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Childhood Accidental Poisoning In South India

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Abstract: *In spite of successful interventions and safety measures to prevent accidental poisoning in paediatric population, toxic exposure continues to be a common occurrence. [1-4] By definition, poisoning is exposure of an individual to a substance that can cause symptoms and signs of organ dysfunction leading to injury or death.[5] A prospective observational study was done from March 2014 to February 2015. The study was conducted at the Paediatric Emergency Unit at Mahatma Gandhi Memorial Hospital, Warangal. All patients under 12 years who visited the emergency department with a history of accidental exposure to toxic substances were included in the study. Age group between 1-3 years was found to be more with percentage of 62.19%. . Male population 89 (54.26%) was found to be more in number when compared to female population 75(45.73%). Rural population was found to be more in number in accidental exposure with a percentage of 78.04%. At home place childhood was found to be more poison exposure when compared to outside home. accidental poisoning was more (98.17%) when compare to intentional poisoning (1.82%). Kerosene poisoning (36.58%) was found to be large in number and paracetamol and others (6.09%) was found to be less in number.*

Keywords: *Pediatrics, Poisoning, Kerosene*

I. Introduction

In spite of successful interventions and safety measures to prevent accidental poisoning in pediatric population, toxic exposure continues to be a common occurrence.[1-4] By definition, poisoning is exposure of an individual to a substance that can cause symptoms and signs of organ dysfunction leading to injury or death.[5] Epidemiological studies on accidental poisoning in children exhibit a consistent pattern regarding age and gender, being predominant in children less than 6 years of age and having male preponderance as they are more active with a drive to explore the environment.[6] The consumer product safety commission incidence shows poisoning in children was 450 per 100000 population in 1994-2003.[7] In a wide perspective, pediatric poisoning shows diverse variability that ranges from lack of maternal knowledge, improper storage of substances and insufficient supervision to curious impulsive behavior of the child.[2] Ingestion was found to be the major route of poisoning by the American Poison Control Centre.[8] The various toxic ingestions included are kerosene oil, most common in developing countries of South Asia and some parts of Africa[7,9] followed by organophosphorous compounds like pesticides specially in a country like Pakistan because of the lack of safety measures from manufacturers to caregivers. Other hazardous compounds used by young children out of inquisitiveness are pharmaceuticals like cough/cold preparations to sedatives/hypnotics. [8] Despite the latest adopted measures and safety campaigns, the number of ingested and/or toxic-related injuries from chemicals and medications continue to rise and the exact scale of problem is difficult to establish. Considering the available literature, defining and characterizing poisoning in children can be carried out by data collection of substances involved, age and gender affected and the immediate outcome in emergency room.

II. Materials And Methods

The objective of the study was to determine the pattern of accidental poisoning in the pediatric age group and their immediate outcome. A prospective observational study was done from from March 2014 to February 2015, 2007. The study was conducted at the Pediatric Emergency Unit at Mahatma Gandhi Memorial Hospital, Warangal. All patients under 12 years who visited the emergency department with a history of accidental exposure to toxic substances were included in the study. Data was obtained mainly by retrieving hospital records and the admission register. Further, the available patient files (one-year record) were also reviewed and relevant information was collected. Demographic data was recorded in each case, including age, gender, and the time of arrival at the hospital after exposure. General management steps to stabilize vitals (ABCs), correction of hydration, acidosis, hypoglycaemia, etc. were carried out in all cases. Specific measures like decontamination, gastric lavage, and antidotes were taken according to the type of poison involved and the

duration since exposure. After given appropriate treatment, they were discharged and followed up in Pediatric Outdoor Patient Department. Alternatively they left against medical advice due to their financial or domestic problems. Data thus obtained was entered and analyzed using statistical package Ms Excel 2007.

III. Results

A total of 164 children were exposed with accidental poisoning during our study.

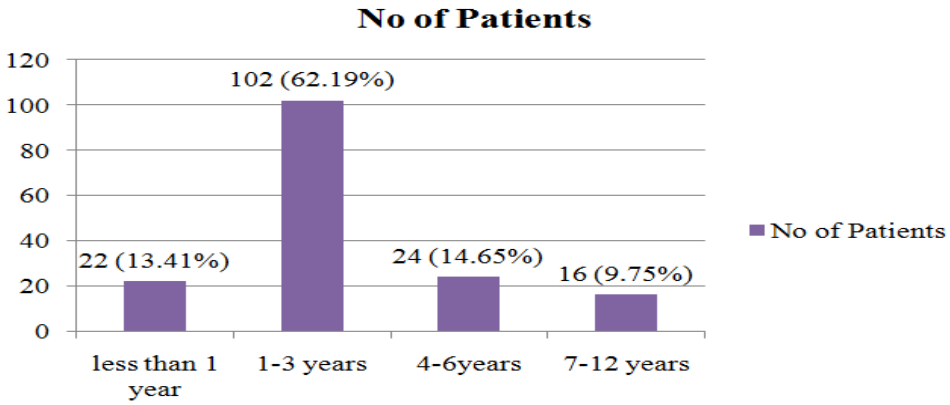

Figure 1: Age distribution

Figure 1 summarizes the age distribution. Age group between 1-3 years was found to be more with percentage of 62.19%.

