

Original Research Article

Clinical profile of accidental ingestion of poisonous substances in children during COVID era

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ABSTRACT

Background: Poisoning and drug overdose is a common medical emergency for children. Majority of childhood poisonings are unintentional. To see the change in epidemiology and spectrum of poisoning in children during COVID period this study was conducted because COVID-19 has changed the mental, socioeconomical, education status of people which also effected mental health of children.

Methods: Prospective cross-sectional observation study was done in 95 children aged 0-15 years over a period of two and half years at tertiary care centre of Uttarakhand.

Results: Most common age group was affected was 1-5 years (44.21%). Most common poisonous substance intake was pesticides and insecticides 18.9% followed by medications 17.89%. Most of the children (44.21%) were asymptomatic at time of presentation and required only observation care.

Conclusions: During COVID time medicine became more common after pesticides in developing country. This spectrum is close to studies done in developed countries. Family education, interaction with children, close vigilance and proper storage of poisonous substance is important to avoid such incidences.

Keywords: Poisonous substance, Drug overdose, COVID-19

INTRODUCTION

Poisoning and drug overdose is the medical emergency both for adults as well as children. It refers to an injury that results from being exposed to an exogenous substance that can cause injury or even death. Children are most susceptible because of their non-nutritive hand to mouth activity and curiosity.¹ Majority of childhood poisonings are unintentional, occur at home, and home surroundings and hence preventable. Spectrum and epidemiology of poisoning in children and their outcome depend a lot on the socioeconomic status, cultural practices, parental education status and availability of health care measures.^{2,3}

Acute poisoning accounted for an estimated 45,000 deaths annually in children and young people under the age of 20 years. The global death rate from poisonings for children younger than 20 years is 1.8 per 100,000 population. Some 45,000 under 20 years died yearly due to acute poisoning. Worldwide estimates suggest that the rate of poisoning in under 20 years is 1.8 per 100,000 population and for India it ranges like 0.6-11.6%.^{4,5}

There was a lot of change in socioeconomic status, education status and the psychological state of the people during the COVID-19 pandemic.⁶ In COVID era children were home bound, loss of school hours and peer time, arguments with parents, feeling of isolation, fear of

disease, affected their mental health.⁷ So they become more vulnerable and it is absolutely important to highlight the seriousness of this problem so that effective measures could be taken by parents as well as by health regulators to prevent accidental ingestion of poisonous substances.

Hence, our study provided useful data on clinical profile and outcome of children presented with accidental poisoning at tertiary care hospital which is the referral centre for whole Kumaon region.

METHODS

A prospective hospital based observational cross-sectional study was conducted in Department of Pediatrics, Government Medical College Haldwani for a period of two and half years from March 2020 to July 2022. Total 95 children aged 0-15 years with history of ingestion of poisonous substance were included. Children who have taken it intentionally as a suicidal purpose were excluded from the study. Statistical analysis done by IBM SPSS software.

Institutional ethical committee approval was taken and informed consent was taken from parents.

Patients were managed according to the symptoms. Emergency management of airway, breathing and circulation was done according to PALS guidelines. Detailed history was taken from the parents or accompanied person regarding ingestion of substance. Type, amount, date and time of substance ingestion were noted. If attendant had bought the container or drugs, basic substance was noted otherwise on the basis of history substance was categorized and divided according to major groups defined by WHO report on child injury prevention. Poisonous substance was identified on the basis of history given by attendant or on the availability of container/drugs from which poison was taken.

Presenting complaints of patients were noted. Categorization of residence (rural/urban), place like (house, farm, workplace), circumstances of accident contact like self or by other persons was noted. Accessibility of poisonous substance and time to reach hospital after ingestion was noted.

Family type (nuclear, joint family), number of children in family, past history of poisoning, long term medication or chronic illness were documented. Developmental assessment and detailed clinical examination of child were performed including vitals (heart rate, respiratory rate, temperature, SpO₂, blood pressure). General examination included pallor, skin colour, any particular odour, sweating, signs of dehydration. In addition to that, full systemic examination was also performed consisting CNS (consciousness, pupillary size, cranial nerves examination, motor and sensory system), GI (oral mucosa injury, ulceration, erythema, recreation, abdominal

tenderness, liver spleen examination, bowel sounds) respiratory system and CVS examination.

RESULTS

Table 1: Age and gender distribution.

Age (in years)	Total (N)	Male	Female
		N (%)	N (%)
0-1	9	8 (88.89)	1 (11.11)
1-5	42	22 (52.38)	20 (47.61)
5-10	11	7 (63.63)	4 (36.36)
>10	33	17 (51.51)	16 (48.48)
Total	95	54 (56.84)	41 (43.15)

Table 2: Type of poison in our study.

