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Medical and Psychiatric Complications of Self Poisoning Presenting in Psychiatry OPD of a Tertiary Care Hospital

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ABSTRACT

Self-poisoning has been considered to be the act of intentional self-administration of more than the prescribed dose of any drug, including the non-ingestible substances, as well as the overdose of recreational drugs and alcohol intoxication. It is the commonest mode of attempting suicide, hence considered to be a major medical and social problem Evaluation of patterns of medical and psychiatric complications of self-poisoning presenting in Psychiatry OPD of a tertiary care hospital. The present study was an Observational study. This research was done over a 1.5-years study period at Department of Psychiatry, Burdwan Medical College and Hospital, Bardhaman (East). Total 100 patients were included in this study. The clinical outcome showed significant association of Comorbid Psychiatric Illnesses with Medical Complications at Baseline(within 1 week of poisoning) and association between Medical and Psychiatric Complications at 3 months and 6 months of poisoning respectively was statistically significant (p<0.0001). Our study concludes that most of the patients develop serious complications following poisoning and treatment programs of self poisoning patients should be planned in a more holistic manner to address both the medical and psychiatric complications with a multidisciplinary approach.

INTRODUCTION

Self-poisoning has been considered to be the act of intentional self-administration of more than the prescribed dose of any drug, including the non-ingestible substances, as well as the overdose of recreational drugs and alcohol intoxication[1]. It is the commonest mode of attempting suicide, hence considered to be a major medical and social problem. Recent literature has shown its grave picture in society estimating that one million people die from self-poisoning each year equating to one every 40 sec[2]. There is a striking difference in the mortality rate of self-poisoning in the developed countries of the world, only 1-2%, compared with developing countries like India, where it is 15-30%[3].

India has the highest number of suicide deaths in the world, with suicide being the leading cause of death in the 15-39 years age group[4,5]. India's contribution to global suicide deaths has increased from 27.3% in 1990 to 36.5% in 2019 among women and girls and from 16.7% in 1990 to 20.9% in 2019 among men and boys. Among various risk factors for suicide, non-fatal self-harm (non-suicidal self-injury and non-fatal suicidal behaviors) is an important risk factor for subsequent suicide. Most commonly, suicide is preceded by nonfatal suicidal thoughts and behaviours (suicidality) that include ideation, plan, intent, preparatory behavior and attempt. Suicidal ideation refers to thoughts of harming or killing oneself; suicidal plan refers to formulation of a specific method, means, location, or timing through which one intends to die, suicidal intent refers to expectation and desire for a self-destructive act to end in death, suicide preparatory behavior indicates acts or preparation toward making a suicide attempt but before the potential for harm has begun and attempted suicide is a non-fatal, self-inflicted destructive act with explicit or inferred intent to die. A previous suicide attempt is the most important predictor of suicidal death, with each attempt increasing the risk of subsequent attempt, death, serious long-term physical injury and psychological suffering in the general population. WHO recommends identifying and understanding suicidality as a key component of all comprehensive suicide prevention strategies. In India, suicide was among the leading ten causes of years of life lost in all state groups. Also, the contribution of suicide to the disease burden increased during 1990-2016 in India. It is now estimated that, death by self-poisoning, especially with pesticides, accounts for 20% of all suicides in India and 14-20% globally and are substantially more prevalent in the regions where agriculture is the predominant occupation because of the greater accessibility to pesticides in these regions.

MATERIALS AND METHODS

Study area: Department of Psychiatry, Burdwan Medical College and Hospital, Bardhaman (East).

Sample size: 100

Study population: 100 consented patients with their informants attending the Psychiatry OPD of Burdwan Medical College and Hospital, fulfilling the selection criteria set for the current study during the study period were recruited after obtaining informed consent from patients or their parents (if patient is a minor).

Study period: 1.5 years (includes data collection, data processing and analysis and preparation of draft of thesis).

Study design: Follow up observational study.

Inclusion criteria:
- Patients with history of deliberate self-poisoning within 1 week
- Fulfilling the criteria of self-poisoning by substances of ICD-11, DCR version, code PC 90-99 and PD 00-05
- With at least one informant
- Giving informed consent
- To read and write Bengali

Exclusion criteria:
- With mental retardation
- With known organic disorder or chronic major physical illness
- Unwilling to give informed consent by patient or informant
- Physically or psychologically too ill to be assessed for the current study

Statistical analysis: For statistical analysis data were entered into a Microsoft excel spreadsheet and then analysed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Two-sample t-tests for a difference in mean involved independent samples or unpaired samples. Paired t-tests were a form of blocking and had greater power than unpaired tests. A chi-squared test (χ^2 test) was any statistical hypothesis test wherein the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Without other qualification, 'chi-squared test' often is used as short for Pearson's chi-squared test. Unpaired proportions were compared by Chi-square test or Fischer's exact test, as appropriate.

