FREQUENCY OF PSYCHOTIC SYMPTOMS IN METHAMPHETAMINE USERS

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ABSTRACT

Objectives: To determine the frequency and severity of psychotic symptoms in users of methamphetamine.
Study Design: Cross sectional analytic study.
Place and Duration of Study: Combined Military Hospital, Quetta, from Aug 2018 to Jan 2019.
Methodology: Sixteen to sixty years old patients already using methamphetamine for at least 1 month were included in this study. Purposive non-probability sampling technique was used. A total of 134 patients of methamphetamine use were studied after consent, using Brief Psychiatric Rating Scale (BPRS). Data was entered in a specially designed semi structured proforma. The data was analysed by using One Way Anova Calculator.
Results: Psychotic symptoms were found in 42 (31.3%) enrolled patients in our study. Out of 134 patients 63 (47%) were >25 years and 71 (53%) were < 25 years of age.
Conclusion: The results of our study showed that a significant proportion of methamphetamine users had psychotic symptoms. A strategy should be made to promote awareness in population about harmful consequences of methamphetamine use, timely identification of psychosis in its users and their rehabilitation.

Keywords: Brief Psychiatric Rating Scale (BPRS), Methamphetamine, Psychotic symptoms.

INTRODUCTION

Methamphetamine, called meth, crystal, or speed, is a central nervous system stimulant that can be injected, smoked, snorted, or ingested orally. Its prolonged use at high levels results in dependence. Methamphetamine is a derivative of amphetamine, discovered in 1893, which was widely prescribed in the 1950s and 1960s as a medication for depression and obesity. Reaching a peak of 31 million prescriptions in the United States in 1967[1,2].

Epidemiological studies place amphetamine and other stimulants as the most widely used illicit drugs in the world after cannabis[3,4] with up to 51 million users globally between 15 and 64 years old[5]. Worldwide statistics on methamphetamine use describe it as a global phenomenon, with its consumption reportedly independent of wealth, geographical location, and culture. Recent reports suggest an increased production of methamphetamine around the world and an increasing popularity of the drug over the last decade, which has been linked to increased ease and cost-effective synthesis in clandestine laboratories and augmented importation of methamphetamine from neighbouring countries.

Methamphetamine (METH; N-methyl-alpha-methylphenethylamine) is a highly potent amphetamine derivative that is frequently abused worldwide and has significant effects on physical, behavioural and cognitive functioning of an individual[6]. This drug is available in various forms and at different levels of chemical purity. When injected, snorted, or inhaled, it has direct access to the circulatory system and therefore has more immediate effects on the brain. The negative consequences of drug are associated with the use of its more potent forms and with intravenous route of administration, the increased availability of crystalline methamphetamine with local drug dealers has resulted in its increased popularity over years amongst vulnerable groups of society.

Its potent central nervous system stimulant effect led to its recreational use as an aphrodisiac and euphoriant. In low to moderate doses, methamphetamine can elevate mood, increase

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Received: 24 Oct 2019; revised received: 24 Nov 2019; accepted: 20 Jan 2020

alertness, concentration and energy in fatigued individuals, reduce appetite, and promote weight loss. At very high doses, it can induce psychosis, muscle breakdown, seizures and intracranial bleeding. Recreationally, methamphetamine's ability to increase energy has been reported to lift mood and increase sexual desire to such an extent that users are able to engage in sexual activity continuously for longer durations.

Methamphetamine dependence, its frequent and recreational use, have all been associated with the induction of psychotic symptoms, including auditory and visual hallucinations, persecutory delusions, ideas of reference, and disorganized speech[4]. The idea that methamphetamine use could induce a psychotic state has long been recognized by clinicians in Japan, who increasingly observed psychosis in their methamphetamine dependent patients[4].

Research has shown that psychosis is a prevalent health concern among recreational methamphetamine users. Various studies have reported 7-76% prevalence rates[4]. A recent meta-analysis reported prevalence of psychotic symptoms among 36.5% occasional methamphetamine users[9] and these rates were even higher for lifetime prevalence (42.7%). In a study on recreational methamphetamine users, 13% of the sample population were positive for psychosis at the time of assessment[4] while 23% reported 'clinically significant' symptoms of psychosis over the previous year. Another study conducted in United States revealed that 60% of drug dependent participants reported at least one type of psychotic symptom[10]. Overall, recreational drug users are two to three times more likely to experience psychotic symptoms than the general population[11], with their risk increasing if they start at a younger age or with large doses.

