

Original Research Article

Epidemiological profile of acute poisoning in children admitted to a tertiary care hospital

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ABSTRACT

Background: Acute poisoning in children is most commonly encountered in day to day practice which contributes a major part of admissions in pediatric intensive units and ward. It is a preventable public health problem. There are limited community based data available because of several reasons including lack of standard case definition, regional variability, poor functioning regulatory and surveillance system. Therefore, authors carried out this study in present set-up.

Methods: A prospective observational study carried out at a tertiary care hospital which included all children within the age of 12 years presenting with history and symptoms and signs suggestive of acute poisoning over a period of 1 year after getting consent from parents.

Results: Incidence of acute poisoning among children was 4.7%. Maximum cases were in the age group of 1-5 years (79.85%). Among the 278 cases, male children were 154(55.4%) and female were 124(44.6%). Majority of cases were observed in upper lower (43.1%) socio-economic group of Modified Kuppusamy scale. Based on locality, majority of cases were from rural area (66.9%). Accidental poisoning was the most common cause including 88.5% cases. In our study, we found that hydrocarbons were the most common substance of poisoning (58%). The most common clinical presentation in our study was vomiting (24.5%).

Conclusions: Incidence of acute poisoning among children is high in our set-up. Lower socio-economic class, rural populations are important epidemiological factors which influences the poisoning event in children.

Keywords: Acute poisoning, Hydrocarbon, Kerosene

INTRODUCTION

Acute poisoning in children is most commonly encountered in day to day practice which contributes a major part of admissions in pediatric intensive units and ward.¹ It is a preventable public health problem. Children between 1-3 years age are most vulnerable to accidental poisoning as they are mobile, inquisitive and cannot differentiate between harmful and harmless things.² The pattern and magnitude varies based on the geographical area, social customs and beliefs, economic and education

status, availability of poisonous substances. In developing countries due to rapid industrialization and life style modification, without proportionate increase in awareness and education, the incidence of poisoning increased due to drugs, household products, chemicals and insecticides.³

There are limited community based data available because of several reasons including lack of standard case definition, regional variability, poor functioning regulatory and surveillance system. Therefore, authors carried out this study in present set-up.

The aim was to study the incidence, clinical and epidemiological profile of different types of acute poisoning in children admitted in a Tertiary care centre.

METHODS

The design is a prospective observational study of children admitted in PICU/Pediatric ward of Institute of Child Health and Research Centre, Govt Rajaji hospital, Madurai. All children within the age of 12 years presenting with history and symptoms and signs suggestive of acute poisoning over a period of 1 year were included in the study after getting consent from parents

Inclusion criteria

- All patients less than 12 years of age who came with history of poison consumption, irrespective of presence of signs and symptoms, carrying the container or poison.
- Patients with doubtful history of consumption of poison but with definite signs and symptoms of acute poisoning.

Exclusion criteria

- Insect bite, animal bite, snake envenomation, scorpion sting cases
- Food poisoning
- Idiosyncratic reactions to drugs.

RESULTS

Among 5827 Paediatric admissions over a period of 1 year, 278 cases were due to acute poisoning events which accounts for 4.7% of the total admissions.

Table 1: Age wise distribution of poison cases.

Age in years	No. of cases	Percentage of cases
1-5	222	79.85
5-9	30	10.79
9-12	26	9.35
Total cases	278	100

Table 1 shows age-wise distribution of poison cases. Among the 278 poisoning cases, maximum cases were in the age group of 1-5 years (79.85%).

Table 2 shows sex-wise distribution of poison cases. Among the 278 cases, male children were 154 (55.4%) and female were 124 (44.6%) with male to female ratio of 1.2:1. Based on socio-economic status, majority of cases were observed in upper lower (43.1%) socio-economic group of Modified Kuppusamy scale.

Table 2: Sex wise distribution of poison cases.

Age in years	Male	Female	Total
1-5	128 (46.04%)	94 (33.81%)	222 (79.85%)
5-9	19 (6.83%)	11 (3.95%)	30 (10.78%)
9-12	7 (2.51%)	19 (6.83%)	26 (9.34%)
Total	154 (55.39%)	124 (44.60%)	278

Table 3 shows the socio-economic status category based distribution of poison cases.

Table 3: Socio economic status category based distribution of poison cases.