Explicit expressions that can be used to carry out various t-tests are given below. In each case, the formula for a test statistic that either exactly follows or closely approximates a t-distribution under the null hypothesis is given. Also, the appropriate degrees of freedom are given in each case. Each of these statistics can be used to carry out either a one-tailed test or a two-tailed test.

Once a t value is determined, a p-value can be found using a table of values from Student's t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favour of the alternative hypothesis.

$p \leq 0.05$ was considered for statistically significant.

RESULT AND ANALYSIS

Type of poison intake: In our study, majority of the patients i.e., 50 (50%) ingested pesticides, 13 (13.0%) patients ingested Sedative hypnotic drugs, 9 (9.0%) patients ingested Analgesics/Antipyretics/NSAIDs, 8 (8.0%) patients ingested Corrosives, 7 (7.0%) patients ingested Antidepressants 4 (4.0%), 4 (4%) patients ingested Methyl Alcohol, 3 (3.0%) patients ingested Antipsychotics, 1 (1.0%) patients ingested Antiepileptics, 1 (1.0%) patients inhaled Carbon Monoxide in toxic amounts and 4 (4.0%) patients ingested poison which were Unspecified/Others (Table 1).

Precipitating factor: In our study, majority of the Precipitating factors was Family dispute which was present in 40 (40.0%) patients Other precipitating factors were Death of loved ones in 17 (17.0%) patients, Failure in examination in 8 (8.0%) patients, Financial crisis in 26 (26.0%) patients, Marriage related issues in 3 (3.0%) patients and Substance abuse in 6 (6.0%) patients.

Overall outcome: In our study, by empirical measures we found that 58 patients (58%) partially improved, 37 patients (37%) improved and 5 patients (5%) died after 6 months with treatment.

At baseline HAM-A score: According to the Table 2 the mean HAM-A Score of patients at Baseline (mean±SD.) was 16±9.6315.

At 3 months HAM-A score: According to the Table 2 the mean HAM-A Score of patients at 3 months was 15.6400±5.9908.

At 6 months HAM-A score: According to the Table 2 the mean HAM-A Score of patients at 6 months was 13.9368±4.5798.

Table 1: Distribution of study population according to type of poison intake, precipitating factor and overall outcome

	Frequency	Percentage
Type of poison intake		
Methanol	4	4.0
Analgesics/Antipyretics/NSAIDs	9	9.0
555Antidepressants	7	7.0
Antiepileptics	1	1.0
Antipsychotics	3	3.0
Carbon Monoxide	1	1.0
Corrosives	8	8.0
Pesticide	50	50.0
Sedative hypnotic drugs	13	13.0
Unspecified/Others	4	4.0
Total	100	100.0
Precipitating factor		
Death of loved ones	17	17.0
Failure in examination	8	8.0
Family dispute	40	40.0
Financial crisis	26	26.0
Marriage related issues	3	3.0
Substance abuse	6	6.0
Total	100	100.0
Overall outcome		
Fatality	5	5.0
Improved	37	37.0
Partially Improved	58	58.0
Total	100	100.0

At baseline BDI-II score: According to the Table 2 the mean BDI-II Score of patients at Baseline (mean±SD.) was 18.1400±9.9352.

At 3 months BDI-II score: According to the Table 2 the mean BDI-II Score of patients at 3 months was 17.7800±9.7500.

At 6 months BDI-II score: According to the Table 2 the mean BDI-II Score of patients at 6 months was 16.4000±11.8316.

Distribution of study population according to psychiatric comorbidity (as per MINI 5.0.0) at baseline: In our study, majority of the patients (68%) had psychiatric comorbidity according to MINI 5.0.0 at baseline. Of them majority i.e., 35 patients (51.5%) had Major depressive episode, followed by 7 patients (10.3%) who had Post Traumatic Stress Disorder, 7 patients (10.3%) who had Obsessive Compulsive Disorder, 6 patients (8.3%) who had Alcohol Dependence and 5 patients (7.4%) who had Substance dependence (Cannabis), 3 (4.4%) patients who had Generalized Anxiety Disorder, 3 (4.4%) patients who had Psychotic disorder, 1 patient (1.5%) who had Dysthymia and 1 patient (1.5%) who had Panic Disorder (Fig. 1).