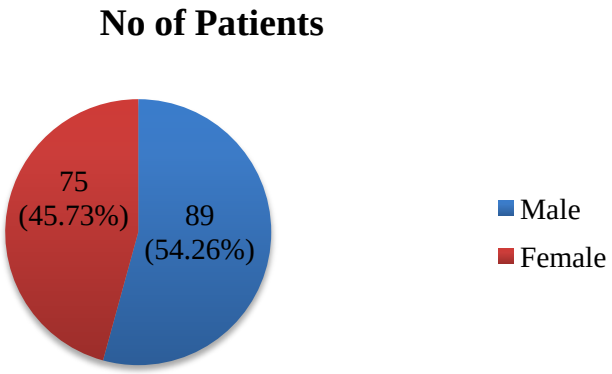

Figure 2: Gender distribution

Figure 2 summarizes gender wise distribution. Male population 89 (54.26%) was found to be more in number when compared to female population 75(45.73%).

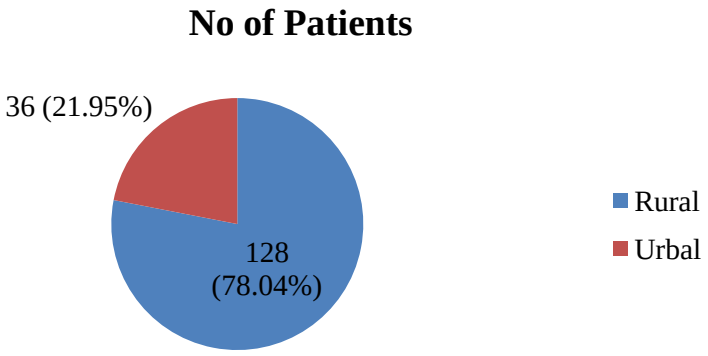

Figure 3: Area and locality distribution

Figure 3 summarizes the area and locality distribution. Rural population was found to be more in number in accidental exposure with a percentage of 78.04%.

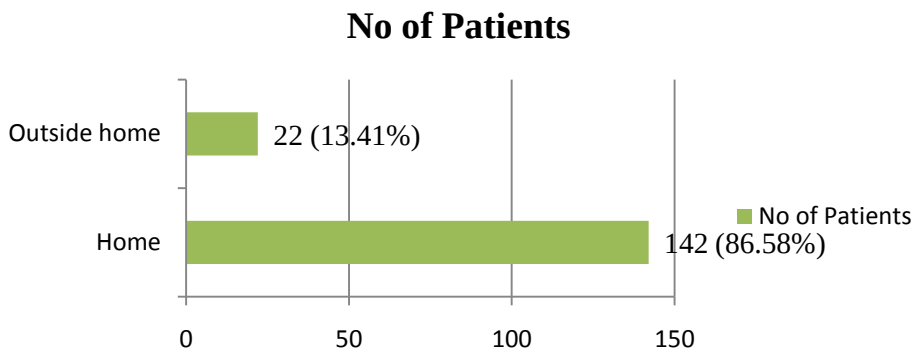

Figure 4: Place of poisoning exposure distribution

Figure 4 summarizes place of Poisoning exposure distribution. At home place childhood was found to be more poison exposure when compared to outside home.

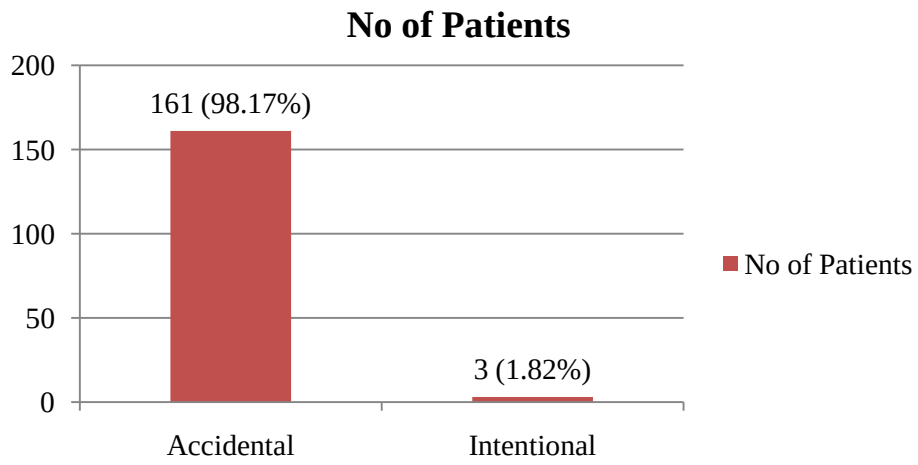

Figure 5: Nature of Exposure

Figure 5 summarizes accidental poisoning was more (98.17%) when compare to intentional poisoning (1.82%)

