ORIGINAL ARTICLE

A comparative study on psycho-socio-demographic and clinical profile of patients with bipolar versus unipolar depression

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ABSTRACT

Background: Several studies have revealed significant differences between bipolar (BP) and unipolar depression (UP). Misdiagnosing BP depression results in suboptimal symptom resolution, induction of manic switch, mixed state, or accelerated cycling. This study compares various psycho-socio-demographic, longitudinal course, and phenomenological factors associated with BP and UP depression.
Materials and Methods: We compared 30 UP and 30 BP depression patients using a specially designed intake proforma, International Classification of Diseases-10 diagnostic criteria for research, Hamilton Rating Scale for Depression-21 (HAMD-21), Hypomania Checklist-32 Questionnaire (HCL-32), Brief psychiatric rating scale (BPRS), and Kuppuswami's socioeconomic status scale.
Results: BP depression group consisted of mostly males, with earlier age of onset of illness, longer illness duration, frequent episodes, hospitalizations and psychotic symptoms. The total HAM-D score and 4 HAM-D item scores–psychomotor retardation, insight, diurnal variation of symptoms and its severity, and paranoid symptoms were significantly higher in this group. Binary logistic regression identified the age of onset, the total duration of illness, frequency of affective episodes, and presence of delusions as predictors of bipolarity (odds ratio = 1.327; 1.517; 0.062; 0.137).
Conclusions: Identification of clinical markers of bipolarity from large scale prospective studies is needed.

Key words: Bipolar depression, comparative study, unipolar depression

INTRODUCTION

Unipolar (UP) and bipolar (BP) disorders differ in genetics, neurobiology, clinical course, treatment regimens and prognosis. Approximately, 40% of patients with BP affective disorder (BPAD) initially receive an incorrect diagnosis of recurrent depressive disorder (RDD).[1] Accurate diagnosis of BP depression is complicated by three factors - Assumption of similar phenomenology for BP and UP depression, failure of therapists to recognize previous hypomanic symptoms, and failure of patients to report them. Use of antidepressant monotherapy for BP depression increases the risk of manic switch, mixed state, rapid cycling, poor or partial response, and resistance to antidepressant therapy.[2,3] Conversely, patients with UP depression unnecessarily exposed to mood stabilizers would suffer poorer outcomes. Several studies have focused on longitudinal course factors such as age, gender (female: male ratio higher in UP), age at onset (earlier in BP), episode duration (more in UP), and frequency (more

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in BP). Postpartum episodes, co-morbidities (substance use, suicide, anxiety disorders), family loading of bipolarity, affective temperament, frequent job changes, marital discord, and hospitalization rates - All were found to be significantly higher in the BP group.[4-8] Depressive episodes with sudden onset, psychomotor retardation, diurnal mood variation, worthlessness, anhedonia, pathological guilt, suicidal thoughts, psychotic symptoms, atypical features, and labile mood are important markers for bipolarity.[9] A study by Singh *et al*.[10] found significantly increased frequency of blood group O and lesser frequency of blood group A in BP group compared to normal controls and UP group. UP depression is characterized by excessive self-reproach, somatic complaints, more severe appetite and weight loss, loss of energy, and diminished libido.[11] The primary objective of our study is to compare the phenomenological factors associated with BP and UP depression in in-patients. We also aim to study the psychosocio-demographic and other variables influencing BP and UP depression.

MATERIALS AND METHODS

This is a cross-sectional comparative study conducted between November 2009 and April 2010. After obtaining the Institutional Review Board approval, 60 consecutive subjects (30 each in BP and UP depression group) who sought in-patient treatment from the Psychiatry Department of a Tertiary Care Medical College were recruited.

Inclusion criteria

Patients aged 20–50 years, both genders, who satisfied the diagnostic criteria for research-10 (DCR-10) criteria for either BPAD (F31) or RDD (F33), currently admitted with moderate depression with/without somatic syndrome and severe depression with/without psychotic symptoms were included. Only those patients who are off medications ≥2 weeks before the onset of current episode and subjects/informants who gave written informed consent were taken.

Exclusion criteria

Patients with history of mental retardation, seizure disorder, permanent neurological deficits, cognitive impairment and affective illness secondary to general medical condition or psychoactive substance use were excluded. We also excluded UP patients with first or second degree relatives having BPAD or psychotic illnesses, patients with poor physical health and those with informants who cannot provide adequate information.

Instruments

A *specially designed intake proforma* is used for assessing the psycho-socio-demographic and clinical profile of the patients.

Psycho-socio-demographic profile

To record age, gender, education, occupation, marital status, religion, socioeconomic status, family type, place, and informant details.

Age of onset, total duration, mood chart, hospitalizations, substance abuse/dependence, deliberate self-harm, postpartum/perimenstrual behavioral disturbances, history of electroconvulsive therapy and family history of psychiatric illness in first and second degree relatives were included.

Clinical profile

Details regarding psychomotor activity, depressive cognitions, catatonic features, suicidal thoughts, anhedonia, pseudodementia, dissociative features, panic attacks, delusions, first rank symptoms, auditory hallucinations, and affective reactivity were recorded.

The ICD-10 classification of mental and behavioral disorders: Diagnostic criteria for research is derived from chapter V(F) of International Classification of Diseases, tenth revision.[12] The criteria being deliberately restrictive are intended to maximize homogeneity of study groups and comparability of findings in various studies.

The Hamilton Rating Scale for Depression-21 item[13] (HAM-D) developed by Max Hamilton in 1960, is the most widely used assessment scale in depressed patients. The strengths include its excellent validation/research base, and ease of administration. Total scores range from 0 to 53 (the sum of the first 17 items).

The Hypomania Checklist-32 Questionnaire[14] (HCL-32) is a self-rating questionnaire developed by Jules Angst and Thomas Myer for assessing lifetime history of hypomanic symptoms. Individuals with a total score of ≥14 are potentially BP.

The Brief psychiatric rating scale[15] (BPRS) developed by Overall and Gorham, is a relatively brief scale that measures major psychotic and nonpsychotic symptoms in major psychiatric disorders. Strengths of the scale include its brevity, ease of administration, wide use, and well-researched status.

Kuppuswami's socioeconomic status scale[16] takes account of education, occupation and income of the family to classify study groups into high, middle, and low socioeconomic status. The income scores require modification using All India Average Consumer Price Index for Industrial Workers.

Procedure

Psycho-socio-demographic and longitudinal course details were collected from patients, informants and clinical records. Patients diagnosed as BPAD-current episode moderate depression with/without somatic syndrome (F31.31/F31.30) and severe depression with/without psychotic symptoms

(F31.5/F31.4) were grouped under BP depression (BP). Those who met the criteria for RDD-current episode moderate depression with/without somatic syndrome (F33.11/F33.10) and severe depression with/without psychotic symptoms (F33.3/F33.2) were grouped under UP depression. Hypomania Checklist-32 (HCL-32) Questionnaire was applied to both the groups (preferably during a second sitting to avoid the scoring being colored by the psychopathology). The cut-off value assigned was 14. Current episode details were obtained using semi-structured clinical interview and rated with HAM-D and BPRS scales.

Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS for Windows, Version 16.0. Chicago, SPSS Inc.). Results on continuous measurements are presented as mean ± standard deviation and are compared using independent *t*-test. Discrete data are expressed as number (%) and are analyzed using Chi-square test. The statistical significance was fixed at 5% level ($P < 0.05$). Binary logistic regression analyses were performed with those psycho-socio-demographic and clinical variables of patients diagnosed with BP and UP, which showed significant difference as independent variables and odd's ratios were determined.

RESULTS

30 UP patients were compared with 30 BP patients and the results were analyzed.

Psycho-socio-demographic variables

The mean age of UP group was 43.1±5.3 years while that of BP group was 39.1±8.8 years ($P = 0.036$). With regard to the current episode, 80% of the BP group consisted of severe depression with psychotic symptoms, whereas in the UP group, 60% had severe depression without psychotic symptoms. This may be accounted for by the fact that both the samples were recruited from inpatients.

56.7% of the total sample consisted of females –73.3% of UP group versus 40% of the BP group ($P = 0.009$). No significant differences could be obtained between the educational status of the two groups. 80% of the UP group and 63.3% of the BP group were married. BP group consisted of manual labourers and other skilled workers, while housewives and skilled workers predominated the UP group. More than half of both the groups hailed from lower middle class families. 60% of UP group and 53.3% of BP group resided in nuclear families.

Illness-related variables

Statistically significant differences were observed between the UP and BP groups with respect to age of onset, total duration of illness, number of affective episodes and frequency of hospitalizations [Table 1]. The average length of hospital stay was higher in the UP group (26.1±20.4 days versus 18.3±11.5 days; $P = 0.074$).

Alcohol dependence was diagnosed in 16.7% of BP group versus 10% of UP group. 20% of BP group and 13.3% of UP group had tobacco dependence ($P = 0.054$). 53.3% of the BP group had family history of BPAD while 33.3% of the UP group had family history of depression. Suicides were reported among the families of 46.7% of UP group patients versus 36.7% of BP group patients. 46.7% of the BP group and 40% of UP group reported family history suggestive of psychoactive substance dependence.

Axis I co morbidity, exclusively contributed by psychoactive substance dependence, was higher in BP group (56.7% versus 33.3%). 46.7% of UP group had Axis III co morbidity, in contrast to 40% of BP group. Hypertension, Diabetes mellitus and Hypothyroidism were the commonly reported Axis III co morbidities.

Table 1: Psycho-socio-demographic and clinical profile of unipolar and bipolar groups

Variables	Mean (SD)/*n* (%)		Test statistic	Significance *P*
	Unipolar	Bipolar		
Age	43.1 (5.3)	39.1 (8.8)	t=2.151	0.036*
Gender				
Male	8 (26.7)	18 (60)	χ^2=6.787	0.009*
Female	22 (73.3)	12 (40)		
Age of onset (years)	30.9 (7)	21.4 (5.6)	t=5.798	0.001*
Total duration (years)	12.6 (6.8)	17.3 (7.1)	t=2.623	0.011*
Number of episodes	3.9 (1.2)	7.8 (2.7)	t=7.091	0.001*
Number of hospitalizations	2.1 (1.5)	5.7 (2.8)	t=6.243	0.001*
Depressive cognitions	27 (90)	30 (100)	χ^2=3.158	0.076
Catatonic features	1 (3.3)	4 (13.3)	χ^2=1.964	0.161
Suicidal thoughts, ideations and plans	22 (73.3)	22 (73.3)	χ^2=0.000	1
Anhedonia	18 (60)	18 (60)	χ^2=0.000	1
Pseudodementia	3 (10)	1 (3.3)	χ^2=1.071	0.301
Dissociative features	2 (6.7)	2 (6.7)	χ^2=0.000	1
Panic symptoms	6 (20)	12 (40)	χ^2=2.857	0.091
Delusions	9 (30)	23 (76.7)	χ^2=13.125	0.001*
FRS	1 (3.3)	6 (20)	χ^2=4.043	0.044*
Auditory hallucinations	6 (20)	15 (50)	χ^2=9.892	0.020*
Second person	4 (13.3)	10 (33.3)		
Third person	2 (6.7)	5 (16.7)		

*P<0.05; SD – Standard deviation; *n* – Frequency; FRS – First rank symptoms

Table 2: Logistic regression analysis of predictors of bipolarity

Variables	*B*	SE	*P*	OR	95% CI	R^2
Number of hospitalizations	−0.501	0.532	0.347	0.606	0.213-1.720	0.848
Age of onset	0.283	0.140	0.043*	1.327	1.009-1.745	
Total duration	0.417	0.172	0.015*	1.517	1.084-2.123	
Number of episodes	−2.782	0.998	0.005*	0.062	0.009-0.437	
FRS	−1.019	1.188	0.391	0.361	0.035-3.702	0.278
Auditory hallucinations	−0.080	0.997	0.936	0.923	0.131-6.512	
Delusions	−1.988	0.589	0.001*	0.137	0.043-0.435	

*P<0.05. B – Co-efficient for the constant; SE – Standard error around B; OR – Odd's ratio; CI –Confidence interval; R^2 – Nagelkerke R^2; FRS – First rank symptoms

Phenomenological factors

Considering psychopathology in both the groups, psychotic symptoms were significantly higher in the BP group [Table 2]. Second person auditory hallucination was the most common perceptual abnormality elicited (33.3% of BP group versus 13.3% of UP group). Different types of delusions – persecutory (70% in BP and 20% in UP), referential (33.3% in BP and 16.7% in UP), guilt (13.3% in UP and 3.3% in BP), infidelity (20% in BP), hypochondriacal (6.7% in BP), and nihilistic (3.3% in BP) were elicited.

Binary logistic regression analysis identified four variables as predictors of bipolarity – Age of onset, total duration of illness, frequency of affective episodes and presence of delusions [Table 2].

DISCUSSION

Psycho-socio-demographic variables

The BP group was found to be significantly younger than the UP group. Females constituted the vast majority in UP group. Majority from either groups had at least secondary education. Unemployed subjects were more in the BP group (16.7%). Higher number of BP patients remained single/divorced/separated (26.7% vs. 10%) probably due to the earlier age of onset of the illness and the greater disability in marital and interpersonal relationships consistent with the earlier studies.

