in Table-1.

Clinical profile

Half of the patients were diagnosed with paranoid schizophrenia (50%), followed by undifferentiated schizophrenia (45%). Two patients (3.3%) were diagnosed to have simple schizophrenia and one patient had post-psychotic depression. One-fifth (20%) of patients were smokers and only minority (6.6%) had comorbid physical disorders, i.e., hypertension (N = 1), Parkinson's disease (N = 1), Cushing's disease (N = 1) and epilepsy (N = 1). Few patients had comorbid psychiatric diagnosis in the form of trichotillomania (N = 1), moderate

Table 1: Socio-demographic profile (N=60)

Variable	Mean (SD)/ Frequency (%)
Age (years)	30.01 (11.52) (range 16-67)
Education (years)	12.08 (2.98) (range 0-17)
Age at onset of psychiatric disorder (years)	21.74 (10.43) (10-67)
Duration of psychiatric disorder (years)	8.29 (6.4) (range 0.5-38)
Sex	
Male	39 (65)
Female	21 (35)
Marital status	
Currently Single	46 (76.5)
Married	14 (23.5)
Occupation	
On paid jobs	11 (18.4)
Home makers/Not on paid jobs	49 (81.6)
Income (monthly household) in rupees	
Upto 6000	24 (40)
> 6001	36 (60)
Religion	
Hindu	47 (78.4)
Non-Hindus	13 (21.6)
Family type	
Nuclear	48 (80)
Non- nuclear	12 (20)
Locality	
Urban	44 (73.4)
Village	16 (26.6)

depressive disorder (N = 1), genera-lized anxiety disorder (N = 1), and organic personality disorder (N = 1).

Mean clozapine dose at the time of follow-up assessment was 256.16 mg/day (SD 86.12) and more than half (55%) of the patients were on daily dose of equal or more than 250 mg. Three-fifth (58.4%) of the sample was receiving amitriptyline, to relieve sialorrhea related to clozapine.

Metabolic parameters

As depicted in table-2, prior to starting clozapine 33.3% (N = 20) of patients had MetS, which increased to 53.3% (N = 32), after 3 months of clozapine therapy. Of the 20 patients with MetS at baseline, there was reversal of MetS in one patient after starting clozapine. Hence, overall there were 13 new cases (21.66%) of MetS with clozapine therapy. However, when one looks at the risk with clozapine in those who didnot have MetS at baseline 13 out of 40 patients, additional 33.3% patients fulfilled the MetS criteria.

Prior to starting clozapine, abnormal waist circumference (56.7%) was the most common abnormality, followed lower HDL cholesterol level (53.5%) and raised triglyceride cholesterol level (41.7%). Abnormal diastolic blood pressure was the least common abnormality.

With 3 months of clozapine therapy, prevalence of high triglyceride levels and fasting blood pressure increased by 16.6-16.7%, raised diastolic pressure increased by 13.4%, abnormal blood pressure increased by 10%, the prevalence of abnormal waist circumference and raised systolic pressure increased by 6.6%, and lower HDL levels increased by 1.7%. Overall there was increase in the prevalence of different criteria of MetS but it was significant only for fasting blood sugar. Prevalence of MetS and number of criteria of MetS fulfilled also increased significantly. In terms of actual laboratory parameters, the increase in difference parameters was significant only for triglyceride levels.

Prior to clozapine besides the presence of MetS, one-fourth (23.3%) of the patients fulfilled 2 criteria of MetS and another 30% fulfilled at least 1 criterion of MetS.

Changes in the metabolic parameters in patients while on clozapine therapy

As shown in table-3, body weight and BMI increased in 70% of patients after clozapine therapy. Among the various components of MetS, triglyceride increased in 80% of cases, fasting blood sugar increased in 57.5% of cases, waist circumference increased in 53.7% of cases, High density lipoprotein decreased in 51.6% of cases and there was least increase in number of cases with diastolic (40%) and systolic (35%) blood pressure.

Highest number of cases benefited after clozapine therapy with respect to High density lipoprotein levels (41.6%) followed by benefits in fasting blood sugar levels (33.3%).

Predictors of Metabolic Syndrome

Prior to starting of clozapine MetS was significantly associated with higher BMI (29.68 ± 5.90 vs 23.04 ± 5.08, t = 4.52, p < 0.001) and obesity (70% vs 25%, χ^2 11.25, p 0.001). After clozapine treatment too, MetS was significantly associated with higher BMI (25.68 ± 3.76 vs 22.62 ± 3.22, t = 12.66, p 0.011) and obesity (53.8% vs 18.5%, χ^2 5.21, p 0.02).

Discussion

In practice, clozapine is widely regarded as perhaps the most efficacious atypical antipsychotic[26] and its use in difficult to treat patients reflects its greater potency.[27] However, in conjunction with its favorable therapeutic

Table 2: Clinical variables and metabolic syndrome before and after starting clozapine

Variable	Before Clozapine Mean ± SD/ Frequency (%)	After Clozapine Mean ± SD/ Frequency (%)	χ^2/t value
Abnormal waist circumference (≥90 M, ≥80 F)	34 (56.7)	38 (63.3)	0.55
Systolic blood pressure ≥130 mm Hg	13 (21.7)	17 (28.3)	0.71
Diastolic blood pressure ≥85 mm Hg	9 (15)	17 (28.4)	3.14
Abnormal blood pressure ≥130/≥85 mmHg	16 (26.7)	22 (36.7)	1.38
TG ≥150 mg/dl	25 (41.7)	35 (58.3)	3.33
Lower HDL (< 40 mg/dl M, < 50 mg/dl F)	32 (53.3)	33 (55)	0.34
FBS ≥ 100 mg/dl$	11 (18.3)	21 (35)	4.26*
Metabolic syndrome	20 (33.3)	32 (53.3)	4.88**
MS criteria- present (in mean number)	1.95 (1.33)	2.63 (1.36)	-2.77**
MS components fulfilled $			
0	8 (13.3)	4 (6.7)	6.70
1	18 (30)	16 (26.7)	
2	14 (23.3)	8 (13.3)	
3	14 (23.3)	16 (26.3)	
4	9 (15)	12 (20)	
5	1 (1.7)	4 (6.7)	
Body Weight (kg)	68.32 (15.53)	70.27 (15.10)	-0.69
Height (cm)	164.89 (8.92)	164.89 (8.92)	
Body mass index	25.25 (6.18)	25.80 (5.31)	-0.52
Obesity (BMI ≥ 25)	24 (40)	28 (46.7)	0.54
Waist circumference (cm)	88.85 (13.89)	92.11 (13.45)	-1.30
Systolic Blood pressure (mm Hg)	117.53 (10.81)	118.93 (11.63)	-0.68
Diastolic blood pressure (mm Hg)	77.53 (7.67)	80.36 (8.46)	-1.92
Triglyceride levels (mg/dl)	140.75 (66.57)	169.05 (75.73)	-2.17*
High density lipoprotein (HDL) levels (mg/dl)	43.14 (11.13)	41.10 (9.90)	1.06
Fasting blood Glucose levels (mg/dl)	92.35 (13.42)	96.36 (16.16)	-1.48

BMI- Body mass index; WC-Waist Circumference; SBP-Systolic Blood pressure; DBP-Diastolic blood pressure; HDL-High density lipoprotein; TG- Triglyceride; FBS- fasting blood pressure; $- Fischer exact test

Table-3: Change in variables (mean) in entire sample (N=60) before vs after clozapine

Variable	Decreased	Same	Increased
Weight	13 (21.6%)	5 (8.3%)	42 (70%)
Body Mass Index	13 (21.6%)	5 (8.3%)	42 (70%)
Waist Circumference	11 (18.3%)	10 (16.6%)	32 (53.7%)
Systolic Blood Pressure	17 (28.3%)	22 (36.7%)	21 (35%)
Diastolic Blood pressure	12 (20%)	24 (40%)	24 (40%)
High Density lipoprotein levels	31 (51.6%)	4 (6.6%)	25 (41.6%)
Triglyceride levels	7 (11.7%)	5 (8.3%)	48 (80%)
Fasting blood glucose levels	20 (33.3%)	6 (10%)	34 (57.5%)

profile, clozapine is thought to confer considerable cardio-metabolic risk.[13] In this context, the present study examines the relationship of MetS and metabolic parameters with clozapine in 'real-world' setting.

In the present study, MetS was present in 33% of patients prior to starting clozapine, which increased to 53% after 3 months of clozapine treatment. When we compare this finding with prevalence of MetS reported in previous studies in patients receiving clozapine, both the figures as noted in the present study fall in the range of 11-74% reported in literature for prevalence of MetS in patients on clozapine from India and other countries.[3-20] Further the prevalence rate of 33% prior to starting of clozapine is also in the range of 11-68% reported in literature for patients with schizophrenia from India and other countries.[28-30]

The previous longitudinal study by Josiassen et al[13] which evaluted the patients prior to starting clozapine and after treatment with clozapine reported significant increase in prevalence of MetS with clozapine. Prior to starting clozapine only 32% of patients had MetS and after treatment with clozapine the prevalence of MetS increased to 64%. Accordingly, 62% of the cumulative risk of development of MetS with clozapine has nothing to do with clozapine exposure. This suggests that all the risk of abnormal metabolic parameters in patients receiving clozapine should not be attributed to clozapine per se.

When we look at the findings of the present study, the prevalence of MetS prior to starting clozapine is similar to that reported by Josiassen et al,[13] however, the prevalence figure of 53% after clozapine therapy is less than the reported figure of 64%. This difference in prevalence can be understood in the light of the fact that in the present study the duration of use of clozapine was only 3 months and the mean dose of clozapine was 256.16 mg/day (SD 86.12), in contrast to the previous study in which most of the patients were on clozapine for more than 1.5 years and the mean dose of clozapine was 472 mg/day. Both these variables were linked with prevalence of MetS in the study by Josiassen et al.[13]

In the present study abnormal waist circumference was the commonest abnormal MetS component present prior to starting of clozapine and after 3 months of clozapine therapy and this is consistent with literature.[3,18] Distribution of other components of MetS is also consistent with the literature.[3,6,18]

Finding of the present study suggests that with clozapine, more than half to up to two-third of patients gain weight, have increase of BMI, waist circumference and fasting blood sugar levels and reduction of high density lipoprotein levels. However, the rise for blood pressure was low compared to other metabolic parameters. This lower rate of changes can be understood in the light of the fact that patients were recently started on clozapine, which is known to cause hypotension as a side effect in the initial phase of treatment.[31,32] The increase/decrease in the various metabolic parameters, weight and BMI with 3 months clozapine treatment is consistent with the literature, which have evaluated changes in particular parameters with clozapine treatment.[3,13]

Another interesting finding of the present study was that about 40-53.3% of patients fulfilled 1-2 criteria of MetS, besides those with MetS. These high figures indicate that a substantial proportion of patients are at risk for development of MetS. Similar high rates of presence of 1 to 2 components of MetS have been reported in previous study from our centre.[33,34]

To conclude, our study suggests that a significant proportion of patients considered for

clozapine therapy already fulfill the criteria for MetS. Within a short duration of clozapine therapy, about one third of those who do not have MetS develop MetS. Clozapine definitely worsens the metabolic parameters in a significant proportion of patients, irrespective of the baseline abnormality levels. Our study was limited by small sample size, lack of control group and a short follow-up duration. The study also did not evaluate the relationship of MetS with severity of illness, residual symptoms, and type of symptoms, treatment refractoriness, life style and dietary habits.

This study highlights the need to physically monitor this patient population and facilitate interventions to offset the increased risk of developing MetS after starting clozapine. Such measures could include improvement in lifestyle-related behaviors (diet, exercise, smoking habits) and complying with pharmacological management of glucose and lipid dysregulation where indicated.[7] Early recognition of these problems can lead to better control of metabolic derangements, which is likely to lead to improved long-term cardiovascular outcomes.[35] In response to these issues, current schizophrenia treatment guidelines recommend regular monitoring of body mass index, lipid levels, fasting blood glucose levels and blood pressure.[36] Regular monitoring may be especially critical for patients taking clozapine, given the high prevalence of metabolic abnormalities.

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Dr Buckshey Award Paper

Help seeking behaviour and Pathways to Care among patients seeking care at a community mental health clinic and psychiatry outpatient department of a medical college: A study from North Rajasthan

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Abstract

Background: *Studies on pathways to psychiatric care can provide useful information regarding help seeking behaviour of mentally ill people, and utilization of mental health services in an area. With increasing emphasis on community based mental health services there is need to conduct such studies in community mental health care settings.* ***Aims:*** *To study the help seeking behaviour and pathways to care among patients seeking treatment at a community mental health service delivery camp and a psychiatric outpatient of a medical college, and to compare help seeking behaviour and pathways to care among patients seeking treatment at these two settings.* ***Method:*** *Newly registered patients seeking treatment at a community based clinic at primary health care level and those seeking treatment at a medical college psychiatric outpatient clinic were interviewed regarding various care givers approached by them before seeking the current consultation. Various aspects of help seeking behaviour and pathways to care among these patients were analysed.* ***Results:*** *Patients attending community camp had a longer duration of illness, had approached first caregiver and a psychiatrist earlier than those seeking help at medical college. 68.2% of the patients had seen a psychiatrist, 38.2% a general physician and 30% a faith healer.* ***Conclusion:*** *It is feasible to conduct pathways to care studies at community mental health facilities. The differences between help seeking behaviour of patients attending mental health services at primary and tertiary health care level should be considered while planning an integrated networking of community based programmes.*

Keywords: *Help seeking behaviour, pathways to psychiatric care, community mental health clinic.*

Introduction

This has been well documented since 1960s and 1970s that patients with mental illnesses seek help from various caregivers in health and non-health sectors such as faith healers, alternative medicine practitioners and other

indigenous healers before seeking treatment from psychiatrist.[1-8] Various reasons such as lack of awareness about mental illnesses, beliefs in supernatural causation of behavioural problems, stigma attached to mental illnesses and mental hospitals, inadequate availability of accessible mental health services, perceived safety of magico-religious interventions and perceived lack of effectiveness of modern treatment in 'curing' mental illnesses have been cited for not directly seeking help from the psychiatrists by the people with mental illnesses. [2,5,9-16] The resultant delay in appropriate treatment leads to poor treatment response in many of these patients reinforcing people's help seeking from non-psychiatric care providers.[17-19]

Ever since WHO cross cultural study on pathways to psychiatric care was reported by Gater et al[20] in 1991, the interest has been growing constantly in studying pathways to psychiatric care to understand help seeking behaviour of mentally ill patients and factors contributing to such behaviours. A number of studies have been reported from Western and developed countries,[21-27] developing countries[28-34] as well as from India[35-42] during last two decades. These studies have highlighted cultural and ethnic differences in pathways to psychiatric care, preponderance of non-psychiatrist as first care giver and reasons thereof, delay in receiving psychiatric care and reasons thereof, and plurality of caregivers. Some studies have also investigated pathways to care among patients with specific psychiatric disorders such as psychosis and depression.[34,43] Some of the authors have also discussed changes in help seeking behaviour over time indicating increased awareness and better availability of mental health services.[16,24,36]

Most of these studies were carried out at tertiary or referral level mental health care facilities that were already well known to the people and to some extent already had established patterns of pathways to care and referral to those facilities. To the best of our knowledge, there has not been any published report of a study on help seeking behaviour and pathways to psychiatric care to a mental health clinic in community setting. We planned to carry out a study at a community mental health clinic of a recently started community mental health programme at a sub-district (Block) in Northern Rajasthan. We also wanted to compare help seeking behaviour and pathways among patients attending the community clinic at primary health care level with those attending outpatient clinic in department of Psychiatry in a medical college in Northern Rajasthan, in order to explore how the findings can be utilized to improve the help seeking behaviour of the people in the Block served by the community mental health programme.

