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CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF POISONING CASES BROUGHT TO EMERGENCY DEPARTMENT

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ABSTRACT

Background: Acute poisoning is one of the most serious medical situations that Indian healthcare facilities' emergency rooms deal with. There is, however, a dearth of information on this topic in the literature.

Aim: to evaluate the clinical and epidemiological characteristics of poisoning patients brought to the Indian Institute's emergency room.

Methods: the poisoning cases that were admitted to the Institute during the specified research time frame. The research evaluated 1096 poisoning patients in all. Age, gender, employment, kind of poisoning, presentation time, GCS scores, and results were all thoroughly evaluated for each participant.

Results: The research's findings indicated that young men who worked as farmers made up the bulk of the study participants with poisoning episodes. Nearly 70% of both purposeful and accidental instances survived with no death, the GCS was low, and more than half of the participants had presentation times longer than two hours. The most frequently reported poisoning agents in both purposeful and unintentional poisoning instances were sedatives and organophosphorus chemicals.

Conclusion: The current study comes to the conclusion that it gives emergency physicians clinical and epidemiological information about how poisoning patients present and what kind of poison they are experiencing when they visit the emergency room in the Indian healthcare system.

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

INTRODUCTION

In India, acute poisoning is often observed in hospital emergency rooms and is linked to elevated rates of both death and morbidity. Worldwide, poisoning incidents are common and include people of all ages. According to WHO estimates, poisoning claims around 7.4 million healthy lives worldwide each year, including disability-adjusted life years. In low- and middle-income nations, where accidental poisoning is the primary cause of mortality, this alarming problem is much more common.[1]

Intentional and unintentional poisoning are the two types of acute poisoning that have been reported in a variety of age groups and genders. According to the literature currently in publication, intentional poisoning is more common in adult affected subjects while unintentional poisoning is more common in child subjects.[2]

According to the information that is currently accessible, frequent poisoning agents include foreign bodies, antipsychotics, hypnotics, sedatives, domestic cleaning products, cosmetics, and analgesics that are observed in poisoning victims. High mortality and morbidity have been linked to a number of circumstances, such as the poison's lethal potential, the availability of efficient medical care, and the promptness with which patients seek clinical attention following exposure.

Since the Institute's emergency department serves as the initial point of contact for poisoning victims and the healthcare system, doctors working there and public health experts must be fully knowledgeable about the various clinical characteristics linked to poisoning.[3]

Therefore, a thorough awareness of the clinical features of poisoning is crucial for the whole management of poisoned people. In poor countries like India, there are few studies on the epidemiological and clinical features and consequences of poisoning patients.[4]

Therefore, the current study sought to evaluate the clinical and epidemiological characteristics of poisoning patients brought to the Indian Institute's emergency room.

MATERIALS AND METHODS

The goal of the current retrospective clinical assessment research was to evaluate the clinical and epidemiological characteristics of poisoning patients that were admitted to the Indian Institute's emergency department. Everyone provided both verbal and written informed permission before participating in the study.

During the specified research period, 1096 poisoning patients who were admitted to the Institute's emergency room were included in the study. Only participants who had complete medical records and ED poisoning reports were included in the research.

Every case of poisoning, including both deliberate and unintentional poisoning, from every age group and gender was included in the research. The study's exclusion criteria included participants with inadequate medical data and records. Comprehensive data collection was conducted on each individual, including age, gender, occupation, time of presentation following poisoning, kind of poison, Glasgow Coma Scale (GCS) scores, and poisoning outcomes. Every piece of information was documented on a pre-made, organized proforma.

The statistical evaluation of the collected data was conducted using the Student t-test, ANOVA (analysis of variance), Chi-square test, and SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) for the assessment of descriptive measures. In addition to frequency and percentages, the findings were presented as mean and standard deviation. P-value <0.05 was taken into account.

RESULTS

Evaluating the epidemiological and clinical characteristics of poisoning cases referred to an Indian institute's emergency room was the goal of the current retrospective clinical evaluation research. A total of 1096 poisoned individuals were evaluated for this investigation. The current study has 33.6% (n=368) female participants and 66.4% (n=728) male participants.