Association between presence of comorbid psychiatric illnesses and medical complications at baseline: Association of Comorbid Psychiatric Illnesses with Medical Complications At Baseline within 1 week Medical Complications was statistically significant (p<0.0001) (Table 4).
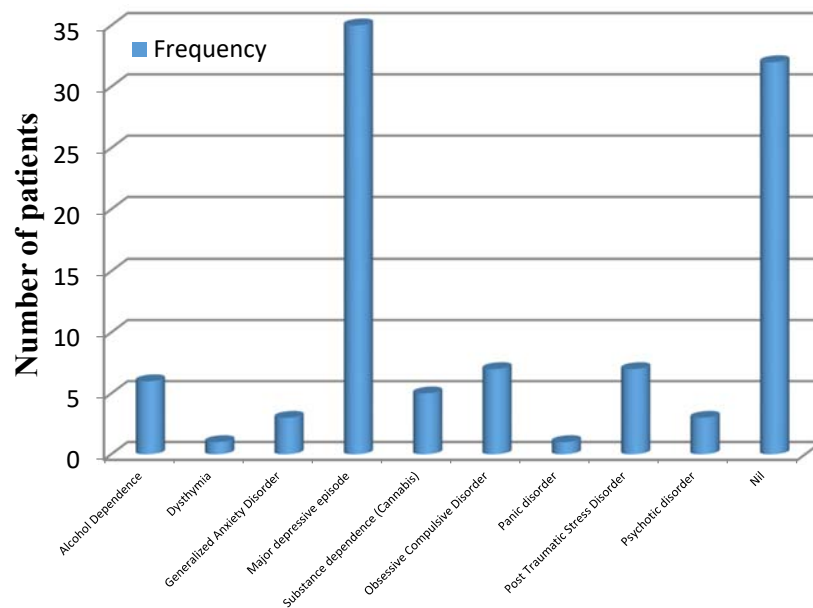
Fig. 3: Distribution of study population according to psychiatric comorbidity (as per MINI 5.0.0) at baseline

Table 2: Distribution of mean HAM-A score and BDI-II score

	Number	Mean	SD	Minimum	Maximum	Median
At Baseline HAM-A score	100	16.0000	9.6315	2.0000	39.0000	15.0000
At 3 months HAM-A score	100	15.6400	5.9908	2.0000	32.0000	15.0000
At 6 months HAM-A score	95	13.9368	4.5798	3.0000	26.0000	14.0000
At Baseline BDI-II score	100	18.1400	9.9352	3.0000	49.0000	16.0000
At 3 months BDI-II score	100	17.7800	9.7500	6.0000	42.0000	14.0000
At 6 months BDI-II score	95	16.4000	11.8316	0.0000	55.0000	13.0000

Table 4: Association between presence of comorbid psychiatric illnesses and medical complications at baseline, medical complications with psychiatric complication (as per MINI 5.0.0) at 3 months and 6 months

(a) At baseline medical complications

Comorbid psychiatric illnesses	Neurological complications	Cardiological complications	GI complication	Hepatic dysfunction	Nil	Others	Renal complications	Total
No	1	0	14	2	7.0	7.0	1	32
	8.3	0	50	20	63.6	58.3	10	32
Yes	11	17	14	8	4.0	5.0	9	68
	91.7	100	50	80	36.4	41.7	90	68
Total	12	17	28	10	11.0	12.0	10	100
	100	100	100	100	100.0	100.0	100	100

(b) Psychiatric complications (as per MINI 5.0.0) 3 months

Medical complications	Alcohol dependences	Major depressive episode	OCD	Panic disorders	Post-traumatic stress disorder	Psychotic disorder	Nil	Total
Neurological complications	1	5	1	1	0	2	0	10
	33.3	13.9	25	3.8	0	50	0	10
Cardiological complications	0	9	1	3	0	2	0	15
	0	25	25	11.5	0	50	0	15
GI complications	0	5	1	8	0	0	0	14
	0	13.9	25	30.8	0	0	0	4
Hepatic dysfunctions	1	5	0	5	1	0	0	12
	33.3	13.9	0	19.2	20	0	0	12
Renal disorders (chronic kidney disease)	0	4	0	1	1	0	0	6
	0	11.1	0	3.8	20	0	0	6
Others	0	5	1	6	0	0	0	12
	0	13.9	25	23.1	0	0	0	12
(1) Cardiological complications (2) others	0	0	0	0	1	0	0	1
	0	0	0	0	20	0	0	1
(1) Neurological	1	0	0	0	0	0	0	1
	33.3	0	0	0	0	0	0	1
Nil	0	3	0	2	2	0	22	29
	0	8.3	0	7.7	40	0	100	29
Total	3	36	4	26	5	4	22	100
	100	100	100	100	100	100	100	100

