

Accidental Poisoning In Children

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Abstract:

Accidental Poisoning in children focuses on the effect of substances caused by accidental poisonings from drugs of abuse, household products, or various other chemicals. Aim was to analyze children with accidental poisoning for the epidemiological factors; time elapsed to reach the hospital, conscious level, mode of poisoning (homicidal, suicidal or accidental), treatment and outcome. This was a retrospective study carried out in different hospitals. Method; 22 children admitted in three different hospitals of Lahore, including Jinnah Hospital, Children Hospital and Mayo Hospital during June 2009, were studied. Results; study showed that age 01- 05years is the major group involved in poisoning (59%) as compared to ages 6-10 years(23%) and age between 11-15 years is (18%) . Kerosene oil poisoning is most common (27%) followed by organophosphates, corrosives, naphthalene and unknown poisoning. Underprivileged population (55%) is more at risk of accidental poisoning in children, as compared to others. Conclusion; outcome of poisoning is directly proportional to the interval between poisoning and presentation to emergency care. Immediate access to the medical vicinity, responsible monitoring of the poisoned patients, rapid treatment and follow-ups are essential to improve the condition of poisoned patients.

Key words: *accidental poisoning, activated charcoal, gastric lavage, poison control centers*

Introduction:

Poisoning is to take a substance that is injurious to health or can cause death. An individual's medical or social unacceptable condition as a consequence of being under influence of an exogenous substance in a dose too high for the person concerned. The most common ingested substances were petroleum products. Alkaline cleaners (12.6%), Opiates (11.9%), Tricyclic Antidepressants (8.4%) and Benzodiazepines (7.7%). About 2.8% of cases were multi-drug poisoning. Opiates were the most common agents which accounted for poisoning in below 6 months old. Decreased level of consciousness (67.6%) and vomiting (50%) were the most common signs and symptoms [1].

Acute poisoning is a common medical emergency in paediatric unit. Poisoning is usually common during the summer season and kerosene was found to be most common ingredient. It was possibly due to easy availability of kerosene and during the summer months thirsty children took this substance which was sometimes kept in the discarded container of soft drinks and mineral water bottles etc. [2]. Acute organophosphorus pesticide poisoning is an

increasing worldwide problem, particularly in rural areas [3].

Iron is a leading cause of death due to poisoning in young children. Because prenatal iron therapy is common, the association between iron poisoning in young children and the birth of a sibling is explored. Pregnancy is a major risk factor for iron poisoning in young children, and the period immediately after delivery is associated with the greatest risk [4].

Mostly parents are unaware of poisons within plants. The top 6 plants that most commonly are the source of exposure to toxic substances are the pepper plant, peace lily, philodendron, holly, poinsettia, and pokeweed. Signs and symptoms of ingestion include burning and irritation of oral mucosa, nausea, vomiting, gastric irritation, jitteriness, breathing difficulties, and change in level of consciousness [5]. Wherever possible the constituents of the substance ingested and its dosage per kilo body weight should be identified as accurately as possible. In younger children the substance taken is often easily identifiable but the dosage can be difficult to ascertain. Some idea of the maximum amount of substance that could have been ingested can be gathered from comparing the number of

tablets, or volume of liquid remaining, with details on packaging [6].

Children with caustic ingestions in developing countries are often treated at home, or are referred, frequently late, to tertiary hospitals, which only seldom offer adequate endoscopic and dilatation facilities. When dilatations are performed, the stricture is often already well established, making dilatation more difficult. The mean interval between ingestion and endoscopy was 8.8 months. Recurrent strictures and a long-term dilatation treatment should be expected [7]. Special emphasis is given to the phenomenon of recurrent or repeat episodes. Recommendations are made concerning means for identifying children who are at risk for repeat poison episodes, as well as for developing methods of intervention to prevent such occurrences [8]. Accidental poisoning of children leading to death has been reduced because patterns of drug prescriptions have changed, packaging of dangerous drugs has been made safer [9]. Prevention of accidental poisoning is an important phase of major health problems. Poison control centers supply up-to-date information on treatment and toxicity to physicians and are in a position to encourage education and research as part of the program of prevention [10].

