

# Clinico-demographic Profile and outcome of acute poisoning among children- a single Centre observational study.

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## Abstract

**Background:** Poisoning in children is a global problem and no part of the world is exempt from this calamity. It is one of the commonest preventable emergencies encountered in pediatric practice. **Methods:** This prospective observational study was done from November 2015 to October 2016. Patients admitted with clear history of poisoning/bite were enrolled during the study period and were carefully monitored for the course, complications and outcome. Patient details like age, sex, socioeconomic status, symptoms, signs, type of poison/bite, mode, reason for poisoning, any prior treatment received and reasons for delayed treatment if any were collected during the hospital stay. **Results:** A total of 119 cases of poisoning/bite were enrolled. Organophosphorus (OP) poisoning outnumbered the poisoning agents and Snake bite out numbered in Bites and Stings. Majority of cases were in the age group of 13-18 years. Male to female ratio 1.2 : 1. Rural to urban incidence of poisoning was 2.7:1. Highest incidence was observed in children from lower socioeconomic nuclear families and parents with lower educational status. Accidental poisoning outnumbered the suicidal poisoning. Vomiting, Pain, bleeding, Swelling, cough, pain abdomen, drowsiness, nausea, diarrhea, breathlessness, excessive salivation, sweating were observed in majority of the cases. Average hospital stay was 3.5 days (2 to 7 days). There was no mortality in this study. **Conclusions:** Parental health education will decrease the occurrence of childhood poisoning. Along with the parents and teachers, media also should take active steps to educate the rural population about the preventive measures from bite, stings and handling of poisonous agents.

**Keywords:** Children, Clinical profile, Poisoning, Snake bite.

## Introduction

Poisoning in children is a global problem and no part of the world is exempt from this calamity. It is one of the commonest preventable emergencies encountered in pediatric practice [1]. The cause and type of poisoning vary in different parts of the world, depending on the accessibility of poison to children, which depends upon factors such as demography, socio-economic status, education, local beliefs and customs [2]. Though the reported incidence of childhood poisoning varies from 0.3 to 7.6 percent in various Indian hospitals, the incidence appears to be much higher, since there is no community based study from India [3]. The incidence also tends to be higher among children from lower

socio-economic status, where the storage facilities may be inadequate for house hold products as well as for medical agents and even for known toxic substances, such as pesticides [3]. Thus environmental conditions including those related to housing are likely to be main contributing factors to childhood poisoning [2]. Studies performed in developed countries consider family stress, personality and behavioral problem of children, related to childhood poisoning [4].

Mortality in childhood poisoning is accounts for 0.03% in infants, 0.16% in 1-4 years of age group and 0.37% in 5-14 years of age group respectively [3]. In view of the paucity of proper report from our country and the possible regional difference, it was considered worthwhile to take up the present study to study the

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clinico-demographic profile and analyze the outcome of treatment among the cases admitted to pediatric wards.

## Material and Methods

This prospective observational study was undertaken in the department of Pediatrics at a tertiary care medical teaching hospital over a period of 1 year. Patients admitted with clear history of poisoning/bite were enrolled during the study period and were carefully monitored for the course, complications and their outcome. Children aged 1 to 18 years with history of

acute poisoning, Snake bite, Scorpion sting and insect bites were included. Cases with signs and symptoms of coagulopathy, haemotoxicity and myotoxicity with no history of poisoning/bite and unknown poisoning were excluded from the study. Patient details like age, sex, socioeconomic status, symptoms, signs, type of poison/bite, mode, reason for poisoning, any prior treatment received, reasons for delayed treatment if any were collected during the hospital stay and patients were managed as per standard guidelines. Final outcome of the treatment was documented.

## Results

The total number of cases in Pediatric wards during study period were 3960, out of which 119 were of poisoning/bite cases which accounts for 3%. Organophosphorus poisoning (OP) outnumbered other poisonings and Snake bite outnumbered in bites and stings. Maximum number of cases were in the age group of 13-18 years, followed by the age group of 1-5 years. Male patients outnumbered the female patients with incidence of male to female ratio 1.2: 1. Most of the cases were from the nearby villages. Ratio between rural and urban incidence of poisoning was 2.7. Highest incidence of poisoning was observed in children of parents with lower educational status. Noted to have more poisonings in the nuclear family than the joint families. Majority of poisonings cases were from lower economic status [Table 1].

