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Socio Demographic and Clinical Profile of Patients with Poisoning Admitted to Medical Intensive Care Unit.

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Close to 800 000 people die due to suicide every year, which is one person every 40 seconds. Suicide is a global phenomenon and occurs throughout the lifespan is the second leading cause of death among 15-29year olds globally. There are indications that for each adult who died by suicide there may have been more than 20 others attempting suicide.[1]

Worldwide intentional poisoning is one of the important causes for mortality and morbidity[2].A conservative estimate based on these data indicates that there were approximately 110,000 pesticide self-poisoning deaths each year from 2010 to 2014, comprising 13.7% of all global suicides. [3]

The National Crime Records Bureau of India report 1,33,623 suicides in 2015 and rate of 10.6 per one lakh population.The number of suicides in the India during the decade (2005–2015) have recorded an increase of 17.3% (1,33,623 in 2015 from 1,13,914 in 2005).[4]A sensitivity analysis accounting for under-reporting of suicides in India resulted in an increased estimate of 168,000 pesticide self-poisoning deaths annually, that is, 19.7% of global suicides [2].In India,majority of suicides were reported in Maharashtra (16,970) followed by 15,777 suicides in Tamil Nadu and 14,602 suicides in West Bengal, accounting for 12.7%, 11.8% and 10.9% respectively in the year 2015.[4]

Poisoning is one of the common methods of attempting suicide in India. And it is clinical assumption that the most serious of these attempters are admitted in Medical Intensive Care Unit(MICU).The mortality following poisoning can range from 5 % to22% depending on the type of poison, facilities for treatment available and other factors.[5,6,7,8]

There is no data from India of patients presenting to MICU with suicidal poisoning.This study aims to find out the socio-demographic and clinical variables of patients presenting to MICU with poisoning in a tertiary care hospital in Tamil Nadu, India.

I. Material And Methods

The study is conducted in Christian Medical College, Vellore (CMC Vellore) in MICU. Consecutive patients with medical diagnosis of poisoning in the age group of 18 to 65 years were included in the study, between March to August 2010.Close family members were interviewed while the patients were in MICU and patients were interviewed after recovery from the physical condition by a trained psychiatrist.

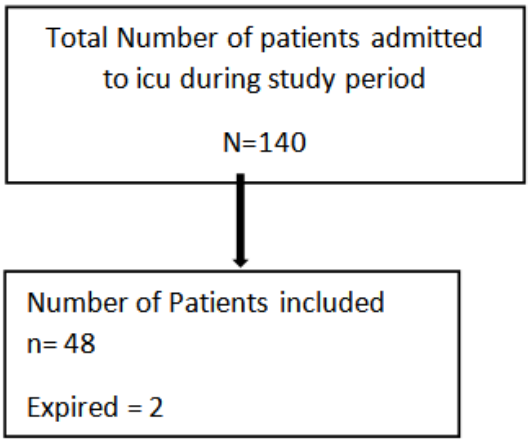
A semi structured Proforma was used to record the socio-demographic details and clinical profile of the patients. Which included age, gender, habitat, occupation and clinical variables of past history of psychiatric illness, past history of suicide attempt, premorbid personality, severity of physical condition indices – GCS (Glasgow coma Scale) and APACHE II score(Acute Physiology, Age, Chronic Health Evaluation II), Duration of Mechanical Ventilation and medication received.

The study was approved by the institutional ethics committee of CMC Vellore.Informed consent initially was taken from the family members and patients after their recovery.Confidentiality was assured.

The association of categorical values was studied using chi-square test. The difference in means were compared using t-test and the threshold for statistical significance was standard 0.05

II. Results

Total number patients screened were 140 of whom 48 fulfilled the inclusion criteria.(flow chart 1)



Flow chart 1

Table 1 Socio-demographic details

Variables	Male n= 36(%)	Female n= 12(%)	Total n= 48(%)
Age 18-25 years	5(10.4)	0	5(10.4)
26-35	7(14.5)	4(8.3)	11(22.9)
36-45	17(14.5)	5(10.4)	12(25)
46-55	5(10.4)	2(4.1)	7(14.5)
55-65	2(2.1)	1(2)	3(6.2)
Marital status			
single	26(54.1)	7(14.5)	33(68.7)
Married	10(20.8)	5 (10.4)	15(31.2)
Habitat			
Rural	35(72.9)	12	47(97.9)
Urban	01(2)	0	01(2.08)
Occupation * Manual labourer	12(25)	10(20.8)	22 (45.8)
Semi-skilled	19(39.5)	2(2.1)	21 (43.7)
Professional	5(10.4)	0	5 (10.4)
Socio-Economic Status Low	23(47.9)	6(12.5)	29(60.4)
Middle	13(27)	6(12.5)	19(39.5)

