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A study of clinical profile and outcome of poisoning among pediatric population in a tertiary care hospital

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***Abstract*---**Background : Poisoning is a serious emergency and a big problem that affects people of all ages all over the world. Education, demographics, socioeconomic conditions, customs, and local belief all influence the cause and kind of poisoning in different areas of the world and within the country. Poisoning patterns differ depending on age, the kind and amount of the poison, and the method of exposure. Even while there has been no major drop in the number of unintentional poisonings, the pattern of poisoning has changed, with new risks always emerging as a result of the introduction of novel pharmaceuticals and chemicals for home use and agricultural. Objective : To asses the clinical Profile and outcome of Poisoning among Pediatric Population in a tertiary care hospital. Materials and Methods : The present Prospective observational study conducted in Department of Pediatrics at Gadag Institute of Medical Sciences , between June 2020 to December 2021. All children and adolescent who were admitted to pediatric intensive care unit with history of poisoning were included in this study. A total 50 cases came to emergency with history of poisoning during this period which were included in the study as per the inclusion criteria All children who

were aged less than 12 years of age admitted in our PICU ,and paediatric ward with history of poisoning or intoxication during the study period. Results : The mean age of the study subjects in our study was 4.3 ±3.5 years of age, with majority (62%) of them between 1 to 3 years of age , 16% were between 3 to 6 years of age , 14% between 6 to 9 years of age and 4% were aged more than 9 years of age. Most common poisoning was seen with hydrocarbon compound in nearly 38% of the subjects followed by insecticide in 22% , Consumption of poisonous plants in nearly 12% and unknown substance in 10% of the subjects. Conclusion: The majority of unintentional poisonings may be avoided with basic precautions, lowering the substantial fatality rate among children poisoned. Due to the location of our centre, which is bordered by many rural regions, kerosene is still the most prevalent agent implicated in paediatric poisoning, followed by paint thinner. Negligence and ignorance are the leading causes of paediatric poisonings, which can be avoided by paying closer attention at home.

***Keywords*---**poisoning, children, kerosene, emergency, hydrocarbon.

Introduction

Poisoning is a serious emergency and a big problem that affects people of all ages all over the world. Education, demographics, socioeconomic conditions, customs, and local belief all influence the cause and kind of poisoning in different areas of the world and within the country.[1] Poisoning-related mortality and morbidity in children can be avoided. Following road traffic accidents, burns, and drowning, poisoning is the fourth biggest cause of accidental injury.[2,3] Every year, almost 2 million children under the age of six visit the emergency room with a history of poisoning. Poisoning has never accounted for a substantial number of unintentional fatalities, but the pace of decline in mortality due to poisoning has not been as dramatic as infectious illnesses, and as a result, it has gained increasing significance in recent years.[4,5,6]

Children, as we all know, are interested about their surroundings and investigate their surroundings with all of their senses, including taste and smell. As a result, when hazardous compounds are consumed or breathed, its surrounds may be a deadly area; as a result, millions of calls to poison control centres are made each year, and many people are taken to emergency rooms. Poisoning patterns differ depending on age, the kind and amount of the poison, and the method of exposure. Even while there has been no major drop in the number of unintentional poisonings, the pattern of poisoning has changed, with new risks always emerging as a result of the introduction of novel pharmaceuticals and chemicals for home use and agricultural. When parents or caregivers are not paying attention at home, the majority of instances are recorded. Over-the-counter (OTC) drugs, prescription pharmaceuticals, home goods, insecticides, kerosene, toxic plants, and animal or insect attacks are the most prevalent poisoning agents.[7]

Poisoning is a major public health issue around the world. The severity of the problem varies from country to country. It is a major cause of hospital admission as well as emergency presentation in affluent nations such as the United States. Acute poisoning causes symptoms to occur suddenly following ingestion, inhalation, or contact with a dangerous chemical. When a patient is exposed to chronic poisoning, symptoms emerge gradually over time and then subside completely when the patient is removed from the situation. Acute poisoning in children is a leading source of morbidity and mortality, although it may be effectively managed by preventative interventions.[8,9]

Poisonings happen when poisonous chemicals are swallowed, injected, breathed, or absorbed through the skin in large amounts. After swallowing drugs, children aged 1 to 2 years are the most commonly seen in emergency rooms, accounting for 68 percent of medication-related visits among young children. Approximately nine out of ten toxic exposures in children occur at home. Unlike adults, children are more likely to become poisoned by accident, making it avoidable with a few easy and clever measures. Poisoning in older children and teenagers is increasingly common, especially as stress levels rise. In many nations, hazardous chemical exposure is the most prevalent cause of acute medical disease. General epidemiological data should be used to aid emergency rooms in good poisoning case treatment, particularly for efficient prevention and therapeutic methods. [10,11,12]

Objective

To asses the clinical Profile and outcome of Poisoning among Pediatric Population in a tertiary care hospital.