Our knowledge about the extent and complexity of psychosis among methamphetamine users has been extended in a study by McKetin *et al*[4]. The study was conducted over a large, geographically and ethnically diverse population of drug users and revealed that 13% of participants screened positive for psychosis, and 23% had experienced a clinically significant symptom of suspiciousness, unusual thought content or hallucinations in the past year. Dependent methamphetamine users were three times more likely to have experienced psychotic symptoms than their non- dependent counterparts, even after adjusting for history of schizophrenia and other psychotic disorders.

There is a growing trend of methamphetamine use in Balochistan over last few years. Sufficient local data about short and long term sequelae of methamphetamine use is not available so there is a need for conducting research for assessment of psychotic symptoms in drug users. Once factors aggravating psychotic symptoms are identified, then effective yielding measures can be adopted for reducing the severity of illness and augmenting an early recovery & rehabilitation. The purpose of this study was to estimate actual burden of the problem so that proper guidelines can be set for identification and timely treatment of psychosis to prevent its complications in methamphetamine users.

METHODOLOGY

A cross-sectional analytic study was conducted in out-patient setting of department of Psychiatry, Combined Military Hospital (CMH) Quetta, from Aug 2018 to Jan 2019. Institutional ethics committee approval was sought for the study vide CMH Quetta Institutional Review Board certificate no CMH QTA-IRB/011. The study population was patients of methamphetamine use reporting in psychiatry OPD, CMH Quetta. Sample size calculation was based upon WHO software/formula. By using purposive (non-probability) sampling technique, a total number of 134 patients diagnosed with methamphetamine use according to the ICD-10 diagnostic criteria were selected, having 16-60 years of age and of either gender having minimum methamphetamine use of 4 weeks duration and willing to participate in study were included. Non consenting patients, those having current or past history of any surgical or medical illness having

known association with psychotic symptoms and those with positive psychiatric diagnosis prior to drug use were excluded. A brief history was taken by clinician from the patient regarding duration of substance use. The subjects were provided with a detailed description of the study and were only inducted into the study after written informed consent from them. The demographic data of the participants was entered in a semi structured proforma. Patients found positive for psychosis through a brief clinician administered psychiatric interview were administered Brief Psychiatric Rating Scale (BPRS) for measuring severity of psychotic symptoms by the clinician.

Table-I: Multiple drug use among participants.

	Past month use %	Daily or almost daily use %
Methamphetamine	100	22
Cannabis	82	83
Heroin	43	90
Cocaine	48	51
Alcohol	38	54

The Brief Psychiatric Rating Scale subscales of emotional withdrawal, conceptual disorganization, suspiciousness, hostility, unusual thought content and hallucinations were used to assess the severity (ranging from 1 to 7) of each of these symptom domains. A cut-off of 4 or greater on each sub scale was used to define a clinically significant symptom.

The findings were recorded for each patient on structured proforma. Data collected was analysed by One Way Anova Calculator. Descriptive statistics were used to calculate mean and standard deviation (SD) for age of patient and BPRS scores. Frequency (%) was calculated for psychosis, gender, education, marital status, job status and duration of drug use. Stratification was done with regards to age, gender, duration of substance abuse through categories to see the effect on these outcome variables through chi-square test. A *p*-value ≤0.05 was taken as signi-ficant.

RESULTS

A total of 134 subjects were included in study after fulfilling the inclusion criteria. Patients had a median age of 26 years (range 16-60), majority were male (89.5%). Almost two third (64%) were currently unemployed and one-third (33%) had a positive forensic history.

Among the 134 patients 63 (47%) patients were above the 25 years and 71 (53%) were below 25 years.

Table-II: Frequency of psychosis in subjects by different variables.

Demographic Data	n	Mean total BPRS score	SD
All patients	134	34.687	28.4
Age Groups			
16-24 yrs	71	44.4225	33.1079
25-40 yrs	41	28.9268	17.256
41-60 yrs	22	14	7.329
Gender			
Male	120	35.7417	27.8817
Female	14	25.6429	32.2075
Educational Level			
Illiterate	17	38.3529	12.6883
Primary-middle	24	17.25	13.0626
Matriculate-intermediate	39	38.9231	31.8445
Graduate-postgraduate	51	37.2157	32.3724
Marital Status			
Single	88	38.4659	32.153
Married	16	24.5667	18.9203
Separated-divorced-widowed	30	32.875	13.0837
Job Status			
Unemployed	86	39.1279	32.2278
Employed	48	26.7292	17.4145
Duration of Methamphetamine Use			
<1year	78	31.7564	25.4319
1-5 years	40	38.425	31.591
>5years	16	40.0625	33.2455

Table-III: Degree of severity of psychosis in the participants.

