International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 14, No. 2, February 2025 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_14.2.2025.74

ORIGINAL RESEARCH

Clinical and epidemiological profiles in poison cases admitted to emergency department of Indian institute

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Received: 12 January, 2025 Accepted: 30 January, 2025 Published: 15 February, 2025

ABSTRACT

Background: In the emergency departments of Indian healthcare centers, acute poisoning is one of the vital medical emergencies encountered. However, existing literature data is scarce on this issue. **Aim:** The present study aimed to assess the epidemiological and clinical profiles of poison cases admitted to the emergency department of an Indian institute. **Methods:** The present study assessed the cases of poisoning admitted to the Institute within the defined study period. The study assessed a total of 1096 subjects with poisoning. All the subjects were assessed comprehensively concerning age, gender, occupation, poisoning nature, time of presentation, GCS scores, and outcomes. **Results:** The study results showed that the majority of the study subjects with the poisoning cases were young male subjects and were farmers by occupation. The time of presentation was more than two hours in more than half of the subjects, the GCS was low and nearly 70% of the intentional and accidental cases survived with no mortality. Sedatives and organophosphorus compounds were the common poisoning agents reported in both intentional and accidental cases of poisoning. **Conclusion**: The present study concludes that the present study provides insight into epidemiological and clinical knowledge to the emergency physician concerning the presentation of the subjects with poisoning and the nature of the poison in subjects reporting to the emergency department in the Indian healthcare sector.

Keywords: Accidental poisoning, Intentional poisoning, Emergency physicians, poison nature, Organophosphorous compounds

INTRODUCTION

Acute poisoning is seen commonly in the emergency departments of medical Institutes in the Indian context and is associated with high mortality and morbidity rates. Poisoning cases reported are from all age groups and are prevalent across the globe. The WHO (World Health Organization) has estimated that nearly 7.4 million healthy lives are lost yearly across the globe from poisoning including disability-adjusted life years. This concerning issue has an even higher prevalence in low-income and middle-income countries where the majority of the deaths are reported from unintentional poisoning.[1]

Acute poisoning reported from various age groups and in different genders can be unintentional or intentional poisoning and the existing literature data reports that unintentional poisoning is more common in child subjects, whereas, intentional poisoning shows a high incidence in the adult affected subjects. The available data also reports commonly employed poisoning agents being foreign bodies, antipsychotic agents, hypnotics, sedatives, household cleaning substances,

DOI: 10.69605/ijlbpr_14.2.2025.74

cosmetics, and analgesics seen in subjects with poisoning.[2]

Various factors have been reported to result in high mortality and morbidity including availability of effective medical treatment, speed of seeking clinical attention after exposure, and toxic potential of the poison. Hence, the physicians in the emergency department and professionals from the public health sector need complete knowledge concerning different clinical features associated with poisoning as the first point of contact for poisoning subjects and the health care system is the emergency department of the Institute.[3]

Hence, it is vital to have a thorough knowledge of the clinical features of poisoning for the complete management of the subjects with poisoning. Studies concerning the epidemiological and clinical characteristics and outcomes of subjects with poisoning are scarce in developing nations including India.[4] Hence, the present study aimed to assess the epidemiological and clinical profiles of poison cases admitted to the emergency department of an Indian institute.

MATERIALS AND METHODS

The present retrospective clinical assessment study was aimed to assess the epidemiological and clinical profiles of poison cases admitted to the emergency department of an Indian institute. Verbal and written informed consent were taken from all the subjects before study participation.

The study included a total of 1096 subjects with poisoning who were admitted to the Emergency Department of the Institute within the defined study period with the poisoning. The study included only the subjects with complete medical data and records of poisoning in the emergency department.

The study included all the poisoning cases including the cases of intentional and accidental poisoning from all the age ranges and both genders. The exclusion criteria for the study were subjects with incomplete medical records and data. In all the subjects, comprehensive recording of the data was done including age, gender, occupation, time of presentation after poisoning, type of poison, GCS (Glasgow coma scale) scores, and outcomes of the poisoning. All the data were recorded on a preformed structured proforma.

Collected data were subjected to statistical evaluation using SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk. NY, USA) for assessment of descriptive measures, Student t-test, ANOVA (analysis of variance), and Chi-square test. The results were expressed as mean and standard deviation and frequency and percentages. The p-value of <0.05 was considered.