53.3% of the UP group and 56.7% of the BP group belonged to lower middle class (Class III). Chopra *et al*.[17] have attempted to study the socioeconomic status and manic depressive psychosis in a private psychiatric hospital setting at Ranchi and concluded that there is a higher representation of middle class in this group. In both groups, higher number of patients reported residing in nuclear families, which would result in higher care-giver burden.

Illness-related variables

BP group was characterized by lower age of onset, longer duration of illness, more frequent episodes and hospitalizations [Table 1]. The first episode was depression in 66.7% of BP patients. Harmful use or dependence of alcohol and/or nicotine was more frequent among BP patients (63.3% vs. 30%; $P = 0.054$). Deliberate self-harm, postpartum episodes, peri-menstrual behavioral disturbances, and history of electroconvulsive therapy all were reported more by BP patients, though the differences were not statistically significant.

83.3% of BP patients had positive family history against 76.7% of the UP group. Family history of depression was found to be significantly higher in the UP group (33.3% vs. 10%). Family history of substance abuse/dependence was higher in the BP group. Similar findings were replicated in previous studies.[4-6]

Phenomenological factors

Psychotic symptoms – Delusions, auditory hallucinations, Schneider's First rank symptoms were significantly high in the BP group. Persecutory and referential delusions were the most common. The only delusion elicited from more number of UP patients was pathological guilt. Suicidal thoughts, dissociative symptoms, and anhedonia had more or less similar distribution in both the groups. Catatonia was reported more in the BP group (13.3% vs. 3.3%); while pseudodementia was more in the UP group (10% vs. 3.3%). Panic symptoms were reported by 40% of BP group, against 20% of UP group.

Contrary to Mitchell *et al*.'s[9] findings, the mean total scores of HAM-D, BPRS and HCL-32 yielded significantly higher values in BP depression in our study. The four HAM-D items with significant higher scores in the BP group were psychomotor retardation (H8: $P = 0.001$), insight (H17: $P = 0.001$), paranoid symptoms (H20: $P = 0.001$) and diurnal variation of symptoms (H18A: $P = 0.001$) and the severity of the variation (H18B: $P = 0.047$).

Binary logistic regression was performed to identify variables significantly predictive of bipolarity [Table 2]. With each year increase in total duration of illness, the probability of transition to BP disorder is 1.5 times ($P = 0.015$). As the age of onset drops down, the chance of bipolarity increases by 1.3 times ($P = 0.043$). The other predictors identified were number of affective episodes and presence of delusions. These findings are in accordance with certain previous studies.[8,9,11]

Limitations

The sample consisted of in-patients who differ from general population. A larger sample size would have aided in better generalization of the results. We focused on certain selected variables only. The study did not include BP II subjects as a separate group. However, all patients were screened using HCL-32 Questionnaire and 3 patients, in whom the history of hypomania was vague, but the HCL-32 score was >14, were included in the BP group to minimize confounding. In patients with psychoactive substance use, even though the evaluation was done after ensuring that the patient is not under intoxication or withdrawal state, their undue influence on psychopathology could not be prevented.

CONCLUSION

Depressive episodes of BPAD are more severe and incapacitating than that of RDD. With the advent of the BP spectrum concept, it becomes all the more important not to miss bipolarity in patients with first episode depression. Adequate measures should be taken to understand the clinical markers of bipolarity. Newer rating scales should be developed which can quantify bipolarity. Findings from prospective and functional neuro-imaging studies should enrich this awareness, so that the disability associated with bipolarity could be minimized. More and more research is

warranted to unravel the exact etiology and neurobiology and thus, to predict the future of bipolarity. To conclude with the words of Prof. Venkoba Rao as rightly quoted by Murthy RS[18] – "To be satisfied with the glory of the past is to turn into a fossil; but to interpret the old from a new point of view is to revitalize the past and bring in a current of fresh air into the monotonous present."

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Conflicts of interest

There are no conflicts of interest.

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ORIGINAL ARTICLE

Psychiatric morbidity in the community: A population based-study from Kerala

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ABSTRACT

Background: Estimates of psychiatric morbidity in the community will help service development. Participation of trained nonspecialist health-care providers will facilitate scaling up of services in resource-limited settings.
Aims: This study aimed to estimate the prevalence of priority mental health problems in populations served by the District Mental Health Program (DMHP).
Settings and Design: This is a population-based cross-sectional survey.
Materials and Methods: We did stratified cluster sampling of households in five districts of Kerala. Trained Accredited Social Health Activists (ASHAs) identified people who had symptoms suggestive of schizophrenia or bipolar disorder. Clinicians evaluated the information collected by the ASHAs and designated individuals as probable cases of psychosis or noncases. Screening instruments such as General Health Questionnaire-12, CAGE questionnaire, and Everyday Abilities Scale for India were used for identifying common mental disorders (CMDs), clinically significant alcohol-related problems, and functional impairment.
Results: We found 12.43% of the adult population affected by mental health conditions. We found CMD as most common with a prevalence of 9%. The prevalence of psychosis was 0.71%, clinically significant alcohol-related problems was 1.46%, and dementia and other cognitive impairments was 1.26%. We found informant-based case finding to be useful in the identification of psychosis.
Conclusions: Mental health problems are common. Nonspecialist health-care providers can be trained to identify psychiatric morbidity in the community. Their participation will help in narrowing the treatment gap. Embedding operational research to DMHP will make scaling up more efficient.

Key words: Alcohol dependence, bipolar disorder, common mental disorders, community health workers, District Mental Health Program, prevalence of psychiatric morbidity, psychosis, schizophrenia

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INTRODUCTION

The wide treatment gap in mental health calls for scaling up of services.[1] Shortage of mental health professionals makes scaling up a difficult task in low- and middle-income countries. Nonspecialist health-care providers can be trained to identify the unmet needs and facilitate care in the community and primary care settings.[2]

The District Mental Health Program (DMHP) is the flagship program under the National Mental Health Programme (NMHP) of India. It is operational in more than 225 districts, covering more than one-third of the country. Scaling up of mental health care is its goal. The DMHP provides decentralized specialist services through their monthly outreach clinics. They also train and equip nonspecialist health-care providers, particularly primary care doctors, to deliver mental health care in community and primary care settings.

Psychiatric disorders differ in their nature, severity, and prevalence. Estimates of their prevalence in the community will help service development. This, however, is not an easy task. Interviewing a large number of individuals by specialists is difficult because of issues related to feasibility and costs.[3] We chose an innovative case finding method to estimate the lifetime prevalence of psychotic disorders such as schizophrenia and bipolar disorder. We also wanted to see whether health workers after training can administer simple screening tools to identify conditions such as common mental disorders (CMDs), alcohol-related problems, and cognitive impairment. This paper describes the prevalence estimates made by the study co-ordinated by the Kerala State Mental Health Authority and carried out by the DMHP teams in five districts of Kerala. Our aim was to estimate the prevalence of mental health problems in the community with the help of Accredited Social Health Activists (ASHAs) employed under the National Health Mission.