Material and methods:

22 children, aged less than 15 years exposed to poisons and admitted to Jinnah hospital, Mayo hospital and Children hospital, Lahore during the month of June 2009 were studied. Patients were admitted to the hospital's emergency department on exposure to poisonous substances and after necessary medical aid were either discharged or were referred to the respective wards for further medical procedures. For all patient, different parameters on sociodemographic basis including age, gender, socioeconomic status, level of education, types of poison, chances of survival, response time, and risk factors

as well as the quality of services provided to patients in different hospitals were documented.

General management of poisoning included supportive care and ABC's, treatment obtaining a history of exposure, vital signs assessment, routine lab assessment, toxicology lab assessment, use of antidotes, skin decontamination, gastric decontamination, whole bowel irrigation, post diuresis and urinary pH manipulation, dialysis and hemoperfusion.

Gastric lavage was considered in patients with massive ingestions. Lavage was performed after a cuffed endotracheal tube was in place to protect the airway. After aspiration of the gastric content, 250-300 ml of tap water or saline was instilled and then aspirated. The sequence should be repeated until the return was continuously cleared to at least 2 liters. Procedure was contraindicated in patient who have ingested acids, alkali or hydrocarbons. Activated charcoal absorbs all ingested drugs and chemicals and was usually administered to most over dose patients as quickly as possible. Child dose is 25-50 gm. Some ingested substances not absorbed were ethanol, iron, lithium, cyanide, lead, mercury, organic solvents, strong acids and alkalies.

Results:

22 poisoned children under age 15 years were studied. Fig 1 reveals that kerosene was the most poisonous substance nearly affecting 27% of poisoned population. Corrosives and unknown poisoning encountered the second- highest position (23%). While organophosphate poisoning ranked on 9% was followed by petrol and naphthalene. Fig 2 shows that majority of the children who encountered accidental poisoning were survived (91%) due to immediate response of the parents. Fig 3 indicates that young children under 5 years (59%) were more at risk to be poisoned