**Table-1: Socio-demographic profile of acute poisoning.**

Variables	Number of cases	Percentage (%)
<b>Gender</b>		
Male	66	55.6
Female	53	44.4
<b>Age (Years)</b>		
1-5	34	28.7
6-12	19	15.9
13-18	66	55.4
<b>Socioeconomic Status</b>		
Class – I	0	0
Class II	13	10.9
Class – III	29	24.4
Class IV and V	77	64.7
<b>Demography</b>		
Urban	32	26.8
Rural	87	73.2
<b>Educational Status of Parents</b>		
Illiterate	47	39.5
Primary and Middle School	46	38.5
Higher Secondary School	17	14.5
College and above	9	7.5
<b>Type of family</b>		
Nuclear family	82	68.9
Joint family	37	31.1

Accidental poisoning outnumbered the suicidal poisoning. Maximum cases were observed in the time interval of 6 pm to 11.59 pm. Number of Snake Bite cases outnumbered during the evening hours and O.P. poisoning cases outnumbered in an interval of 12pm to 5.59pm in the afternoon hours [Table.2].

**Table-2: Characteristics of Poisoning in children.**

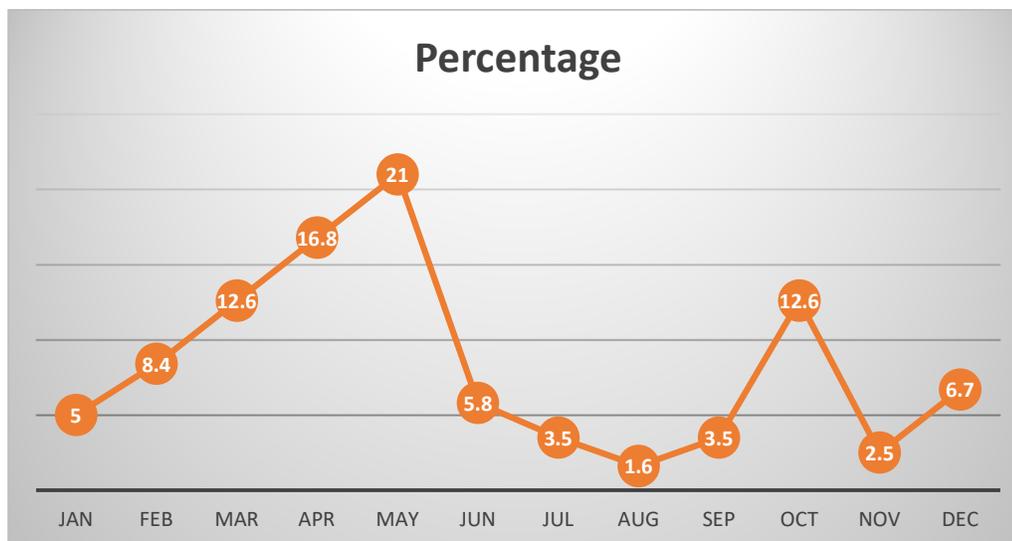
Variables	Number of cases	Percentage (%)
<b>Types of poisoning</b>		
Organophosphorus	47	39.5
Kerosene	18	15.1
Snake bite	42	35.3
Scorpion Sting	4	3.4
Corrosives	3	2.5
Rodenticides	5	4.2
<b>Mode of poisoning</b>		
Accidental	75	63
Suicidal	44	37
Homicidal	0	0
<b>Approximate time of poisoning(hrs)</b>		
6 am – 12pm	4	3.36
12 pm –6 pm	57	47.90
6 pm – 12 am	58	48.74
<b>First Aid</b>		
Received	83	70
Not received	36	30
<b>Time to admission after poisoning</b>		
0-2 hours	49	41.1
2-4 hours	53	44.6
4-6 hours	10	8.5
> 6 hours	7	5.8
<b>Duration of hospital stay (Days)</b>		
1-2	52	43.6
3-7	53	44.6
>7	14	11.8
<b>Outcome</b>		
Recovered	119	100
Death	0	0

Most of the Poisoning cases occurred in the month of May accounting for 21% of the cases [Figure 1]. 70% of the cases had received first aid before admission to the hospital. Vomiting, Pain, bleeding & Swelling at the bite site, cough, pain abdomen, drowsiness, nausea, diarrhea, breathlessness, excessive salivation, sweating were observed in majority of the cases. Odour of poisoning agent, miosis, excessive salivation, defecation, altered sensorium, abnormal lung findings were observed in other poisoning incidences [Table 3].

