

## ORIGINAL ARTICLE

### PROFILE OF POISONING IN CHILDREN

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#### Abstract

This observational study was done to find out the incidence and pattern of childhood poisoning, to know the morbidity and mortality resulting from childhood poisoning and to analyze the outcome. One hundred sixty five children aged between 0-18 years were admitted to the pediatric ward with history of poisoning during the six year period of the study (August 1999-July 2005). The incidence of childhood poisoning was 1.28%. In this study commonest age group affected was between 11-18 years (76.5%). Male to female ratio was 1.17:1. Majority of cases, 158 (95.7%) were seen from low and middle socioeconomic group and 134 (81.2%) belonged to rural area. The commonest mode of presentation was vomiting in 100 (60.6%) patients and 99 (60%) patients were brought to hospital after 5 hours of exposure. In the present study, 63 (38.2%) of cases were due to poisoning by insecticides and pesticides, followed by plant poisoning in 36 (21.8%) whereas kerosene oil poisoning was seen in only 8 (4.9%) patients. Accidental poisoning was seen in 153 (92.7%) patients. Ten (6.1%) patients died and 96 (58.1%) of patients stayed in hospital for only 1-2 days.

#### Introduction

Poisoning among children is one of the common medical emergencies encountered in pediatric practice. Poisoning has been a problem for generations, but received little attention except in last 30 years. With the reduction in childhood mortality from infectious diseases, due to advent of immunizing agents and antimicrobials, accidents including poisoning are one of the leading causes of morbidity and mortality among children in the west. Poisoning, while never accounting for a large number of accidental deaths, have acquired prominence now because they have not decreased at the same rate as the infectious diseases. (1-3) The young preschool child or toddler is mentally and physically immature and is most susceptible to accidental poisoning. This pattern of poisoning is related to the developmental stage of the child. As the infant starts crawling exploratory behavior increases and they have strong oral tendency and they explore anything by putting it into their mouths. Though poisoning in children below 5 years of age tends to be accidental, especially in the 18 months to 3 years old (1-3), it is more often intentional poisoning in older children and adolescents. Stress has been implicated for increased incidence of intentional poisoning in adolescents. (4,5) The present study was planned with the objective of understanding the etiological and demographic background, incidence and pattern of poisoning by analysis of data over 6 years (August 1999-July 2005) in children and adolescents admitted

in the Pediatrics Department at Indira Gandhi Medical College Shimla.

#### Methods & Materials

All children and adolescents admitted to the Pediatrics Department of a tertiary care teaching institute in northern India with diagnosis of poisoning were included in the study. Diagnosis of poisoning was made on the basis of history and examination findings. Clinical history was taken in detail with reference to the age, sex, socioeconomic status as per modified Prasad's classification (6), demography, nature of poisoning, the time elapsed between consumption and reporting to the hospital, intent, symptomatology, duration of stay in the hospital and outcome. The examination findings were recorded as per proforma from patient's case record. Relevant investigations findings like chest x-ray to diagnose pneumonitis in kerosene poisoning, blood tests (complete hemogram, renal function tests, liver function tests) and urine examination to rule out complications of various poisonings like insecticide poisoning or snake envenomation were also recorded from indoor case records. No toxicological analysis report was available in any patient. Profile of patients with poisoning, their symptoms, type of poisoning and outcome were analyzed.

#### Observations

One hundred and sixty five (165) children aged between 0-18 years were admitted with poisoning. Total number of admissions during this period were 12872. The incidence of poisoning was 1.28%. In this study commonest age group affected was between 11-18 years. Male: female ratio was 1.17:1. Table 1 depicts age and gender distribution of patients with poisoning. Seven (4.3%) belonged to upper socioeconomic status, 33 (20%) to middle socio-economic status and 125 (75.7%) belonged to lower socioeconomic status. Thirty-one (18.8%) patients were from urban population and 134 (81.2%) were from rural areas. Only 1 (0.6%) patient presented within an hour of exposure to the poison, whereas 23 (13.9%) presented within 1-2 hours of poisoning, 42 (25.5%) presented in 2-5 hours and 99 (60%) presented after 5 hours of poisoning. Table 2 depicts the various clinical presentations and table 3 depicts various types of poisons to which these children were exposed. Ninety-six (58.1%) patients stayed in hospital for 1-2 days, 64 (38.8%) stayed for 3-7 days, 5 (3.1%) needed hospital stay for more than 7 days.

The average duration of stay in the hospital was 2.7 days. Poisoning was accidental in 152 (92.8%) patients whereas suicidal intent was present in only 9 (7.8%) patients. Total 10 (6.1%) patients died of which 9 were due to insecticide and pesticide poisoning and one was due to snakebite.