The present study had two objectives:

1. To study the help seeking behaviour and pathways to care among patients seeking treatment at a community mental health service delivery camp and a psychiatric outpatient of a medical college
2. To compare help seeking behaviour and pathways to care among patients seeking treatment at a community mental health service delivery camp and a psychiatric outpatient of a medical college

Materials and Method

This was a cross-sectional study of prior help seeking behaviour among patients seeking help at two different mental health care settings. Study was conducted at two different settings: at a service delivery camp of a community mental health programme at primary health care level, and at the outpatient clinic of psychiatric

department in a medical college at tertiary health care level.

(a) *Community camp setting:* A three year community mental health programme was started in a sub-district (also called Block) Sangaria of district Hanumangarh in Northern Rajasthan in January 2011. Block Sangaria comprises of town Sangaria and 170 villages with a total population of nearly 2 lakhs. The programme is implemented by a not-for profit organization Nishkam Foundation in collaboration with many local community based organizations and professional bodies, including local branch of Indian Medical Association. A private psychiatric hospital in Sriganganagar, a neighbouring district at 90 kilometers from Sangaria, and Department of Psychiatry at Sardar Patel Medical College in Bikaner, at 250 Kilometers from Sangaria, are involved in the programme as regional collaborators. Geographically the medical college in Bikaner serves as a tertiary health care centre for the population in Block Sangaria and Sriganganagar is among one of the secondary health care level towns in this region.

The activities carried out under the programme include raising awareness about mental health, training of doctors and other health care professionals, and direct service delivery through a monthly free consultation camp organized at town Sangaria. On average about 20 new patients seek help in each camp. Psychiatrists belonging to Nishkam Foundation and from Sriganganagar and Bikaner visit Sangaria every month to provide free consultation to the patients. The patients who need more complex intervention (assessment, hospitalization, psychologist's intervention) are referred to the psychiatric treatment facilities at district level or at medical college. Many of these patients are referred to their family physicians or previous psychiatrists.

(b) *Medical College Psychiatry outpatient setting***:** Sardar Patel Medical College in Bikaner came into existence in 1959 while Prince Bijay Singh Memorial Hospital associated with the college existed since 1937. The hospital has been serving as a tertiary health care centre for the people in northern Rajasthan and adjoining areas of neighbouring states. Psychiatry Outpatient services at the hospital were started since the inception of department of Psychiatry in 1964. Currently the department runs a postgraduate training programme with three faculty members and 6 residents. It has indoor facilities for 45 patients. Outpatient clinic is run daily with a daily average of 80 new patients. All the new patients are either seen by a consultant directly or after work up by a postgraduate trainee.

A minimum sample size of 50 at each site was considered adequate based on the sample size in other pathways studies. Based on the average attendance of new patients at community camp, a period sample of three months (three consecutive camps) was planned. All the patients seeking treatment for the first time at three consecutive monthly mental health camps were included in the sample from community camp setting. For the sample from medical college setting, an equal number of patients were selected by systematic random method from patients attending psychiatry OPD as new registrants during the week following the date of community camp. A systematic random fraction of 20 was decided based on the average number of new patients at psychiatry OPD.

Instruments for assessment

A semi-structured interview performa designed specifically for the present study was used to obtain information on study measures. The study measures included socio-demographic variables (age, gender, education level,

occupation, marital status, type of family, religion, area of domicile), clinical variables (onset, course, diagnosis on ICD-10), and variables related to help seeking behaviour since the onset of symptoms (first care giver, reasons for seeking care from the first care giver, and subsequent care givers, time to seek help from the first care giver and subsequent care givers, time to seek help from a psychiatrist, number of care givers seen before seeking present consultation, and source of referral for the present consultation). In camp, all the clinical diagnosis were ascertained by a senior psychiatrist (DKG).

The information was obtained through face to face interview of the patients and family members accompanying them. Most of the family members were closely associated with treatment of these patients and were able to provide useful information, especially in psychotic patients. Interviews were conducted in respondent's mother tongue which included Hindi, Bagri or Punjabi for most of them. Whenever there was discordance between the patient and family members, they were encouraged to recall details and arrive at consensus. Written informed consent was obtained from the patient and family members. Whenever patient was unfit to give consent (ascertained by a senior psychiatrist- DKG or KKV), consent was taken only from family members. The interviews were conducted by postgraduate trainees who were trained by a senior psychiatrist (DKG). Before actual data collection, each trainee conducted interview in five patients under supervision of the trainer. Interviews were conducted in privacy and confidentiality of information was ensured.

The study was approved by the Ethics Review Committee of Sardar Patel Medical College. The study proposal was discussed with main collaborating community based organizations in Sangaria and their concurrence was obtained before starting data collection. Only those patients/family members who were willing to participate in the study and gave written informed consent were included in the study. Those refusing consent were not put to any discrimination or other disadvantages in their treatment process at respective settings.

Statistical analysis

Data was entered in Microsoft Excel 2003 and transferred to PASW Statistics 18 for statistical analysis. Descriptive statistics were calculated. Proportions were compared using chi-square test. For scale variables independent sample t-test was used to compare two groups and Mann-Whitney U test was used when scale variable did not have a normal distribution.

Results

A total of 110 patients were included in the study. The socio-demographic and clinical profile of the patients is shown in Table 1. There were more male patients in community camp group. The duration of illness did not have a normal distribution so median was calculated. The patients seeking help at community camp had longer duration of illness (72 months versus 30 months, p 0.004). Patients at community camp had diagnosis of depressive disorder, seizure disorder, and migraine more commonly while patients at medical college outpatient had more commonly a diagnosis of acute and transient psychotic disorder, bipolar disorder, and dissociative (conversion) disorder. Both settings had nearly equal number of patients with anxiety disorders, schizophrenia, substance use disorders and somatoform disorders.

Sources of referral for the current help seeking

Table 2 provides sources of referral for the current help seeking at both settings. At community camp setting about one third of

Table 1: Socio-demographic and clinical profile of patients

Variable	Community camp† (n = 55)	Psychiatry OPD in Medical College† (n = 55)	Total sample† (N = 110)	Chi-square/ F value (p)
Age (years):				
Mean ± SD	34.91 ± 13.66	33.27 ± 12.26	34.09 ± 12.95	0.056 (0.813)
Gender:				
Male	43 (78.2%)	27 (49.1)	70 (63.6)	10.06 (0.002)
Female	12 (21.8)	28 (50.9)	40 (35.4)	
Education:				
Illiterate	9 (16.4)	19 (34.5)	28 (25.5)	4.95 (0.176)
Upto Middle	20 (36.3)	15 (27.3)	35 (31.8)	
Upto higher secondary	16 (29.1)	14 (25.5)	30 (27.3)	
Graduation and above	10 (18.2)	7 (12.7)	17 (15.4)	
Marital status:				
Married	40 (72.7)	48 (87.3)	88 (80.0)	3.64 (0.057)
Unmarried	15 (27.3)	7 (12.7)	22 (20.0)	
Type of Family:				
Joint	30 (54.5)	34 (61.8)	64 (58.1)	0.82 (0.663)
Nuclear	16 (29.1)	12 (21.8)	28 (25.5)	
Extended nuclear	9 (16.4)	9 (16.4)	18 (16.4)	
Religion:				
Hindu	42 (76.4)	50 (90.9)	92 (83.6)	8.70 (0.013)
Muslim	5 (9.1)	5 (9.1)	10 (9.1)	
Sikh	8 (14.5)	0	8 (7.3)	
Domicile:				
Villages	27 (49.1)	24 (43.6)	51 (46.4)	3.96 (0.138)
Small town/ BlockCity	26 (47.3)	23 (41.8)	49 (44.5)	
(District and above)	2 (3.6)	8 (14.5)	10 (9.1)	
Duration of illness (months): Median	72	30	39	(0.004)
Course of Illness:				
Continuous less than two years	19 (34.5)	25 (45.5)	44 (40.0)	2.00 (0.368)
Continuous more than two years	25 (45.5)	18 (32.7)	43 (39.1)	
Episodic	11 (20.0)	12 (21.8)	23 (20.9)	1.56 (0.459)
Onset of Illness:				
Sudden	36 (65.5)	32 (58.2)	68 (61.8)	
Gradual	19 (34.5)	23 (41.8)	42 (38.2)	

† Figures in parentheses indicate percentages

Table 2: Sources of referral for the current help seeking

Source of Referral[#]	Community camp† (n = 55)	Psychiatry OPD in Medical College† (n = 55)	Total sample† (N = 110)	Chi-square value (p)
Faith healer	1 (1.8)	2 (3.6)	3 (2.7)	
General Physician	0	6 (10.8)	6 (5.5)	
Other Psychiatrist	1 (1.8)	1 (1.8)	2 (1.8)	
Media	9 (16.4)	0	9 (8.2)	40.62
Community leaders/ volunteers	8 (14.5)	0	8 (7.3)	(< 0.001)
Relatives or friends	21 (38.2)	8 (14.5)	29 (26.4)	
Other patients or their families	12 (21.8)	23 (41.8)	35 (31.8)	
Self referral	3 (5.5)	15 (27.3)	18 (16.4)	

[#] No patient was referred by a community health worker (CHW), non-formal local health care provider (RMP), Chemist/pharmacist, and non-psychiatric specialists in either setting.
† Figures in parentheses indicate percentages

patients sought help either after getting information from media or were referred by the community leaders and volunteers associated with the community mental health programme in Sangaria. 38% of patients were referred by a relative or friend. On the contrary at medical college setting majority of the patients sought help on the advice of other patients (42%) or came on their own (27%). Six patients were referred to medical college by general practitioners while none was referred by a general practitioner to the community camp. Only a few patients were referred by faith healers and none was referred by a non-psychiatrist specialist, community health worker, non-formal local health care provider (RMPs) or a chemist.

First care giver

Table 3 indicates number of patients seeking help from various categories of care givers as the first care giver. More patients attending community camp had sought help from a psychiatrist as the first care giver (22 versus 14) while patients attending medical college outpatient had more commonly sought help from a faith healer or non-formal local health care provider (23 versus 7). About one third of the patients had sought help from a general physician or a non-psychiatric specialist in both the groups. None of the patients in either group had approached a community health worker.

The most important reason shared by the patients or their families for choosing a particular care giver as the first care giver are listed in table 4. More than half of the patients (52%) decided about their first care giver based on their own or that of their families' belief and understanding of the cause and nature of the problem. When patients or their families considered the problem to be arising due to supernatural causes, they sought help from faith healer. The patient who predominantly had physical symptoms and believed their problem to be a medical illness approached a general physician or a non-psychiatrist specialist. The patients or families who considered their problem as either a behavioural problem or a

Table 3: First care giver prior to the current help seeking

Care giver*	Community camp† (n = 52)	Psychiatry OPD in Medical College† (n = 54)	Total† (N = 106)#	Chi-square value (p)
General Physician	16 (30.8)	14 (25.9)	30 (28.3)	
Psychiatrist	22 (42.3)	14 (25.9)	36 (34.0)	
Other Specialists	3 (5.8)	1 (1.9)	4 (3.8)	12.92
Faith healer	3 (5.8)	14 (25.9)	17 (16.0)	(0.044)
RMP	4 (7.7)	9 (16.7)	13 (912.3)	
AYUSH doctor	1 (1.9)	1 (1.9)	2 (1.9)	
Chemist/pharmacist	3 (5.8)	1 (1.9)	4 (3.8)	

AYUSH = Ayurvedic, Unani, Siddha and Homeopathy
** No patient sought help from a community health worker*
†Figures in parentheses indicate percentages
 # Four patients has not sought help from any caregiver in the past
RMP = Registered Medical Practitioner

Table 4. Reasons for choosing the first care giver (n= 106)[#]

Reason	General Physician	Psychia-trists	Other specialists	Faith healers	RMP	AYUSH Doctors	Chemists	Total
Easy availability/ accessibility	20 (66.7)	0	2 (50.0)	0	10 (76.9)	0	4 (100.0)	36 (34.0)
Family doctor/ routine caregiver	5 (16.7)	0	0	0	3 (23.1)	0	0	8 (7.5)
Considered a super-natural problem	0	0	0	16 (94.1)	0	0	0	16 (15.1)
Considered a physical illness	5 (16.7)	1 (2.8)	2 (50.0)	0	0	0	0	8 (7.5)
Behavioural symptoms	0	18 (50.0)	0	0	0	0	0	18 (17.0)
Considered a ‘mind illness’	0	12 (33.3)	0	0	0	0	0	12 (11.3)
Advice of relatives/friends	0	4 (11.1)	0	1 (5.9)	0	1 (50.0)	0	6 (5.7)
Others (taken to hospital by passers by, had faith in Ayurvedic medicine)	0	1 (2.8)	0	0	0	1 (50.0)	0	2 (1.9)
Total	30 (100.0)	36 (100.0)	4 (100.0)	17 (100.0)	13 (100.0)	2 (100.0)	4 (100.0)	106 (100.0)

Chi-Square value = 249.30 , p value <0.001; *# Four patients has not sought help from any caregiver in the past ; *Figures in parentheses indicate percentages*

'mind illness' sought help from a psychiatrist as the first care giver. About 42% patients approached a particular caregiver due to the fact that the caregiver was easily available and accessible in the locality, or the care giver was a routine/family care giver of patient's family. Mostly general physicians, non-formal local health care providers (RMPs) and chemists were approached as the first care givers due to this reason. Only a few (6) patients chose their first care giver based on the advice of a relative or friend.

Delays on the pathways to psychiatric care

We calculated duration in months from the time of onset of illness to time of seeking help from the first care giver and to the time of seeking care from a psychiatrist for the first time. We also calculated time interval between seeking help from the first care giver and seeking help from a psychiatrist for the first time. Distribution of these duration variables was highly skewed to the right (skewness 7.174, 3.364 and 2.353 respectively; kurtosis 56.113, 11.050 and 4.644 respectively). Hence median was calculated for these durations. Median time to see first care giver after the onset of illness was one month in both settings. Median time to see first psychiatrist was shorter in patients attending community camp (one month) as compare with patients attending medical college OPD (five months). However median time interval between seeking help from a non-psychiatrist first care giver and a psychiatrist for the first time was longer in patients at community camp (nine months) than patients attending medical college setting (five months).

We also categorized delay in seeking care from the first care giver and psychiatrist into three time frames viz less than one month, one to six months and more than six months. The number of patients having delay in seeking care according to these categories is given in Table 5. It is evident that patients seeking help at community camp reached the first care giver earlier than those seeking help at medical college setting (86.5% vs 70.4% within one month). Similarly these patients had sought help from a psychiatrist much earlier than their counterparts from medical college settings (55.3% vs 27% seeking help within one month). However patients in community camp group took longer to reach a psychiatrist after having sought treatment from a non-psychiatrist first care giver.