Total BPRS score	n	Mean	SD
0-19 No psychosis	61	12.8852	3.9034
20-39 Mild psychosis	31	29.129	4.9108
40-59 Moderate psychosis	18	50.1667	5.742
60-126 Severe psychosis	24	85.6667	19.1508
Total	134	34.687	28.4

The demographic data of 134 participants along with their mean and standard deviation of total BPRS scores are shown in table-II. No participant of this study dropped out. The mean total BPRS score of 134 patients was 34.687 (cut off score for psychosis is >40). Out of 134 patients, 61 (45.5%) showed subclinical or no symptoms, 31 (23.1%) showed mild symptoms, 18 (13.4%) showed moderate symptoms and 24 (18%) showed severe symptoms on BPRS (table-III). These results showed that patients of methamphetamine abuse had a substantial frequency of psychosis. Results showed that the younger age group (age 16-24) had highest mean total BPRS score.

Use of multiple drugs was common among the participants and all participants reported using cannabis, heroin, cocaine & alcohol in addition of methamphetamine in past (table-I).

Thirty percent participants gave account of previously hospitalisation for drug-induced psychosis.

DISCUSSION

The focus of this study was to identify the frequency and severity of psychosis amongst patients of methamphetamine use. The participants showed high scores on psychosis scales. The mean total BPRS score of 134 participants was 34.687 (Cut off score for psychosis is >40). Out of 134 participants, 61 (45.5%) showed subclinical or no psychosis, 31 (23.1%) showed mild psychosis, 18 (13.4%) showed moderate psychosis and 24 (18%) showed severe psychosis on BPRS. The results show that there is considerable prevalence of psychosis among methamphetamine users. The younger age group and unemployed patients had the highest mean total BPRS scores.

The prevalence of psychosis among methamphetamine users in the current sample was 11 times higher than that seen among the Pakistani general population (31.3% versus 1.5%) 12.17% methamphetamine users had experienced clinically significant psychosis that warranted hospitalisation causing absence from work[12].

Prevalence of psychosis in methamphetamine users has been evaluated in many studies. McKetin *et al*[11] found that unusual thoughts, hallucinations and suspiciousness were present in one-quarter of chronic consumers of methamphetamine diagnosed with acute methamphetamine psychosis.

Bousman *et al*[13] examined the variation in positive symptoms across individuals with methamphetamine psychosis. While they found three distinct sub-profiles, delusions were common amongst all individuals with methamphetamine induced psychosis.

Additional studies have also reported that methamphetamine psychosis is associated with a high prevalence of persecutory delusions, auditory and visual hallucinations, odd speech, and delusions of reference[14-16].

In many studies, comparing methamphetamine induced psychosis with schizophrenia researchers have found no difference in the type and severity of psychotic symptoms using the Brief Psychiatric Rating Scale (BPRS)[17].

Other researchers demonstrated that the longitudinal changes of positive symptoms between methamphetamine induced psychosis and schizophrenia are similar. For example, Hajebi *et al*[18] revealed that there was no significant difference in the severity of positive symptoms between methamphetamine users & schizophrenics after 6 months and one year follow-up. These findings suggest that the progression of psychotic symptoms following methamphetamine use is comparable to that of schizophrenia.

The present study aimed to determine the frequency & severity of psychotic symptoms among methamphetamine users seeking consultation at psychiatry OPD of a tertiary care hospital in Balochistan. The results indicated that prevalence of psychosis is alarmingly high among study participants. This finding can be supported through findings of previous researches that psychotic symptoms in methamphetamine users is statistically high when compared to general population.

Our research findings are in line with previous studies reflecting the need to address the psychotic symptoms like emotional withdrawal, blunted affect, conceptual disorganisation, suspiciousness, hostility & hallucinatory behaviour in illicit drug users especially those using methamphetamine to prevent its long term afflictions over the individual and their families.

LIMITATION OF STUDY

The study population represented only those methamphetamine users who presented to psychiatry OPD of Combined Military Hospital Quetta.

There was concomitant use of other drugs as well besides methamphetamine among the study participants.

RECOMMENDATION

On the basis of findings of current research, large epidemiological studies can be carried out to determine the prevalence, psychosocial determinants, risk and protective factors of psychosis in methamphetamine users from diverse sociodemographic variables.

CONCLUSION

The results of our study showed that a significant proportion of methamphetamine users had psychotic symptoms. A strategy should be made to promote awareness in population about harmful consequences of methamphetamine use, timely identification of psychosis in its users and their rehabilitation.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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