**Table 1: Age and Sex Distribution of patients with poisoning**

Age in years	Males (%)	Females (%)	Total (%)
< 1	0	1 (0.6)	1 (0.6)
1-5	43 (26.1)	23 (13.9)	66 (40)
6-10	11 (6.7)	11 (6.7)	22 (13.4)
11-18	35 (21.2)	41 (24.8)	76 (46)
Total	89 (54)	76 (46)	165 (100)

**Table 2: Common Modes of Presentation**

Symptoms	Number of cases (%)
Vomiting	100 (69.6)
Altered sensorium and unconsciousness	59 (35.8)
Convulsions	13 (7.9)
Diarrhea	12 (7.3)
Urinary incontinence	10 (6.1)
Drooling of saliva	10(6.1)
Asymptomatic	7 (4.3)
Pain and swelling at bite site	7 (4.3)
Odor of poison	5 (3)
Restlessness/agitation	5 (3)
Fever	5 (3)
Hematuria	5 (3)
Hematemesis	3 (1.8)
Respiratory distress	3 (1.8)
Red hot skin	2 (1.2)
Headache	1 (0.6)
Blurring of vision	1 (0.6)
Anuria	1 (0.6)
Redness of face and eyes	1 (0.6)

**Table 3: Types of Poisoning**

Types of poisoning	Number of cases (%)
Insecticide and pesticides	63 (38.2)
Plant poisoning	36 (21.8)
Snake bite	19 (11.5)
Drug and medications	18 (11)
Hydrocarbon (including Kerosene)	8 (4.9)
Miscellaneous	7 (4.2)
Corrosives	5 (3)
Food poisoning	4 (2.4)
Alcoholic intoxication	3 (1.8)
Bee sting	2 (1.2)
Total	165

Sharma et al (14), Singhal et al (15), and Buch et al (16) studied children up to 12 years and Kumar et al (10) up to 14 years, whereas Singh et al (17) studied children up to 15 years. Hence this finding in the present study can not be compared with the data available, however Singh et al (9) have observed the maximum incidence of childhood poisoning occurred above 5 years of age (40.9%). Our study had a male preponderance, which is similar to studies of Khadgawat et al (8), Niyaj et al (16) and Ganga et al (18), who have reported the ratio of 1.6:1, 1.25:1, and 1.7:1 respectively. The childhood poisoning is more common in boys, because they are more active, exploratory, inquisitive, curious and adventurous by nature.

Majority of cases in our study were seen from low and middle socioeconomic status. Tak et al (19) reported that 100% of cases were from this group. Singh et al (12) reported that 98.6% of cases were from low socioeconomic status group. Barat et al (11) observed that 98% of childhood poisoning cases were from poor socioeconomic status group. Singh et al (9) reported that easy availability of some formulations in unacceptable concentration in the local market and lack of education among parents are the reason for higher incidence of childhood poisoning in this socio-economic

**Discussion**

Childhood poisoning is a global problem. The spectrum of poisoning varies considerably from place to place, depending upon age, sex, socioeconomic status and demography. (7-10) The incidence of poisoning in the present study was 1.28%, which is similar to that reported by of Barat et al (1.1%), Khadgawat et al (1.1%) Agarwal et al (1.8%) and Sitaraman et al (1.9%). (8,11-13) Maximum numbers of cases of poisoning were in 11-18 years age group in our study.

strata. Majority of cases in our study belonged to rural areas. It is similar to observation made by V Kumar (10). Maximum (60%) of cases were brought after five hours of exposure. V Kumar (10) reported the average time interval to be 5.5 hours and Singh et al (17) reported that the time interval of 6.77 hours in their studies. The delay in reporting to the hospital could be due to ignorance, poverty, insufficient knowledge regarding the poisonous agent, hilly topography and lack of easy modes of transportation. The commonest mode of presentation was vomiting in our patients. This could be attributed to the increased incidence of insecticide poisoning. In this study maximum cases were due to poisoning by insecticides and pesticides, followed by plant poisoning whereas kerosene oil poisoning constituted only 4.9%, which was predominant poisoning in almost all other studies (4,8,13,17,). Buch et al (16) reported medicines and chemicals to be the commonest poisoning substance (53%). In the present study the probable reason for higher incidence of poisoning by insecticides & pesticides could be the involvement of higher age group and more involvement of rural children where these substances are used for agricultural purposes, and are easily available.

In the present study majority of cases were due to accidental poisoning, few due to suicidal mode and none due to homicidal poisoning conforming to findings of others (16,17 ). Majority of cases stayed in hospital for 1-2 days. Duration of stay is similar to that observed by Tak et al (18) and Gupta et al(21). Mortality rate in this study was 6.1%. Ganga et al (18) and Singh et al (17) have reported mortality rate of 3.9% and 12.5% respectively in their studies.

### Conclusion

Kerosene poisoning is no longer a predominant form of childhood poisoning and has been replaced by insecticides as the most predominant childhood poisoning.

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