RESULTS

The present retrospective clinical assessment study was aimed to assess the epidemiological and clinical profiles of poison cases admitted to the emergency department of an Indian institute.The study assessed a total of 1096 subjects with poisoning. There were 66.4% (n=728) males and 33.6% (n=368) females in the present study. The majority of the study subjects were in the age range of 31-40 years with 37.2% (n=408) subjects followed by 36.7% (n=402) subjects from 21-30 years, 19% (n=208) subjects from 41-50 years, 3.6% (n=40) subjects in <20 years, and 3.5% (n=38) subjects in >50 years respectively. The occupation in the majority of the subjects was farmer in 23.5% (n=258) subjects followed by employee in 20.1% (n=220), business in 16.8% (n=184), housewife in 16.4% (n=180), student in 14.6% (n=160), unemployed in 5.7% (n=62), and coolie in 2.9%(n=32) subjects respectively (Table 1).

On assessing the distribution of study subjects in various groups based on presentation time and poisoning type, in subjects that presented within 2 hours, intentional accidental poisoning was seen in 46.8% (n=104) and 46.7% (n=408) subjects respectively, and a total of 46.7% (n=512) subjects. Presentation time was 2-4 hours in 24.3% (n=54) and 28.1% (n=246) subjects respectively with intentional and accidental poisoning, 4-6 hours in 11.7% (n=26) and 11% (n=96) subjects, and >6 hours in 17.1% (n=38) and 14.2% (n=124) subjects with intentional and accidental poisoning respectively. Total cases of intentional and accidental poisoning were 222 and 874 respectively in the study (Table 2).

The study results showed that for distribution of study subjects based on type and nature of poisoning, in intentional and accidental poisoning, the most common agent was organophosphorus in 35.1% (n=78) and 34.3% (n=300) subjects respectively followed by sedatives in 19.8% (n=44) and 17.2% (n=150) subjects. The least common cause of intentional poisoning was kerosine reported in 2.7% (n=6) subjects and accidental poisoning was weedicide reported in 2.3% (n=20) study subjects respectively. Other causes were opioids, aluminum phosphide, alcohol, acid, TCA, cleaning agents, and other drugs in both intentional and accidental poisoning (Table 3).

It was seen that for distribution of study subjects from two groups based on outcome and GCS and poisoning type, GCS scores of <8 were seen in 55% (n=122) and 63.2% (n=5520 subjects with accidental and intentional poisoning, grade of 9-12 in 18.9% (n=42) and 18.5% (n=162) subjects with accidental and intentional poisoning, and 13-15 in 26.1% (n=58) and 18.3% (n=160) subjects with accidental and intentional poisoning respectively. However, the difference in the two groups of study subjects was statistically non-significant with p=0.156. Concerning the outcomes of study subjects, 29.7% (n=66) subjects from accidental and 30.9% (n=270) subjects from intentional poisoning group died of poisoning (Table 4).

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Table 1: Demographic data of study subjects with poisoning

S. No	Parameters	Frequency (n)	Percentage (%)
1.	**Gender**		
a)	Males	728	66.4
b)	Females	368	33.6
2.	**Age range (years)**		
a)	<20	40	3.6
b)	21-30	402	36.7
c)	31-40	408	37.2
d)	41-50	208	19
e)	>50	38	3.5
3.	**Occupation**		
a)	Unemployed	62	5.7
b)	Student	160	14.6
c)	Housewife	180	16.4
d)	Farmer	258	23.5
e)	Employee	220	20.1
f)	Coolie	32	2.9
g)	Business	184	16.8

Table 2: Distribution of study subjects in various groups based on presentation time and poisoning type(p=0.794)

S. No	Presentation time(hours)	Poisoning type				Total n	Total %
		Intentional		Accidental			
		n	%	n	%		
1.	**Within 2 hours**	104	46.8	408	46.7	512	46.7
2.	**2-4**	54	24.3	246	28.1	300	27.4
3.	**4-6**	26	11.7	96	11	122	11.1
4.	**>6**	38	17.1	124	14.2	162	14.8
5.	**Total**	222	100	874	100	1096	100

Table 3: Distribution of study subjects based on type and nature of poisoning

S. No	Poison nature	Poisoning type				Total n	Total %
		Intentional		Accidental			
		n	%	n	%		
1.	Organophosphorus	78	35.1	300	34.3	378	34.5
2.	Opioids	10	4.5	36	4.1	46	4.2
3.	Kerosine	6	2.7	44	5	50	4.6
4.	Aluminium phosphide	10	4.5	52	5.9	62	5.7
5.	Alcohol	14	6.3	38	4.3	52	4.7
6.	Acid	8	3.6	32	3.7	40	3.6
7.	Weedicide	12	5.4	20	2.3	32	2.9
8.	TCA	10	4.5	80	9.2	90	8.2
9.	Sedatives	44	19.8	150	17.2	194	17.7
10.	Other drugs	20	9	56	6.4	76	6.9
11.	Other cleaning agents	10	4.5	66	7.6	76	34.5
12.	Total	222	100	874	100	1096	100

