A Four Years' Retrospective Study of Poisoning Cases in Southern India

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Abstract

Objective: To study the pattern of poisoning in Visakhapatnam and its demographic correlates.

Materials & method: The study was retrospectively conducted in all poisoning cases admitted in Casualty department of Anil Neerukonda Hospital, Visakhapatnam and carried out during the period of 1st Jan 2014 to 31st Dec 2017.

Results: Majority (47.37%) of the subjects were between the ages of 20-29years with slight preponderance towards female (52.63%) as compared to male (47.37%). Most of the cases belonged to lower socioeconomic status (94.74%). Place of occurrence was most commonly within the house (85.97%) & it was predominantly observed during winter season. Aluminum phosphide (21.05%) was the most commonly abused substance followed by Organophosphate compounds (14.04%).

Conclusion: The government should take legislative steps to curb down the menace of poison in the hands of the vulnerable people in the society primarily focusing on developing the poisons with less toxicity or non-toxic to humans.

Keywords: *Poisoning, demographic profile, pattern, Aluminum phosphide, Organophosphate compound.*

Introduction

According to WHO, poisoning occurs when people drink, eat, breathe, inject, or touch enough of a hazardous substance (poison) to cause illness or death. [1]

As per the records of National Poisons Information Center, New Delhi the highest incidence of poisoning was due to household agents (44.1%) followed by drugs (18.8%), agricultural pesticides (12.8%), industrial chemicals (8.9%), animal bites & stings (4.7%), plants (1.7%), unknown (2.9%) & miscellaneous groups (5.6%). The commonest case of poisoning in developing countries is pesticides which include organophosphates, carbamates, chlorinated hydrocarbons, Pyrethroids & aluminum or Zinc phosphide.[2]

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Even National Poison Data System showed that in 2017, 2,607,413 closed encounters were logged by NDPS: 2,115,186 human exposures, 51,164 animal exposures, 435,540 information contacts, 5,424 human confirmed non-exposures, and 99 animal confirmed non-exposures. Analgesics were the most frequently involved substance with more serious outcome. NPDS documented 3,208 human exposures resulting in death.[3]

Pesticide poisoning is a common cause of suicidal & rarely accidental death in India. The distribution pattern of death due to poisoning in a region depends on its easy accessibility, low cost, effectiveness, socio-economic condition, education, health care facilities, transportation facilities, social stigma etc.

Hence, a detailed study of poisoning in a particular area can help in inoculating primordial & primary preventive measures, early diagnosis, prompt evaluation & treatment of the patient.

Objectives

To study the pattern of poisoning in Visakhapatnam

and its demographic correlates.

Material & Method

A retrospective study of all poisoning cases admitted in casualty department of Anil Neerukonda Hospital, Visakhapatnam was carried out during the time period of 1st Jan 2014 to 31st Dec 2017. All the information for the present study was collected from the medical record section of the hospital after obtaining the due permission. A pre-designed pro forma was used to collect the detailed information and categorically tabled followed by statistical analysis using SPSS20.0.[4] Patients discharged against medical advice were not included in our present study.

Results

In the present study, 73 poisoning cases between the time periods of 2014-2017 were reported in the hospital. Among those 73 cases only 57 cases were taken into account. The rampantly rising trend of poisoning cases is observed in our study. All the poisons were consumed orally except for 1 snake bite case.

The female proportions were 52.63% followed by 47.37% of male cases. Majority of cases reported were in the age group of 20-29years (47.37%) followed by (17.54%) 10-19years & 30-39years age group. The mean age of entire 57 cases were 26.53±10.75 and the median age is 23years, which indicates the preponderance of suicides in females & young adults as described in **Table 1**. Statistically, x^2 value= 6.876, p= 0.14250. Hence, no significant difference is observed in the age group & sex.

The marital status was not stated in 63.16% while 26.31% were married & 10.53% were single. Similarly, occupation was also not stated in 92.98% while 5.26% were housewife & 1.78% was student. As the data is inconclusive, it cannot be used for study.