Care givers seen before present consultation

All except four patients had seen one or more care givers before coming for the current

Table 5: Delays on the pathways to psychiatric care

Segment on the pathway	Community camp (n = 55)			Psychiatry OPD in Medical College (n = 55)			Chi-square value (p)
	Within 1 month	1-6 months	> 6 months	Within 1 month	1-6 months	> 6 months	
Reached first care giver†	45 (86.5)	3 (5.8)	4 (7.7)	38 (70.4)	13 (24.1)	3 (5.6)	6.95 (0.031)
First help from a psychiatrist#	21 (55.3)	5 (13.2)	12 (31.6)	10 (27.0)	14 (37.8)	13 (35.1)	8.19 (0.017)
Reached to psychiatrist from the first care giver	5 (29.4)	3 (17.6)	9 (52.9)	10 (40.0)	7 (28.0)	8 (32.0)	1.87 (0.393)

**Figures in parentheses indicate percentages*

consultation. 68.2% of the patients had seen a psychiatrist, 38.2% a general physician and 12% other specialist. 30% of patients reported had seen a faith healer, 15.5% had seen a non formal local health care provider (RMP) and about 5% had sought help each from an AYUSH doctor and a chemist/pharmacist. It was worth noting that no patient reported having sought help from a community health worker ever during the course of illness. Mean number of care givers seen before the present consultation was 3.62 months (SD=3.59). There was no difference between the groups.

More than one fourth of patients (27.3%) attending community camp reported that they had reverted to unqualified heath care providers after they did not find adequate improvement with treatment from a psychiatrist or general physician. Mostly these patients went to seek help from faith healers, AYUSH doctors, chemist and RMP. The similar figure for medical college patients was 7.4%. Some patients (6) also reported that they had received treatment from a faith healer or AYUSH doctor and a psychiatrist at the same time.

Discussion

Studies on pathway to psychiatric care are simple, quick and inexpensive method to obtain information about people's understanding of and beliefs about their mental health problems, their help seeking behaviour and status of mental health services in a particular area. This information can be useful in the planning of mental health services, including specific interventions for help seeking behaviour of people with mental illness. Previous studies from India and most of the studies reported from other countries were carried out at well established tertiary hospitals. This is the first study reported from India carried out in a community mental health setting, on the patients attending a community mental health camp organized as a part of a comprehensive community mental health programme. Studies like this can provide more appropriate and relevant information as compared to those carried out at tertiary health care settings, for the planning of community based mental health porgrammes.

Comparison of pathways to care at primary health care level and tertiary health care level in the present study

Since this was the first pathway study in community setting at primary health care level we thought it will be appropriate to have a comparison group from a tertiary care setting in the same region. The differences observed in these two groups of patients on various help seeking and pathway to care variables reflect the differences - (i) between catchment area of two settings, (ii) between a newly started mental health services and services at well established centre, and (iii) between a community based programme and hospital services.

District Hanumangarh (including Sangaria where the community mental health programme is carried out) and adjoining district Sri Ganganagar are among the most affluent districts with well developed health care system in private sector. This may be the reason that more patients attending community mental health camp in Sangaria had reached to a care giver within one month of the onset of the illness. These patients had approached to a psychiatrist as a first care giver more often as compared to patients seeking help at medical college. They also reached to a psychiatrist earlier as compared to their counterpart in medical college. On the other hand patients seeking help at medical college had more often approached a faith healer or RMP's as the first care giver.

Psychiatric services at medical college started nearly five decades ago and hence already have an established pattern of referral to its outpatient clinic. Thus 10.8% of the patients at Psychiatry OPD at medical college were referred by a general physician and 41.8% by other patients who had taken treatment previously from medical college. On the other hand no patient at community camp was referred by a general physician and only 28.1% of the patients were referred by other patients. For the same reason more than the one fourth of the patients sought help at medical college on their own as compared to 5.5% of patients at community camp. Patients seeking help at community camp had a longer duration of illness and had seen more number of care givers before seeking current consultation, despite having had seen a psychiatrist more frequently and more promptly in the beginning of the illness as compare to patients seeking help at medical college. This kind of apparently contradictory phenomena can be expected at any recently started psychiatric services. Psychiatric disorders have a chronic and relapsing course, and many of the patients stop treatment after some time after initial improvement and have a relapse later. A number of the patients also stop treatment due to inadequate treatment response or financial constraints. Such out-of-treatment patients in the community are likely to be attracted towards a new services (especially if it is easily accessible and affordable) with a resurgent hope. 17 out of 50 (34%) patients presenting at community camp who had received some sort of care earlier were not taking any treatment during six month prior to current consultation. On the other hand most (46 out 49, 93.88%) of such patients presenting at medical college were taking treatment during six month prior to current consultation. These out-of-treatment patients are more likely to have a chronic illness, more dysfunction, and likely to have seen more number of care givers. This observation should be kept in mind while planning to start a new community based mental health services. Any new service should be well prepared to provide comprehensive care to these out-of-treatment patients who might be relatively difficult to treat patients.

Nearly one-third of the patients seeking help at community camp were referred by community volunteers and community leaders associated with the programme while none of the patients presenting at the medical college outpatient was referred by such sources. This may indicate a favourable influence of the ongoing awareness programme and efforts to involve community in the programme at Sangaria, and one can suggest that such programmes may also be organized by medical college psychiatry departments.

First care giver and reason of choosing the first care giver

The first care giver on the pathway to psychiatric care is determined by a complex interplay of demographic, socio-economic and cultural factors and factors associated with health care system. The first care giver has a significant influence on subsequent progression to psychiatric services. Psychiatrist was approached as first care giver by 34% of patients in our study. this figure is relatively high and comparable with a range of figures reported from India and from certain developed countries In Indian studies the number of patients having psychiatrist as a first care giver ranged from 8.3% in study by Gupta et al[35] from a tertiary hospital in 1998 to 57.7% reported by Chadda et al[36] from a Mental hospital in Delhi in 2001. As high as 74% of patients from Kerala center in a multi centric study by Pradhan et al[37] had psychiatrist as first care giver. In two recent

studies from Madhya Pradesh[38] and Rajasthan,[42] 9.2 % and 15% of patients had psychiatrist as the first care giver. In developed countries the figures for psychiatrist as first care giver ranged from 22% to 40%.[22,44]

In this study, the general physician was the first care giver of 28.3% patients. Again literature shows a huge variation in proportion of patients seeking help from a general physician as their first care giver. While Chadda et al[36] and Gupta et al[35] in their studies from Delhi reported 11% of their study sample having first contact with a general physician. Faizan et al[41] in their study of South India reported that more than half of the patients sought help from General Physician as first care giver. Alegria M et al[44] reported that 36% of patients in USA and 66 to 78% of patients in Canada and Netherlands sought help from General Physician as first care giver. Gater et al[31] in study from 6 countries in Eastern Europe 40% patients approached general physician as first care giver. In Japan Fujisawa et al[27] found 54% of their patients seeking help from general physician as the first care giver.

A faith healer was the first care giver in 16% of patients in our study which is similar to the findings of studies by Mishra et al[39] and Gupta et al[35] but much lower than the studies by Lahariya et al[38] (68.5%) from Central India and Jain et al[42] (39.5%) from Rajasthan. Other studies from India have also reported higher figures.[36,37,41] In a similar study from Bali, Indonesia Kurihara et al[32] found 78% of their patient seeking help from a faith healer as first care giver. 12% of our patients had RMP as the first care provider which was higher than some other studies in India.[35,39]

Easy availability and accessibility and practice of seeing a family doctor as a routine was reported as the reason behind choosing the first care giver by 41% of our patients while belief in supernatural causation behind psychiatric problem led about one-sixth of our patients to their first care giver. Similar observations had also been made by some other researcher[35,36,39,42] in India. More than 50% of patients in our study had chosen first care giver based on their perceived cause and nature of their problem. This is an important finding suggesting that an awareness programme aimed at improving people's understanding of the nature and the causation of psychiatric problems can be an effective instrument in bringing about a change in their help seeking behavior.

Only 5.7% of our patients had sought help from first care giver on the advice of a friend or relative. This was not surprising as most of the patients or their families would try to hide their problem due to stigma and hence may not seek advice of friend or relative at the first instance. However subsequently when patient does not improve or when illness becomes known to friends and relatives in the due course of time, patients and their families do seek advice of their friends and relatives to decide about the subsequent care givers, more so if patient does not improve.

The above data shows that there is wide range of variation of people seeking the first ever help from different categories of professionals or community personnel. As such this is not well understood but likely to be determined by a host of factors rooted in local cultural beliefs, health awareness, prevailing illness models and availability and accessibility of health care facilities.

Delay in seeking treatment

Nearly half of our patients had seen a psychiatrist within one month after the onset of illness. Median time to reach a psychiatrist after seeing the first care giver in our study was nine months in community camp and five months in

medical college, which was lesser than the time reported in studies by Chadda et al[36] and Lahariya et al.[38] Time taken by a patients to reach a psychiatrist after seeing a first care giver was less than a month in Japan,[27] 0 to 3 months in Eastern Europe[21] and six months in Australia.[45] Time taken by a patient in reaching from a care giver to psychiatrist is an important indicator of the delay occurring in treatment of the people with mental illness. Many researchers have tried to find out factors affecting the progression from a non psychiatrist care giver to a psychiatrist care giver. In a recent study from Chandigarh Garg et al[40] found that age, source of referral, and nature of previous care giver affected the treatment lag. Many of the other authors have also highlighted the effect of choice of first care giver on the delay in seeking treatment from a psychiatrist.[32,38,46]

Care givers seen prior to current consultation

Of total sample, 40% of patients in our study had sought help from general physician, 30% from a faith healer, and about one-fourth from an RMP, an AYUSH doctor or a chemist at some point on their pathway to psychiatric care. And yet only 2.7% of them were referred to psychiatric care by faith healers and 5.5% by general physicians and no patient was referred by RMPs, AYUSH doctors or Chemists. Similar finding of a high proportion of patients having seen other care givers but not getting referred to the psychiatric facilities by them has been reported in other studies from India[35,39] and in a study from Indonesia.[32]This indicates the need of establishing liaison with non-psychiatric care givers to develop effective networking with them for speedy and appropriate referral of mentally ill patients to psychiatric services. However it has to be done without over psychiatricization of trivial behavioural problems or even milder psychiatric disorders. Surprisingly none of the patients in our study reported having seen a community health worker, indicating that these health workers, supposedly to be the backbone of community based health (including mental) services, currently do not fall anywhere on the pathways to psychiatric care. Incidentally none of the other Indian studies looked into their role in pathways to psychiatric care. The future studies should look into this aspect so that appropriate modification can be made in the training programme for community health workers.

More than one-fourth of patients attending community camp in our study reported seeing a non-allopathic care giver after having sought treatment from a psychiatrist. While this is understandable in view of many chronic patients in our sample, it indicates a need for educating patients seeking treatment at psychiatric services about the nature, course and prognosis of their illness. This may help in reducing window shopping and wastage of resources.

It is obvious from the above discussion that various studies have found wide variations in the first care provider, delay in seeking psychiatric treatment, care providers seen before a psychiatrist and other aspects of pathways to psychiatric care across the Globe and with in India. At global level these variations are attributed to differences in health care system in various countries and population differences across countries and cultures. Within India, besides variations in socio-demographic, economic and cultural factors, and differences in availability of accessible affordable health care and mental health care services in different parts of India, the findings of pathway studies are also influenced by the hospitals and institutions where these studies are carried out. Most of these institutions not only have their established catchment areas but also the pathways to these institutions. Researchers

carrying out a pathways to care study at any mental health care facility may have a follow-up plan to utilize the study findings for improving help seeking behaviours of people in the catchment area for that care facility. This also applies to a community based mental health programme. The WHO ten recommendations made by WHO in the 2001 World Health Report[47] laid a significant emphasis on community based mental health services. The National Mental Health Programme in India also emphasizes on availability of mental health services at community level through integration with primary health care system. The studies on pathways to care may be carried out in any community based mental health programme and the findings can be used to improve the programme. The findings of this study may be useful in enhancing the quality of the current community mental health programme in Sangaria and similar other programmes in Northern Rajasthan.

Using the study findings for improvement in community mental health programme Sangaria

Finding of any research study, especially those conducted in community settings should be utilized for the benefit of the concern communities.[48] We are planning to use the study findings for improvement in ongoing community mental health programme at Sangaria. We have discussed the key findings of the study in the Executive Committee of the Programme and have drafted a tentative plan of action:

- Sharing of the study findings and discussing the implications with stake holders and collaborative organizations.
- Engaging faith healers in the area- Mapping of faith healers practicing in block Sangaria and approaching the faith healers to involve them in the programme.
- To re-engage non-formal local health car providers (RMPs) and organize a workshop for them on identification and referral of people with mental illness.
- To strengthen the networking with community health workers and general physicians who have been trained in this programme.
- To introduce novelty in awareness programme to make it more effective modifying people's perception about the mental illness and to bring a change in their help seeking behavior. We plan to use the study findings in making people aware of their help seeking behaviour and its impact on treatment of mental illnesses.

Some limitations of the study need to be discussed. Information given by the patients or their family members might have been influenced by recollection bias and retrospective falsification. Information gathered in the study might have been influenced by the willingness of the subjects to share information about their previous caregivers. Many times people do not want to acknowledge that they were seeing a faith healer or other traditional care provider. The study does not provide any account of those who do not reach psychiatric services. Relatively smaller sample size did not permit a meaningful multivariate analysis.

To conclude, in this first ever study from India comparing pathways of seeking care by the patients before they reach a community mental health setup or a medical college outpatient set up, it is obvious that in the latter with years long established sources of referral still considerable gaps exist in the pathways taken by the patients before they reach the tertiary care center. In contrast, a relatively new community based mental health programme can

have a favourable impact on the local population to motivate the carers of the sufferers to seek effective medical treatment available in the community. Integrated networking of tertiary, secondary and primary community based programmes and services can strive to minimize the treatment gaps and should be the focus of future studies on treatment pathways. Additionally, study of factors governing the pathways will further help improve the programmes aimed at improving the efficiency of the community personnel and resources.

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Dr GC Boral award

Comparing various treatment options in treatment resistant unipolar, non-psychotic depression

Ajeet Sidana, Sukhtej Sahni, BS Chavan

Abstract

Background: *The available literature says that response rate of unipolar non-psychotic depression with single antidepressant is 30-50%. Such patients can be defined as antidepressant resistant as per Thase and Rush model, 2006. There are multiple strategies to treat such patients but there is not enough evidence based ground for the same.* ***Aims****: To evaluate the role of switching, combination and augmentation with lamotrigine of antidepressants in patients with treatment resistant unipolar non-psychotic depression.* ***Method****: A total of 84 patients of unipolar, non-psychotic depression were included and were put on a single antidepressant by the treating clinician. Out of 84 patients, 50 non-responders were divided in to A,B, and C groups. Group A received additional antidepressant, B received new anti-depressant and group C augmented with Lamotrigine. Then these groups were followed till six weeks and were weekly assessed with administration of HDRS-17, WHO Qol scale and CGI scale.* ***Results:*** *A total of 34 out of 84 patients (40.4%) had significant improvement with single antidepressant, rest (n=50)were randomized into groups A, B and C. All the three groups had adequate improvement in period of six weeks, and 46.66%, 80% and 73.68% attained complete remission in groups A, B and C respectively. The group A had experienced more side effects than the rest.* ***Conclusion:*** *Changing the anti-depressant, increase the chances of response significantly. Adding another antidepressant to pre-existing antidepressant therapy does not increase the chance of response. Rather, increases the list of side effects and cost of the treatment. Adding Lamtrogine again increase the chances of response and recovery significantly and does not increase the list of side effects.*

Keywords: *Unipolar depression, non-psychotic depression, treatment resistant depression, lamotrigine*

Introduction

Large number of studies have shown that a substantial number of patients with unipolar depression do not respond to monotherapy with a standard antidepressant.[1-3] In a recent study, out of 4000 patients with unipolar depression from primary care settings, only 30% achieved remission after a 12-week course of citalopram.[4] This outcome has also been seen in multiple

other studies on unipolar depression.[5-7] In cases of treatment-resistant depression (TRD), guidelines usually recommend a combination or augmentation strategy.[8] Apart from the add-on of lithium (Li) — which is (by some authors) regarded as the most well established and the best empirically supported augmentation strategy[7] — a wide variety of medications including atypical antipsychotics[9] and thyroid hormone[10] are used in TRD. Although the evidence for the efficacy of lamotrigine in bipolar depression is growing,[11,12] data for its efficacy in treatment-resistant unipolar depression remain preliminary.