MATERIALS AND METHODS

Five districts of Kerala, two each from northern and central regions and one from the southern region (Kasaragod, Wayanad, Palakkad, Idukki, and Kollam), were selected for the survey. We used a cross-sectional study design. The research was carried out with the involvement and supervision by the DMHPs in these districts.

Sampling

We used random cluster sampling. Block Panchayaths in each district were stratified into East, West, and Mid zones. One Block Panchayath from each zone was chosen. We chose three Grama Panchayaths from each Block Panchayath and chose wards at a ratio of 1:7. The urban areas (municipalities and corporations) were grouped together. One municipality or a corporation was selected for each district. The wards were again selected at the ratio of 1:7.

Procedure

We prepared a booklet which contained (a) a questionnaire to collect sociodemographic and household details; (b) Symptoms in Others Questionnaire (SOQ) to screen for major neuropsychiatric disorders;[4] (c) Symptom of Psychosis, a checklist based on the psychosis module of mhGAP Intervention Guide;[5] (d) General Health Questionnaire (GHQ-12)[6] to screen for CMDs which is a group of minor psychiatric illnesses such as depressive disorders, anxiety disorders, and others; (e) Everyday Abilities Scale for India (EASI)[7] to screen for functional impairment due to dementia and other cognitive impairments; and (f) CAGE questionnaire[8] to screen for problems related to alcohol abuse.

All the study instruments were translated into local language by adopting standard procedures of translation, back translation, and cultural adaptation. We trained ASHAs to administer these tools. They then visited the households in the designated area. A key informant, either the head of the household or a senior family member available in the household, was identified and the aims of the study was explained. All adult members of the household were invited to participate in the study. The study instruments were administered after obtaining informed consent. The subjects were assured confidentiality of the information they provide. The home visits were often repeated to meet all household members. Information regarding mentally ill members in the family, issues related to their care, and the needs of the family was collected using Need Assessment Questionnaire, which we designed. Families were also given information about the availability of mental health-care services. We relied on the ration card issued by the state government to measure the socioeconomic status. All those with a ration card designated as "below poverty line" were considered as poor and rest were considered as "above poverty line (APL)" for the purpose of the study.

Training for Accredited Social Health Activists

A 2-day training program was organized in each district before the commencement of the study. This training program was designed by a committee consisting of the principal investigators and they supervised the implementation of the training program. The 1st day of training focused on enhancing the mental health knowledge of ASHAs and building their skills to interview key informants and elicit symptoms of psychiatric illness, especially that of psychosis. The DMHP team comprising a psychiatrist, clinical psychologist, psychiatric social worker, and a nurse supervised the training program. The training was based on mhGAP Intervention Guide.

Handouts and leaflets were prepared in Malayalam. The same material was used at all sites. Case vignettes were

used to describe prototypes of each condition. ASHAs were encouraged to describe and discuss probable cases from their catchment area. They were also given specific training in the administration of study instruments. More opportunities for interactive learning were provided on the 2nd day. The public health importance of this research and the importance of their role were made explicit to them. We wanted them to be stakeholders in this initiative as they will continue to serve the same population.

Field work monitoring

Although the ASHAs were assigned simple tasks, we offered them support during their field work. ASHAs could call clinicians over telephone to clarify their doubts. The co-coordinating center located at Government Medical College, Thrissur, took up the responsibility of handling the unresolved issues and provided clarifications, assistance, and directions to all centers as and when needed. We also organized periodic group reviews at all centers. These were interactive sessions aimed at giving and getting feedback.

The survey took place between 2014 and 2015. The completed survey forms were sorted and organized. We identified the files of the households reporting symptoms on SOQ. These files were then evaluated by a psychiatrist to see whether the reported symptoms are suggestive of psychosis, mental retardation (MR), epilepsy, dementia, and alcohol-related problems. Participants were then classified as probable case, possible case, or a noncase. When psychosis was considered, the clinician tried to classify them further as schizophrenia or bipolar disorder, whenever this was possible. These diagnostic considerations were based on the International Classification of Diseases-10 (ICD-10) classification. The prevalence estimates were made after combining both probable and possible cases.

All cases of psychosis identified in four GramaPanchayaths of Palakkad district were followed up with inquiries with the ASHAs or other key informants in an attempt to validate the diagnosis of psychosis. Psychiatrists working with the Palakkad DMHP made visits to the community. They interviewed the ASHAs and asked them to visit the family and organize personal interviews with the subjects and their family members. We estimated the positive predictive value (PPV) of this case identification method based on the evaluations made by the clinicians in the community.

Statistical analysis

Proportions and means were used to describe the sample. We estimated the lifetime prevalence of psychosis in general and that of schizophrenia and bipolar disorder in particular. The estimates of lifetime prevalence of epilepsy and MR were solely based on the response to the relevant items in SOQ. The point prevalence rates of CMDs, alcohol-related problems, and that of dementia and other cognitive impairments were estimated. A score of 3 or more on GHQ-12 was taken as indicative of CMD. A score of 2 or more on CAGE was considered as cutoff score for identifying individuals with clinically significant alcohol-related problems. A score of 4 and above on the EASI was taken as indicative of functional impairment due to dementia or other cognitive impairments. Screen-positive cases were then compared with screen-negative cases to identify risk factors using multivariate analysis. We used Chi-square test to find the association between sociodemographic factors and mental disorders. Logistic regression was used to estimate odds ratios for risk assessment. Missing data were considered as missing when detailed analysis was undertaken.

Data entry and data management were done using Microsoft Excel, and the software used for data analysis was R version 3.1.2 (Pumpkin Helmet) R Development Core Team (2014). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria (http://www.R-project.org).

RESULTS

The survey was done by 221 ASHAs. They collected details of the households from 45,886 households with 192,980 residents. The prevalence estimates were made for this population. The data from all centers were combined and reviewed for errors and missing data. We found missing data on several variables. Multiple factors such as nonavailability of reliable informants at the time of home visits, problems with data collection, omissions during documentation into survey forms, and omissions during data entry had contributed to this. We had to limit the detailed analysis to 41,572 households with complete details.

The informants from 1344 (2.9%) households reported presence of a person with mental health problem in the family. The characteristics of all the households which were surveyed are given in Table 1. Majority of the informants were females aged <45 years with 5–10 years' education.

Lifetime prevalence of psychosis

A total of 1062 individuals were considered as probable or possible cases of psychosis by the psychiatrist after evaluating the documented information collected by the ASHAs during the survey. The estimated lifetime prevalence of psychosis in this study was 0.55% (95% CI: 0.52–0.58). There were 1009 individuals who had clinical features suggestive of psychosis among 142,260 individuals who were aged 18 years or more. The estimated lifetime prevalence rate of psychosis among adults (those who are 18 or older) was 0.71% (95% CI: 0.66–0.74). There were 53 cases of psychosis among 50,720 individuals who were aged <18 years giving a lifetime prevalence estimate of 0.10%.