Table 4: Continue

(c) Psychiatric complication (MINI 5.0.0) 6 months

Medical complication	Not applicable	(1) Alcohol dependence (2) generalisd anxiety disorder	(1) Alcohol dependence (2) panic disorder	(1) Psychotic disorder (2) substance dependence	Alcohol dependence	Generalized anxiety disorder	Major depressive episode	Nil	OCD	Panic disorder	Post-traumatic stress disorder	Psychtic Disorder	Total
Neurological complications	0	0	0	1	1	1	3	0	1	0	0	2	9
Cardiological complications	0	0	0	0	1	5	1	0	1	0	0	1	9
Death	5	0	0	0	0	0	0	0	0	0	0	0	5
GI complications	0	0	0	0	0	5	2	0	0	1	0	0	9
Hepatic dysfunctions	0	0	1	0	2	2	3	0	0	0	2	0	10
Nil	0	0	0	0	0	0	0	37	0	0	0	0	37
Others	0	0	0	0	2	4	4	0	1	2	2	0	15
Renal complications (Chronic kidney disease)	0		0	0	0	0	4	0	0	0	1	0	6
Total	5	1	1	1	6	17	17	37	3	4	5	3	100

Association of At 3 months Medical Complications with Psychiatric Complications (as per MINI 5.0.0 was statistically significant (p<0.001).

Association of Medical Complications at 6 months with Psychiatric Complication (as per MINI 5.0.0) at 6 months was statistically significant (p<0.0001) (Table 4).

DISCUSSION

In this study patients with self-poisoning were assessed at 3 points of time (at baseline [within 1 week], 3 months and 6 months) to look for both medical complications at baseline, 3 months and 6 months and psychiatric comorbidities at baseline and psychiatric complications at 3 months and 6 months. One advantage of this study is that apart from estimating the socio-demographic profile of suicide attempters with poisoning, we also estimated the different medical and psychiatric complications encountered by these patients over a period of time. Apart from this we also attempted to find out the total HAM-A, BDI-II scores and pattern of suicidality at baseline, 3 months and 6 months. In addition we also attempted to find out whether there was any association between different medical and psychiatric complications after self-poisoning attempts and the overall outcome after 6 months.

In the current study, mean age (mean±S.D.) of patients was 31.3000±10.3265 with majority of patients between 21-30 years (30%). Mean[SD] age of males was 33.19±10.540 and females was 28.79±9.588. Mean[SD] age of self-poisoning patients in Indian studies by Brahma et al.[6], was 26.2[11.75] years, by Narang was 25.11 [8.17] years and Chowdhury et al.[7] found that mean[SD] age for males was 30.47 [10.45] years and that for females was 27.53 [14.73] years. 25.23[12.59] years. In both sexes suicidal behaviour was more frequent among younger individuals as in other Indian studies and other studies outside India. Jailkhani et al.[8] observed 71.4% of the males and 28.6% of the females had committed suicide by poisoning. Around 39.2% of the males were between 20 and 30 years and 54.9% were the males aged between 20 and 40 years. About 38.3% of the females were between 20 and 30 years and 48.9% of the females aged between 20 and 40 years. Other studies also observed suicidal poisoning to be more in males (44.30%) than in females (35.54%). Mohanty et al.[9] observed the incidence of suicidal poisoning was equal in males and females. The most frequent age group of the victims was 21 and 30 years. Sharma et al.[10] found that males and females were equally affected by suicidal poisoning. Sharma et al.[10] observed 33.8% of the cases of poisoning were seen in age groups 20 to 25 years and were higher in males than females. Parekh and Gupta observed that people in the third decade of life and males were common victims of poisoning. Zhang et al.[11] observed acute poisoning more in the 20-39 age group (52.7%). The female to male ratio was 1.2:1. Eddleston et al.[12] found that typical patients were young (median age 25 years) of self-poisoning. According to that Rajapakse et al.[13], over half of female deaths were under 25 years old and common in males (57%) Vancayseele et al.[14] and the gender ratio (male to female) was 2:1 or more. Most studies reported nonfatal self-poisoning to be more common among males, with a peak age range of 10-30 years. In our study, the incidence was higher in the age group 21 to 30 years and among males; this was consistent with other studies. but not consistent with few studies. Males and 21-30 age groups are more affected because they are burdened with financial and family problems and also hardships of life encountered during early adulthood.