The benefits of mood-stabilizing effects of anticonvulsants continue to be supported in recent studies.[12,13] In particular, lamotrigine, a phenyltriazine that has been approved by the United States Food and Drug Administration for certain types of seizure disorder and for the maintenance treatment of adults with bipolar I disorder. There is some evidence that lamotrigine may show promise in treating unipolar depression.[13] Moreover conventional treatment guidelines exist for major depression, to date there are no standardized protocols to guide clinicians on how to choose various psychotropic agents in the management of patients with TRD.

Studies suggest that most patients fail to achieve remission on a given antidepressant, and augmentation strategies used in clinical practice include the use of lithium and thyroid augmentation, but there is not a good evidence base for these practices or for more novel strategies such as the use of selective dopamine agonists, or the newer anticonvulsants.[14] This provides us a sufficient ground for research in this area.

In this study, TRD was defined as failure to achieve a response of 50% reduction in Hamilton Depression Rating Scale (HDRS-17) score from baseline, with single antidepressant in adequate dose and duration (Stage 1, Thase and Rush model).[15]

Materials and Method

In this study, the patients of unipolar, non-psychotic depression as per ICD-10[16] who fulfilled the following inclusion and exclusion criteria were included and they were put on a single antidepressant after detailed assessment by the treating clinician as per their routine clinical practice.

Inclusion Criteria were patient meeting the ICD-10 criteria of moderate to severe depressive episode without psychotic symptoms, aged at or above than 18 years and consenting to participate in the study. Those individuals with a co-morbid psychiatric disorder (including a history suggestive of hypomanic, manic or mixed episode), substance dependence (except for nicotine) or a serious medical or surgical co morbidity were excluded. Patients already on multiple antidepressants or on mood stabilisers or history of electroconvulsive therapy in past and for the current episode were also excluded.

A baseline assessment was carried out with HDRS-17[17] and CGI.[18] The patients were assessed weekly and an outcome measure was defined at the end of four weeks. The outcome measures were defined as: remission (HDRS =7 points), response (>50% reduction of initial HRSD-score) and partial response (25–49% reduction of initial HDRS score). At the end of four weeks, the patients who had attained remission or have responded were continued on the same drug and those with partial response were randomly allocated to three different treatment options:

(a) A second antidepressant from a different group was added.
(b) Existing antidepressant was replaced with a different antidepressant.
(c) Lamotrigine was added to the pre-existing drug.

The patients in these groups were followed till four weeks and were assessed weekly with administration of HDRS-17, WHO Qol scale and CGI scale.These patients were followed up

till six weeks and were assessed weekly with HDRS-17 and with WHO-QOL scale, CGI scale at two, four and six weeks.

Results

A total of 84 patients meeting the inclusion criteria were inducted. They were put on a single antidepressant as per the choice of the treating clinician (Table 1). Out of these 84 patients, 34 (40.4%) had more than 50% reduction in HDRS-17 score and these were continued with the same treatment and were followed up and managed as per the standard protocol of the department. These 34 patients who responded to single antidepressant were compared in terms of socio-demographic variables, illness severity with those who didn't respond adequately (Table 2).

Table-1: Choice of first antidepressant

Drug / group of drugs	Number of patients	Drug/group of drugs	Number of patients	Drug/group of drugs	Number of patients
SSRI	66 (78.57%)	SNRI & others	14 (16.66%)	Tricyclic antidepressants	4 (4.76%)
Escitalopram	23 (27.38%)	Venlafaxine	8 (9.52%)	Imipramine	4 (4.76%)
Fluoxetine	20 (23.80%)	Mirtazapine	6 (7.14%)		
Sertraline	13 (15.47%)				
Paroxetine	10 (11.90%)				

Table 2: Socio-demographic variables of responders & non-responders

Profile	Group	Non-responder N (%)	Responder N (%)	P Value
Age	≤ 20 years	07 (14.00%)	05 (14.70%)	
	21-30 years	10 (20.00%)	10 (29.41%)	
	31-40 years	12 (24%)	13 (38.23%)	0.059
	41-50 years	17 (34%)	05 (14.70%)	
	> 50 years	07 (14%)	01 (2.94%)	
Education	Illiterate	11 (22%)	6 (17.64%)	0.146
	Under Metric/	17 (34%)	12 (35.29%)	
	Metric	8 (16%)	6 (17.64%)	
	Inter	14 (28%)	10 (29.41%)	
	Graduation/ Post Grad.			
Occupation	Employed	20 (40%)	18 (52.94%)	
	House wife	25 (50%)	14 (41.17%)	
	Student	05 (10%)	2 (4%)	0.339
	Unemployed	00	00	
	Retired	00	00	
Income	< 3500	11 (22%)	5 (14.70%)	
	3500-7000	22 (44%)	11 (32.35%)	0.276
	> 7000	17 (34%)	17 (50%)	
Gender	Male	28 (56%)	14 (41.17%)	0.730
	Female	22 (44%)	20 (58.82%)	
Marital status	Married	44 (88%)	24 (70.58%)	0.085
	Unmarried	5 (10%)	10 (29.41%)	
	Separated	01 (2%)	00	
Region	Urban	40 (80%)	27 (79.41%)	0.510
	Rural	10 (20%)	07 (20.58%)	

Table 3 shows that the responders and non-responders did not differ on clinical variables including severity of illness, duration of illness, past history and family history. Table 4 shows the number of individuals who responded to a single antidepressant.

The 50 patients who did not have adequate response with first drug were divided among three groups randomly, as follows:

- **Group A**: A second antidepressant from a different group was added (n = 15).
- **Group B**: The existing antidepressant was replaced with a different antidepressant (n = 15).
- **Group C**: Lamotrigine was added to the pre-existing drug. A total of 20 patients were included, and one of the patient had maculo-papular rash over chest and forearms after addition of Lamotrigine, so was dropped from the study and was managed as per the standard guidelines.

These 49 patients were followed up till 6 weeks with weekly assessment with HDRS-17 and with CGI and WHO-QOL scale at every two weeks. Then, the non-responders were randomized into three groups and were compared on socio-demographic and clinical variables.

Table 5 above shows that three groups on socio-demographic variables were similar. Table 6 shows the comparison of the three groups on clinical variables. All were comparable and there was no statistical difference.Table 7 shows comparison among the three groups with mean HDRS-17 scores and standard deviation. It was found that there was significant reduction in HDRS-17 scores in all the groups. However the group A and C were comparable statistically, but the reduction in scores in group B was statistically more than other groups.

Table 8 depicts that there was significant improvement in quality of life in all the groups and the improvement was significant statistically. Along with this CGI was also assessed and it was found that all the groups had reduction in CGI scores, however, Group B and C did statistically better than the Group A (Table 9). Table 10 shows the side effects check list, and these were measured in all the three groups and there was no statistical difference.

Table 3: Clinical Variables of responders and non-responders

Variables	Responders (%)	Non-responder (%)	P value
HDRS (mean±S.D)At baseline	24.13±3.642	25.11±3.162	1.245
Duration of illness (months)	9.70 ± 7.756	8.00 ± 4.457	0.099
Number of patients had past history of depression	7.0(20.58%)	13.0(26%)	0.200
Number of patients had Family history of depression	3.0(8.82%)	8.0(16%)	0.329

Table 4: Choice of antidepressant in responders

Drug	Number of patient who had response (percentage)
Escitalopram	11 (47.82%)
Fluoxetine	7 (35%)
Sertraline	5 (38.46%)
Paroxetine	5 (50%)
Venlafaxine	4 (50%)
Mirtazapine	2 (33.33%)

Table 5: Socio-demographic Variables of non-responders across three groups

Profile	Group	Group A N (%)	Group B N (%)	Group C N (%)	p Value
Age	≤ 20 years	01 (6.66%)	01 (6.66%)	01 (5%)	
	21-30 years	02 (13.33%)	06 (40%)	06 (30%)	
	31-40 years	04 (26.66%)	07 (46.66%)	09 (45%)	0.069
	41-50 years	08 (53.33%)	01 (6.66%)	03 (15%)	
	> 50 years	00	00	01 (5%)	
Education	Illiterate	3 (20%)	2 (13.33%)	3 (15%)	
	Under Metric/ Metric	8 (53.33%)	7 (46.66%)	9 (45%)	0.246
	Inter	1 (6.66%)	4 (26.66%)	7 (35%)	
	Graduation/ Post Grad.	3 (20%)	02 (13.33%)	1 (5%)	
Occupation	Employed	7 (46.66%)	8 (53.33%)	10 (50%)	
	House wife	7 (46.66%)	5 (33.33%)	10 (50%)	
	Student	01 (6.66%)	2 (13.33%)	00	0.439
	Unemployed	00	00	00	
	Retired	00	00	00	
Income	< 3500	1 (6.66%)	03 (20%)	03 (20%)	
	3500-7000	10 (66.66%)	07 (46.66%)	09 (60%)	0.276
	> 7000	04 (26.66%)	05 (33.33%)	08 (53.33%)	
Gender	Male	08 (53.33%)	06 (40%)	11 (55%)	0.630
	Female	07 (46.66%)	09 (60%)	09 (45%)	
Marital status	Married	14 (93.33%)	14 (93.33%)	18 (90.00%)	0.078
	Unmarried	1 (6.66%)	1 (6.66%)	2 (10.00%)	
	Separated	00	00	00	
Region	Urban	12 (80%)	13 (86.66%)	17 (85%)	0.610
	Rural	03 (20%)	02 (13.33%)	03 (15%)	

Table 6: Clinical variables across three groups

Variables	Group A	Group B	Group C	P value
HDRS (mean ± S.D.)	21.13 ± 3.126	19.61 ± 2.985	22.02 ± 3.456	0.985
Duration of illness (months)	9.70 ± 7.756	8.00 ± 4.457	6.53 ± 3.866	0.099
Number of patients had past history of depression	7.0 (23.3%)	2.0 (6.7%)	5.0 (16.7%)	0.200
Number of patients had Family history of depression	5.0 (16.7%)	2.0 (6.7%)	2.0 (6.7%)	0.329

Table 7: HDRS score at different assessments across three groups

Group	HDRS-17 (mean/SD) 1st week	HDRS-17 (mean/SD) 2nd week	HDRS-17 (mean/SD) 3rd week	HDRS-17 (mean/SD) 4th week	HDRS-17 (mean/SD) 5th week	HDRS-17 (mean/SD) 6th week
Group A	21.66 (3.37)	17.6 (3.15)	13.6 (2.19)	10.9 (1.79)	8.73 (1.83)	6.2 (2.33)
Group B	20.86 (3.41)	16.66 (3.22)	13.2 (2.65)	10.06 (1.48)	7.8 (1.42)	4.13 (1.06)
Group C	19.31 (4.35)	15.26 (3.34)	13 (2.86)	10.63 (2.49)	9.05 (2.12)	5.84 (1.70)
Significance P value	0.193	0.118	0.799	0.510	0.145	0.005

Table 8: Assessment of QOL using WHO-QOL scale

Groups (WHO-QOL total score)	2nd week	4th week	6th week	P value
Group A	33.40 ± 6.190	68.20 ± 4.916	75.40 ± 3.502	0.001**
Group B	33.53 ± 8.759	63.00 ± 4.983	72.40 ± 4.149	0.001**
Group C	32.00 ± 6.808	64.20 ± 7.513	69.40 ± 7.502	0.001**

**p value < 0.001

Table 9: CGI scores in different assessments

CGI (S)	Baseline	Two weeks	Four weeks	Six weeks
Group A	4.10±0.607	2.73±0.521	1.32±0.785	1.0±0.00
Group B	4.27±0.450	2.57±0.504	1.0±0.00	1.0 ±0.00
Group C	4.33±0.477	2.50±0.682	1.00±0.00	1.0±0.00
P-value	0.203	0.275	0.0001**	——

**p value <0.001

Table 10: Side effects across the three groups

Side effects	Group A	Group B	Group C	P-value
Dry mouth	2	0	0	0.089
Drowsiness	5	0	0	0.012
Blurred vision	2	1	0	0.160
Headache	7	2	1	0.383
Constipation	4	2	1	0.271
Diarrhoea	0	1	0	0.338
Increased/decreased appetite	5	6	3	0.554
Anxiety	6	2	4	0.093
Nausea or Vomiting	4	3	1	0.383
Disturbance in sexual function	9	8	4	0.271
Palpitation	3	2	1	0.586
Sweating	3	1	0	0.202
Insomnia	0	1	2	0.152
Other specific side effects i.e. mania	0	0	0	0.364
Dermatological reactions	0	0	2	0.064

*p < 0.05

But the group A patients had greater side effects than the other two groups.

Discussion

A total of 84 patients of unipolar, non-psychotic depression were inducted and were put on a single antidepressant as per the clinician choice, and findings show that 66 (78.57 %) were prescribed an SSRI, the most common being Escitalopram, followed by fluoxetine, sertraline and paroxetine. Earlier surveys indicate that antidepressant use, particularly of SSRIs, has increased rapidly and is being the most often prescribed antidepressant class.[19,20] Out of 66 patients on SSRI's, 28 patients (42.42%) had shown response with the treatment and were continued with the same drug. So it is to be noted that response rate with SSRI in an

episode of unipolar non psychotic episode came out to be 42.42%, while in an earlier study which had 4000 cases of unipolar depression, the response rate was found to be merely 30%.[4] However in these studies the end point was remission and that too with a single drug (citalopram). Similarly other studies found that response was anywhere between 30 to 50%.[21]

The remaining 18 (21.42%) patients were put on SNRI, Mirtazapine and TCA. Among the SNRI, single drug was used and it was venlafaxine in 8 patients. Out of these 8 patients, 6 (33.33%) patients had response after 4 weeks. The total patients who had shown response with single antidepressant were compared on socio-demographic and clinical variables with rest of the patients and there were no significant differences. The other 50 patients were randomized into three different groups as mentioned earlier and then were followed up for next six weeks.

These three groups were also compared on socio-demographic and clinical variables after randomization, but there were no significant differences.

In Group A, the patients were added another drug from a different antidepressant class along with the ongoing antidepressant. This group had 15 subjects, all of them had significant response with the treatment statistically and 7(46.66%) of the patients had complete remission i.e. HDRS-17 score of less than 7 at the end of six weeks. The work done by Craig et al,[22] reflected similar findings that combination, does leads to improvement in depressive symptomatology, but adds to cost and side effects.

In Group B, the existing anti-depressant was replaced with a different antidepressant of different class. This group also had 15 subjects and all of them had significant response with the treatment statistically and all the 12(80%) out of 15 patients attained complete remission at end of the study. In previous studies it was found out that switching improved compliance, reduced cost along with depressive symptomatology.[23] However, the rate of response to switching is highly variable.[24,25]

In Group C, Lamotrigine was added to the existing antidepressant and it had total of 20 patients, out of which one was dropped out as this patient developed maculo papular rash after 5 days of initiation of Lamotrigine. Among the remaining 19 patients, 14 (73.68%) patients attained complete remission.