94.74% belonged to the low socioeconomic strata while 5.26% were from middle socioeconomic strata (**Table 2**). On computing, it was observed that x^2 value= 45.62, d.f. =1 & p<0.0001. Statistically, the data is significant. Maximum number of patients 31.58% was admitted only for 1 day followed by 21.05% for three days. With the increasing number of days, the patient number decreased as they were discharged after full recovery or loss on follow up or referred to higher center for further evaluation & management or expired. On evaluation it was observed that x^2 value= 6.05, d.f. =4, p=0.1954. Therefore, it is not significant.

In this study, only one (1.75%) patient had history of suicidal tendency in the past & only 2 (3.50%) patients were alcoholic. 55(96.49%) of them had committed suicide in their own/rented house, 01(1.75%) of them in college hostel & 01(1.75%) of them in field.

Failure on personal level like marital discord, familial dispute, unemployment, quarrel etc was the most common reason for suicide with 84.21%, followed by 3.5% of accidental, depression & financial reasons (**Table 3**). The observed proportions are significant as x^2 value=227, d.f. =6 & p=0.0001 (p<0.001). The mean time of poisoning was 1:25pm & the median time of poisoning was 2pm. The highest number of cases was reported in the last quarter of the year with 35.09% followed by the second quarter of the year i.e. April – June with 29.83% (**Table 4**). Statistically, x^2 value= 5.94, d.f.= 3 & p>0.05.

Almost 86% of cases consumed poison which was available in house followed by 12.28% who bought the poison from shop. The median of time lapse between places of occurrence to hospital was 2hrs & the mean lapse time was 3.37hrs.No. of patients survived after admission into hospital was 52 i.e. 91.24% of the total no. of case while 5 of them expired i.e. 8.77%

Aluminum phosphide (21.05%) accounts for maximum number of poisoning cases followed by organophosphorus poisoning (14.04%) in our study (**Table 5**). The findings are statistically significant as x^2 =58.79; d.f. =15; p<0.001.

Most of the patients came with complaints of vomiting, nausea, drowsiness, respiratory distress, dysphagia, altered sensorium etc. While only 8.77% of patients were asymptomatic on examination (**Table 6**). Statistically, it is significant as x^2 value= 57; d.f. =19; p<0.0.

Gastric lavage was done in 53 cases (92.98%) & not conducted in 4 cases (7.02%). 96.49% of the cases were suicidal while only 3.51% were accidental in manner of poisoning.

Table 1: Distribution of poisoning cases (MLC) according to age & sex (n=57)

Age group (years)	Male	Female	Total
1-9	01 (1.75%)	01 (1.75%)	02 (3.5%)
10-19	03 (5.26%)	07 (12.28%)	10 (17.54%)
20-29	10 (17.54%)	17 (29.82%)	27 (47.37%)
30-39	07 (12.28%)	03 (5.26%)	10 (17.54%)
40-49	04 (7.02%)	02 (3.51%)	06 (10.53%)
50-59	02 (3.51%)	00	02 (3.51%)
Total	27 (47.37%)	30 (52.63%)	57 (100%)

Table 2: Distribution of subjects according to economic status (n=57)

Economic status	No. of patients	Percentage
Low	54	94.74
Middle	03	5.26
High	00	00
Total	57	100

Table 3: Distribution of subjects according to reasons for poisoning (n=57)

Reasons	No. of patients	Percentage
Personal failure (marital discord, familial dispute, unemployment, quarrel etc.)	46	84.21
Exams	01	1.75
Accidental/Snake bite	02	3.50
HIV/TB	01	1.75
Depression	02	3.50
Physically handicapped	01	1.75
Financial	02	3.50
Total	57	100

Table 4: Season of poisoning

Month of poisoning	No. of patients	Percentage
January – March	8	14.03
April – June	17	29.83
July – September	12	21.05
October – December	20	35.09
Total	57	100

