

ORIGINAL ARTICLE

Clinical Profile of Poisoning in Children and it's short-term Outcomes

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Abstract:

Poisoning in children is a neglected health problem. Curiosity and tendency of exploration in children drives them to consume poisons accidentally. It can cause significant morbidity and mortality. To describe the epidemiology and clinical profile of children brought to hospital with history of poisoning and to determine the short-term outcomes at discharge. Hospital records of children, age 1 month to 15 years, admitted with history of acute poisoning in Paediatric ICU over an 8-year period were reviewed retrospectively. Institutional ethics committee approval was taken. Relevant information was collected in proforma and analysed statistically. Of the 200 children, majority were boys aged less than 5 years, consumed poisons accidentally at home. Most commonly found poisons were chemicals especially kerosene, mosquito repellents followed by medicines used by family members. Among medicines, paracetamol was most common. Intentional poisoning was seen in adolescents. The poisons were typically kept in unsafe and handy locations. Majority of the children were asymptomatic; while others presented with vomiting, drowsiness, pain abdomen and cough. Most of the children survived, with 14.5% being discharged against medical advice. There were 2 deaths among the 200 children. The children were usually hospitalised for less than 7 days. Majority of poisoning were accidental in small children. Kerosene was the most commonly used followed by mosquito repellents and medications. Paracetamol was the most common medication noted. All poisoning in adolescents were with the intent of self-harm. Chemicals kept in soft drink bottles contributed to poisoning in children.

Keywords: Poisoning; Accidental consumption; Poison.

Introduction:

Poisoning in children is a serious health problem which is often neglected and underestimated. Exposure to toxins is slowly becoming a major health problem contributing to acute illness in children. It can cause significant morbidity and mortality. By definition poisoning is a state of medical emergency as a result of ingestion of an exogenous chemical in a level that is harmful to the individual.¹ Curiosity and the tendency of exploration in children drives them to consume poisons accidentally.² This inadvertently occurs in their homes, thus making it a preventable cause of mortality and morbidity.³ Hospital statistics reported periodically from different parts of India indicate an incidence varying from 0.33 - 7.64 % of total admissions.⁴ Approximately 3,45,814 individuals of various ages died worldwide as a result of poisoning, according to the WHO Global Burden of Disease research. Although adults made up the bulk of those who ingested poison, 13% of those cases involved children under the age of 20.⁵

Paediatric poisonings account for 0.23-3.3% of the total poisoning in India.⁶ The chemical consumed by younger children is typically identifiable but estimating the dosage might be challenging. Accidental poisoning occurs often in the age group of 1-5 years, although less than 1 percent of poisoning in children is serious. The intent of this study was to determine the

epidemiology, pattern and outcome in children with poisoning admitted to a tertiary care hospital.

Materials and method:

The case files of all paediatric patients admitted with history of poisoning between January 2014 and September 2022, a period of 8 years, were reviewed for this retrospective observational analysis. Institutional ethical committee approval was taken. This study included all patients with a history of acute poisoning who were younger than 15 years old. Chronic poisoning such as lead poisoning and food poisoning were among the exclusion criteria. Age, gender, poison type, amount consumed, mode of poisoning (ingestion, inhalation, and skin contact), time between exposure or consumption and presentation, home first-aid treatment, clinical characteristics, therapeutic intervention, and outcome were all noted in a proforma for the patients who were included. The collected data was statistically analysed.

Results:

A total of 200 children were enrolled in the study, from 1 month to 18 years, of which 122 were males as depicted in fig 1. Majority of patients were in 1-5 years age group (n=153, 76.5%) followed by 10-15 years (n=26, 14.5%), as depicted in fig 2. Amongst the 200 children, 65% were from rural areas. Most of the poisoning were accidental and at home which were identified early by the caretakers. About 69.5% of poisoning were witnessed since it was accidental and immediate measures were initiated. 90% of children were brought to the hospital within 5 hours of consumption. Up to 83.5% of poisoning were consumed accidentally and 13.5% were taken intentionally by children. All intentional poisoning were by adolescents. Majority of poisoning occurred at home. Household chemicals including kerosene,