There was reduction in HDRS-17 score in all the groups and it was significant statistically across the groups. But on comparison among the groups, it was found that reduction in scores in group B was statistically more than the group A and C. In the earlier studies, various authors have reported the role of Lamotrigine for augmentation in bipolar and as well as unipolar resistant depression.[11-13]

In addition to challenges in choosing the optimal pharmacologic treatment, clinicians face a growing concern over the increasing case load of treatment resistant patients across major psychiatric disorders. Once it has been determined that a medication change is warranted based on lack of response to the current treatment, the treating clinician can opt for various changes in strategy.[26,27] Common change strategies involve 'switching' or 'cross-titration' techniques. In many circumstances, it is difficult to manage a change in medication while evaluating treatment effects in patients taking different classes of antidepressants simultaneously. Although there are concerns about the use of multiple medications for a particular condition, the benefits of shortening latency response and sustaining improvement.

In addition to this, the failure with one antidepressant for sufficient dose and duration is also being recognized as antidepressant

resistance.[26] In this study, approximately sixty per cent of patients had not responded to one antidepressant for adequate dose and duration. The results show that all the patients in three groups had significant improvement with the treatment, however, there were some differences.

Although, there was improvement in all the groups, but patient who gained complete remission differed across the three groups and it was found that 46.66% of patients attained remission in group A, 80% in group B and 73% in group C. Thus it can be seen that more than 50 % attained remission where the ineffective drug was replaced with another antidepressant or Lamotrigine was added.

Then it was also observed that in group B, where the existing antidepressant was replaced with another, the reduction in HDRS-17 was statistically significant and greater number of patients attained complete remission as compared to the other groups. It was also observed that tolerability was better in group B than the other two groups; however there were no statistical differences.

It was noted that in group A in which individuals were taking two antidepressants were having more side effects with no apparent clinical advantage.

Finally it is noteworthy to consider that although all the patients had a diagnosis of unipolar depression with no past history of any hypomanic or manic episode, but the possibility of developing bipolarity in future cannot be ruled out. A 2006 meta-analysis review found wide variation in the findings of prior studies; for patients who had failed to respond to an SSRI antidepressant, between 12% and 86% showed a response to a new drug, with between 5% and 39% ending treatment due to adverse effects. The more antidepressants an individual had already tried, the less likely they were to benefit from a new antidepressant trial.[27] This makes us think as to what is the right approach to the benefit of clinical population who does not respond adequately to first antidepressant.

In this study, patients who met criteria for TRD and who received lamotrigine augmentation to their antidepressant regimen were evaluated for their response to augmentation. Based on analysis, results showed significant improvement of the clinician-rated 'target symptoms' of depression. Equally important was the patient's report of positive response. Perhaps just as noteworthy was the lack of worsening of the depressive symptoms during the initial titration of Lamotrigine. By the first month after initiating Lamotrigine, significant differences were observed. The Lamotrigine group also had fair tolerability. The favourable side effect profile of Lamotrigine is in line with results from other studies.[11,12,25] and makes it a potential alternative especially for patients, in whom possible side effects of other augmentation strategies such as metabolic disturbances as in the case of atypical antipsychotics or renal insufficiency as in the case of Lithium are problematic. For example, a recent post-hoc analysis revealed that Lithium treated, obese bipolar patients gained weight after an 18-month maintenance treatment, whereas those treated with Lamotrigine lost weight.[28]

Our findings of the early onset to response of Lamotrigine (before a 'therapeutic' dose, as it is used in epileptology, is reached) are in accordance with findings from other studies that included unipolar[11] and bipolar[29] patients. Normann et al[29] hypothesized an accelerating effect for Lamotrigine in the treatment of major depression. These findings are in contradiction to the notion that Lamotrigine might not be useful in the treatment of acute TRD owing to its slow dose escalation scheme.

This study was intended to add to the

decision making process of clinicians while treating TRD patients in their psychiatric practice. It was found that that 40.4% of patients with diagnosis of unipolar, non-psychotic depression had adequate response with the first antidepressant prescribed. This study also reflected SSRIs as the most frequently prescribed class of antidepressants. It was seen that all the three groups had adequate improvement with the treatment over six weeks. However the improvement in group B was statistically significant than the others and moreover, greater number of patients attained remission in group B and C than group A. It was also noted that the in group A, patients had more side effects than the other two groups. This implies that a combination of two antidepressants had similar improvement as with replacement or augmentation but led to greater side effects.

Followings are the implications of the current study:

- Adding another antidepressant to pre-existing antidepressant therapy does not increase the chance of response. Rather, increases the list of side effects and cost of the treatment.
- Changing the anti-depressant, increase the chances of response significantly. However, the risk of switch cannot be ruled out.
- Adding Lamtrogine again increase the chances of response and recovery significantly and does not increase the list of side effects. Further, it can be said that Lamtrogine can be helpful in obese non-psychotic patients and also provides mood stabilizing properties.

To conclude, it can be interpreted from the study results that in patients of unipolar, non-psychotic depression who failed to respond to single antidepressant did not benefitted additionally with second antidepressants. The replacement with another antidepressant provided good results.

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Original article

Relationship of personality characteristics and stressful life events to Myocardial Infarction: A case control study

J Jeenger, DK Sharma, CS Sushil, DK Vijayvergiya, R Sanadhya

Abstract

Background: *Some personality traits are known to be independent risk factors for acute myocardial infarction (MI), however there is a paucity of research on Indian subjects.* ***Aim:*** *To investigate the relationship of various personality traits and stressful life events to the development of MI.* ***Method:*** *A total of 50 cases with an established diagnosis of first episode of acute MI completed the assessment within two to three weeks of MI and were compared with 50 healthy controls.* ***Results****: Findings in terms of personality traits revealed that MI patients were significantly more tense, frustrated, impatient, over wrought (Q_4), more conservative, traditional (Q_1), highly apprehensive, worrying, depressive, self-doubting (O), shrewd, diplomatic (N) compared to controls. Also, patients were concrete thinkers (B), emotionally less stable, easily upset (C), withdrawn, shy (H) and less tough minded. Stressful life events were significantly associated with MI patients as compared to healthy controls.* ***Conclusion****: Identifying certain personality traits which may predispose a person to coronary artery disease may be important for early interventions.*

Keywords*: Healthy, Personality, Stressful life events*

Introduction

Coronary heart disease (CHD) is one of the most common and life threatening illness. With urbanization, the prevalence of risk factors for CHD is increasing rapidly in the developing countries as well. Cardiovascular diseases have almost reached to epidemic proportions in India.[1] The reason for high risk of CAD among Indians is still unclear but could be attributed to genetic predisposition and unhealthy life-styles.[1,2]

Intense emotions such as anxiety, anger, elation and sexual arousal are accompanied by predictable increases in heart rate and blood pressure. The interaction of heart and psyche works both ways. Emotions and stressful experiences affect the heart directly through the autonomic nervous system, as well as indirectly via neuroendocrine pathway.[3,4]

Type A behavior, initially proposed by Friedman and Rosenman, is suffused with a sense of ambition, time urgency, anger and hostility. People with Type A behaviours are excessively competitive and aggressive, with an extreme drive for achievement. In contrast, type B people are relaxed, unhurried, less aggressive,

and do not get upset when thwarted. Large prospective studies showed that those with type A behavior pattern, compared with type B individuals, had a significantly elevated rate of developing CHD and myocardial infarction (MI).[5]

Various studies suggested that type A personality traits especially anger and/or suppressed anger are strongly associated with MI. Anger, hostility, antagonistic interactions, cynicism, and mistrust have now been associated positively in long-term, prospective studies with the incidence of CHD, coronary event, and total mortality.[6-9] Mittleman et al [10] investigated the relative risk of onset of MI after the exposures for anger and anxiety above the 75th percentile. Both showed a significantly elevated relative risk.

Acute mental stress, has negative cardiovascular consequences.[11,12] Cardiovascular mortality rises in the month following the death of a loved one,[13] the incidence of cardiac events rises immediately after natural disasters[14] and among civilians subjected to military attack. Trichopoulos et al[15] found excess of cardiac deaths in the days after the Athens earthquake and proposed that this excess was due to mental stress. Higher emotional events, anger at work place[16] and acute depressed mood may lead to CHD.[16,17]

Few large-scale prospective epidemiologic studies found the influence of low socio-economic status, work stress, social isolation, and depression as risk factors for CAD. [18,19] The Multicenter Investigation of Limitation of Infarct Size (MILIS)[20] study interviewed 849 acute MI patients within 18 hours of symptom onset, of whom 48.5% had possible triggering factor in which most common were emotionally upset (18.4%) and moderate physical activity (14.1%) followed by lack of sleep and overeating. By contrast, only 10% of 1818 patients in the Secondary Prevention Reinfarction Israeli Nifedipine (SPRINT)[21] study reported possible external triggers of acute MI. Exceptionally heavy physical work, quarrels at work or home, and unusual mental stress were the most commonly mentioned triggers.

There is a paucity of research in this direction on Indian subjects. The study aims to assess the role of various personality traits in the development of MI and also, determine the association of stressful life events in development of MI.

Material and method

This study was conducted in the Department of Cardiology and Medicine of M.B.S. Hospital, Kota, attached to the Government Medical College, Kota. Prior approval of the ethics committee was taken.

Group A, comprised of 50 cases of established diagnosis of first attack of acute MI confirmed by either cardiologist or consultant physician on the basis of ST-T elevation on ECG. Patients were stable enough to complete the assessment within two to three weeks of MI. It was a sample of convenience. Group B had 50 healthy control subjects matched for age (± 5 years) and were non-biological relatives and friends of the patients. Controls did not have any past or present history of MI.

The selected patients (group A) and control (group B) were assessed using the following tools:

- A specially designed proforma prepared for the study which included identification data, sociodemographic profile, past history of illness.
- Presumptive Stressful Life Event Scale:[22] This scale is considered suitable for the Indian population, using stressful life event items related to its culture and standardized in Indian population. Scale

items were classified into (a) Desirable, Undesirable or Ambiguous and (b) Personal or Impersonal. Scale comprising of 51 items, have scoring from zero to one hundred. Score of 100 is treated as the highest stress score and zero as no perceived stress.

- Sixteen Personality Factor (16 PF) questionnaire:[23] The questionnaire is an objective scorable test. It gives the most complete coverage of personality factors possible in a brief time. This test has been designed for the use with individual ageing 16 years and above. This test is most appropriate to titrate individuals whose educational level is roughly equivalent to that of the average high school student. The personality factors measured by the 16PF are not just unique to the test but instead rest within the context of a general theory of personality.

Results

Tables 1 and 2 compare the profile of patient and control groups with regards to socio-demographic, tobacco use and family characteristics. There was no difference between the two groups except tobacco use (62%) and family history of cardiac illness (32%) which was significantly more in MI patients compared to controls (12%).

With reference to personality characteristics (Table 3), MI patients were significantly more tense, frustrated, impatient, over wrought (Q_4), more conservative, traditional (Q_1), highly apprehensive, worrying, depressive, self-doubting (O), shrewd, diplomatic (N). MI patients were concrete thinkers (B), emotionally less stable, easily upset (C), withdrawn, shy (H) and less tough minded when compared to healthy controls ($p<0.05$).

Table 1: Profile of cases and controls

Variables	Study group (n = 50)	Control group (n = 50)
Age group		
31-40 yrs	04 (8%)	05 (10%)
41-50 yrs	10 (20%)	10 (20%)
51-60 yrs	18 (36%)	17 (34%)
61-70 yrs	18 (36%)	18 (36%)
Sex		
Male	38 (76%)	40 (80%)
Female	12 (24%)	10 (20%)
Marital status		
Married	42 (84%)	44 (88%)
Divorced/widower/ separated	08 (16%)	06 (12%)
Religion		
Hindu	41 (82%)	42 (84%)
Muslim	08 (16%)	07 (14%)
Christian	01 (02%)	01 (02%)
Domicile		
Urban	29 (58%)	30 (60%)
Rural	21 (42%)	20 (40%)
Education		
Middle	24 (48%)	15 (30%)
Secondary	14 (28%)	18 (36%)
Sr. Secondary	07 (14%)	11 (22%)
Graduate	03 (06%)	05 (10%)
Post Graduate	02 (04%)	01 (02%)
Occupation		
Housewife	10 (20%)	08 (16%)
Farmer	05 (10%)	08 (16%)
Businessman	08 (16%)	10 (20%)
Private service	05 (10%)	05 (10%)
Govt. service	10 (20%)	12 (24%)
Unemployed	12 (24%)	07 (14%)
Tobacco use*		
Yes	31 (62%)	21 (42%)
No	19 (38%)	29 (58%)

*X^2- 4.000, d/f-1, $p < 0.05$

As seen from Table 4, more percentage of patients (34%) had three or more stressful events over past one year compared to controls (12%).

Discussion

This study was aimed at finding out the role of personality traits and stressful life events in the development of first episode of acute MI.

Table 2: Family characteristics: Cases and controls

Variable	Study group (n = 50)	Control group (n = 50)
Family Income		
< 5000 Rs/mth	18 (36%)	16 (32%)
5000-10000Rs/mth	24 (48%)	24 (48%)
> 10000Rs/mth	08 (16%)	10 (20%)
Family Size		
< 5	08 (16%)	10 (20%)
05 to 10	32 (64%)	32 (64%)
> 10	10 (20%)	08 (16%)
Family Type		
Nuclear	12 (24%)	15 (30%)
Ext. Nuclear	24 (48%)	20 (40%)
Joint	14 (28%)	15 (30%)
Family history of cardiac Illness*		
Present	16 (32%)	06 (12%)
Absent	34 (68%)	44 (88%)

*X2 - 5.828, d/f-1, $p < 0.05$

Table 4: Stressful life events over last one year

	Study Group (n = 50)	Control Group (n = 50)
No Event	06 (12%)	13 (26%)
1-3 Events	27 (54%)	31 (62%)
> 3 Events	17 (34%)	06 (12%)

Findings support that perceived stress may have an effect on the occurrence of acute MI. Various researchers explained biological plausibility of this relationship. Emotional stress can precipitate cardiac events either through a chronic state of vigilance that alters the lipids, thereby contributing to atherogenesis or through an acute severe emotional stress leading to catecholamine excess that increases the platelet count, makes the platelets more adherent and precipitates rupture of atherogenic plaque.[24]

Table 3: Personality characteristics: Cases and controls

Factors		Study group (n = 50)	Control group (n = 50)	p value
A	Warmth	5.60 ± 1.62	5.80 ± 1.60	$p > 0.05$
B	Reasoning	4.27 ± 1.64	5.16 ± 1.67	$p < 0.05$
C	Emotional stability	6.16 ± 1.36	7.06 ± 1.78	$p < 0.05$
E	Dominance	4.74 ± 1.73	5.10 ± 2.12	$p > 0.05$
F	Liveliness	6.04 ± 1.32	6.20 ± 1.59	$p > 0.05$
G	Rule Conscious	6.52 ± 1.50	6.54 ± 1.50	$p > 0.05$
H	Social Boldness	5.04 ± 1.35	5.58 ± 1.31	$p < 0.05$
I	Sensitivity	5.22 ± 1.46	5.84 ± 1.68	$p < 0.05$
L	Vigilance	6.64 ± 1.61	6.98 ± 1.81	$p > 0.05$
M	Abstractedness	4.82 ± 1.28	5.14 ± 1.46	$p > 0.05$
N	Privateness	6.74 ± 1.53	5.88 ± 1.53	$p < 0.01$
O	Apprehensive	5.02 ± 1.47	4.24 ± 1.57	$p < 0.01$
Q_1	Openness to change	4.90 ± 1.46	6.02 ± 1.50	$p < 0.001$
Q_2	Self Reliance	5.26 ± 1.22	5.46 ± 143	$p > 0.05$
Q_3	Perfectionism	6.86 ± 1.35	6.92 ± 1.35	$p > 0.05$
Q_4	Tension	6.20 ± 1.35	5.20 ± 1.08	$p < 0.001$
	Second order factors			
QI	Extraversion	4.84 ± 1.18	5.58 ± 1.73	$p < 0.05$
QII	Anxiety	6.76 ± 1.66	5.64 ± 1.33	$p < 0.001$
QIII	Tough Poise	4.74 ± 1.02	5.40 ± 1.48	$p < 0.05$
QIV	Independence	5.0 ± 1.03	5.30 ± 1.3	$p > 0.05$

In a study by Deljanin et al,[25] those with huge financial problems, violation of law and serious illness of family members were at the highest risk for acute MI. Gullette et al[26] found an increased risk of silent myocardial ischemia (measured by electrocardiographic changes) after episodes of mental stress, such as sadness, frustration, and tension. Similar observations have also been made in previous research from India.[27]

There has been a great deal of controversy over the association of type A personality and cardiovascular disease. In fact, several studies like Multiple Risk Factor Intervention trial[28] and the Multicenter Postinfarction Program[29] reported negative finding on the subjects. However, several other studies have supported the association. The type A personality does not define a homogenous entity, rather it includes several behavioral characteristics among which anger, impatience and competitiveness seem to play a major role.[30] In view of this, more recent studies have investigated the effect of individual personality traits on cardiovascular disease. Cole et al[31] showed the significant association between personality traits like time urgency/ impatience and MI (OR 3.99; 95% CI 1.32–12). In the present study, it has been observed that MI patients were significantly more tense, frustrated, impatient, over wrought (Q_4), more conservative, traditional (Q_1), highly apprehensive, worrying, depressive, self-doubting (O), shrewd, diplomatic (N), concrete thinkers (B), emotionally less stable, easily upset (C), withdrawn, shy (H) and less tough minded compared to healthy controls ($p < 0.05$).