Table 5: Distribution of cases according to type of poison

Type of poison	No. of cases	Percentage
Corrosive	12	10.53
Atenolol	01	1.75
Liquid mosquito repellant (All out), transfluthrin	01	1.75
Alprazolam over dose	01	1.75
Carbamate	03	5.26
Pyrethroids	03	5.26
Organophosphorus compound	08	14.04
Drug overdose	01	1.75
Carbamate	03	5.26
Clonazepam overdose	01	1.75
Kerosene	02	3.50
Methanol poison	02	3.50
Pyrethroids	04	7.02
Alphos	12	21.05
Snake bite	01	1.75
Unknown poison	02	3.50
Total	57	100

Table 6: Distribution of cases according to signs & symptoms

Signs & symptoms	No. of cases	Percentage
Drowsy	05	8.77
Vomiting only	17	29.82
Nausea & vomiting	08	14.03
Respiratory distress	03	5.26
No signs & symptoms	05	8.77
Unable to open mouth	02	3.50
Dysphagia	02	3.50
Swelling pain of right foot	01	1.75
Epigastric & throat pain	01	1.75
Drowsiness & constricted pupil	01	1.75
Drowsy	01	1.75
Pinpoint pupils & lacrimation	01	1.75
Irritable without lacrimation	01	1.75
Pupils dilated	01	1.75
Loose motion >3 episodes	01	1.75
Dilated & non-reacting pupil	01	1.75
Irritable	01	1.75
Drowsy, headache & burns in throat	01	1.75
Not stated	03	5.26
Altered sensorium	01	1.75
Total	57	100

Discussion

In the present study, we aim to assess the pattern of poisoning & outcome. It was observed that there has been an increasing trend in poisoning among low socio-economic community[5,6] with greater preponderance of female at 20-29years among others. The approximate findings were also observed by other workers.[7,8,9.10]

In majority of the cases, place of observance was the patient's residence which is in concurrence with other studies.[11,20] The most common reason for suicide was failure at personal level in our study which is concurred by other study.[12] Similar seasonal variations was also observed in other study.[11] In contradiction to our observation summer season recorded the maximum incidences in few studies.[13,14]

Suicide was the most common intention for consumption of poison & it was also observed by many other workers in India,[6,15,18,20] Nepal[14] & Bangladesh.[12] While a study done by Liu Q, et al suggest that accidental poisoning (64.7%) is the most frequent manner of death in China.[17] Aluminum phosphide is the most commonly used poison followed by organophosphorus poisoning in Visakhapatnam (our study). The similar kind of findings was also observed by other workers in the same field in Haryana[6] & Amritsar.[15] In contrast to our study organophosphorus compound & insecticides was observed as the highly abused poison in different studies done in Nepal[14] & India.[16,18,19,20] While organochlorine compounds was found to be increasing abused in Bangladesh.[12]

Conclusion

Poisoning with an intention to cause self-harm has been an increasing trend in the recent past. Suicidal tendencies among young adults belonging to low socio-economic background are alarming. The millennial these days are living in a digital world with tremendous exposure & influences from internet isolating them from other social being. Disappointment, failure, bankruptcy, sickness, fear etc. can frustrate an individual very easily & with the cheap & easy availability of poisons like Aluminum phosphide, organophosphorus compound, Zinc sulphide etc. it paves their way to suicide as an easy means to end all the problems.

Hence, with an attempt to reflect the psychology of a person who commits suicide we have come to an understanding that mental wellbeing of an individual should be acknowledged & primordial prevention at grass root levels should be prioritized. Health services department, employment agencies, education institute, etc. can play a pivotal role in shaping the young minds. The government should also strengthen the legislature by introducing awareness programme, educating people about poison & its harmful effects, introduction of poison information center in every state if not in all the districts, control on availability of poison along with development of new & less toxic insecticide, herbicide, rodenticide, pesticide etc. which over a long run can drop down the number of suicidal cases using poison.

Acknowledgement: We wish to thank Dr. G. Krishna Murthy, Principal, NRI Institute of Medical Sciences for letting us collect, compile & publish the hospital's data.

We sincerely than Sikkim Manipal University for its resources.

Conflict of Interest: None

Source of Support: None

Ethical Clearance: Ethical clearance & funding was not necessary as it was a retrospective study which included only collection of data.

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