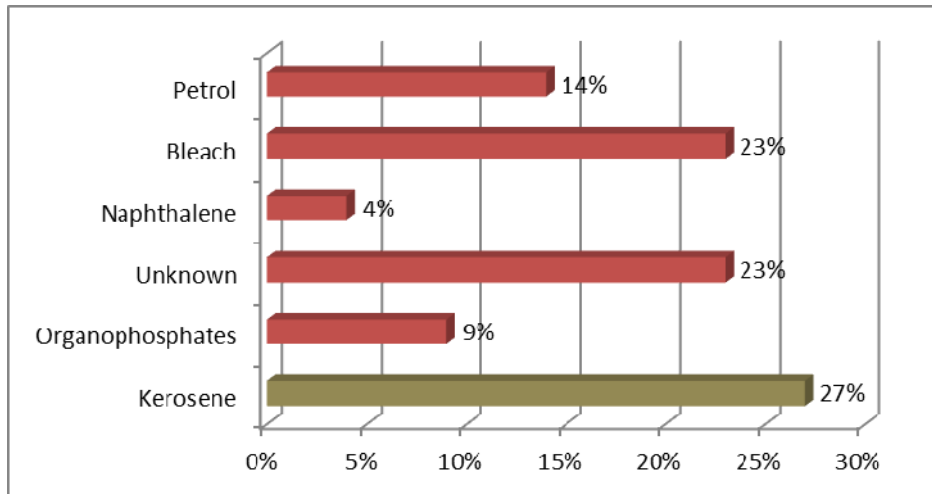


Fig 1: Common poisonings in children

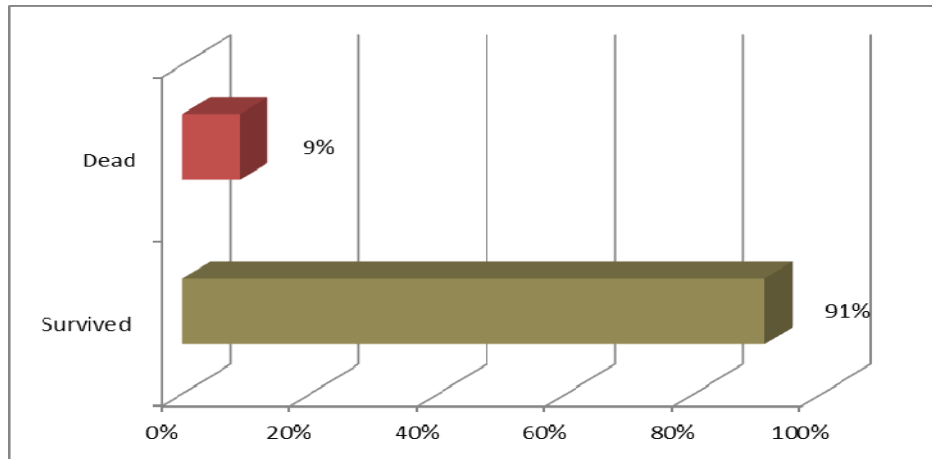


Fig 2: Mortality rate due to accidental poisoning

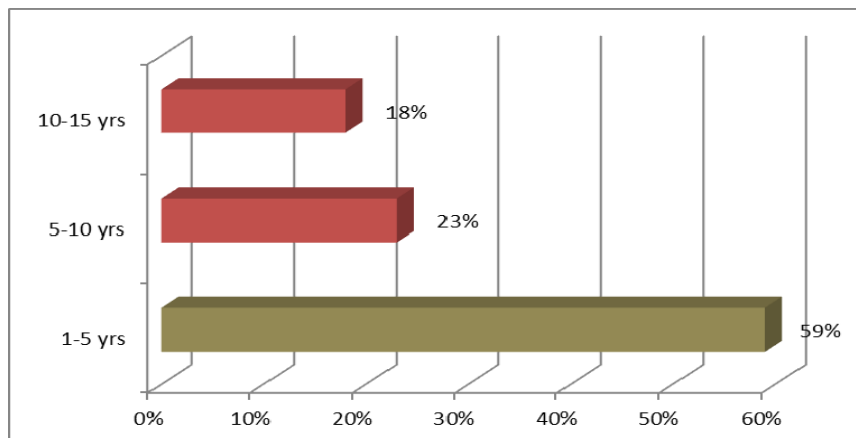


Fig 3: Prevalence of poisoning in different age groups

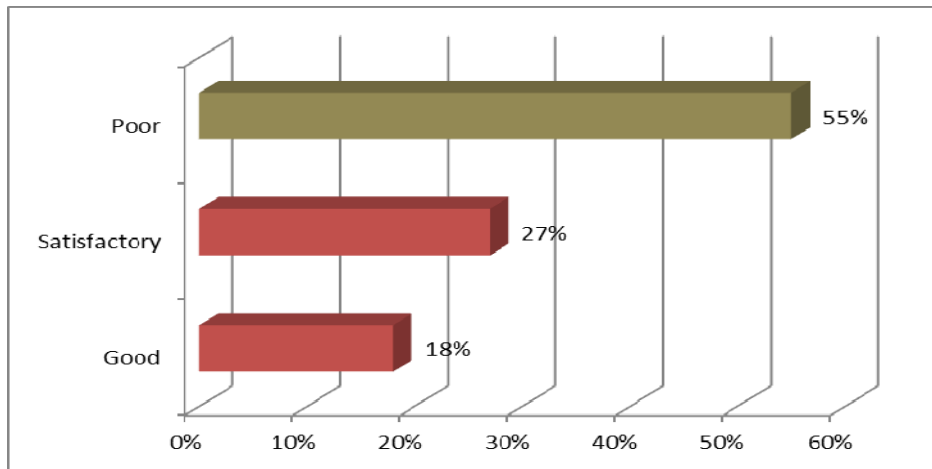


Fig 4: Socioeconomic status

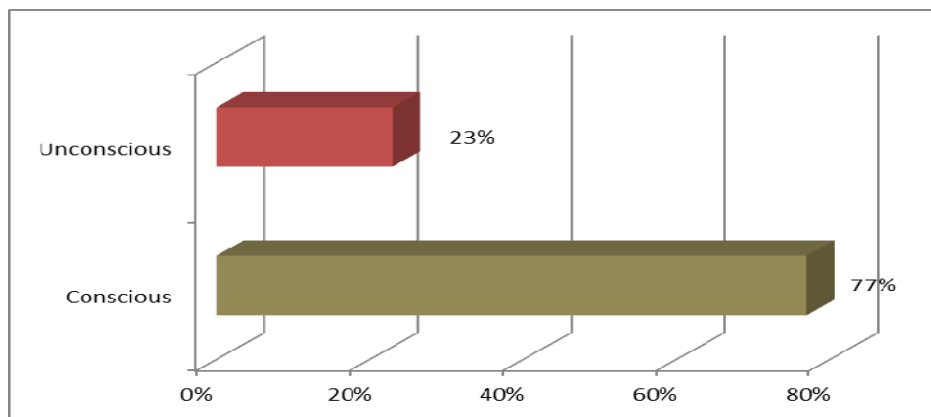


Fig 5: Level of consciousness

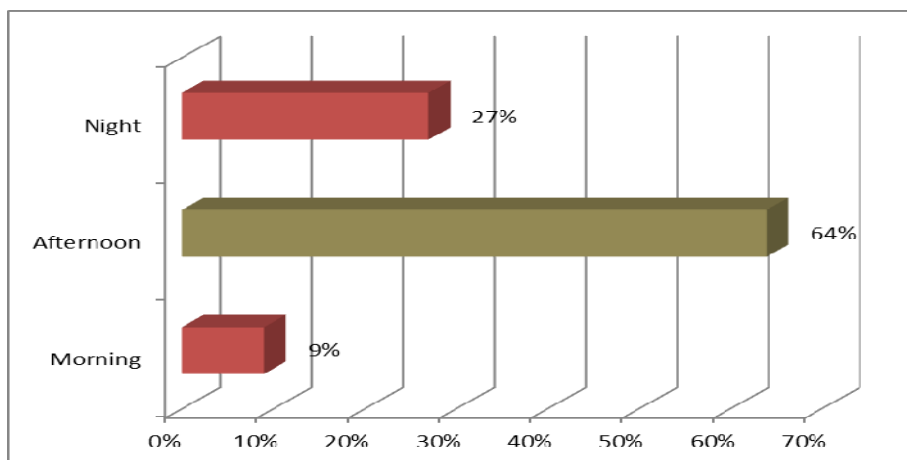


Fig 6: Poison cases admitted Vs time

accidentally as compared to 5-10 years (23%) and 11-15 years (18%).

In Fig 4, Socioeconomic status reveals that underprivileged children (55%) were more prone to accidental poisoning. Fig 5 shows that majority of poisoned patients are conscious (77%) irrespective of the type of poisoning. Fig 6 illustrates majority of the cases of accidental poisoning were admitted in the afternoon (64%) and at night (27%), lesser cases were admitted in the morning (9%).

Discussion:

Accidental poisoning in children usually occur with household items, cosmetics, cleaning substances ,analgesics, plants, pesticides, vitamins, arts and craft supplies in home and also with hydrocarbons or with other drugs. Early assessment and management of poisoning should be done to provide core emergency medicine competency. Emergency medical services should be immediately contacted to provide advanced life support for patients with unstable vital signs resulting from a poisoning exposure. Emergency monitoring of patient with suspected poisoning requires checking the level of consciousness including Airway, Breathing, and circulation. Vital signs include heart rate, pulse rate, respiratory rate, blood pressure and glucose level.