Table 4: Distribution of study subjects from two groups based on outcome and GCS and poisoning type

S. No	Parameter	Poisoning type				p-value
		Accidental		Intentional		
		n	%	n	%	
1.	**GCS**					0.156
a)	<8	122	55	552	63.2	
b)	9-12	42	18.9	162	18.5	
c)	13.15	58	26.1	160	18.3	
2.	**Outcomes**					
a)	Died	66	29.7	270	30.9	0.814

DOI: 10.69605/ijlbpr_14.2.2025.74

b)	Survived	156	70.3	604	69.1	
c)	Total	222	100	874	100	

DISCUSSION

The present study assessed a total of 1096 subjects with poisoning. There were 66.4% (n=728) males and 33.6% (n=368) females in the present study. The majority of the study subjects were in the age range of 31-40 years with 37.2% (n=408) subjects followed by 36.7% (n=402) subjects from 21-30 years, 19% (n=208) subjects from 41-50 years, 3.6% (n=40) subjects in <20 years, and 3.5% (n=38) subjects in >50 years respectively. The occupation in the majority of the subjects was farmer in 23.5% (n=258) subjects followed by employee in 20.1% (n=220), business in 16.8% (n=184), housewife in 16.4% (n=180), student in 14.6% (n=160), unemployed in 5.7% (n=62), and coolie in 2.9%(n=32) subjects respectively. These data were comparable to the previous studies of Chan YC et al[5] in 2005 and Marahatta SB et al[6] in 2009 where authors assessed subjects with demographics comparable to the present study in their respective studies of subjects admitted after poisoning.

Concerning the assessment of the distribution of study subjects in various groups based on presentation time and poisoning type, in subjects that presented within 2 hours, intentional accidental poisoning was seen in 46.8% (n=104) and 46.7% (n=408) subjects respectively, and total 46.7% (n=512) subjects. Presentation time was 2-4 hours in 24.3% (n=54) and 28.1% (n=246) subjects respectively with intentional and accidental poisoning, 4-6 hours in 11.7% (n=26) and 11% (n=96) subjects, and >6 hours in 17.1% (n=38) and 14.2% (n=124) subjects with intentional and accidental poisoning respectively. Total cases of intentional and accidental poisoning were 222 and 874 respectively in the study. These results were consistent with the findings of Kumar SV et al[7] in 2010 and Mgaya E et al[8] in 2008 where the distribution of study subjects in various groups based on presentation time and poisoning type reported by the authors in their studies was comparable to the results of the present study.

It was seen that for distribution of study subjects based on type and nature of poisoning, in intentional and accidental poisoning, the most common agent was organophosphorus in 35.1% (n=78) and 34.3% (n=300) subjects respectively followed by sedatives in 19.8% (n=44) and 17.2% (n=150) subjects. The least common cause of intentional poisoning was kerosine reported in 2.7% (n=6) subjects and accidental poisoning was weedicide reported in 2.3% (n=20) study subjects respectively. Other causes were opioids, aluminum phosphide, alcohol, acid, TCA, cleaning agents, and other drugs in both intentional and accidental poisoning. These findings were in agreement with the results of Banerjee I et al[9] in 2014 and Maharani B et al[10] in 2013 where the distribution of study subjects based on type and nature of poisoning, in intentional and accidental poisoning similar to the present study, was also reported by the authors in their respective studies.

The study results showed that for distribution of study subjects from two groups based on outcome and GCS and poisoning type, GCS scores of <8 were seen in 55% (n=122) and 63.2% (n=5520 subjects with accidental and intentional poisoning, grade of 9-12 in 18.9% (n=42) and 18.5% (n=162) subjects with accidental and intentional poisoning, and 13-15 in 26.1% (n=58) and 18.3% (n=160) subjects with accidental and intentional poisoning respectively. However, the difference in the two groups of study subjects was statistically non-significant with p=0.156. Concerning the outcomes of study subjects, 29.7% (n=66) subjects from accidental and 30.9% (n=270) subjects from intentional poisoning group died of poisoning. These results were in line with the findings of Guloglu C et al[11] in 2005 and Marahatta SB et al[12] in 2009 where the distribution of study subjects from two groups based on outcome and GCS and poisoning type results reported by the authors in their studies was comparable to the results of the present study.

CONCLUSIONS

Within its limitations, the present study concludes thatthe study provides insight into epidemiological and clinical knowledge to the emergency physician concerning the presentation of the subjects with poisoning and the nature of the poison in subjects reporting to the emergency department in the Indian healthcare sector.

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