MI patients scored significantly high on anxiety (factor QII) and low on extroversion (factor QI) and sensitivity (factor QIII) in present study, while in another Indian study,[32] MI was significantly associated with hyperactive ($P < 0.001$), dominant ($P = 0.03$), egoistic ($P < 0.001$) and introvert ($P < 0.001$) personalities. Another study found the males with MI had significantly high scores on superego ($P < 0.001$) and low scores on extroversion ($P < 0.05$).[33]

Limitations of the study include a relatively small sample size, inclusion of only literate subjects and only a single hospital setting, thereby limiting the generalizability of results. Findings from this and similar previous studies has important implications. The interventions for hostility, competitiveness, and time urgency may aim at secondary prevention of cardiac events.[34] There may be utility of the personality questionnaire-based approach to identify coronary-prone behaviors for the purposes of research and interventions.

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Original article

Prevalence and factors related to suicidal ideation in students

Anupam Talwar, Priti Arun, Sachin Kaushik

Abstract

***Background**: Adolescent and youth population is at a relatively higher risk of completed suicide. It is important to assess for various factors associated with suicidal ideation in this population group. **Aims**: The study was planned to assess the prevalence and factors associated with suicidal ideation among students. **Method**: A cross sectional study was carried out on students (n=100) from the medical college, non professional college and high schools in Chandigarh. The study sample was assessed using Suicide Risk Eleven, General Health Questionnaire, ICMR Psychosocial Stress Scale, Personality Trait Inventory, Zung Depression Scale and CAGE Questionnaire. **Results**: Of total sample, 13% reported suicidal ideation, out of these 6% had depression, and a similar percentage had a high psychosocial stress. Students with suicidal ideation were found to have personality traits of high introversion (38%) and depressive tendency (68%). Suicidal ideas were associated with psychosocial stress (61%), stressful life events (54%), and depression (46%). Age, GHQ score and depression were found to be significant in the logistic regression. **Conclusion**: Students with high psychosocial stress, depression, depressive tendency and those who were younger in age had relatively higher suicidal ideas. Findings have implications for suicide prevention among student population.*

***Keywords**: Suicidal ideation, Students, Depression, Personality traits, Psychosocial stress*

Introduction

Suicidal behaviors represent a spectrum, ranging from suicidal ideation, to suicidal plans, suicide attempts, and completed suicide. Non-fatal suicidal behaviors (NFSB) include all these behaviors except the completed suicide.[1] Across different cultures, prevalence of NFSB has been found to be alarmingly high among adolescents.[2] Young people with an attempted suicide, who persistently express suicidal ideas, particularly where there is evidence of planning and strong intent to die, are at an increased risk of re-attempting suicide. It has been shown that among youth, 1 suicide attempt raises the risk of suicide completion by 15-fold.[3] Among young adults aged 15 to 24 years old, there are approximately 100-200 attempts for every completed suicide.[4] Thus, it becomes

exceedingly necessary to identify adolescents and young adults with suicidal ideation.

A recent study from north India on stress and suicidal ideation among adolescents reported that 6% of adolescents had reported suicidal ideation and 0.39% had made a suicidal attempt.[5] In a similar study from Delhi, prevalence of suicidal ideation in adolescent was 15.8%.[6] Across the world, a study from Brazil on 1,145 adolescents reported prevalence of suicidal ideation to be 14.1%[7] and another Colombian study reported a prevalence of 13 %.[8] Similarly a study from China reported suicidal ideation in 8.8 % of adolescents in a sample of 2,013 adolescents.[9]

Studies in the past had also attempted to ascertain the factors associated with suicidal ideation in adolescents. Suicidal ideation is a part of generalized risk profile for some adolescents and represents unique risk behaviour for others.[10] The overall empirical evidence suggests that mental disorders and substance abuse are the most salient risk factors in both completed and attempted adolescent suicide.[11] Depression has been implicated as a significant risk factor for suicidal ideation.[12] Further alcohol use has also been found to be associated with suicidal ideation.[13] Personality factors and stressful life events are also said to play a major role in predisposing to suicidal ideation in adolescents.[14] Multiple-problem youth, those who exhibit two or more problem behaviours such as alcohol use, cigarette smoking, illicit drug use, and delinquent behaviour show more shift from suicidal ideas to acts.[15]

There is a need for more studies from India on various factors associated with suicidal ideas in adolescents and young adults, which will help in better understanding of this problem. The present study aimed at (a) assessing prevalence of suicidal ideas in high school and college students; and (b) assessing the presence of depression, psychosocial stress, stressful life events, personality pattern, psychiatric illness and alcoholism in those having suicidal ideas.

Material and Methods

A total of 100 high schools and college students aged between 16-22 years from three educational institutes of Chandigarh were assessed on various socio-demographic variables and clinical parameters. Optimum sample size of 100 students was calculated on basis of 40% prevalence of suicidal ideas allowing 20% permissible error and 95% confidence coefficient.[16]

The sample was recruited from three institutes of Chandigarh (1 school, 1 medical college and 1 non-professional college) using Stratified PPS (probability proportional to size) sampling technique. The number of students selected from each institute was according to number of students enrolled in that institution. This procedure assigns each sampling unit a specific chance to be selected in the sample before the sampling begins, and the chance is proportional to its measure of size. The sample consisted of 27 medical students, 43 students from a non-professional college and 30 subjects from class XI and XII of a school.

Written, informed consent was taken from all the students. Study was approved by the research and ethics committee of the institute.

Tools of assessment

Basic information regarding various socio-demographic variables was obtained on a semi structured Performa. The following tools were used:

- ICMR Psychosocial Stress Scale[17]: A self report scale with three sections - section A (Psychosocial stressors) has 40 items; Section B (Stressful life

events) has 14 items and ; Section C is special stress scale for teenagers-students and non-students- with each having seven items.

- General Health Questionnaire (GHQ)[18] : It is widely used for screening for psychiatric illness. It is a self rating scale with 12 items.
- Suicide Risk Eleven[19]: It is a self-administered, visual analogue scale having score from zero (suicide is sin) to 10 (I have tried many times). Authors of the scale have reported good test-retest reliability (rho = .95, p < .01). Correlation with other scales had high validity (rho = 1.0, p < .01). This scale was previously used in a study on adolescents.[5]
- Personality Trait Inventory:[20] This is a ninety item questionnaire based on MMPI, in Hindi measuring eight personality traits viz. Activity, dominance, paranoid tendency, depressive tendency, emotional instability, introversion, superego and cyclothymia. It has dichotomous items, ten items for each trait and ten for social desirability. Reliability and validity has been found to be high in the range of 0.91 to 0.96.
- Zung Depression Scale:[21] It is a self rating depression scale, twenty question survey to be completed by patient. It is a likert type scale, answers scored on 1 to 4 scale.
- CAGE Questionnaire:[22] It has four questions to assess alcohol dependence.

Statistical Analysis:

Chi square, t–test and Mann-Whitney-U test were employed for relationship between variables. This was followed by step-wise logistic regression analysis.

Results

Of the total 100 students, 13 reported suicidal ideas. Out of these 61.54% (n = 8) were from the age groups of < 18 years, 61.54% (n = 8) were females, more than three fourths 76.92% (n = 10) were from urban localities, and majority 92.31% (n = 12) were living with parents. Also, 69.23% (n = 9) were members of nuclear families and 46.15% (n = 6) were Hindus (Table 1).

On comparison of students with and without suicidal ideation on other variables (Table 2), a significant association was found with psychosocial stress. 46.15% (n = 6) of students with suicidal ideas reported very high psychosocial stress as compared with 13.79%

Table-1. Relationship of sociodemographic variables to suicidal ideation

Variables	Students with Suicidal Ideas n = 13(%)	Students without Suicidal Ideas n = 87(%)	p value
Age <18 years	8 (61.54)	22 (25.29)	.019*
Females	8 (61.54)	31 (35.63)	.074
Living With Parents	12 (92.31)	72 (82.76)	.687
Religion other than Hindu	7 (53.85)	20 (22.99)	.039*
Nuclear family	9 (69.23)	77 (88.51)	.08
Urban locality	10 (76.92)	84 (96.55)	.028*

*p<.05, chi square value 3.19 for gender, fisher's exact probability was applied for all other variables

Table-2. Comparison of students with and without suicidal ideation on various study variables

Study variables		Students with suicidal ideas n = 13 (%)	Students without suicidal ideas n = 87 (%)	p value
Psychosocial stress	Low	5 (38.46%)	38 (43.68%)	.012*
	Moderate	2 (15.39%)	37 (42.53%)	
	High/V. High	6 (46.15%)	12 (13.79%)	
Stressful life events	Low	6 (46.15%)	66 (75.86%)	.023*
	Moderate	4 (30.77%)	17 (19.54%)	
	High/very high	3 (23.08%)	4 (4.60%)	
General Health Questionnaire†	Distress present	8 (61.54%)	13 (14.94%)	.001**
Zung Depression Scale†	Depression present	6 (46.15%)	4 (4.60%)	.001**
CAGE†	Alcoholism Present	0 (0.00%)	2 (2.30%)	1
Personality Traits				
Activity	Low	9 (69.23%)	37 (42.53%)	.192
	Normal	4 (30.77%)	49 (56.32%)	
	High	0 (0.00%)	1 (1.15%)	
Cyclothymia	Low	1 (7.69%)	7 (8.05%)	.294
	Normal	10 (76.92%)	48 (55.17%)	
	High	2 (15.38%)	32 (36.78%)	
Superego†	Low	1 (7.69%)	28 (32.18%)	.101
	Present	12 (92.31%)	59 (67.82%)	
Dominance	Low	4 (30.77%)	17 (19.54%)	.157
	Normal	6 (46.15%)	62 (71.26%)	
	High	3 (23.08%)	8 (9.20%)	
Introversion	Low	1 (7.69%)	23 (26.43%)	.002**
	Normal	7 (53.85%)	58 (66.67%)	
	High	5 (38.46%)	6 (6.90%)	
Paranoid Tendency†	Absent	12 (92.31%)	81 (93.10%)	1
	Present	1 (7.69%)	6 (6.90%)	
Depressive Tendency†	Absent	5 (38.46%)	85 (97.70%)	<.001***
	Present	8 (61.54%)	2 (2.30%)	
Emotional Instability†	Absent	0 (0.00%)	21 (24.14%)	.064
	Present	13 (100.00%)	66 (75.86%)	

† Fisher's exact probability

(n = 12) of group without suicidal ideas. They had also experienced high stressful life events (23.08% v/s 4.6%). On GHQ, 61.54% (n = 8) students scored above cut off for psychological distress. 46.15 % (n = 6) scored above cut off on Zung depression rating scale as compared to 4.6% (n = 4) in group without suicidal ideas. Among personality traits introversion and depressive tendency were significantly higher in the group with suicidal ideation.

Age, score on GHQ, and depression came out to be significant on applying logistic regression analysis (Table 3). Age had highest odds ratio and was found to affect suicidal ideas more than 3.5 times. Psychosocial stress, stressful life events and introversion were

significantly different between students with and without suicidal ideas, but were not significant on logistic regression.

Table 3: Logistic Regression

	Sig. (p value)	Odds ratio	C.I.
Age	0.003	47.409	3.674-611.8
GHQ score	0.017	10.703	1.53-74.89
Depression	0.015	1.96	1.96-470.37
Introversion	0.092	3.878	.801-18.77

Discussion

High prevalence of life-time suicidal ideation has been reported in studies on younger population from India and other countries. The prevalence rates of suicidal ideation among adolescents and young adults found in this study (13%) are similar to that reported in the study conducted by Sidhartha and Jena[23] in which prevalence of suicidal ideation (lifetime), suicidal ideation (last year), suicide attempt (lifetime), suicide attempt (last year) were 21.7%, 11.7%, 8% and 3.5%, respectively. A recent study in Chandigarh collected data on 2,402 students from classes VII to XII, of which 8.82% students reported that life was a burden, 6% reported suicidal ideation and 0.39% reported suicidal attempt.[5] In a similar study conducted in Delhi prevalence of suicidal ideation in adolescent was 15.8%.[6] In another study 368 adolescents aged 15-18 years were randomly selected from public secondary schools and suicidal ideation was estimated. The results showed that about 22.6% had suicidal ideation and 10.3% had even made plans for suicide.[24] In another large sample study of 1,817 undergraduate college students aged 18-24 years in Ahmedabad, Gujarat, the prevalence of lifetime suicide ideation and lifetime suicide attempts was 11.7% and 4.0%.[25] A high prevalence of 53.6% suicidal ideation in medical students was recently reported from Delhi.[26]

The period of adolescence is considered stressful as it is one of rapid growth, change, relocation and self-discovery, which are defining qualities of stressful experience.[27] Psychosocial stress had a significant bearing on suicidal ideation in adolescents in this study. The support of this finding from a similar study on adolescent suicides in Finland echoes the fact that stress among adolescents is universal. In the study, it was found that disruptions in the adolescent's interpersonal relationships, excess accumulation of stress, and lacking support from the family were warning signs of suicide.[28] High stress of academics, insecurity regarding career, raised expectations and fear of failure to perform according to expectations, real or perceived insufficiency of alternative careers available for satisfactory settlement (as per expectations in life) could be the reasons behind stress among Indian adolescents. In the study from Gujarat, economic stress did come out to be significantly associated with lifetime suicide attempt.[25] In theory, most prevailing models of developmental psychopathology recognize the potential importance of psychosocial stress in the etiology and maintenance of both internalizing and externalizing disorder in youth.[29] The presence of high distress on General Health Questionnaire in adolescents expressing suicidal ideation in our study agrees with the same.