Materials and Methods

The present Prospective observational study conducted in Department of Pediatrics at Gadag Institute of Medical Sciences , between June 2020 to December 2021. All children and adolescent who were admitted to pediatric intensive care unit with history of poisoning were included in this study. A total 50 cases came to emergency with history of poisoning during this period which were included in the study as per the inclusion criteria. All children who were aged less than 12 years of age admitted in our PICU ,and paediatric ward with history of poisoning or intoxication during the study period.

Inclusion Criteria

1. All children between 1 to 12 years of age who come with history of poison consumption/intoxication, irrespective of signs and symptoms, accompanied or unaccompanied by poison or container.
2. Snake bite , scorpion sting and other poisonous bite.

Exclusion Criteria

1. Chronic poisoning
2. Idiosyncratic reactions to drug

3. Food poisoning

Data Collection

Children admitted with history of poisoning in PICU during study period will be studied regarding age, sex, social demographic data.. Informed consent obtained from parents and care givers of the children before including them in the study. Details of the poison will be noted as, name, type of agent, time of arrival to hospital after poison exposure, manner of poisoning. Clinical examination will be done by seeing vital signs, systemic examination of CVS, RS, Abdomen, CNS. Necessary investigations will be done according to the type of poisoning. Intervention done, complications and outcome were noted.

Results

A total of 50 study subjects were enrolled for the purpose of the study during the study period.

Table 1 : Social Profile of the study subjects

		Frequency	Percentage
Age Group	< 1 year	2	4%
	1-3 year	31	62%
	3-6 year	8	16%
	6-9 year	7	14%
	>9 year	2	4%
Gender	Male	29	58%
	Female	21	42%

The mean age of the study subjects in our study was 4.3 $\pm$3.5 years of age, with majority (62%) of them between 1 to 3 years of age , 16% were between 3 to 6 years of age , 14% between 6 to 9 years of age and 4% were aged more than 9 years of age. Nearly 58% of the study subjects were male and 42% were female in the present study .

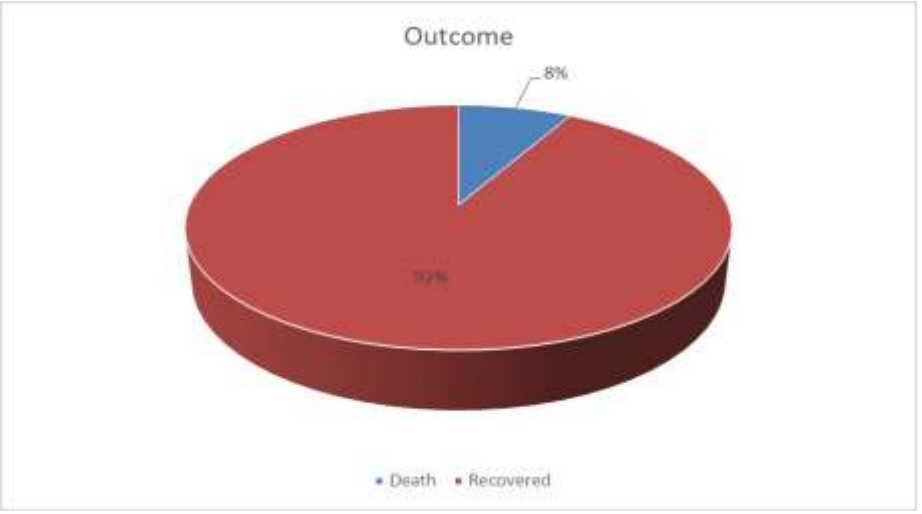
Table 2: Distribution of study subjects based on the type of Poisoning

		Frequency	Percentage
Type of Poisoning	Insecticide	11	22%
	Drugs	4	8%
	Corrosive	3	6%
	Pesticide	2	4%
	Plants	6	12%
	Hydrocarbon	19	38%
	Unknown	5	10%
Route of Absorption	Oral	49	98%
	Injection	1	2%
Duration between poisoning and	< 1 hours	5	10%
	1-6 hours	40	20%

presentation	>6 hours	5	10%
Duration of Hospital Stay	0-2 days	17	34%
	2-4 days	24	58%
	>4 days	9	18%

Most common poisoning was seen with hydrocarbon compound in nearly 38% of the subjects followed by insecticide in 22% , Consumption of poisonous plants in nearly 12% and unknown substance in 10% of the subjects . Nearly 98% of the subjects route of poisoning was found to be oral and 2% through injection route . Nearly 10% of them presented with signs and symptoms within one hour after consumption and 20% within 1-6 hours and 10% after 6 hours of consumption.. More than half nearly 58% of them had stayed in hospital for nearly 2 to 4 days and 34% of subjects duration of stay was less than 2 days and 18% stayed for more than 4 days in the present study.

Figure 1 : Graph wise distribution of study subjects based on the Outcome



In the present study nearly 92% of the subjects recovered and got discharge and 8% of the subjects outcome was with the mortality.

Table 3: Distribution of study subjects based on the Presenting symptoms.