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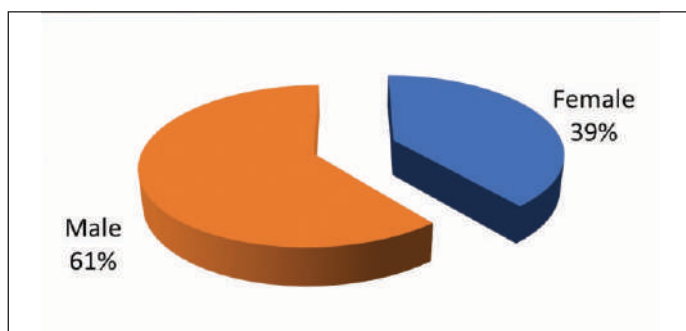


Figure 1: Gender.

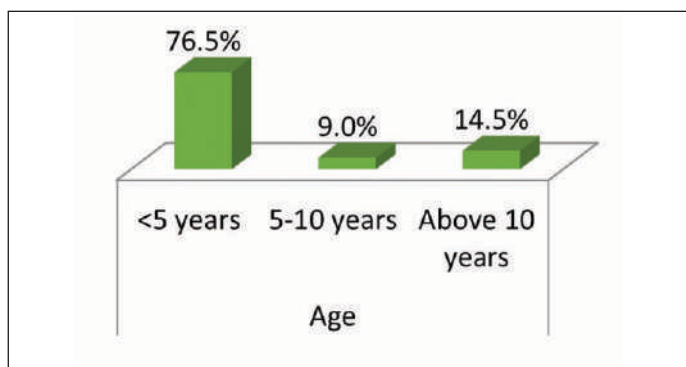


Figure 2: Age distribution.

Table 1: Clinical features.

Symptoms	Number	Percentage
Asymptomatic	86	43%
Vomiting	60	30%
Cough	24	12%
drowsiness	10	5%
Pain abdomen	8	4 %
Breathlessness	8	4 %
Convulsion	2	1%
Fever	4	2%
Loose stools	1	0.5%
Rashes	1	0.5 %

insecticides and pesticides including mosquito repellents, potassium permanganate, ratol and phenol were most frequently used. Other chemicals include carbofuran, DDT, Dettol, diesel, glass cleaner, sewing machine oil, ant powder and carbamate. It was noted that most of the poisons such as kerosene, turpentine oil etc were kept in alternate bottles, which was possibly within the reach of children leading the child to accidentally consume the item. Mosquito repellents were in their original containers but due to their bright colours and odour would instigate the curiosity of children especially toddlers. Medications such as paracetamol, thyroxine, antipsychiatry medications etc taken for treatment by the family members of the child were frequently encountered in accidental poisoning. Paracetamol is the most common medication leading to poisoning in this study. Toxic plants included datura fruit. Other poisons included gingelly oil and vinegar. All poisons were taken orally

Most of the children were asymptomatic (n=86, 43%). Vomiting (30%) was the most common presenting symptom followed by cough, drowsiness, pain abdomen and breathlessness., as

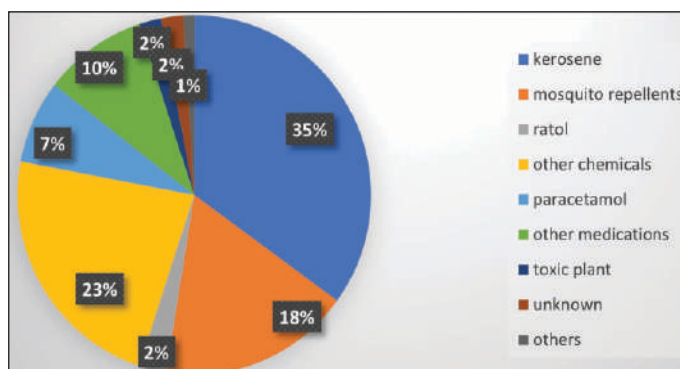


Figure 3: Type of poison.