37.2% (n=408) of the study participants were between the ages of 31 and 40, followed by 36.7% (n=402) participants who were between the ages of 21 and 30, 19% (n=208) participants who were between the ages of 41 and 50, 3.6% (n=40) participants who were under 20, and 3.5% (n=38) participants who were above 50. Twenty-three percent (258) of the subjects were farmers, followed by twenty-one percent (20.1%) were employees, sixteen percent (16.8%) were company owners, sixteen percent (16.4%) were housewives, fourteen percent (14.6%) were students, five percent (5.7%) were jobless, and two percent (2.9%) were coolies (Table 1).

Based on presentation time and poisoning type, the distribution of research participants in different groups was evaluated. Of those who presented within two hours, 46.8% (n=104) and 46.7% (n=408) of them had purposeful accidental poisoning, for a total of 46.7% (n=512) of the individuals.

For 24.3% (n=54) and 28.1% (n=246) of the individuals with purposeful and accidental poisoning, the presentation time was 2-4 hours; for 11.7% (n=26) and 11% (n=96) of the cases, it was 4-6 hours; and for 17.1% (n=38) and 14.2% (n=124), it was >6 hours. The investigation found that there were 222 cases of deliberate poisoning and 874 cases of unintentional poisoning (Table 2).

According to the study's findings, the most common agent in both intentional and accidental poisoning was organophosphorus, which affected 35.1% (n=78) and 34.3% (n=300) of the study participants, respectively. Sedatives were the next most common agent in 19.8% (n=44) and 17.2% (n=150) of the study participants. Kerosine was the least frequent cause of purposeful poisoning, occurring in 2.7% of research participants (n = 6), whereas weedicide was the least common cause of accidental poisoning, occurring in 2.3% of study participants (n = 20). Alcohol, acid, TCA, opioids, aluminum phosphide, cleaning products, and other medicines in both deliberate and unintentional poisoning were additional causes (Table 3).

According to the distribution of study participants between the two groups according to outcome, GCS, and poisoning type, 55% (n=122) and 63.2% (n=5520) of the subjects with accidental and intentional poisoning had GCS scores of less

than 8, 18.9% (n=42) and 18.5% (n=162) of the subjects with accidental and intentional poisoning had grades of 9–12, and 26.1% (n=58) and 18.3% (n=160) each had grades of 13–15. On the other hand, the difference between the two research subject groups was statistically insignificant (p=0.156). Regarding the study participants' results, Table 4 shows that 30.9% (n=270) of the deliberate poisoning group and 29.7% (n=66) of the accidental poisoning group perished from poisoning.

DISCUSSION

In this investigation, 1096 poisoning patients were evaluated. In the current study, there were 33.6% (n=368) females and 66.4% (n=728) men. 37.2% (n=408) of the study participants were between the ages of 31 and 40, followed by 36.7% (n=402) of those between the ages of 21 and 30, 19% (n=208) of those between the ages of 41 and 50, 3.6% (n=40) of those under the age of 20, and 3.5% (n=38) of those beyond the age of 50. Of the subjects, 23.5% (n=258) were farmers, followed by 20.1% (n=220) who were employees, 16.8% (n=184) who were company owners, 16.4% (n=180) who were housewives, 14.6% (n=160) who were students, 5.7% (n=62) who were jobless, and 2.9% (n=32) who were coolies.

These findings were in line with earlier research by Chan YC et al. (2005) and Marahatta SB et al. (2009), who evaluated participants with demographics similar to the current study in their investigations of patients hospitalized following poisoning.

According to the distribution of research participants in different groups according to the kind of poisoning and the time of presentation, 46.8% (n=104) and 46.7% (n=408) of the individuals who presented within two hours had purposeful accidental poisoning, for a total of 46.7% (n=512) of the subjects. Both deliberate and accidental poisoning participants had presentation times of 2-4 hours in 24.3% (n=54) and 28.1% (n=246), 4-6 hours in 11.7% (n=26) and 11% (n=96), and >6 hours in 17.1% (n=38) and 14.2% (n=124) of the subjects, respectively.

Total cases of intentional and accidental poisoning were 222 and 874 respectively in the study. These findings were in line with those of Kumar SV et al. (2010) and Mgaya E et al. (2008), who found that the distribution of research participants in different groups according to presentation time and poisoning kind was similar to what the authors of those studies stated.