Symptom	No. of cases	%	p- value
Vomiting	36	72%	0.00
Altered sensorium/Unconsciousness	19	38%	0.00
Restlessness	17	34%	0.00
Odour	13	26%	0.00
Headache	08	16%	0.12
Pain abdomen	16	32%	0.26
Respiratory distress	15	30%	0.38
Convulsions	06	12%	0.61
Giddiness	05	10%	0.56

The most prevalent symptoms at the time of presentation were vomiting (which accounted for 72 percent of cases) and altered sensorium (which accounted for roughly 38 percent of cases). In 34% of the instances, there was a feeling of restlessness. In 26% of instances, there was a strong odour of poison. Headache and abdominal pain occur in 16 percent and 32 percent of patients, respectively. In 12% of instances, respiratory distress was present at the time of presentation. Convulsions and giddiness were seen in 12% and 10% of patients, respectively.

Discussion

Children's poisoning is a leading source of sickness and mortality in underdeveloped nations such as India. The most instances are found in the 1-3 year old age group, followed by the 3-6 and 6-9 year old age groups in this study. In Manas Pratim Roy et al's study, poisoning was most common in children aged 1 to 5. [13] According to various literature publications, children under the age of five have been disproportionately affected. [14,15] The high prevalence among children under the age of five years is due to their curiosity, increased oral exploration activities, and newly acquired mobility and hand abilities, since they are unable to distinguish between hazardous and innocuous substances. Children above the age of 5 are at danger, according to a research performed by Vinayak Y.Kshirsagar et al in Maharastra.[16]

In terms of sex preponderance, men were more often in the under-5-year-old age group, however female predominance was shown in the teenage age bracket; with overall female predominance, although other research revealed overall male occurrence.[3,10] Hydrocarbon poisoning is the most prevalent kind of poisoning, with kerosene oil being the most common agent implicated. It demonstrates that kerosene is the most frequent domestic fuel used by lower middle-class households, and that because it is kept in bottles on the kitchen floor, children readily drink the bottles as water or play with them out of curiosity. Other research from Moradabad performed by Ravi Gangal et al [19] and Mahvish Qazi et al [20], revealed insecticides and pesticides to be the most often ingested material, while another study conducted in Pakistan [21] found pharmaceuticals to be the most prevalent poisoning agent. Mineral spirit or paint thinner, which is commonly used with paints for painting homes, is the second most common agent involved. It's also included in the hydrocarbons category. Children inadvertently drank it as water. This sort of poisoning was discovered in the families of children who worked on construction sites. The second most prevalent poisonous substance is Ant killer chalk, rat killer paste, anti-mosquito liquid, camphor, and lice killer are all typical household poisons. Organophosphate is the second most prevalent poisoning agent. It is attributed to the rural population that is based on agriculture. Narayana Prasad Modi et al study [22] and Mahvish Qazi et al [20] showed similar results. Though oleander seed and mushroom poisoning is more prevalent in adults, a considerable number of instances have been reported in adolescents.

The poisoning and presentation took an average of 3.5 hours. The majority of the children in this research (79.7%) arrived at the hospital within 1-4 hours. Within 4-6 hours, 7.8% of patients arrived at the hospital. Kohli et al [12] conducted a research that was comparable to this. The most prevalent method of presentation

in this research was vomiting, which was followed by both local and systemic reactions to the bite site, odour of poison, altered sensorium, cough, and children with respiratory distress. Cellulitis, cholinergic symptoms, cough, tachypnea, altered sensorium, and seizures were all prevalent symptoms. Cough and respiratory discomfort are common symptoms of kerosene and mineral spirit intoxication. Children in our research received a variety of treatments. As demonstrated in the research by Kholi et al[12]., the majority of the patients were treated with supportive therapy such as gastric lavage, oxygen, intravenous hydration, and other supportive therapies.

The average stay in the hospital was 2.5 days. Because there isn't much time between presentation and poisoning, supportive interventions and antidotes were successful. In a Nigerian research, the average hospital day lasted 0.66 days, compared to 3.8 days and 3.78 days in Buthathoki et al's study. [23] In our study, 98 percent of youngsters who had been poisoned survived and were released. Only 2% (n-1) of the instances resulted in death. This study's mortality was similar to those of earlier research [24,25,26.]

Conclusion

Childhood poisoning, like other medical crises, is a paediatric medical emergency that results in high death and morbidity in children. Because of their inventive nature, curiosity, mouthing inclinations, and exploring nature, most unintentional poisoning occurs in children under the age of five. The majority of unintentional poisonings may be avoided with basic precautions, lowering the substantial fatality rate among children poisoned. Due to the location of our centre, which is bordered by many rural regions, kerosene is still the most prevalent agent implicated in paediatric poisoning, followed by paint thinner. Negligence and ignorance are the leading causes of paediatric poisonings, which can be avoided by paying closer attention at home. Because there is currently no community-based childhood poisoning prevention programme, basic preventative measures such as parent education, safe storage, child-proof containers, and adequate medicine placement might help to reduce death and morbidity in children who have been poisoned.

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