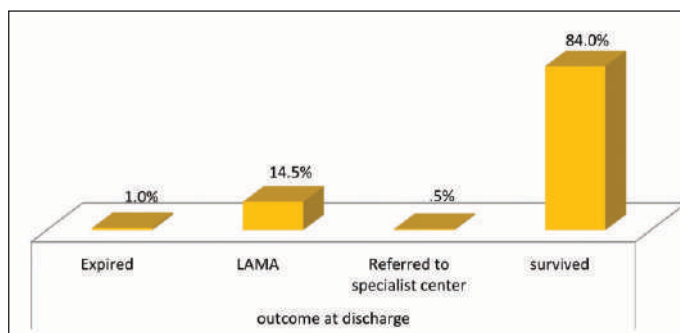


Figure 3: Outcome at discharge.

depicted in table 1. Most of the children maintained stable vitals, 15 children required oxygen support and 4 required ventilatory support. Induced vomiting was done at home in case of 8 children, others were directly taken to the hospital. About 17 children were given specific antidote, gastric lavage was given for 2 children. Others required only supportive care. Almost 98% children were discharged within 7 days. Majority of children survived, out of which 29 patients went leaving against medical advice, one patient was referred to specialist centre. 2 children expired as depicted in fig 3.

Discussion:

Poisoning in children is a critical health problem and a leading factor in serious mortality and morbidity. It is observed that males are more common in childhood poisoning, according to a few studies. In this study we had a similar observation. Males were more common; this may be because they tend to be more hyperactive, have more freedom or are more likely to be biased for hospital admission than females. In accordance with earlier studies, the majority of our patients were in the 1 to 5 year age group.^{7,8,9} The majority of our patients were from adjacent urban regions. In the current study, the average duration between poisoning and presentation to emergency was 2 to 5 hours. Majority of poisoning occurred at home (98%). Various household chemicals such as toilet cleaner, detergents, mosquito repellents were commonly encountered in childhood poisoning. In a study done by R Khadgawat and others it was noted that ingestion of kerosene oil accounted for 48.9% of all occurrences of unintentional poisoning in children.¹⁰ The most frequent agent encountered in our study was kerosene and children commonly had access to these chemicals as they were routinely kept in empty soft drink bottles in their reach.

Drug toxicity by accidental ingestion of medications that is taken by the family members is common (n:171, 75.5%), mainly due to the lack of awareness of child-proof storage and packaging and careless storage by family members. In addition to that iatrogenic intoxication is also common. Most common medicines encountered in poisoning were – paracetamol, antipsychiatry medications, thyroxine. The most common drug identified in our study was paracetamol (n-15, 7.5%).

Majority of the poisoning in children were accidental while 14.5 % were with intention of self-harm. It was noted that all adolescent poisonings were intentional. Commonly used agents were ratol, phenol, kerosene, medications such as paracetamol and antipsychiatry medications and pesticides like carbofuran. In 2 children with intentional poisoning, the type of poison was unknown.

The majority of our patients had no symptoms at presentation or only experienced minor, non-specific symptoms like nausea, coughing, and pain in the abdomen. About 2% children developed serious symptoms and signs and required ventilatory support. These children had consumed the poison with the intent of self-harm, quantity of poison consumed was more and also had delayed presentation to the hospital. Two children expired in our study during the course of hospital stay. Majority of the paediatric poisoning was accidental with a very small amount consumed and required only supportive care. The transfer of hazardous drugs from their original containers or those left within children's reach was observed. These accidental poisonings are also caused by inadequate storage facilities. Our study had few limitations. The assessment of all risk factors could not be determined with the available data. But it is crucial to be aware regarding the morbidity that could be prevented in accidental poisoning and adequate interventions to be taken immediately. Assessment of socioeconomic circumstances, psychological state of the child and of the caretakers is necessary.

Conclusion:

In our study, we found that kerosene is the most common causative agent, followed by mosquito repellents and paracetamol. Majority of the poisoning were accidental. Home safety education for safe storage of medicines, household and cleaning products is necessary. All poisoning in adolescents were

intentional with a suicidal intent. To stop the surge in incidents of self-poisoning, it is important to start the proper mental health awareness and interventions in children.

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