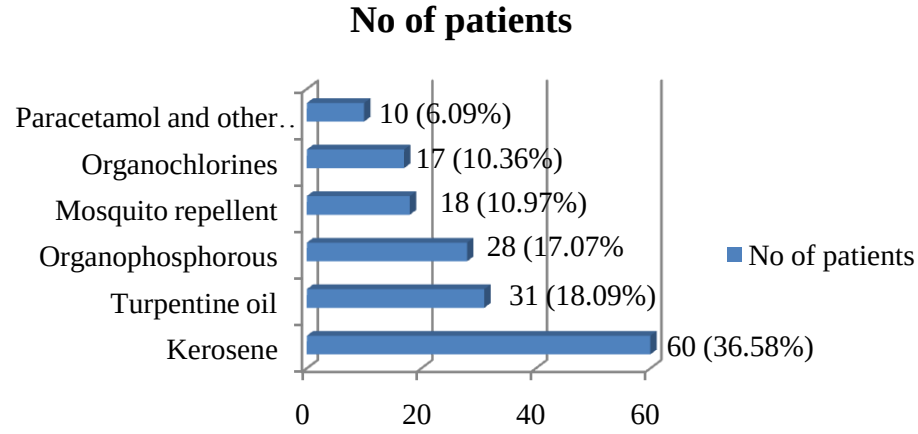

Figure 6: Distribution of Substances

Figure 6 summarizes distribution of substances. Kerosene poisoning (36.58%) was found to be large in number and paracetamol and others (6.09%) was found to be less in number.

IV. Discussion

There were 164 cases with acute poisoning seen during our one-year study. This seems to be equal to other local studies that have quoted about 60 and 30 admissions per year from three teaching hospitals of Lahore and Karachi respectively.[10,11] Unintentional poisoning exhibits strong age stratification. The problem is particularly acute in toddlers and older children. Children belonging to this age group are extremely keen to explore the environment and have acquired the mobility to do so. Children of these ages also possess strong oral orientations.[12] Most of the children in our study were less than 5 years of age as has also been observed in other studies.[8] Similarly, age is also comparable with other local and regional studies.[7] Further analyzing the age distribution among the under-5, 23.2% were below 2 years. This figure seems to be lower than other studies reported from Pakistan. [13] In our study, males were slightly higher in number. This finding is consistent with the results of most of other research studies on accidental poisoning among children.

The observation of pharmaceutical products as a group being the commonest cause of childhood poisoning is no different to other studies.[8,9,14] Other studies have shown drugs to be very important cause of poisoning, but not necessarily the leading one. A study from Japan has reported household to be the leading cause of pediatric poisoning.[15] Similar results have also been reported from India.[16] Kerosene oil is the commonest hazardous substance ingested accidentally by children living in Third World countries like Pakistan, India, [9] and Sri Lanka. [17] Kerosene is ingested accidentally by children due to their inquisitive behavior. Surprisingly, in this era of development and technology, kerosene poisoning cases are reported from industrialized cities. Kerosene oil is a hazardous substance in accordance with the definition of Environmental Protection Agency of USA. Kerosene is a petroleum distillate hydrocarbon.[9] Organophosphorous poisoning was found to be the third most common agent. This finding in our study is different from some others. [8] Organophosphorous poisoning is an important clinical problem in several countries of the world among the adult age group. The symptomatology of organophosphorous insecticides is that they irreversibly inhibit both cholinesterase and pseudocholinesterase activity. Subsequent accumulation of acetylcholine at synapse causes an initial over-stimulation followed by exhaustion and disruption of neurotransmission in both central and peripheral nervous systems.[18] Though poisoning is a common occurrence during childhood, fortunately, very few patients require hospital admission and even fewer patients need treatment in a Pediatric Intensive Care Unit.[3] The numbers in our study were comparatively higher than the West.[6] The probable cause was the lack of awareness in the community about the management of toxic ingestion.

V. Conclusion

A small percentage of children presented with acute poisoning in our study. Pharmacological agents were a common source of poisoning in children. There is a need of further studies to identify risk factors of acute poisoning in children. The key lessons include implementing admission criteria guidelines in children with accidental ingestion of toxic substance, strategic planning and educational programmes for better prevention.

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