Significant association of stressful life events with suicidal ideation has also been substantiated by previous studies. In a previous study suicide attempt were correlated with stressful life events. There was greater turmoil in families of adolescents who had suicide attempts, rooted in childhood and not stabilizing during adolescence, in combination with traumatic events during adolescence and social instability in the year preceding the attempt.[30] Interestingly, a recent study has attempted to analyze mechanism associated between negative

life events and suicidal ideation. It was concluded that people who brood in response to negative life events may be vulnerable to thinking about suicide, partly due to symptoms of depression, but also as a result of brooding itself. [31]

Both long standing and recent social adversities precede and increase the risk for emotional and behavioral psychopathology during the school-age years. [32] In the Gujarat study stressful experience of religious conflict was significantly associated with lifetime suicide attempt.[25] In our study, depression was found to have a significant association with suicidal ideation. This finding was in accordance with previous studies which point out correlation between depression and committing suicide,[33] and depression and suicidal ideation.[34] A study on community sample of 521 adolescents found co-occurring depression and conduct problems as a predictor of heightened risk for later suicidal ideation and behavior.[35]

Personality traits like introversion and depressive tendency have been found to be associated with suicidal ideation in the present study. Another study evaluating personality traits and cognitive styles as risk factors for serious suicide attempts among young people also implicated introversion and hopelessness as serious risk factors.[36] Introversion had been implicated by other studies also as a risk factor for suicide.[37]

However, alcoholism was not found to have a significant association with suicidal ideation in our study. This finding was contrary to the study conducted by Kovalenko[38] in which it was seen that among mental disorders alcoholic patients had highest rate of completed suicide. However this finding could be explained from the fact that in present study only alcohol dependence was assessed and alcohol use that is more prevalent was not assessed.

Use of self reporting method of assessing suicidal ideation and other clinical parameters through questionnaires in our study ensured full anonymity and privacy for the subjects; this increased the validity of our findings as there were less chances of under reporting of suicidal ideation due to the social taboos attached with suicidal ideation.

Limitations of present study include a small sample size and cross-sectional evaluation. Assessment of harmful use of alcohol would have given a better picture. The results on logistic regression are preliminary, needing further replication in view of small number of positive observations.

To conclude, the prevalence of suicidal ideation in adolescents and young adults is a cause for concern. Psychosocial stress, stressful life events and depression had a significant association with suicidal ideation. Traits of personality such as introversion and depressive tendency play a role in further increasing suicidal vulnerability of at risk group. Studies with larger sample size, involving diverse populations, and longitudinal in design will be required for better understanding.

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Case Report

Self amputation of thumb: A rare psychiatric presentation

Kapil Dev Arya, Ankit Awasthi, GD Koolwal, Sanjay Gehlot

Abstract

Self-mutilation is the direct and deliberate self-destruction of a part of a person's own body without intention of suicide. Self amputation is a rare clinical presentation. We discuss the case report of a male patient brought to psychiatric emergency after the self- amputation of his left thumb under the influence of a persecutory delusion. A provisional diagnosis of Acute and Transient Psychotic Disorder- other acute predominantly delusional psychotic disorders-was made.

Key words: *Self amputation, Persecutory delusion.*

Introduction

Self-mutilation has been defined as the direct and deliberate self-destruction of a part of a person's own body without an intention of suicide. Minor self-mutilation is quite common, is not associated with any significant disability, and may even be part of recognized cultural practices. In contrast, major self-mutilation is rare, occurring mostly in association with serious mental illness and often results in permanent loss of an organ or its function e.g. parts of limb or eye.[1]

Although, case reports have described self mutilation in a variety of disorders such as substance use, mental retardation, Lesch-Nyhan syndrome, Gilles De La Tourette's syndrome etc, but most frequently has been described in patients with psychotic disorders. [1-3] Large et al conducted a literature review for case reports of patients with major self mutilation and found that 143 of 189 cases (75.6%) were diagnosed with a psychotic illness, of which 119 had a schizophrenia spectrum disorder.[1] A little over half (54%) were in their first episode of illness. A psychotic patient may attempt self-mutilation as a result of religious delusions, any other delusions, a commanding hallucination and/or due to other sociocultural or religious factors.[1-3]

We report a patient who presented after self amputation of thumb as a result of a persecutory delusional belief.

Case Summary

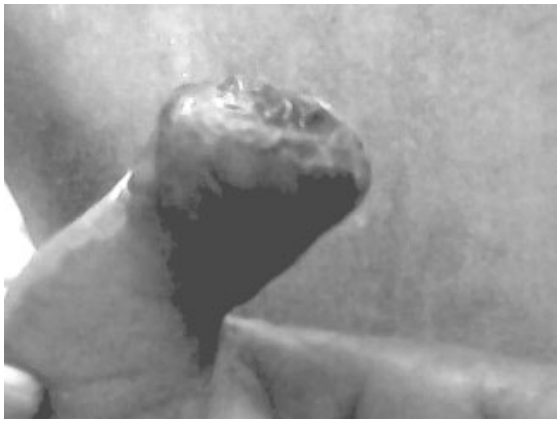
Mr. X, a 37 year old, Hindu, married male presented to psychiatric emergency with his relatives with history of self amputation of his left thumb using an axe three days back. As per history narrated by his attendant, illness was noticed by family members for over a month. Patient was observed to remain awake at night and at times, go out of house without telling family members. He would report suspiciousness towards family members and

other persons, believing that all of them are against him and wanted to implicate him in a legal case of fraud in order to take away his property and money. Patient also told that some time ago the schoolteacher of a nearby government school took his thumb impression on some documents (for purpose of census survey) . After this incident , patient continuously thought that his thumb impression can be used in some fraud case or property take over. He remained fearful and suspicious and made many efforts to run away from the home, but his family members never let him do so. Patient would get abusive and assaultive on this issue with his family members. After a few days, he indulged in excessive religious practices and rituals. Three days back, in afternoon, patient confined himself in a room and amputated his left thumb by axe at distal interphalangeal joint. He soaked the amputated part in kerosene and burnt it in fire to destroy it. Thereafter, patient performed some religious ritual with bleeding stump in front of goddess' picture and wrapped up the stumped part with a piece of cloth. He denied any impulse that drove him to do so, instead he reported he had been thinking about the possible misuse of his left thumb impression and related legal consequences.

When patient's family members came to know about this incident, they urged him to attend the hospital but he refused and declared that goddess will give his thumb back and no medical treatment is required. Patient was taken to the psychiatric emergency against his will by his brothers and other relatives. There was no previous history of violence, self-injury or any suicidal attempt. There is a past history of a psychotic episode three years back (suspiciousness, abusive, aggressive/destructive behaviour) due to which family members sought help first from an exorcist and then, a psychiatrist, but treatment details were not available. Patient had stopped the prescribed medication after improvement in symptoms. Patient abused cannabis (ganja) for past 4-5 years and was an occasional user of alcohol. In family history, his younger brother had an episode of a psychiatric illness four years back, which improved on treatment.

After presentation to emergency, patient was abusive and assaultive towards relatives, and had to be physically restrained with ropes. His left thumb was amputated at distal interphalangeal joint. His physical condition and vitals were, however, stable. Emergency management of stump was done by bandage, analgesics and anti-inflammatory medications. On a subsequent Mental Status Examination, he was calm, quiet, comfortable, oriented to time, place and person. He did not exhibit any abnormal mannerisms or gestures. He spoke coherently and relevantly and answered adequately and appropriately. He expressed a normal range of emotions. The delusion of persecution against family members and other village persons was present. No other delusions or perceptual abnormalities were elicited. His cognitive capabilities appeared clinically intact. Insight was absent.

Laboratory investigations including hemogram, various counts, and biochemistry,



EEG as well as imaging studies including CT scan head revealed no abnormality. On psychological assessment, he was found to have moderate to severe positive symptoms indicative of delusions and hallucinations, on PANSS scale. On Rorschach test, his responses were very scattered: numbers of D-Dd responses & poor form responses were suggestive of psychosis. On Thematic Apperception Test, patient identified himself with hero, attributing the feelings of helplessness and unhappiness to the hero in the story. The stories narrated by the patient revealed aggressive behavior towards the opposite sex, strong conflicts and poor interpersonal relationship. The stories also showed features of aggression and suspicion

After complete history and evaluation, a provisional diagnosis of Acute and Transient Psychotic Disorder- other acute predominantly delusional psychotic disorders [4] was made and patient was initiated on an antipsychotic (Risperidone gradually increased to 4mg/day) and concurrent administration of ECT (3 sessions of modified ECT). With this treatment, patient's symptoms improved, and he dropped out of follow-up shortly thereafter.

Discussion

The case report describes a patient acting in response to his persecutory belief by amputating his own thumb. The intention behind thumb amputation was to avoid legal consequences which might arise due to a possible misuse of his thumb impression by the alleged persecutors. A sustained fear gradually developed and heightened up to the delusional level, eventually provoking him to amputate his thumb. The reports adds to the very few published accounts of self-mutilation from India.[2,5]

Favazza and Rosenthalin[6] classified self mutilating behavior into (a) superficial or moderate; (b) stereotypic and ; (c) major. While superficial self-mutilation is seen in personality disorders, stereotypic self-mutilation is often associated with mental retardation. Major self-mutilation, rarely documented, is most commonly associated with psychopathology such as religious delusions, any other delusions, hallucinations etc in patients with psychotic illnesses. A literature review by Schlozman [7] reported that all 11 cases of self-inflicted upper extremity amputation described over the past 30 years had manifestations of a psychotic disorder. Risk factors involved in self-injury syndrome include various biological, cultural, behavioral, and psychodynamic factors, which needs to be fully recognized. The patients with a clinical risk must be immediately hospitalized to manage the underlying psychotic disorders.

This patient is most probably a case of acute transient psychotic disorder, however there is a need to follow him up for long term especially as he had a past psychotic episode. Management consists of establishing the diagnosis, to decide on appropriate interventions, and manage complications. A complete abstinence from substances (including cannabis and alcohol) is also advisable. The success of treatment depends on an effective and therapeutic doctor-patient relationship, which is far from easy to establish in patients with persecutory delusion/s. Even the psychiatrist may be drawn into their delusional nets.

Although self mutilation is relatively rare, the importance of identifying at-risk patients and instituting treatment early is important to prevent disability and risk of self harm.

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Inspirations from history

Eric Kandel and the 'Sea Slug': A simple experimental model for learning and memory

Raman Deep Pattanayak, Rajesh Sagar

Eric Kandel, a psychiatrist and neuroscientist, chose to use a simple invertebrate (sea slug - *aplysia*) as an experimental model to understand the basics of memory and learning. Recognizing the significance of this and subsequent studies from his laboratory, he was awarded the Nobel Prize in Medicine or Physiology (2000).[1] Currently, he is a professor at Columbia University.

We discuss his research work as well as early life and experiences that motivated him to study learning and memory.[1,2]

Early Life

Eric Kandel (1929-) was born in Vienna, Austria, in a middle-class Jewish family. His family suffered as a result of the anti-semitic attitudes prevailing in Austria before World War II. After Austria was annexed by Germany, all non-jewish children at his school had stopped speaking to him. His family had to emigrate to U.S. when he was 9 years of age. These memories which he could remember from childhood held special significance for him and later on, made him interested in studying the basis of memory in brain. In his own words:[1]

My last year in Vienna was likely also an important factor in my more specific later interest in the mechanisms of memory. I am struck, as others have been, at how deeply these traumatic events of my childhood became burned into memory.

Education and interest in human mind

During high school, he was strongly interested in pursuing History and later on, did the undergraduate major from Harvard university with dissertation on German writers' attitudes towards national socialism. However, history as a career was soon to be eclipsed over by the study of human mind. He came in contact with a fellow student, Anna Kris, whose parents were prominent academic psychoanalysts from Freud's circle in Vienna and had emigrated under similar circumstances. As a result of proximity to them, he became more interested in conscious and unconscious memories as well as psychoanalysis, which was the dominant school to study human mind in 1950s. Eventually, he decided to enter a medical school and thereafter, train as a psychiatrist to become a psychoanalyst.

Medical school and early research

After a short chemistry course from Harvard summer school, he was admitted to the New York University (NYU) Medical School in 1952 (and later on, completed psychiatric residency in 1962). In final year of medical school, he sought to learn more about the biological basis of mind processes.

Earlier at Harvard, he was influenced by the BF Skinner and his behaviorist approach to learning. He went to work in laboratory of a prominent neural science researcher (Harry Grundfest), where he was involved in several cortical electrophysiological studies. During the same time, Kandel came across published papers of Kuffler, which described the use of 'neurons isolated from marine invertebrates' as more accessible experimental models.[3] Under this influence, he also learnt about use of microelectrodes for intracellular recordings of relatively large crayfish giant axons.

In 1957, after medical school, Kandel was accepted into NIH neurophysiology laboratory. Initially, his area of interest was hippocampal neurons (because of a neurosurgical case report describing the failure to store long term memories in a patient after removal of hippocampus). Kandel began to study the electrophysiological properties of hippocampal neurons in the hope that some special characteristics may explain its memory storage functions. However, after numerous experiments, there was nothing remarkable in neurons of hippocampus which could distinguish them from, say, spinal cord. Thereafter, he thought that perhaps it is the *connections between the neurons* which held special significance rather than the neurons per se.[4]

'Sea Slug' experiments: synaptic plasticity

In order to test the importance of synapses in memory, the mammalian brain appeared to be too complex. Kandel knew (from famous studies by Lorenz, Tinbergen, and Frisch) that simple forms of learning was conserved across all animals. Therefore, instead of mammals, he planned to focus on a simpler experimental model: the nervous system of a sea slug (aplysia).

Aplysia has relatively few nerve cells (around 20,000), many of which are rather large. Kandel felt that it would facilitate electrophysiological analysis of the synaptic changes involved in learning and memory storage. After completing his psychiatry residency in 1962, Kandel went to Paris as a post doctoral fellow for 1.5 years to learn about studies on aplysia from Tauc (one of the only two researchers working with aplysia in those times).[5] His decision to pursue with invertebrate studies was considered risky for his career by many senior investigators who discouraged him to experiment on invertebrates as the higher order capabilities for learning are not present in them. Kandel, however, states.[1]

From the outset I .. believed that the mechanisms of memory storage were likely to be conserved in phylogeny, and that a cellular analysis of learning in a simple animal would reveal universal mechanisms that are also employed in more complex organisms.[1]

Aplysia has a simple protective reflex to protects its gills (gill-withdrawal), on exposure to a stimulus. Eric Kandel found that certain types of stimuli resulted in an amplification of this protective reflex, which could remain for days to weeks and thus, it was a form of *learning* (sensitization). Two other forms of simple learning- habituation and classical conditioning-were also documented in aplysia. Kandel and the team demonstrated that learning is the result of changes in the synaptic strength of specific sensory pathways.[1,4]

Molecular basis of memory

Eric Kandel and many other prominent researchers ventured to study the biochemical or molecular analysis of synaptic plasticity- or memory. The weaker stimuli give rise to a form of short term memory, which lasts from minutes to hours. The mechanism for this 'short term memory'

is a phosphorylation of certain ion channel proteins, leading to an increased amount of *transmitter release* at the synapse, and consequent amplification of the reflex.[6]

A stronger and long lasting stimulus will result in a form of long term memory that can remain for days to weeks. The stronger stimulus gives rise to increased levels of the messenger molecule cAMP and thereby protein kinase A. These signals will reach the cell nucleus and cause *new protein synthesis*, the result of which is *increase in shape of the synapse*, thereby creating a long lasting increase in synaptic functioning. [4] This new protein was identified to be CREB protein.