We used the same strategy to estimate the lifetime prevalence rates for schizophrenia and found it to be 0.23% (95% CI: 0.21–0.25). The estimated lifetime prevalence rate for schizophrenia among adults (those who are 18 or older) was 0.29% (95% CI: 0.26–0.32).

The lifetime prevalence rate for bipolar disorder was 0.29% (95% CI: 0.27–0.31) and the estimated lifetime prevalence rate for bipolar disorder among adults (those who are 18 or older) was 0.37% (95% CI: 0.34–0.40) [Table 2].

We used an informant-based case finding method to identify cases of psychosis in the community. Psychiatrists who work along with the community mental health team at Palakkad reviewed the cases of psychosis identified from the four GramaPanchayaths. They interviewed the ASHAs to collect more information. The ASHAs in turn contacted the family members to get more details. The subjects and the family members were invited for personal interviews. Whenever that was not possible, the family members were contacted to get relevant details about the illness. ICD-10 guidelines were used for the diagnostic evaluation. The survey identified 121 subjects who had symptoms suggestive of psychosis. Psychiatrists could personally interview 29 subjects and only family members could be interviewed for 12 other subjects. All ASHAs were interviewed by the psychiatrists after they made home visits. This information was used to arrive at the diagnosis of psychosis. Clinicians agreed with the diagnosis of psychosis in 104 subjects. The PPV of this method was 86%. Most cases who did not receive a diagnosis of psychosis were found to be having conditions such as MR, dementia, or alcohol-related problems.

Table 1: Sociodemographic profile of 41,572 households

Variable	Levels	*n*=41,572 (%)
Informant: Mean age	44.74±13.74	
Informant: Gender	Female	29,225 (70.3)
	Male	12,347 (29.7)
Informant: Education (years)	0-4	8524 (20.5)
	5-10	23,886 (57.5)
	11-15	8285 (19.9)
	Above 15	877 (2.1)
Economic status	BPL	16,041 (38.6)
	APL	25,531 (61.4)
Religion	Hindu	25,588 (61.6)
	Muslim	7990 (19.2)
	Christian	7742 (18.6)
	Others	252 (0.6)
Districts	Kollam	15,807 (38.0)
	Idukki	8047 (19.4)
	Palakkad	8097 (19.5)
	Wayanad	7123 (17.1)
	Kasaragod	2498 (6.0)

BPL – Below poverty line; APL - Above poverty line

Prevalence of mental retardation and epilepsy

We identified 450 (0.23%) individuals with epilepsy among the 192,980 people in the 45,886 households surveyed. There were 400 (0.21%) individuals with symptoms indicative of MR. We did not evaluate these cases further.

Prevalence of common mental disorders

Profile of individuals who completed GHQ-12 (n = 105,473) is given in Table 3.

Most of the adults screened for CMD were aged 18–29 years. Both genders were almost equally represented. Most of them (56.3%) had 5–10 years of education, 56.2% were employed, and 39.8% of them belonged to families below the poverty line. Mean GHQ scores increased with advancing age. Women had higher mean GHQ score across all age groups.

We used a cutoff point of 3 or more for GHQ-12, and the prevalence rate of those screened positive for CMD among adults was 9.0% (95% CI: 8.83–9.17). We used logistic regression to identify factors associated with those screened positive for CMD. Individuals aged above 40 years and females were at higher risk for CMD. More number of years of education, employment, and better socioeconomic (APL) status were protective factors [Table 4].

Prevalence of clinically significant alcohol-related problems

CAGE questionnaire was administered to 3163 individuals identified as having alcohol-related problems by the ASHAs. Only these cases were given CAGE questionnaire.

Table 2: Lifetime prevalence of psychosis

Households and population	*n*			
Total households	45,886			
Total population	192,980			
Adult population	142,260			
Under 18 years' population	50,720			
Prevalence	**Lifetime prevalence**			
	Total population		**Population aged 18 or more**	
	Prevalence (%)	**95% CI**	**Prevalence (%)**	**95% CI**
Psychosis	0.55	0.52-0.58	0.71	0.67-0.75
Schizophrenia	0.23	0.21-0.25	0.29	0.26-0.32
Bipolar disorder	0.29	0.270.31	0.37	0.34-0.40

CI – Confidence interval

Table 3: Profile of individuals screened with the General Health Questionnaire-12 (*n*=105,473)

Variable	Categories	Value, *n* (%)
Age groups (years)	18-29	27,374 (26.0)
	30-39	18,200 (17.3)
	40-49	22,186 (21.0)
	50-59	15,145 (14.4)
	60-69	13,955 (13.2)
	70-79	4927 (4.7)
	80 and above	3686 (3.5)
Gender	Male	52,917 (50.2)
	Female	52,556 (49.8)
Education (number of years)	0-4	16,981 (16.1)
	5-10	59,331 (56.3)
	11-15	25,033 (23.7)
	Above 15	4128 (3.9)
Employment status	Unemployed	46,166 (43.8)
	Employed	59,307 (56.2)
Economic status	BPL	42,009 (39.8)
	APL	63,464 (60.2)
Districts	Kollam	40,889 (38.8)
	Idukki	21,132 (20.0)
	Palakkad	20,566 (19.5)
	Wayanad	17,577 (16.7)
	Kasaragod	5309 (5.0)

BPL – Below poverty line; APL – Above poverty line

Table 4: Factors associated with the General Health Questionnaire-positive cases (common mental disorders) on logistic regression

Variable	Categories	OR	95% CI
Age (years)	18-29	1	
	30-39	1.12##	1.04-1.21
	40-49	1.29##	1.20-1.38
	50-59	1.54##	1.43-1.67
	60-69	1.75##	1.62-1.89
	70-79	2.63##	2.39-2.9
	80 and above	4.08##	3.70-4.50
Gender	Male	1	
	Female	1.36##	1.29-1.43
Education (number of years)	0-4	1	
	5-10	0.64##	0.61-0.68
	11-15	0.41##	0.38-0.44
	Above 15	0.37##	0.31-0.43
Employment	Un employed	1	
	Employed	0.82##	0.78-0.87
Economic status	BPL	1	
	APL	0.90##	0.86-0.94

BPL – Below poverty line; APL – Above poverty line; OR – Odds ratio; CI – Confidence interval; ##p<0.01

We considered a CAGE score of 2 or more as indicative of clinically significant alcohol-related problems. We found 2108 (66.6%) of them having a score of 2 or more. The estimated prevalence of clinically significant alcohol-related problems was 1.09% (95% CI: 1.04–1.14). Vast majority of them (98.43%) were aged 18 years or older. Prevalence of alcohol-related problems among the adult population (aged 18 years or more) was 1.46% (95% CI: 1.40–1.52). Males accounted for 95.3% of all cases. Almost half of those with alcohol-related problems had severe problems.

