

FREQUENCY OF PATTERNS AND RISK FACTORS OF ACUTE ACCIDENTAL POISONING AMONG CHILDREN OF AGE 5-10 YEARS

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Abstract

Background & Objective: Poisoning in children is a leading cause of fatalities across the globe; around 2% of injury related deaths are incriminated due to accidental poisoning in the developing countries. The objective of this study was to determine the frequency of patterns and contributing factors of acute accidental poisoning among children of age 5-10 years.

Methods: A cross-sectional type of study was done at the Jinnah Hospital, Lahore from November 20, 2018 to May 20, 2019. All accidental poisoning patients were enrolled. General and specific management steps were carried out in all the cases. After discharge they were kept on follow up in Pediatrics Outdoor Patient Department. Information regarding their demographic data was noted in the proforma. The patterns and contributing factors of acute accidental poisoning among children were identified. SPSS v23.0 was used to assess the obtained data.

Results: Age range in this study was from 5 to 10 years. Mean age of child was 7.3 ± 1.6 years. Among 145 children, 89(61.4%) were males and 56(38.6%) were females. The result of the study were unsafe storage of household poison 94(64.8%), inadequate supervision 91(62.8%), working mother 49(33.8%), low SES 19(13.1%) and illiterate mother 13 (9.0%).

Conclusion: Unsafe storage of household poison 94(64.8%) was the most common factor followed by inadequate supervision 91(62.8%), working mother 49(33.8%), low SES 19(13.1%) and illiterate mother 13 (9.0%). There is a need to arrange health promotion and protection programs at various levels through projects, brochures and electronic media campaigns so that the awareness of parents can be raised regarding accidental poisoning and they can observe preventive measures in the future to reduce its incidence.

Keywords: Acute Accidental Poisoning, Children, Patterns, Risk Factors.

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The reports of Institute of Medicine in the United States show that the incidence of poisoning is around 4 million cases per year, with 300,000 requiring hospitalization and around 30,000 fatalities.² About

130,000 to 140,000 exposures are reported to the American Association of Poison Control Centers (AAPCC)³ for children 6 to 12 years and 150,000 to 170,000 exposures for teenagers 13 to 19 years.^{4,5}

Around 90 percent of poisoning cases are reported at homes.^{3,5} Most of the poisonings predominantly involving young children are categorized as unintentional (e.g., exploratory ingestions, therapeutic errors).^{4,5} Pharmaceutical agents commonly associated with fatalities in this age group included analgesics (e.g., acetaminophen, oxycodone, hydrocodone, fentanyl) and antidepressants. Fumes/gases/vapors (primarily carbon monoxide), analgesics, cardiovascular drugs, antidepressants, and antihistamines are more often

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involved in fatalities in children of 5 and less than 5 years of age.⁵ The incidence of poisoning for over-the-counter cough and cold preparations among young children dropped drastically after the introduction of warning labels on these products.^{6,7}

Poisoning is a financial burden to society.⁸ Results of a study portray that for every \$1 spent on the poison control center activities, it saved approximately \$6.50 in the Medicine costs.⁸ Data of multiple studies reflects that poison control centers reduce the health care spending.⁹

Poisonings like other injuries and accidents are preventable events. Research is needed on the events involved in accidental poisoning, safety measures and precautions to reduce the frequency of poisonings and its improved emergency care management. Accidental poisoning in children is a common reason of admission in emergency department and is documented in around 2% of all the injury related fatalities in children.¹ Awareness programs regarding the prevention of poisoning and its hazards can be made using the results of this study.

METHODS

At the Pediatrics Department, Jinnah Hospital, Lahore a descriptive cross sectional study was conducted from November 20, 2018 to May 20, 2019 after the approval of synopsis 145 cases those who met the inclusion criteria were selected using Non-Probability Consecutive Sampling, calculated using 95% confidence level with 5% margin of error and taking an expected percentage of food poisoning as 12.6% in children with acute accidental poisoning.¹⁰

Patients of either gender both male and female of ages between 5-10 years diagnosed with acute accidental poisoning were included. Children with insect bite, chronic poisoning and children whose parents were not giving consent were excluded.

Study was started after taking permission from the institutional ethical committee. All accidental poisoning cases of 145 children who fulfill inclusion and exclusion criteria were recruited for the study.

The details of the study and its associated benefits and risks were explained and then written informed consent was taken from the parents / guardian. Steps of general management, stabilization of vitals (ABCs), correction of hydration, acidosis, hypoglycemia, etc. were done in all the cases. Particular special measure-ments like decontamination, gastric lavage, administration of activated charcoal and antidotes were done and tailored according to the need. They were given suitable treatment and discharged. Interview was taken from the parents in the outpatient and indoor department in which the name, age, gender, patterns and contributing factors of acute accidental poisoning among children were noted down in the proforma.

