

Clinico Epidemiological Profile of Poisoning Cases Admitted in Emergency Department of a Tertiary Care Hospital

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Abstract

Background: Acute poisoning is an important medical emergency presenting to the emergency departments. This study was mainly undertaken to study the clinico epidemiological characteristics and pattern of poisoning in a tertiary care setting. **Materials and Methods:** A retrospective study was conducted in medical records department of Basaveshwara Medical College and Hospital, Chitradurga in 548 patients of poisoning. The patients were studied in detail with respect to age, sex, occupation, time of presentation, nature of poisoning, GCS and outcome. **Results:** Majority of the study subjects in this study were young male farmers. The time of presentation was more than 2 hours in more than half of the patients, the GCS was low and around 70% of accidental and intentional poisoning cases survived. Organophosphorous compounds and sedatives were the common poisons in both accidental and intentional poisonings. **Conclusion:** This study provides an insight of clinico epidemiological knowledge to the emergency physicians about the nature of poisons and presentation to the emergency medicine departments.

Keywords: Accidental poisoning; Intentional poisoning; Organophosphorous compounds; Emergency physicians; Nature of poison.

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Introduction

Acute poisoning is commonly encountered medical emergency with high morbidity and mortality. This problem is often found in all age groups across the world.¹ The World Health Organization estimates shows that, almost 7.4 million years of the healthy life (disability adjusted life years) is lost all over the world.² This problem is impacting the low and

middle income countries where majority of the deaths are the result of unintentional poisoning.³

The acute poisoning can be intentional and unintentional and studies available have shown that the intentional poisoning is common in adults and unintentional in children.⁴ The reports available have shown that, analgesics, cosmetics, household cleaning substances, sedatives/hypnotics/antipsychotics and foreign bodies-(incomplete

sentence).⁵ A number of factors have been shown to result in high morbidity and mortality including the age of the patients, the toxic potential of the poison, the speed of seeking the clinical attention after exposure and availability of the effective medical treatment.⁶ Hence, the emergency physicians and public health professionals require a complete knowledge about different clinical features of poisoning. Emergency medicine department is the first contact of the patients consuming poison and health care system. Hence, a comprehensive knowledge about the clinical features of poisoning is required for the complete management of the patients. The studies pertaining to clinico epidemiological characteristics and outcome of the poisoning is scant in this part of the country. So, this study was mainly undertaken to study the clinico epidemiological characteristics and outcome of the poisoned patients in a tertiary care setting.

Materials and Methods

A retrospective study was undertaken to study the clinico epidemiological characteristics and outcome of the patients with poisoning. A total of 548 cases with complete medical records admitted to the emergency department of Basaveshwara Medical College and Hospital, Chitradurga constituted the study sample. The clearance from institutional ethics committee was obtained before the study was started. The permission from appropriate authorities was obtained before accessing the medical records in the medical records department. All the cases with accidental and intentional poisoning of all the ages and both the sexes were included in to the study. The incomplete medical records were excluded from the study. The details pertaining to the age, sex, occupation, nature of poison, timing of presentation after poisoning, GCS and outcome of poisoning was obtained by using a predesigned proforma. The details thus obtained were entered in to Microsoft excel sheet and transferred and analyzed using Statistical Package for social services (vs 20). The variables were presented as frequencies and percentages and *Chi*-square test was used as test of significance and a *p* value of less than 0.05 was considered as statistically significant.

Results

Table 1: Distribution of the study subjects according to socio demographic variables

	Parameters	Frequency	Percentage
Age group	Less than 20 years	20	3.6
	21–30 years	201	36.7
	31–40 years	204	37.2
	41–50 years	104	19.0
	More than 50 years	19	3.5
Sex	Male	364	66.4
	Female	184	33.6
Occupation	Business	92	16.8
	Coolie	16	2.9
	Employee	110	20.1
	Farmer	129	23.5
	Housewife	90	16.4
	Student	80	14.6
	Unemployed	31	5.7

The socio demographic characteristics as depicted in table no 1 had shown that, most of the study subjects belonged to 21–40 years of age group. This age group represents productive age group, age of marriage and also the age of achievements in life. The career life balance may lead psychiatric illnesses including depression and subsequent suicidal intent for those who had intentional poisoning and farmers who are productive may be exposed to the accidental poisoning. More than half of the study subjects were males and majority were farmers. The farmers are exposed to the easy accessibility and crop losses can trigger the intentional poisoning and exposed to accidental poisoning while applying the insecticides to their farms.

Table 2: Distribution of the study group according time of presentation and type of poisoning

Time of presentation	Type of poisoning		Total n (%)
	Accidental n (%)	Intentional n (%)	
Within 2 hours	52 (46.8)	204 (46.7)	256 (46.7)
2–4 hours	27 (24.3)	123 (28.1)	150 (27.4)
4–6 hours	13 (11.7)	48 (11.0)	61 (11.1)
More than 6 hours	19 (17.1)	62 (14.2)	81 (14.8)
Total	111 (100)	437 (100)	548 (100)

χ^2 value=1.029 df=3 *p* value = 0.794, NS

About 46.8% of the patients with accidental poisoning and 46.7% with intentional poisoning presented within 2 hours to the emergency department. Early presentation can help the complete removal of the poison before it is absorbed to the blood stream and early initiation of the treatment can help better prognosis of the patients. But more than half of the patients in accidental and incidental groups had late presentation which may be due to neglect in accidental poisoning and intent to die in intentional poisoning. This difference was not statistically significant.