Prevalence of dementia and other cognitive impairments

We used EASI to assess the activities of daily living of 16,649 individuals using EASI. There were 15,642 individuals who were aged 60 years or older. Among them, 1639 (10.48%) had a score of 4 or more on EASI. The estimated prevalence of dementia and other cognitive impairments was thus 10.48% among older people. There were 1007 individuals who reportedly had problems with memory and thus were screened though their age was below 60 years. We did a multivariate analysis and found age and female gender to be risk factors for cognitive impairment among older people. Education and employment were found to be protective factors [Table 5].

The findings related to the need assessment will be discussed in a separate paper.

Combined prevalence of priority psychiatric disorders

While making an estimate of the combined prevalence of mental health conditions such as psychosis, CMD, cognitive impairment, and alcohol-related problems for the adult population, we have to presume that comorbidity (an individual diagnosed with more than one condition) is infrequent and thus will not alter the estimate of total prevalence. However, this may not be true. In that case, combined rates will exceed the actual prevalence. While attempting to combining the rates, we found 12.43% of the adult population to be affected by priority mental health conditions. This included those screened positive for CMDs (9%), alcohol-related problems (1.46%), dementia, and other cognitive impairments (1.26%). We found the prevalence of psychosis to be 0.71% in the adult population.

DISCUSSION

We found psychiatric morbidity common among the adult population of Kerala. Common Mental Disorder was most frequent with 9% of the adult population screened positive on GHQ-12. Outreach workers like ASHAs are capable of participating in community-based research. We found informant-based case finding to be a useful method for identifying cases of psychosis in the community. Simple, short screening questionnaires can be used to estimate the prevalence of CMD, alcohol-related problems, and cognitive impairment. Active case finding by trained community health workers will be helpful in identifying unmet mental health needs in the community.

Lifetime prevalence of psychosis, mental retardation, and epilepsy

We found the prevalence of psychosis in the adult population to be 0.71% (95% CI: 0.66–0.74). The prevalence of schizophrenia was 0.29% (95% CI: 0.26–0.32) and that of bipolar disorder was 0.37% (95% CI: 0.34–0.40). These rates are comparable to the rates reported by the Indian Council of Medical Research collaborative study of severe

Table 5: Multivariate analysis of the Everyday Abilities Scale for India scores

Variable	Categories	OR	95% CI
Age (years)	Below 60	1	
	60–64	0.39##	0.30-0.51
	65-69	0.46##	0.36-0.58
	70-74	0.79#	0.62-1.00
	75-79	1.04	0.80-1.35
	80-84	1.28#	1.01-1.64
	85-89	2.35##	1.83-3.03
	90 and above	4.15##	3.22-5.34
Gender	Male	1	
	Female	1.56##	1.39-1.75
Education (number of years)	0-4	1	
	5-10	0.53##	0.47-0.59
	11-15	0.40##	0.32-0.50
	Above 15	0.43##	0.26-0.69
Employment status	Unemployed	1	
	Employed	0.66##	0.58-0.76
Economic status	BPL	1	
	APL	0.90	0.81-1.00

BPL – Below poverty line; APL – Above poverty line; OR – Odds ratio; CI – Confidence interval. #$p<0.05$,## $p<0.01$

mental morbidity and the National Mental Health Survey[9] The prevalence of epilepsy and MR was low at 0.23% and 0.21%, respectively, when compared to earlier studies from India.[10] However, there are serious methodological limitations here.

Reliance on the abilities of trained ASHAs for identification of individuals with psychosis is the major limitation of this study. However, the PPV of this case finding method was high (86%). We can train outreach workers like ASHAs to elicit clinical features of schizophrenia and bipolar disorder. We found the 2-day training based on mhGAP Intervention Module[5] to be useful in building their case-finding capacity. Informant-based case-finding techniques had been used in community settings and were found to be more useful than structured interviews in identifying conditions such as schizophrenia.[11,12] But then, such methods are likely to miss milder forms of the illness. In any case, identification of individuals with unmet mental health needs by trained health workers can be a good starting point for community care by the DMHP.

Common mental disorder

The prevalence of CMD in the total population was 9.0% (95% CI: 8.83–9.17). We used the GHQ-12 cutoff used by earlier studies from India.[13,14] Our CMD rate is similar to that of the combined rates for depression and other CMDs reported by the NMHS.[9] Our estimates are entirely based on the use of GHQ-12 by trained ASHAs. This is unlike the detailed evaluations used in a recent report from India. They have reported lower rates.[15] The high community prevalence of CMD makes it a major public health challenge for Kerala, more so when the suicidal rates are high.[16] Higher prevalence of CMD in older age groups suggests the prospect of further increase in the prevalence of conditions like depression in older age groups. Depression will emerge as a major public health problem in all rapidly aging societies.

Clinically significant alcohol-related problems

We identified clinically significant alcohol-related problems in 1.46% of the adult population. The prevalence was 3% among men and most of them had serious problems related to alcohol. High alcohol consumption was reported earlier from the state with about one-tenth of the current drinkers in high-risk drinking zone.[17] Our rates only refer to those with clinically significant problems due to their drinking. The proportion of those who abuse alcohol would be much more and we did not estimate the extent of alcohol abuse or drinking pattern. Alcohol abuse, like depression, is associated with suicides and has an adverse impact on the well-being of other family members. We need evidence-informed policies to regulate sale of alcohol in the state and interventions to prevent harm.

Dementia and other cognitive impairments

As per the 2011 Census, 12.6% of Kerala's population is 60 years or older. We found 10.48% among the surveyed older people having functional impairment. We used EASI as a general measure of cognitive disability. These figures do not by any means refer to the community prevalence of dementia. The EASI has only modest sensitivity and specificity when it is used alone for identification of dementia.[18] Earlier studies from Kerala had found the prevalence of dementia to be much lower.[19,20] However, those studies also identified a similar proportion of older people with cognitive dysfunction during the initial evaluation. A variety of disabling conditions could contribute to functional impairment in older people. We found older age, female gender, unemployed status, and low education to be risk factors for cognitive disability. Future research should look for factors which can reduce disability, prevent or postpone its occurrence. The reportedly high prevalence of depression among older people[21] is a matter of concern and can contribute to disability. The increasing number of older people with disabling neuropsychiatric conditions will lead to an exponential increase in the need for long-term care. Home-based care is often associated with significant caregiver burden. Families engaged in care do not get the support they need.[22] Trained health workers can identify and support home-based care.[23] Simple community-based interventions can be of help to people with disabling neuropsychiatric conditions like dementia.[24,25]

Limitations of the study

Reliance on the capacity of trained ASHAs to elicit clinical features of psychosis is the major limitation of the study. Clinician interviews were not carried out to assess all individuals which is the major limitation. It is not easy to schedule interviews with a large number

of people in community settings. We used translated validated screening instruments, but did not undertake validation exercises for the translated versions. We also did not estimate the inter-rater reliability between ASHAs. These are other limitations. We had to make best use of the limited time for evaluations done by the ASHAs in households. Hence, we limited ourselves to the use of brief screening instruments instead of detailed diagnostic evaluations.