Type of poison	Number	Percentage
Household chemicals		
Toilet cleaner	10	10.52
Kerosene	5	5.26
Naphthalene ball	4	4.21
Soap solution	7	7.37
chollhexynol	2	2.10
Nail paint remover	3	3.16
Pesticide and insecticide	18	18.94
Mosquito repellent	10	10.52
Rat killer powder	1	1.05
Unknown	6	6.32
Workplace product		
Paint thinner machine oil	2	2.10
Petrol	1	1.05
Terpentine oil	2	2.10
Medicine		
Iron	2	2.10
Chlorphneramin+phenyephtrin	4	4.21
Thyroxin	1	1.05
Antidepressant	2	2.10
Clonazepam	1	1.05
Ivermectine	4	4.21
Phenytoin	1	1.05
Potassium permanganate	1	1.05
Metoprolol	1	1.05
Plant substance	7	7.37

Total 95 children were included in the study over a period of 2 years. Out of them 56.84% were male and 43.15% were female. Most common age group was 1-5 years (Table 1). 51.57% children were from urban area while 48.42 % were from rural area. Accessibility of children to poisonous substance was present in 91.5% of children, while in 8.4% of children it was accidentally given by family members or friends. 53% children were living in nuclear family and 47% in joint family. Development of all the children was age appropriate. Most common poisonous substance intake was pesticides and insecticides 18.9% followed by medications 17.89%

(Table 2). Although 44.21% children had no symptoms at time of admission, but most common presentation was vomiting 27.36% followed by cough 12.63%. As 44.21% children were asymptomatic so required only observational care while 54.74% had given symptomatic treatment and only one child came in coma with history of naphthalene ball ingestion who required mechanical ventilation, vasopressor and expired. Other 98.94% children were discharged. Median duration of hospital stay among children was 3 days.

Table 3: Presenting complaints at time of admission.

Clinical features	Number	Percentage
Abdominal pain	10	10.52
Altered sensorium	5	5.26
Vomiting	26	27.36
Cough	12	12.63
Asymptomatic	42	44.21

DISCUSSION

In our study most common age group affected by accidental ingestion of poisoning was 1-5 years of age (44.21%). This was found to be similar with Indian studies like Saikia et al, Ghosh et al, Bhat et al, Kohli et al as well as foreign studies by Andiran et al, Budhathoki et al.^{1,8-12} This was because of rapid neurocognitive development, curiosity, mouthing tendency and not able to differentiate harmful from harmless substance. Like other studies Rathore et al, Bhat et al, Basu et al our study also reported male predominance in incidence of poisoning.^{9,13,14}

Most common poisonous substance intake in current study was pesticides and insecticide followed by medications and toilet cleaner. Studies from developed countries Dawson et al, Rajka et al showed medicines were most common agents.^{15,16} But study Bhat et al from rural part of India showed insecticide was the most common poisoning agent in children, while other Indian studies like Rathore et al, Ghosh et al and Kohli et al had reported kerosene to be the most commonly agent in urban areas.^{8-10,13} As our study was done during COVID period and our study catered both rural and urban area, while in urban area people were restricted to their houses while in rural and hilly part children used to allow to go outside in the fields. So in rural area the children were more prone and exposed to pesticides like other studies but in urban area most of the people were storing medication in their houses for COVID and children were restricted to houses and were more prone for medication ingestion and toilet cleaner. As kerosene availability is decreasing now a days so incidences of it are limited.¹⁷

In our study most of the cases were asymptomatic followed by vomiting, cough and abdominal pain. Only 5 cases had neurological involvement and presented with altered sensorium. Recent study done by Saikia et al

reported the same finding of more asymptomatic patients in their study.¹ While in study done by Bhat et al had reported 30% children were asymptomatic at the time of presentation and Kohli et al reported neurological manifestation to be the most common presentations in their study.^{9,10} Gastrointestinal manifestation seen in 37.88% of cases in our study but in Disfani et al it was observed in 87.7% cases and by Saikia et al only 15% cases had gastrointestinal involvement.^{1,18} This variation could be because of predominance of poisonous substance in particular area.

Accessibility of poisonous substance or unintentional poisoning was present in 91.5% children in our study which was similar to study conducted by Saikia et al while in study of Azab et al 68.5% children had unintentional poisoning.^{1,19}

Limitation

During COVID era referral from distant areas was not possible only symptomatic patients were referred. Only from nearby areas all cases were included.

CONCLUSION

Poisoning is not uncommon without COVID era but the substance differed during that phase as medicine become more common agent to ingest as they are easily available because people were storing the medication for tough time. Family education, interaction with children, close vigilance on children while they are playing alone, proper storage of poisonous substance is important to avoid such incidences. Most of the patients are asymptomatic and required observation or symptomatic care.

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Conflict of interest: None declared

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