Table 3: Distribution of the study group according Nature of poison and type of poisoning

Nature of poison	Type of poisoning		Total n (%)
	Accidental n (%)	Intentional n (%)	
Acid	4 (3.6)	16 (3.7)	20 (3.6)
Alcohol	7 (6.3)	19 (4.3)	26 (4.7)
Aluminium phosphide	5 (4.5)	26 (5.9)	31 (5.7)
Kerosine	3 (2.7)	22 (5.0)	25 (4.6)
Opioids	5 (4.5)	18 (4.1)	23 (4.2)
Organophosphorous	39 (35.1)	150 (34.3)	189 (34.5)
Other cleaning agents	5 (4.5)	33 (7.6)	38 (34.5)
Other drugs	10 (9.0)	28 (6.4)	38 (6.9)
Sedatives	22 (19.8)	75 (17.2)	97 (17.7)
TCA	5 (4.5)	40 (9.2)	45 (8.2)
Weedicide	6 (5.4)	10 (2.3)	16 (2.9)
Total	111 (100)	437 (100)	548 (100)

χ^2 value=9.029 df=3 p value=0.794, NS

Organophosphorous and sedatives were the common poisons accounting for more than half of the cases in both the groups. The wide availability of these agents may be the reason for the higher consumption in accidental and incidental poisoning. However, this difference was not statistically significant.

The GCS score at the time of presentation was poor in 55% of the accidental poisoning cases and 63.2% of the intentional poisoning cases. The poor

GCS can be attributed to the negligence in case of accidental poisoning and suicidal intent in the intentional poisoning. Such type of presentation poses challenge to the emergency physicians and demands a comprehensive care. However, this difference was not statistically significant. About 70.3% of the accidental poisoning cases and 69.1% of the intentional poisoning cases survived due to availability of treatment in time. But this difference was no statistically significant.

Discussion

This study was mainly undertaken to study the clinico epidemiological characteristics of the patients presenting with poisoning and also to study the nature of poisoning in the study area.

Majority of the patients presenting with either accidental or intentional poisoning belonged to productive age group. This age represents the early beginning of the career for those who were students, employed and businessmen. The work life balance, financial aspirations, immaturity to cope with stress and psychological factors plays a dominant role for the intentional poisoning. The farmers by virtue of being productive may be exposed to the accidental poisoning. More than half of the study subjects were males and majority were farmers. The farmers have easy accessibility especially for the organophosphorous compounds and crop losses can trigger the intentional poisoning. A study from Tanzania and other study from Africa also observed similar findings that the poisoning was common in young males.^{2,7} A study from India had shown that majority of the patients with poisoning were housewives followed by farmers.¹

The time of presentation was later than 2 hours in both accidental and incidental poisoning groups. Early presentation can help the complete removal of the poison before it is absorbed to the blood stream and helps in early initiation of the treatment. It will

Table 4: Distribution of the study group according GCS & outcome and type of poisoning

		Type of poisoning		χ^2 value	P value, Sig
		Accidental n (%)	Intentional n (%)		
GCS	13 - 15	29 (26.1)	80 (18.3)	3.697	0.158, NS
	9 - 12	21 (18.9)	81 (18.5)		
	Less than 8	61 (55.0)	276 (63.2)		
Outcome	Survived	78 (70.3)	302 (69.1)	0.056	0.812, NS
	Died	33 (29.7)	135 (30.9)		
	Total	111 (100)	437 (100)		

help the emergency physician to make prompt effort to initiate the treatment measures at earliest possible point of time to improve the prognosis. In a study by Banerjee et al., the mean time of presentation to the hospital was 6.4 hours.¹ A study from Andhra Pradesh had shown that, the mean time of presentation to the hospital was between 3–6 hours similar to the results of this study.⁸

Organophosphorous and sedatives were the common poisons accounting for more than half of the cases in both the groups. The availability of these agents may be the reason for the higher consumption in accidental and incidental poisoning. In a study from Tanzania had reported that, alcohol which is used for recreational purposes was also incriminated in the accidental and self poisoning and antimalarials and pesticides were other agents.² A study from India had shown that, the organophosphorous compounds were the second common poisons followed by rodenticide, alcohols other chemicals and drugs.¹ The results of this study was in corroboration with the study conducted in Nepal where organophosphorous compound was the common poison used followed by Antidepressants.⁹

This study had shown that, the GCS score at the time of presentation was poor in 55% of the accidental poisoning cases and 63.2% of the intentional poisoning cases. The poor GCS can be attributed to the negligence in case of accidental poisoning and suicidal intent (explain) in the intentional poisoning. Such type of presentation poses challenge to the emergency physicians and demands a comprehensive care. The survival was little better in accidental poisoning cases than the intentional poisoning cases. In a study by Banerjee et al., the mortality was 16.24% which is lesser compared to this study.¹ A study from Andhra Pradesh⁸ had reported as 8.3% and Hong Kong study¹⁰ has reported 1.43% of the cases which was attributed for the late presentation and low GCS at the time of admission.

Conclusion

This study had shown that, the accidental and intentional poisoning was commonly demonstrated in young males. The organophosphorous compounds and sedatives were the common poisons for

both accidental and intentional poisoning. This study mainly helps the emergency physicians to know the local pattern of poisoning to improve their skills in comprehensive management of these type of poisonings. But a multicentre study can throw light on many aspects of accidental or intentional poisoning.

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