Population-based surveys to estimate psychiatric morbidity are not easy and can be challenging tasks.[26] We tried to rely on simple, easy case identification methods which can be used by health workers like ASHAs. Our results thus may not represent accurate estimates of the community prevalence of specific psychiatric disorders. Instead, it indicates the extent of psychiatric morbidity in the community.

CONCLUSIONS

Mental health problems are prevalent and identifiable in the community. Depressive disorders and other minor mental health problems are common. A large number of individuals need care and support. Specialists themselves cannot provide mental health care for all those who need it. Training and equipping nonspecialist health-care providers will be a useful strategy to reduce the treatment gap in mental health.

There cannot be health without mental health.[1] Social determinants of health[27] remain relevant for mental health. We found poverty, low education, and unemployed status to be associated with mental health problems. Social interventions cannot be viewed separately from health-care interventions. A public health approach will help. Outcomes would depend on effective implementation of interventions. There is a strong case to make operational research an integral component of programs like the DMHP. This will help us to evaluate and guide the services. Embedding operational research to DMHP will add value by making scaling up more efficient.

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Conflicts of interest

There are no conflicts of interest.

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Suicide Prevention: We Have More To Do

Dr. V. Sathesh
President IPS Kerala State

Dear friends,

Suicidal Behaviour has become a major public health problem across the world. It is a complex phenomenon that usually occurs along a continuum, progressing from suicidal thoughts, to planning, to attempting suicide, and finally dying by suicide, a tragic outcome of a morbid process. The psychological and social impact of suicide on the family and the community is enormous.

World, Indian and Kerala Scenario:

As per WHO one million people worldwide die by suicide each year. The suicide rate is 16 per 1 Lakh population. This corresponds to 1 death by suicide every 40 seconds. The number of suicide attempts may be up to 20 times the number of deaths by suicide. National suicide rate is 11.2 per 1 Lakh population. This contributes to more than 10% of suicide in the world. .
Kerala ranks 5th in suicide rate after Pudussery, Andaman & Nicobar islands, Sikkim and Chattisgarh. Suicide rate of Kerala is 25.3 per 1 Lakh population. Suicide rate continues to be elevated in Kerala compared to other states. But there is marked improvement when compared to previous rate 10 yrs back (30/1 Lakh in 2002).

SUICIDE PREVENTION

Primary Prevention involves broad modification of social, economic and biological conditions to prevent suicide with population-based intervention rather than focusing on individual risk. It also includes restricted access to lethal methods, promoting positive mental health, promoting a responsible representation of suicide in social and other media, reduction of stigmatization of mental illness and suicide and encouraging help-seeking behavior through public awareness and education campaign.

Secondary Prevention is aimed at minimizing suicide risk in high-risk populations. Early identification of suicidal individuals, accurate diagnosis and effective treatment of mental health problems (Mood disorder and substance-related disorders) are crucial. Improving primary care physician's recognition of psychiatric disorders, suicide risk evaluation, treatment intervention and referral skills are key components of suicide prevention. Providing education for 'Gate keepers' will help in early recognition of risk of suicide and facilitates referral of vulnerable to appropriate assessment and treatment facilities.

Tertiary Prevention is aimed at preventing relapses of suicidal behavior after a suicidal attempt. This also involves work of post-vention – the care, support and treatment of those impacted by suicide.

SUICIDE PREVENTION STRATEGIES

One point to be borne in mind is that suicide is the outcome of a complex set of factors. Bio-psycho-social and other factors should be addressed. Community participation is important. As a life-saving procedure it is our responsibility to move out of consultation room and take lead in applying the prevention strategies.

Strategies in Hospita l/ Institution /Residence involves education of the relative / care giver / bystander in various settings of treatment, ensuring a responsible and efficient care giver / bystander, education of the bystander, supervision of the suicidal patients, ensuring trained staff and safe ward environment, adequate lighting facilities near the patient's place of stay especially in the night, easy access to a resident health staff, absence of any tools or utensils which can harm the life of the inmate etc. If in a hospital, the staff should make a very good therapeutic alliance and through which most of the interactions including the therapeutic ones can be carried out. Through tactful interactions highlighting the merits of life, reminding the suicidal person of his responsibilities towards society and families, explaining to the suicidal patient the plight of dear and near ones in case of suicide and strengthening of suicide-counters are also important.

Prescriptions for medicines are to be given for a few days only. The follow-up can be very frequent in the onset. Safe custody of medicines, ensuring that the patients are taking drugs at the right time and right quantity etc. are also some important preventive steps. Restricting means by control of sale of pesticides, insecticides, acids etc. is necessary. Locked boxes can be used to restrict the availability as tried in Sri Lanka, Tamilnadu etc. Warning signs and emergency remedial care steps may be noted on the box. Emetics also may be added to insecticides to induce vomiting thus preventing further absorption.

School-Based Programme should focus on life-skill education, training of students in tiding over the stressful situations, school-health programme, training of teachers and parents in early detection and management of scholastic backwardness, deviant behavior, dropouts etc. Mental health should be included in the student's syllabus and there should be liaison of school-based programme with mental health services.

Crisis Management System should be regular and efficient even at Taluk level with helpline facilities to address difficulties during periods of crisis. Suicide Prevention Clinics should be started in all mental health care facilities. Promotion of better mental health, stress management, proper financial planning, life-skill development and promotion of help-seeking behavior for health problems are also important steps.

Media both print and visual ones influence people generally and those who are at risk, suggestible and distressed. As far as suicide is concerned there should be a responsible media reporting. The guidelines for media people developed by NIMHANS Bangalore may be followed in reporting suicide. Inclusion of mental health in the curriculum of journalism students is helpful.

Development and up-liftment of weaker sections in the community, support to those who are vulnerable, eradication of poverty and unemployment, control of alcoholism and facilities for early management of alcohol-related problems, writing off debts combined with mental health package etc. are some of the steps in social policy.

Loan Defaulters, women, elderly, alcohol and drug dependent, adolescent etc. constitute special group needing special attention.

Improving Mental Health Care and Training andQuality of Medical Education have also got important role to play in suicide prevention. Extension of National Mental Health Programme to all districts, enhancement of P.G..seats and starting new PG courses, inclusion of psychiatry in MBBS curriculum as a subject with examination are appropriate suicide preventive strategies.