Eric Kandel with other researchers showed that if the synthesis of new proteins is prevented, the long term memory will be blocked, but not the short term memory. [6] Thus, short-term memory was linked to *functional changes in existing synapses*, while long-term memory was associated with a *change in the number of synaptic connections*.

During the 1990s, he was able to show that the same type of long term changes of synaptic function were seen in mammals as well.[4]

Implications

Eric Kandel revealed that memory is 'located in the synapses' and changes in synaptic function are central to formation of memories. Even though inter-neuronal connections develop according to a pre-determined plan, the strength and effectiveness of those connections can be altered by experience. Also, the possibilities to develop new types of medication to improve memory function in patients with dementia may be increased. Even if the road towards an understanding of complex memory functions still is long, the results of Eric Kandel and his able team of researchers has provided a critical building stone.

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List of Interesting articles

What is happening in research elsewhere?

- **How psychiatrists should introduce themselves in the first consultation: an experimental study.** Priebe et al. British J Psychiatry 2013; 202 : 459-62.

  Twelve psychiatrists were filmed, each with three different introductions. Six randomly selected videos, of different psychiatrists, two of each type of introduction, were rated by each of 120 psychiatric in- and out-patients on Likert-type scales. Patients gave the most positive ratings to psychiatrists who introduced themselves with information about what will happen in the consultation rather than ones with briefer introductions or with additional personal disclosure (p = 0.002). Preferences were similar in different subgroups. Psychiatrists should introduce themselves with information about what they intend to do in the consultation, but without personal disclosure.

- **Cost-effectiveness of depression case management in small practices.** Gensichen et al. British J Psychiatry 2013; 202 : 441-6.

  Cost-effectiveness analysis on the basis of a pragmatic randomised controlled trial (2005-2008): practice-based healthcare assistants in 74 practices provided case management to 562 patients with major depression over 1 year. Findings suggest that in small primary care practices, 1 year of case management did not increase the number of quality-adjusted life-years but it did increase the number of depression-free days (DFDs). The intervention was likely to be cost-effective.

- **The Dutch Bipolar Offspring Study: 12-Year Follow-Up.** Mesman et al. Am J Psychiatry 2013; 170 : 542-549.

  The Dutch bipolar offspring cohort is a fixed cohort initiated in 1997 (N=140; age range at baseline, 12–21 years), 77% of which were followed up after 12 years. Overall, 72% of the bipolar offspring developed a lifetime DSM-IV axis I disorder, 54% a mood disorder, and 13% bipolar spectrum disorders. Only 3% met DSM-IV criteria for bipolar I disorder.

- **Computer-assisted therapy for medication-resistant auditory hallucinations: proof-of-concept study.** Leff et al. British J Psychiatry 2013; 202 : 428-33.

  The authors attempted to develop a computerized system that enables the patient to create an avatar of their persecutor; and to encourage them to engage in a dialogue with the avatar, which the therapist is able to control so that the avatar progressively yields control to the patient. Avatar therapy was evaluated by a randomised, single blind, partial crossover trial comparing

the novel therapy with treatment as usual. Replication with a larger sample is required before roll-out to clinical settings.

- **Genome-Wide Methylation Changes in the Brains of Suicide Completers**. Labonte et al. Am J Psychiatry 2013; 170 : 511-520.

  The authors identified 366 promoters that were differentially methylated in suicide completers relative to comparison subjects (273 hypermethylated and 93 hypomethylated). Results suggest broad reprogramming of promoter DNA methylation patterns in the hippocampus of suicide completers. This may help explain gene expression alterations associated with suicide and possibly behavioral changes increasing suicide risk.

- **Evidence for the early clinical relevance of hallucinatory-delusional states in the general population.** Nuevo et al. Acta Psychiatr Scand 2013; 127 : 482-93.

  The study aimed to analyze clustering of delusional and hallucinatory experiences in relation to environmental exposures and clinical parameters in 52 countries participating in the WHO's World Health Survey with a total of 225 842 subjects. Findings suggest that the co-occurrence of hallucinations and delusions in populations is not random but instead can be seen, compared with either phenomenon in isolation, as the result of more etiologic loading leading to a more severe clinical state

- **The Relationship Between Delusions and Violence: Findings From the East London First Episode Psychosis Study.** Coid et al. JAMA Psychiatry 2013; 70 : 465-471.

  A total of 458 patients with first-episode psychosis who were 18 to 64 years of age were assessed clinically. The prevalence of violence was 38% during the 12-month period, and 12% of the sample engaged in serious violence. Anger was the only affect due to delusions that was positively associated with violence. A small number of uncommon delusional beliefs demonstrated direct pathways leading to minor violence. Three highly prevalent delusions demonstrated pathways to serious violence mediated by anger due to delusional beliefs: persecution ($z = 3.09$, $P = .002$), being spied on ($z = 3.03$, $P = .002$), and conspiracy ($z = 2.98$, $P = .002$).

Instructions for contributors

The Journal of Mental Health and Human Behaviour (JMHHB) is the official publication of the Indian Psychiatric Society – North Zone, that considers for publication articles in all fields of Psychiatry. The Journal aims to provide an update on the research work in Northern India in the field of mental health. Submissions should be sent, preferably by e-mail, along with a covering letter and a contributor's form signed by all authors to:

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The covering letter must include information on prior or duplicate publication or submission elsewhere of any part of the work/study; and a statement of financial or other relationships that might lead to a conflict of interest. Copies of any permission(s) to reproduce published the material, and to use illustrations or report information about identifiable people must accompany the manuscript. The format for contributor's form has been provided along with these Instructions for contributors.

Editorial process

The manuscripts will be reviewed for a possible publication with the understanding that they are being submitted to one journal at a time and have not been published, simultaneously submitted, or already accepted for publication elsewhere. All submitted manuscripts shall undergo an editorial review initially. Manuscripts with insufficient originality, serious scientific flaws or absence of importance of message are rejected. Rest manuscripts shall be sent to expert reviewers without revealing the identity of the contributors to the reviewers. Within a period of three months, the contributors will be informed about the reviewers' comments and acceptance/ rejection of manuscript. Accepted articles would be copy-edited for clarity, readability, grammar, punctuation, print style and format.

Type of manuscripts

The Journal publishes editorials, review articles, original articles, brief communications, case reports and letters to editor. Editorials generally reflect on an important current theme of psychiatry. Review articles (up to 4,500 words, excluding abstract and references) summarize an important area of literature. Original articles describe an original research work (up to 3,500 words). Brief communications (up to 1,500 words) provide a short account of an innovative, novel work or preliminary findings from work still in progress. Case reports (up to 1,000 words) highlight an unusual case of significance to the field. Letters to editor (generally up to 500 words) can deal with a recently published article or personal observations on a theme of relevance or can be a short, succinct research-based letter.

From time to time, the journal shall also invite guest editorials, articles for debate, viewpoints, book reviews etc.

Preparation of manuscript

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journal" developed by International Committee of Medical Journal Editors (2006).The manuscript should be typed on A4 size (212 × 297 mm)

paper, with margins of 1 inch from all the four sides, using double-spacing throughout. Type or print on only one side of the paper and number the pages serially, beginning with the title page. Arrange manuscript in following order:

Title page

Mention the type of manuscript, title of the article, running title not more than 50 characters, names of the contributor (In full, first name, middle name, last name), along with designations and institutional affiliations, the name of the department(s) and institution(s) to which the work should be attributed. Designate a corresponding author with name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence. Mention the total number of pages, tables and word counts separately for abstract and for the text (excluding the references and abstract). If the manuscript was presented at a meeting or conference, mention the related details.

Abstract page

It should carry the full title of the manuscript and an abstract (of no more than 250 words for original/review articles and 150 words for case reports). Abstract should briefly state the background, aims, methods, results and conclusion. Three to six keywords should be provided.

Main manuscript

It should be organized under four broad headings: Introduction, Material and methods, Results and Discussion. There should be a clear description of the sampling and statistical techniques used for the study.

Reports of clinical trials should be based on the CONSORT statement. Reporting guidelines for specific study designs should be followed. Refer to the following weblink:

http://www.equator-network.org/home/

When reporting experiments on human subjects, procedures followed should be in accordance with the standards ethical committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000, of which a clear mention should be made in the text. The manuscript should ensure full confidentially in presentation of data and meet all ethical considerations. Avoid the duplication of findings between the tables and text. Discussion should be relevant and focused.

Acknowledgement

Specify contributions that need acknowledging, but do not justify authorship, such as general support by a departmental chair and acknowledgments of technical, financial and material support.

References

References should be numbered consecutively in the order of their first mention in text. Identify references in text by Arabic numerals in superscript. References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The titles of journals should be abbreviated according to the style used in Index Medicus. List the first six contributors followed by et al.

Standard journal article

- Seshadri L, George SS, Vasudevan B, Krishna S. Cervical intraepithelial neoplasia and human papilloma virus infection in renal transplant recipients. Indian J Cancer 2001; 38: 92-5.

Chapter in a book

- Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. Hypertension: pathophysiology, diagnosis, and management. 2nd ed. New York: Raven Press; 1995. pp 465-78.

Personal author

Book

- Ringsven MK, Bond D. Gerontology and leadership skills for nurses. 2nd ed. Albany (NY): Delmar Publishers; 1996.
  For further details, refer to the following weblink: http://www.nlm.nih.gov/bsd/uniform_requirements.html

Tables

Tables should be self-explanatory and not duplicate text material. Type each table with double-spacing on a separate sheet of paper. Limit number of tables to the minimum required.

- Number tables, in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each.
- Place explanatory matter in footnotes, not in the heading. Explain in footnotes all non-standard abbreviations or symbols that are used in each table.
- Obtain permission for all fully borrowed, adapted, and modified tables and provide a credit line in the footnote.

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General rules for submission of IPS-NZ award papers

For any paper to be considered for an award, it shall be necessary for the author to submit four copies of the full paper to the Chairman, Awards Committee by a date determined by the Chairman, Awards Committee.

To be eligible for the award, the paper must fulfill each of the following criteria:

(a) It must be a research paper based on work done in India and must not have been published in a scientific journal nor presented at a National or Inter-national Conference.

(b) The principal author and at least 50% of all authors and the person presenting the paper must be members of the North Zone, I.P.S.

(c) The coauthors who are not members of the society are not eligible for receiving cash prize or certificate.

The full papers received for consideration for the Awards shall be considered by a panel of judges appointed by the Chairman, Awards Committee who shall select papers of sufficient merit for final rating at the time of presentation. Out of the papers considered to be of sufficient merit by majority of judges, the Chairman, Awards Committee shall select three papers for each award with the highest pooled percentage scores for presentation at the Annual Conference.

A panel of judges will be appointed by the Chairman, Awards Committee. Out of the total marks, 60% will be for preparation and compilation of the paper and 40% for its presentation at the Conference. The paper with the highest pooled rank order shall be declared the winner, In case of a tie, both the papers will be declared as joint winners.

All the authors of the Award winning papers, who are the members of the IPS, North Zone. shall be considered to have won the award and will be issued certificates and be eligible for the award money as follows:

(a) 25% of the money shall go to the author presenting the paper.

(b) The remaining 75% shall be distributed as follows:

  (i) If there are two authors who are eligible for the award money, 60% to the principal author and 40% to the co-author.

  (ii) If there are more than two authors who are eligible for the award money, 50% to the principal author and 50% to be equally divided amongst the co-authors.

If in the opinion of a majority of judges, no paper is of high enough merit, there will be no award that year.

No paper shall be eligible to context for an award where a member who has won that award in the immediately preceding year appears as an author or co-author.

None of the judges of the award and none of the members of the Awards Committee shall be contestant for any Award that year.

The assessment of papers by the panel of judges as certified by the Chairman, Awards Committee shall be ratified by the Executive Council of IPS (NZ).

The practical and logistic problems from time to time in assessment process will be dealt with appropriately by the Chairman Awards Committee in consultation with President.

General rules for submission of IPS-NZ award papers

No one paper or substantially similar paper shall win more than one award on the basis of presentation at the Annual Conference, in case more than one award is announced at a Conference.

The paper can be considered only for the category for which it has been nominated.

All the papers submitted for awards will be the property of the zone for publication in the Journal of the Society.

The authors should furnish a declaration containing following items at the time of submission.

(a) The Principal author and 50% of the co-authors are members of society

(b) This or substantially similar paper has not won an IPS North Zone Award earlier or been submitted for another award this year.

(c) This or substantially similar paper has not been published or been submitted for publication in any scientific journal.

(d) Consent from all authors about sub-mission of the paper and a certificate that there is no copy right infringement in the contents of the paper.

(e) None of the author has won the same awards in the immediate preceding year

SPECIFIC GUIDELINES

Dr. A.K. Kala Award

This award will be given for original research in Biological psychiatry. There is no age bar. Award Money: Rs. 2,500/-.

Dr. Buckshey Award

This award will be given to the paper presented by the member of North Zone IPS who is not above 35 years of Age at the time of presentation. Award Money Rs. 1000/- The paper must be accompanied with proof certifying age of the Principal/Presenting author.

Dr. G.C. Boral Award

There is no age bar to compete for this award. Award Money: Rs.1000/-

Nomination for Bombay Psychiatric Society Silver Jubilee Award (Best Paper of the conference):

All the award papers can compete for the best paper award. The authors, if they desire to compete for this award, should send a declaration about their desire and willingness to compete for the nomination for the BPS award. It may please be noted that the papers submitted for the Awards of IPS-North Zone will not be automatically considered for the nomination for the BPS Award, unless a specific declaration to that effect is provided in writing at the time of submitting the paper or before the last notified date for submission of the award papers.

Free papers (i.e. the papers other than the award papers) can also compete for the best paper award to the nomination for BPS award. For this, the authors of the free paper must submit four copies of the full text of their paper along with the declaration as explained above, to the Chairpersons, Awards Committee. This submission will have to be in addition to the four copies of abstract of the free paper to be submitted to the President.

The last date for sending the full text of the paper with the declaration will be the same as the last date notified for the submission of the Award Papers.

GUIDELINES FOR EVALUATION OF AWARD PAPERS

A panel of judges shall rate the papers. There shall be three judges in each panel. Out of the total numbers i.e. 100, 60% will be for preparation and compilation of the manuscript & 40% for presentation during the conference. The assessment of the written manuscript will be on the following pattern:

Written manuscript evaluation	**60 marks**
(a) Topic/Title, its relevance and methodology.	12
(b) Survey of literature/reference bibliography.	12
(c) Presentation of results/discussion.	12
(d) Conclusion and how far they are substantiated by the study.	12
(e) Clarity, lucidity, precision of language and over all elegance of paper.	12

Presentation during conference:	**40 marks**
(a) Style, clarity, compactness of expression and presentation	20
(b) Use of audiovisual aids (if any) appropriateness, quality visibility comprehensibility and novelty	10
(c) Response to points raised in discussion	10

*In case no paper is found to be of sufficient merit (e"50% marks), there shall be no award.

Panel for selection of best paper to be nominated for BPS award

There will be two panels of three judges, one for evaluation of manuscript and one for presentation, for award papers submitted, and the full papers/manuscripts of the free papers submitted for BPS award.

Presentation during conference	**25 marks**
(a) Style, clarity, compactness of expression and presentation.	10
(b) Response to points raised in discussion.	10
(c) Use of audiovisual aids, if any Appropriateness, quality, visibility, comprehensibility, and novelty.	5

Written manuscript evaluation	**75 marks**
(a) Topic Title its relevance and methodology.	15
(b) Survey of literature/reference bibliography.	15
(c) Presentation of results and discussion.	15
(d) Conclusion and how far they are substantiated by the study.	15
(e) Clarity, lucidity, precision of language and over all elegance of paper.	15