**Table-3: Clinical Profile of poisoning.**

Symptoms	Number	Percentage %	Signs	Number	Percentage %
Vomiting	85	71.5	Odour of poison	66	55.5
Pain and swelling at bite sites	39	32.8	Fang Marks & bite site	44	36.9
Cough	38	31.9	Swelling	44	36.9
Pain Abdomen	38	31.9	Local reaction at bite sites	39	32.7
Drowsiness	32	26.8	Abnormal lung findings	38	31.9
Nausea	30	25.3	Tachycardia	36	30.3
Bleeding from the bite site	30	25.3	Cellulitis	36	30.3
Diarrhea	22	18.5	Tachypnea	28	23.5
Breathlessness	22	18.5	Defecation	24	20.1
Excessive salivation	22	18.5	Miosis	24	20.1
Sweating	20	16.8	Excessive salivation	22	18.5

Vomiting and odour were most common presenting symptom and sign respectively



**Figure-1: Monthly incidence of Poisoning**

Most cases (53%) were admitted within 4 hours of consumption/bite. Average duration of stay in the hospital was 3.5 days. Duration of hospital stay increased as delay in the time interval of admission to the hospital from the time of consumption of poison. There was no mortality in this study.

## Discussion

The incidence of childhood poisoning in Indian studies [5,6,7] varies between 0.3% to 7.6%. The occurrence of poisoning in the present study is similar to the study of Dutta AK [3]. Incidence of childhood poisoning was more (55.4%) in the age group of 13-18 years. Males were outnumbered females with a ratio of 1.2:1 in the present study, which were similar to other studies [3, 7,8]. Accidental poisonings outnumbered the suicidal poisonings in the present study 63.1%, which were similar to the other Indian [5,7] and international studies [8].

Majority of the cases (58.8%) were reported during summer season similar to other Indian studies [9,10] which noticed 41.7% and 37.3%. Winter season witnessed least number of cases in both Indian and present studies. In the present study rural cases outnumbered the urban cases, which was inconsistent with other international [8] and Indian studies [6].

However it agrees with the study by Ramesh S [11], since our center caters to more number of rural population. 89.1% of cases were from lower socio economic status similar to another study [6]. Singh S [2] reported 98.6% of cases from both middle and lower socio economic group. Possible factors for incidence of poisoning in lower and middle socio economic status were illiteracy, neglect of children, lack of awareness

regarding the poisoning agents, lack of health education and nuclear families. It is pertinent to note that negligible cases were noted from the upper socio economic class in all the studies. In the present study more number of cases were due to Organ phosphorous poisoning followed by poisoning due to Snake bite, Kerosene poisoning, Aluminum phosphide, Scorpion sting and Corrosive acid.

Dutta AK [3] in their study on childhood poisoning have reported that various regions in the country showed variation in types of poisoning which could be attributed to different geographical and socio economic background. Present study noticed more (39.5%) OP poisonings than other Indian [2] and western [8] studies. In our study OP poisoning makes the chunk of poisoning case followed by Snake bite this can be attributed to the rural population working in fields is a access to pesticides, insecticide and increased exposure to animal bite and stings. Snake bite constituting 35.3% of total poisoning cases similar to other Indian study [3]. Kerosene poisoning constituting 15.1% of total poisoning cases which was similar to the study of Dutta AK [3].

Majority of the cases (85.7%) were admitted to hospital within 4 hours of poisoning, which was similar to other comparative study [8]. Majority of the cases stayed for

3 –7 days and few cases stayed beyond 7 days. The duration of hospital stay was more in our study when compared to other studies [6,12].

We have noticed the delay in seeking medical treatment has resulted in increased stay in the hospital. No mortality was reported but high morbidity like increased duration of stay in the hospital was observed. Some Indian studies [3,11] have reported the low mortality rate of 0.6 % – 0.9%. Ganga N [13] and Singh S [2] have reported high mortality rate of 3.9% & 12.9% respectively.

### Conclusions

Parental health education will decrease the occurrence of childhood poisoning and there is a need to strengthen the preventive measures. The young children should be kept under strict supervision and constant vigilance. Along with the parents and teachers, media also should take active steps to educate the rural population about the preventive measures from bite, stings and handling of poisonous agents.

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