Socio economic grade	Category	No. of cases	Percentage
Upper	I	0	0
Upper middle	II	12	4.31
Lower middle	III	106	38.1
Upper lower	IV	120	43.1
Lower	V	42	15.1

Based on locality, majority of cases were from rural area (66.9%) as compared to urban area (33.1%) which is shown in Table 4.

Table 4: Distribution of cases based upon the geographical area.

Area	No. of cases	Percentage of cases
Rural	186	66.90
Urban	92	33.09

Table 5: Cases distribution of poisoning cases based on the nature and gender.

Age	Accidental		Suicidal		Homicidal		Total
Sex	Male	female	Male	Female	Male	Female	
1-5 years	128 (89.5%)	93 (90.29%)	0	0	0	1	222
5-9 years	15 (10.48%)	10 (9.74%)	0	0	4	1	30
9-12 years	0	0	5	19	2	0	26
Total	143 (51.43%)	103 (37.05%)	5 (1.79%)	19 (6.83%)	6 (2.15%)	2 (0.71%)	278

Based on the nature of poisoning, accidental poisoning was the most common cause including 88.5% of the total poisoning cases. Table 5 shows the distribution of cases according to nature of poisoning.

Majority of the poisoning cases were brought to hospital between 2-4 hours of exposure to the poison (54%) as shown in Table 6.

Table 6: Distribution of cases based on the time interval between poison consumption and medical attention.

Time intervals	No. of cases	Percentage
<2 Hours	92	33
2-4 Hours	150	54
4-6 Hours	30	11
>6 Hours	6	2
Total cases	278	100

In present study, authors found that hydrocarbons were the most common substance of poisoning (58%) as shown in Table 7.

Table 7: Distribution of cases based on the nature of the poisonous substances.

Name of the poison	No. of cases	Percentage
Hydrocarbons	161	58
Chemicals and insecticides	45	16
Household products	37	13
Drugs	19	7
Plant poisons	16	6
Total	278	100

The most common clinical presentation in present study was vomiting (24.5%) as shown in table 8. In present study, the duration of stay in majority of cases were within 3 days except for those poisoning with chemicals and insecticides where the duration of stay was more than 3 days in 71% cases.

DISCUSSION

Acute poisoning in the paediatric age group is an important preventable public health problem. Limited literature were available regarding paediatric poisoning from present centre, hence authors carried out this study. The incidence of acute poisoning in paediatric age group in present study was found to be 4.7%. This was found to be higher when compared to studies by Randev S et al and Bhatt K et al where the incidence was 1.4% and 1.5% respectively.^{1,4} In present study, authors noticed that majority of the poisoning cases were in the age group of 1-5 years and this was comparable with the studies done by Gupta et al and Khadgawat et al.^{5,6} The male to female ratio among the poisoning cases from present study was 1.2:1 i.e. male children are more commonly affected when compared to female children. Similar results were

shown by Khadgawat et al, Buhariwalla et al and Kumar V et al.⁶⁻⁸ Poisoning events are more common in male children because of their higher activity and the freedom they enjoy in our society.

Present study included 58.2% of poisoning children from Class IV and Class V socio-economic status coming under Modified Kuppusamy classification of socio economic status. This was comparable with studies done by Ozdogan et al, Nabeel Manzar et al.^{9,10} Poor literacy rate, inadequate knowledge about poisons, use of hydrocarbons as fuel, improper storage of poisonous substances from the above mentioned socio-economic classes might have led to this increased incidence. Majority of cases included in present study were from rural area (66.9%). This was comparable with a study done by Bhatt K et al.⁴ Easy availability and Over the Counter sale of poisonous substances with improperly labeling in rural area shops were the important factors that authors noticed.

In present study, authors found that hydrocarbons were the most common substance of poisoning (58%). A study done by Rathore et al shows similar result where the most common substance was kerosene (31%).¹¹ In present study, most cases presented to health care facility within 4 hours of exposure to poison which was comparable with studies done by Randev S et al and Bhatt K et al.^{1,4} The most common clinical presentation in poisoning cases was vomiting. Kohli et al reported similar finding in their study.¹²

CONCLUSION

Incidence of acute poisoning among children is high in present set-up. Lower socio-economic class, rural populations are important epidemiological factors which influences the poisoning event in children.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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