33 cases in our study had Prescription medicines' overdoses of which majority were sedative-hypnotics (39.4%, n = 13), second most common were Analgesics/Antipyretics/NSAIDs (27.3%, n = 9), Antidepressants (21.2%, n = 7), Antipsychotics (9.1%, n = 3) and Antiepileptics (3%, n = 1). This is similar to the findings of the Indian study by Sanjay et al.[15] who found that the most commonly consumed drugs belonged to the drug class of benzodiazepines (22%), NSAIDs (19.2%), antihistamines (15%), antidepressants (12%) and antipsychotics (10.2%). According to a study conducted by Vancayseele et al.[14] in Belgium, the

most commonly ingested drugs during an act of DSP belonged to the drug class of antidepressants (20% in males and 25% in females) but these were third most common in our study population (30.4%, n = 7). Instead, benzodiazepines were found to be most common class of drugs exploited for DSP in our study population (39.4%, n = 13), which was similar to the results of other studies outside India done by Henderson *et al*.[16] in Australia, The baseline mean BDI-II score of self-poisoning at baseline was 18.14±9.94, at 3 months was 17.78±9.75 and at 6 months was 16.4±11.83 and the baseline mean HAM-A score of self- poisoning patients at baseline was 16±9.6315, at 3 months was 15.64±6.0 and at 6 months was 13.9368±4.5798.. This decrease in mean BDI scores and HAM-A score at 3 months and 6 months was because the patients were under treatment from our OPD. A study conducted by Placidi *et al*.[17] found that the mean[SD] BDI-II score of self-poisoning patients was 27.3 [13.6] and mean[SD] HAM- A score was 26.5[10.1], while another study by Wenzel *et al*.[18] found mean[SD] BDI score in suicide attempters was 24.69[13.29]. Loas and Defélice[19] conducted a study to evaluate the stability of IPD and depression in suicide attempters, evaluated on two occasions: on admission and 1 month later and found the mean[SD] BDI-II scores to be 28.12 [14.78] and 22.66 [16.77], respectively. An Indian study found mean[SD] BDI-score in self harm with depression and without any psychiatric diagnoses to be 21.7 [16.2] and 16.1 [13.9] respectively. This variation was due to the difference in population distribution in our study.Many studies demonstrate high prevalence of suicide attempts in MDD patients with comorbid anxiety symptoms which explains the HAM-A scores in our study.

In our study we estimated the overall outcome by empirical measures and found that 58% of the patients partially improved and 37% of the patients improved with treatment and 5% of the patients were fatal (2 because of peptic perforation and 3 due to liver failure).

We also tried to show the association between different medical and psychiatric complications in our study. We found that at baseline medical complications were significantly associated with presence or absence of comorbid psychiatric illnesses. At 3 months and 6 months also found significant association between different medical and psychiatric complications of self-poisoning. To the best of our efforts we could find only one study in China which reviewed the association between caustic ingestion patterns, each specific Psychiatric Comorbidities (PC) and long-term survival outcomes. The presence of PCs predicted increments of systemic/GI complications. Our findings were consistent with this study. This association between medical and psychiatric complications could be explained because the relationship between physical health and mental health has been documented by various studies and association between mental disorders and subsequent medical conditions has been showed by other studies. This could be because generally people with medical conditions have a poor quality of life which also affects their physical well-being and hampers their socio-occupational functioning which can lead to poor interpersonal relationships, economic hardships, affective disorders, increased anxiety, increased substance use, repeated suicidal thoughts and attempts.

CONCLUSION

Most of the patients admitted with deliberate self poisoning are not provided with proper follow up to assess whether there is development of any medical and psychiatric complications. Our study concludes that most of the patients develop serious complications following poisoning and treatment programs of self poisoning patients should be planned in a more holistic manner to address both the medical and psychiatric complications with a multidisciplinary approach.

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