*p < 0.010

Socio -demographic Variables

The mean age of subjects with attempted poisoning is 31.69 (SD-10.7)years. The male : female ratio is 3:1.Married subjects constituted 31.3 %. Most patients are from rural habitat(97.9%) and belonged to manual labour kind of occupation (45.8%). A significantly higher proportion of manual labours have attempted poisoning. (p < 0.010)

Table 2 Psychiatric Variables

Variable	Male(%)	Female(%)	Total (%)
PH Psychiatric illness			
Present	18(37.5)	6 (12.5)	24 (50)
Absent	18(37.5)	6 (12.5)	24 (50)
PH Suicide attempt			
Present	4(8.3)	4(8.3)	8 (16.6)
Absent	32(66.6)	8(16.6)	40 (83.3)
Treatment			
Irregular	8(16.6)	1(2)	9(18.7)
regular	2(2.1)	2(2.1)	4(8.3)
Not on medication	26(54.1)	9(18.7)	35(72.9)
Pre-morbid Personality disorder			
Present	34(70.8)	10(20.8)	44(91.6)
Absent	2(2.1)	2(2.1)	4(8.3)
PH Psychiatric illness			
Organic	1(2)	0	1(2)
Psychosis	4(8.3)	2(2.1)	6(12.5)

Mood	0	1(2)	1(2)
anxiety	1(2)	1(2)	2(2.1)
Alcohol dependence	13(27)	2(2.1)	15(31.2)
No PH Psychiatric illness	17(35.4)	6(12.5)	23(47.9)

PH-past history

Psychiatric Variables

50% patients had past history of psychiatric illness of which only 8.3% were regular to medication. The common psychiatric morbidity is of alcohol dependence (31.2%). Patients with past history of psychiatric illness had significant past history of suicide attempt. ($p< 0.002$) Subjects with a personality disorder are more at risk of suicide attempt($p< 0.001$)

Table 3 Medical Variables

Poisoning type	Male(%)	Female (%)
Accidental	0	1(2)
Intentional *		
OPP	30(62.5)	6(12.5)
Corrosives	1(2)	2(2.1)
Carbamazepine	0	2 (2.1)
Rotendicide	1(2)	1(2)
Oleander	3 (6.2)	0
Mortality		
Alive	34(70.8)	12(25)
Dead	02(2.1)	00

*p = 0.020

Medical Variables

The most common method of poisoning is Organo-phosphorus (OP)poisoning (75%). Poisoning with OP is significantly more in men than women ($p<0.020$) 100% of patients were mechanically ventilated. The mean duration of mechanical ventilation was 8.54 days(SD- 5.2). The mean APACHEII Score is 15.46(SD-6.17). The mean GCS Score is 7.8 (SD-2.2) (Range 2-10) The Mortality is 4.1%.

III. Discussion

In our study 140 patients were admitted over 6months period and of which 33.5% were admitted to MICU with poisoning with intent of suicide,which is higher than other studies from south east Asia where upto 10% were reported with intentional poisoning. Thefigures reported from south east Asia are comparatively higher to the numbers reported in the west

Age,Gender and Marital status

The mean age in this study is 31.7 yearswhich is similar to Indian statistics of 2015, where middle aged group (30 and above- below 45 years) which accounted for 33.8 % of total number of suicides. [4,10]Male: female ratio of 3:1 suicide attempters in MICU was high in comparison with the national figures of suicide victims for the year 2015 in India which is 2.1: 1,which showed a marginal increase of male and marginal decrease of female ratio as compared to year 2014 (2.09 : 1).[4,10,11,12,]The high male to female ratio can be explained by the fact men tend to use methods with high intention and arelethal and this is evidenced by the fact of setting they were admitted (MICU) in.This study is in contrary to the studies in west[13,14] and some south east Asian studies[7]where female suicide attempts are higher.Being married did not seem to be a protective factor in our studyunlike a study done in Rajasthan where there was a significant decrease in married subjects attempting suicide.[15]

