



Research Article

PATTERN OF PHARMACEUTICAL DRUG POISONING IN SOUTH INDIAN TERTIARY CARE HOSPITALS

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ABSTRACT

Objective was to study the pattern of pharmaceutical drug poisoning (PDP) in four South Indian tertiary care hospitals. Prospective, observational study included patients admitted to emergency departments of four tertiary care hospitals of South India. The data was collected from the patient case records into a well-designed data collection form, in accordance with the study protocol of inclusion and exclusion criteria. Out of 708 PDP patients we found that the male patients dominated the female patients, with highest number between the age group between 1 to 20 years and 21 to 40 years. We found that most of them had education between 7th to 10th std, and also the data revealed that, unmarried group were reported more than other groups. Intentional consumption was the most common reason for PDP of which non steroidal anti inflammatory drugs (NSAIDs) were the most reported drug poisoning followed by antiepileptic drugs. Awareness and counseling can bring in drastic reduction in the number of suicidal attempts due to pharmaceutical drugs.

Key Words: Pharmaceutical drug poisoning, emergency department, developing countries, suicides, unmarried.

INTRODUCTION

Suicide is a complex and tragic outcome of mental illness. It is one of the significant public health problem in all the developed and developing countries ¹⁻³ not only because of the loss of over 30,000 lives per year, but because the death by suicide of a single individual can have a devastating effect on the lives of those left behind ³⁻⁶. It is estimated that more than 50,000 people die every year from toxic exposure in India ^{7,8}. Furthermore, there are almost one million suicides each year and a significant number of these deaths are related to chemicals ^{1,5,9,10}. Suicide is rated as the ninth leading cause of death among adolescents aged 15 to 19 years ^{11,12}. Low and middle-income countries suffer the highest burden of unintentional and suicidal poisoning ⁵. Inadequate social support, social isolation, family conflicts, interpersonal relationships, unemployment, and school performance have been found to be associated with suicide attempts ^{13,14}. In Southern Africa, acute poisoning has been identified as a significant cause of both morbidity and mortality with hospital prevalence ranging from 1 to 17% ⁷.

It has been reported that more than 25% of the global burden of disease is linked to environmental factors including exposures to inappropriate use of toxic chemicals ^{8,15}. Current trends show an increase in use of chemicals in the global economy and daily modern life which may be linked to increased human exposure ^{16,17}. Suicide prevention in developing countries poses a unique and formidable challenge. Public and mental health professionals as well as government and non-government organizations need to work together to take up the challenge of reducing the suicidal attempts ¹⁸. Hence, we conducted a study

to know the pattern of pharmaceutical drug poisoning, so that this can bring in the percentage of incidence reported to hospital due to pharmaceutical drug poisoning and necessary steps can be taken to prevent the poisoning, which can reduce the percentage of morbidity and mortality.

MATERIALS AND METHODS

Patients who were admitted during the study period from March 2011 to March 2014 into the emergency department of four south Indian tertiary care hospitals with a history and clinical features of PDP were prospectively included into the study after the approval from the respective institutional ethical committee of the different hospitals. Identification of a particular poison was done by the treating physician of the emergency department on the basis of statement of the patient/witness, smell of poisoning agents, brought specimen or clues and the toxidromes due to poisoning. Nasogastric tube was passed into the stomach and washing was done with normal saline or tap water. All the patients were catheterized to monitor and maintain the urine output chart. The data was collected in a well designed data collection proforma including demographic data, mode of poisoning, route of exposure, circumstances of poisoning, treatment data, complications, mortality and other relevant data required to draw the conclusion for the study. The patients who are been treated with first aid outside the study centre or those patients, who have been referred to the study centre for observation have been excluded from the study. The literature supporting the study was collected and analyzed. Obtained data were analyzed using percentage method.

Table 1: Frequencies and study variables (n=708)

Variables	Frequency (%)
Sex	
• Male	407 (57.48)
• Female	301 (42.51)
Age Category	
• 1 to 20 years	277 (39.12)
• 21 to 40 years	277 (39.12)
• 41 to 60 years	125 (17.65)
• Over 61 years	29 (4.09)
Marital Status	
• Married	221 (31.21)
• Unmarried	321 (45.33)
• Divorced	115 (16.24)
• Widowhood	51 (7.20)
Circumstances of poisoning	
• Intentional	484 (68.36)
• Unintentional	149 (21.04)
• Homicidal	20 (2.82)
• Unknown	55 (7.76)
Time of Incidence	
• 6 am to 6 pm	225 (31.77)
• 6 pm to 6 am	429 (60.59)
• Unknown	54 (7.62)
Time of arrival	
• 1 to 4 hours	84 (11.86)
• 4 to 8 hours	216 (30.51)
• 8 to 12 hours	301 (42.51)
• Over 12 hours	107 (15.11)
Clues of poisoning	
• Empty strips	311 (43.92)
• Empty containers/Bottle	193 (27.25)
• Missing tablets in strips	126 (17.79)
• Unknown	78 (11.01)
Outcome	
• Discharged	652 (92.09)
• Death	42 (5.93)
• Discharged against medical advise	14 (1.97)
Different types of pharmaceutical drugs poisoning	
• NSAIDs	161 (22.74)
• Antiepileptics	117 (16.52)
• Antidiabetics	114 (16.10)
• Antihypertensives	108 (15.25)
• Antipsychotics	78 (11.01)
• Anxiolytics	73 (10.31)
• Antithyroids	57 (8.05)