Organophosphorus was the most prevalent agent in both purposeful and accidental poisoning, accounting for 35.1% (n=78) and 34.3% (n=300) of the study participants for each kind and nature of poisoning, respectively. Sedatives came in second with 19.8% (n=44) and 17.2% (n=150) of the study subjects. Kerosine was the least common cause of purposeful poisoning, occurring in 2.7% of research participants (n = 6), whereas weedicide was the least common cause of accidental poisoning, occurring in 2.3% of study participants (n = 20). Other causes were opioids, aluminum phosphide, alcohol, acid, TCA, cleaning agents, and other drugs in both intentional and accidental poisoning. These results were in line with those of Banerjee I et al. (2014) and Maharani B et al. (2013), who also reported in their respective studies that the study's participants were distributed according to the type and nature of poisoning in both intentional and accidental poisoning.

With regard to the distribution of study participants between the two groups according to outcome, GCS, and poisoning type, the results indicated that 55% (n=122) and 63.2% (n=5520) of the subjects with accidental and intentional poisoning had GCS scores of less than 8, 18.9% (n=42) and 18.5% (n=162) of the subjects with accidental and intentional poisoning had grades of 9–12, and 26.1% (n=58) and 18.3% (n=160) of the subjects with accidental and intentional poisoning had grades of 13–15.

However, the difference in the two groups of study subjects was statistically non-significant with p=0.156. 29.7% (n=66) of the study participants in the accidental poisoning group and 30.9% (n=270) in the purposeful poisoning group perished from poisoning. These findings were consistent with those of Guloglu C et al. (2005) and Marahatta SB et al. (2009), whose study results were similar to the present study's in terms of the distribution of study participants from two groups according to outcome and the authors' reported GCS and poisoning type results.

CONCLUSION

Despite its limitations, the current study comes to the conclusion that it gives emergency physicians understanding of epidemiology and clinical knowledge regarding the presentation of poisoning and the type of poison in patients who visit the emergency room in the Indian healthcare system.

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Parameters	Frequency (n)	Percentage (%)
Gender		
Males	728	66.4
Females	368	33.6
Age range (years)		
<20	40	3.6
21-30	402	36.7
31-40	408	37.2
41-50	208	19
>50	38	3.5
Occupation		
Unemployed	62	5.7
Student	160	14.6
Housewife	180	16.4
Farmer	258	23.5
Employee	220	20.1
Coolie	32	2.9
Business	184	16.8

Table 1: Demographic data of study subjects with poisoning

Presentation time (hours)	Poisoning type				Total n	Total %
	Intentional		Accidental			
	n	%	n	%		
Within 2 hours	104	46.8	408	46.7	512	46.7
2-4	54	24.3	246	28.1	300	27.4
4-6	26	11.7	96	11	122	11.1
>6	38	17.1	124	14.2	162	14.8
Total	222	100	874	100	1096	100

Table 2: Distribution of study subjects in various groups based on presentation time and poisoning type

Poison nature	Poisoning type				Total n	Total %
	Intentional		Accidental			
	n	%	n	%		

Organophosphorus	78	35.1	300	34.3	378	34.5
Opioids	10	4.5	36	4.1	46	4.2
Kerosine	6	2.7	44	5	50	4.6
Aluminium phosphide	10	4.5	52	5.9	62	5.7
Alcohol	14	6.3	38	4.3	52	4.7
Acid	8	3.6	32	3.7	40	3.6
Weedicide	12	5.4	20	2.3	32	2.9
TCA	10	4.5	80	9.2	90	8.2
Sedatives	44	19.8	150	17.2	194	17.7
Other drugs	20	9	56	6.4	76	6.9
Other cleaning agents	10	4.5	66	7.6	76	34.5
Total	222	100	874	100	1096	100

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

Parameter	**Poisoning type**				**p-value**
	Accidental		**Intentional**		
	n	**%**	**n**	**%**	
GCS					0.156
<8	122	55	552	63.2	
9-12	42	18.9	162	18.5	
13.15	58	26.1	160	18.3	
Outcomes					
Died	66	29.7	270	30.9	0.814
Survived	156	70.3	604	69.1	
Total	222	100	874	100	

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