Occupation, Habitat and Socio-economic status

In this study group most suicide attempters are from rural habitat and lower socio-economic status which is in line with other studies in India [4,11]and west[13].However middle socio-economic status is reported higher in other studies. [12,15]

Psychiatric corelates

50% subjects in this study had past history of psychiatric illness and 16.6% had past history of suicide attempt.Which was comparatively lower than in some of other Indianstudies. [11,12,15,16]Presence of past history of psychiatric illness and having a personality disorder significantly co-related with suicidal risk in line with other Indian studies[11,15].No other specific psychiatric diagnosis was significantly corelated with risk of

suicide.Our study is in contrast with study by Novak et al where past history of psychiatric illness and previous ICU admission were found to be protective.[17]

Poisoning

In this study,Organo-phosphorus(OP) compounds were the most common method of suicide attempt(75%) as is found in most south Asian countries[5,6,11,15,16]. Of the OP compounds the most frequently used were monocrotophos and endo sulpha unlike in the west where psychotropic drugs, antidepressants and antipsychotic agents remain the most common means of suicide attempt. [13,18].Accidental poisoning (4%) was very low in our study group showing the magnitude of attempters with high suicidal intent in an MICU setting. This is figure is much lower than most studies which have report a range of 10 to 30 % of intentional poisoning[7,16,20].Other studies support the fact, that admission to ICU with poisoning tends to be more common with an intent of suicide than by accident.[14]And this also is explained by the fact that the study included adults and not children where accidental poisoning is more common.

Mechanical Ventilation

Mechanical Ventilation (MV) was required for 100 percent of cases in this study. This is in marked contrast with other Indian and western studies where MV was indicated in upto 27% to 74% of patients.[5,6,8]Multiple studies have established a role for early MV to prevent morbidity and mortality This is required to prevent or treat various physical complications of bronchial secretions, altered level of consciousness, pneumonia, and flaccid paralysis, intermediate syndrome ARDS and others. Physicians must be aware of the potential dangers of respiratory failure, which could occur within 72 hours of OPP. [6,7,8,20]The use of mechanical ventilation in 100% of the subjects could explain the low mortality rate.The duration of MV, Mean GCS score and APACHE II did not yield any clinically significant results.

Morality

The mortality in our study is 4.1%, which is least among many south Asian and western studies. Both patients who died had consumed Oleander seeds, which are highly toxic and causes hyperkalaemia and death occurs due cardiac conduction block.There was no mortality in the OP poisoning group,which constituted 75% of patients, and this result must be interpreted in the setting in which they were treated (MICU).In a Rural based hospital, the mortality rate in OP poisoning is as high as 22%[5], which illustrates the lethal nature of these compounds. Evidence -based treatment protocols should be implicated in the low mortality rate in poisoning MICU and among OPpoisoning[21,22]

Costs

Economic burden has not been studied in this research. But the high cost of intensive care are well established.[9,14,23]This factor is specifically significant to this study as most subjects are rural habitat(98%) and belong to lower socio-economic status(46%).

Limitations

The study did not have a comparative group of patients admitted and discharged from the medical ward, to establish statistically that patients admitted to MICU were more severely medically ill and more severe intention of suicide.The study findings reflect the profile of suicide attempters attending tertiary level hospitals and may not be generalized to all suicide attempters in the general population as most severe cases are the ones referred to a tertiary care.

IV. Conclusion

Suicides are preventable. The most intentional suicide attempters are admitted to the Medical ICU. Mortality and morbidity can be reduced by early evidenced based interventions as demonstrated by this study.Acute self-poisoning is an increasing medical issueand so should it also be an important psychiatric issue. The present study makes astrong case for protocol establishment of consultation-liaisonbetween Intensive care units and Psychiatry department, to make first consultationwith patient and family members during the admission in the ICU.This serves many purposes like crisis intervention, diagnosis, treatment and follow- up after recovery and prevention of further suicide attempts. Multi-level intervention, starting from the level of decreasing the production and restriction of distribution of highly lethal organo-phosphorus compounds and switching to Organic fertilizers are primary prevention methods.

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