Data from the questionnaire proforma was entered in SPSS version 23.0 for analysis. Numerical variable which includes age was shown as a mean and standard deviation. Qualitative descriptive variables which here imply gender, patterns of accidental poisoning (kerosene, cleaning products, drugs, pesticides, food poisoning), illiterate mother (no formal education), low socio-economic status (<10,000/month), working mother (working ≥36 hours/week), unsafe storage of household poisons, inadequate supervision (if both the parents are working) were shown as frequencies and percentages. Stratification of the data was done for age and gender of children to sort out the issue of effect modifiers. $p < 0.05$ was taken as statistically significant and after the stratification of variables Chi-square test was applied.

Table 1: Frequency of patterns of acute accidental poisoning

Variable n:145	Frequency	Percentage
Type of Poisoning		
Kerosene	39	26.9
Cleaning products	32	22.1
Drugs	29	20.0
Pesticides	25	17.2
Food poisoning	20	13.8
Demographic data	Frequency	Percentage
Male	89	61.4
Female	56	38.6
Children age 5-7 years	77	53.1
Children age 8-10 years	68	46.9

A total of 145 children with acute accidental poisoning were included. Age range in this study was from 5 to 10 years and mean age of child was 7.3 ± 1.6

Table 2: Stratification of risk factors of acute accidental poisoning with respect to age groups

Risk factors of acute accidental poisoning n:145	Age Group		p-value
	5-7 years	8-10 years	
Illiterate Mother n:13	7 9.1%	6 8.8%	0.955
Low Socio-Economic Status (SES) n:19	14 18.2%	5 7.4%	0.034
Working Mother n:49	19 24.7%	30 44.1%	0.014
Inadequate Supervision n:91	52 67.5%	39 57.4%	0.206
Unsafe Storage of Household Poisons n:94	52 67.5%	42 61.8%	0.468

Table 3: Contributing factors of acute accidental poisoning

Contributing factors n:145	Frequency	Percentage
Unsafe Storage of Household Poisons		
Yes	94	64.8
No	51	35.2
Inadequate supervision		
Yes	91	62.8
No	54	37.2
Working mother		
Yes	49	33.8
No	96	66.2
Low socioeconomic status(SES)		
Yes	19	13.1
No	126	86.9
Illiterate mother		
Yes	13	9.0
No	132	91.0

years.

According to stratification of the risk factors of acute accidental poisoning with respect to age, there was a significant difference between age groups (illiterate mother = 0.955, low SES = 0.034, working mother = 0.014, inadequate supervision = 0.206, unsafe storage of household poison = 0.468).

DISCUSSION

The results of our study are equivocal with a study

done at the Poisoning Unit of a University Hospital in Egypt. The results of this study as per say kerosene was implicated in 24.3% cases, Other patterns of accidental poisoning were cleaning products 14.6%, drugs 23.3%, pesticides 13.5% and food poisoning 12.6%. The risk factors of acute poisoning were 10.5% children of working mothers, 83.3% children with no nursery training, 62.5% male children, and 31.2% low level of education of the mothers.¹⁸ These are synchronous with our findings.

Another study was done in the rural community of Sri Lanka it was concluded that kerosene was involved in 50% of all the cases, next in order pharmaceutical products 14.3% and chemicals 12.9%. The biggest risk factors found in the study were insufficient supervision 83%, employed mother 22.7%, lack of family support 40.7% and unsafe storage of poisons 56%.¹⁹ These results are in harmony with our study.

Studies conducted by Andiran & Sarikayalar¹² in Turkey showed that there were 489 poisoning cases. There was a male preponderance of the cases under 7 years of age. Results of various studies have shown that children less than 7 years were involved in 51.4% - 73.3% of all the poisoning cases observed in Turkey.¹²⁻¹⁵

Another study done by Ozdogan et al.¹⁵ on poisoning its results established that the topmost incidence of poisoning was in children in the age group of 5 to 7 years.

A study done in Iraq¹⁶ showed that for children below 7 years, the chief cause of poisoning was kerosene (56.2%) in congruence with our study, proceeded by drugs and insecticides. The results of our study conclude that 26.9% of the studied cases were poisoned by kerosene. Kerosene oil is the commonest dangerous substance ingested accidentally by children worldwide across the globe in countries like Pakistan,¹⁷ India,¹⁸ Sri Lanka,¹⁹ Kuwait,^{20,21} Austria²² most likely due to the exploring nature of children under 7 years of age.

CONCLUSION

Acute accidental poisoning is a major pediatric

medical emergency with implications on morbidity and mortality in this age group. Health promotion programs involving print and electronic media with poisoning awareness campaigns and guidelines on child safety at home are needed to increase parents' knowledge, understanding and awareness regarding accidental poisoning and to reduce its incidence among children.

Conflict of interest None

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