RESULTS

Of the 708 PDP patients admitted, male were 407 (57.48%) patients and female were 301 (42.51%) patients (**Table 1**). From the collected data, the PDP were reported equally in the age group of 1 to 20 years and 21 to 40 years with 277 (39.17%) patients, followed by 41 to 60 years of 125 (17.65%) patients and more than 60 years of 29 (4.09%) patients (**Table 1**). In our study we observed that PDP was more in unmarried patients 321 (45.33%), followed by married patients with 221 (31.21%), divorce patients with 115 (16.24%) and 51 (7.20%) widowhood patients (**Table 1**). With regard to the circumstances of the poisonings, the majority of the cases were intentional with 484 (68.36%) patients, followed by unintentional with 149 (21.04%) patients, 20 (2.82%) of the population were admitted with homicidal poisoning and in about 55 (7.76%) patients, the cause of poisoning was unknown (**Table 1**). Intentional PDP was more common in the age group of 1 to 20 years and 21 to 40 years. Intentional poisoning was higher in the males than in the females. During the analysis of data, we found that 429 (60.59%) patients were exposed to PDP between 6pm to 6am, of

which we found majorly due to intentional and very negligible with unintentional, homicidal or with an unknown cause. We found that, 225 (31.77%) patients reported with PDP during 6am to 6pm, followed by unknown time in 54 (7.62%) patients (**Table 1**).

Majority of the patients were people working in private companies, businessmen, unemployed, and students. After the exposure to PDP, by different circumstances, the time of arrival to the study centre was observed and we found that, maximum number of 301 (42.51%) patients took 8 to 12 hours time gap, followed by 4 to 8 hours with 216 (30.51%) patients, over 12 hours were about 107 (15.11%) patients and within 1 to 4 hours, was about 84 (11.86%) patients (**Table 1**). Treating physician requested the caretakers of the poisoned patients to get the clues of poisoning. Out of which 331 (46.75%) patient's caretakers brought empty strips of tablets, 219 (30.93%) patients attenders brought empty or opened containers or bottles. We also found that 158 (22.31%) patient's attenders got missing tablet in strips (**Table 1**). About 652 (92.09%) of the patients admitted to the emergency department were shifted from Intensive care unit

(ICU) to wards, recovered and were discharged. However, the mortality rate was reported to have 42 (5.93%) patients. 14 (1.97%) patients took discharge against medical advice due to many reasons.

Compilation of data found that, most exposure substances identified in emergency department includes non steroidal anti inflammatory drugs (NSAIDs) took the highest reports of PDP with 161 (22.74%) patients, followed by antiepileptics with 117 (16.52%) patients, antidiabetics with 114 (16.10%) patients, antihypertensives with 108 (15.25%) patients, antipsychotics with 78 (11.01%) patients, anxiolytics with 73 (10.31%) patients and antithyroids in about 57 (8.05%) patients (**Table 1**).

DISCUSSION

In a developing country like India, poisoning is a major health problem, though the type of poison and the associated morbidity and mortality varies from one place to another. Suicidal poisoning with pharmaceutical drugs is one of the most common modality of poisoning in India.

Males are more vulnerable to deaths from poisonings than females, with several studies reporting twice as many deaths in them¹⁹⁻²¹. This trend is reflective of the greater stress and strain, family bread earners and better accessibility of poison to them. But, in few studies, females dominated^{22, 23}.

The majority of our patients belonged to the productive age group of 15 to 45 years, the most active and yet the most vulnerable to stressors like examination failure, unemployment, marital problems, school performances etc, which resembles with other studies conducted worldwide²⁴⁻²⁶. This group of population needs more of interventional programs to decrease the suicidal attempts. Contradictory to our study results there were few international studies were older adults between 65-69 years were more likely to die from deliberate poisoning than younger people due to retirement, failing health, dependency and depression^{22, 26-28}.

As reported by many national and international studies on acute poisoning, we also found that most acute poisoning were suicidal and commonly employed the oral route. Females under 25 years old, the divorced, unemployed and single are at high risk of self-poisoning. In addition, a quarrel with a sexual partner also is a precipitating factor for self-poisoning. Unawareness of the people to take food and beverages from unknown person could be one of the causes of high incidence of homicidal poisoning²⁹.

In accordance with other studies, our research confirms that most frequent agents of self-poisoning were analgesics or NSAIDs, which are the most frequently, consumed agents as it is easily accessible and they are available as over-the-counter medications³⁰⁻³². But, in few studies conducted by researchers, benzodiazepine was on the top list of self poisoning^{29, 33}.

In our data, poison was consumed mostly in the night time between 6pm to 6am, which was contradictory to other research, where they found that, consuming poison in day time was very common⁵. In our study, the mortality was in 42 (5.93%) patients, which was similar to other studies with mortality rate of 5.8% to 8.0% in suicidal drug overdose³⁴⁻³⁶.

Educational programs should be arranged for parents, children guardians and drug users, in order to give them adequate knowledge about hazardous properties and the toxic potentialities of medicines and the proper storage methods. It is

also recommended that drugs should be kept locked in cupboards. Strictly drugs should not be dispensed without prescription. We believe that our study will trigger necessary awareness which highlights the measures to be taken against poisoning.

CONCLUSION

The present data gives additional insight to the epidemiology of pharmaceutical drug poisoning in our country and reflects the need for stringent rules regarding the availability and sales of these substances. Early psychiatric counseling will minimize the risk of next attempt of self harm of suicidal cases. Effective clinical management of poisoning can minimize the mortality.

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