Conclusion: The causes of suicide is multi-factorial. So approach to suicide prevention is multipronged. Let us join our hands to fight this evil to save precious lives.

.'Human being is the most wonderful creation in the universe.
Life is the one which drives it. Don't destroy it, but guard it.
It is everybody's responsibility'

Jai IPS

Case Report

Megaloblastic Anemia as a Sequelae to Schizophrenia

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Introducton

Vit B12 deficiency is common in developing countries and its prevalence ranges up to 67% in Indian population(1). Man depends on nutritional intake for their vit B12 supply(2). Vit B12 deficiency is caused by strict vegetarian diet, pernicious anemia, food-cobalamine malabsorption, gastric surgeries, ileal diseases and pancreatic insufficiency. Vit B12 is an integral component of two biochemical reactions in humans, conversion of L-methyl malonyl co enzyme A to succinyl co enzyme A and transmethylation reaction which is essential for DNA synthesis and maintenance of the myelin sheath by methylation of myelin basic protein.Vit B12 deficiency can affect skin, and cause neuropsychiatric manifestations such as peripheral neuropathy, cerebellar ataxia, optic atrophy, delirium, dementia, psychosis, and mood disorders(3)

Psychiatric syndromes associated with vitB12 deficiency have been reported previously.Psychiatric symptoms in B12 deficiency (4) describes unusual psychiatric manifestations including catatonia and complete remission of symptoms with vitamin B12 therapy, psychiatric syndromes and pernicious anemia(5) describes a patient with B12 deficiency and paranoid delusions, chronic psychosis associated with vit b12 deficiency (6) describes a patient with two year history of psychosis without anemia which responded well to short term antipsychotics and B12 therapy.

Here we report a case of schizophrenic patient who became strict vegetarian since 2 years and developed megaloblastic anemia, He responded well to parenteral cobalamine supplementation and he is under our follow up now.

Mr.V, a 25 year old unmarried male Hindu laborer presented with decreased social interaction, irritability, irregularity in job and keeping aloof for 2 years, he became increasingly religious, disliking his Christian neighbours and avoiding food from Christian hotels. He became a strict vegetarian, and did not allow family members to take non veg food. He kept on staring at the picture of diety as well as lamp in front of it while at home, and visited temple regularly; few instances of unprovoked assaultiveness also present. Over the last one year twice he had jaundice, vomiting and fatigue and had to be admitted in tertiary care centre, He was treated symptomatically and was being worked up as anemia for evaluation .But he got discharged against medical advice, and there was no medications or follow up. Three months prior to 3rd

admission his biological functions worsened, irritability increased and he started muttering and laughing to self .So he was brought to our psychiatry facility. There was no other significant medical history in the past. Past history of abuse of alcohol and smoking was present and he was abstaining from them for the last 2 years. Family history of alcohol dependence and suicide in father was present. There was also history of suicides in maternal grandmother and paternal first cousin and behavioral disturbances in a third degree relative.

On examination eye to eye contact was ill sustained and rapport was difficult. His talk was decreased with poverty of thought content and he had bizarre delusions and restricted affect. His cognitive functions were intact, but he had impaired judgment and poor insight. His PANNS scoring was 74/210 and MMSE scoring 26/30.

Physical examination revealed sparse hair with alopecia, pallor, jaundice, clubbing, glossitis, soft cervical LN, hyperpigmantation of both hands and knuckles. These findings provided the impetus for further evaluation. His Cranial nerves, motor system, sensory system and gait were normal. There was no signs of cerebellar dysfunction.

LAB INVESTIGATION

Hb 6.8gm% [13-15gm%]
TC 3600/mm3[4000-11000]
DC P54 L42 M4
PLC 1.75 lakhs
Peripheral smear – bicytopenia,polychromatasia, pencil cells.
MCV 100fL [80-100]
MCH 31.5pg/cell [26-32]
MCHC 32 g/dl [32-36]
LDH 1430U/L (115-220)
Reticulocytic count 1.5%
Serum ferritin 297ng/mL [29-248]
Vit B12 256 pg/ml [350-650]
Bone marrow – megaloblastic erythroid hyperplasia.

DISCUSSION

Several reports of psychosis secondary to B12 deficiency has been reported earlier. We had also considered organic psychosis secondary to B12 deficiency as the first possibility in our patient. But here there were few points against it. Presence of previous psychiatric symptoms which made the patient strict vegetarian and anemic features following for more than one year suggested the possibility of having non affective psychosis with megaloblastic anemia. Being strict vegetarian the patient had a risk factor for B12 deficiency. He had a family predisposition of psychiatric illness. Marked improvement of psychosis with short term antipsychotics and parental B12 therapy which usually occur in megaloblastic anemia was not seen here. Hence the chance of organic psychosis secondary to vitB12 deficiency was considered as second differential diagnosis.

Although there is definite clinical evidence of psychiatric syndromes associated with low vitamin B12 the latter may sometimes be the consequence rather than the cause of the abnormal mental state since vitaminB12 deficiency can result from inadequate nutrition. Hence the latter may be sequel of a mixed nutritional deficiency in psychiatric patients who have neglected their diet. Before accepting a causal link between vitamin B12 deficiency and psychiatric syndromes Zucker et al(7) suggested four criteria 1, the absence of other organic causes for the mental symptoms 2, a nonrelapsing course 3,poor response to other treatments and 4,a positive and well maintained response to vitaminB12 administration.

As we managed this patient in a psychiatric facility having cost constraints, we have not employed neuro imaging, electrophysiology studies and assays of homocysteine, methymalonic acid to increase the specificity of diagnosis of B12 deficiency.

In view of high prevalence of vit B12 deficiency in Indian population, co existence of B12 deficiency and psychosis is insufficient to establish a causal association. However the possibility of psychiatric symptoms antedating anemia should be considered and hence the patient is under our follow up.

Early surveys have shown that a large

number of psychiatric patients have low serum B12 levels ranging from 6-15%; and this reveals the magnitude of this often overlooked nutritional deficiency which compounds the disease process(8). Co morbidity of B12 deficiency in a psychotic patient is more frequent than organic psychosis secondary to B12 deficiency. But early initiation of parental cobalamine supplementation may be beneficial for both clinical scenarios. Also it is important to treat B12 deficiency as early as possible as the symptoms may be difficult to reverse after a certain duration because of irreversible changes secondary to axonal degeneration.Also deficiency results in diffuse and focal areas of degeneration in the cerebral white matter with little gliosis and grey matter changes,methyl tetrahydrofolate a potential excitatory neurotoxin may be responsible for such neuronal destruction(9)

CONCLUSION

General examination and routine blood investigation findings were the clue in this patient which helped us to evaluate further and reach a diagnosis of megaloblastic anemia.so this case report intends to highlight the importance of general physical examination and basic blood investigations which should be routinely performed in all psychiatric patients.

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