In some cases, the substance taken is often easily identifiable but the dosage can be difficult to determine. Some idea of the maximum amount of substance that could have been ingested can be gathered from the child's immediate environmental conditions. The unknown poisoning is dangerous. By taking careful history combined with a physical examination and simple laboratory and clinical tests, the physician can both correctly diagnose and treat most ingestion in a rational and effective manner. The management of acute poisoning with universal antidote activated charcoal is a

valuable technique and very effective method for reducing the absorption of many poisons.

Acute organophosphorus pesticide poisoning is an increasing worldwide problem, particularly in rural areas. People are unaware about safe handling of pesticides and their safe storage from children. In caustic ingestions emesis is avoided due to their corrosive action on esophagus and stomach lining. However, most of children with caustic ingestions are often treated at home, or are referred, frequently late, to hospitals. Therefore, when dilatations are performed, the stricture is often already well established, making dilatation more difficult. Prevention of accidental poisoning is an important phase to avoid major health problems. Pharmacist could be able to avoid accidental poisoning of children by counseling the parents, by providing knowledge about the poison substances and their safe storage and use. Also by changing the drug prescriptions patterns, by making the packaging of dangerous drugs safer, and substances such as kerosene should be colored. Repeated episodes of poisoning in children should be avoided.

Conclusion:

Poisoning should be managed by maintaining vitals, level of consciousness and other parameters. Absorption of poison can be minimized by doing emesis, gastric lavage with universal antidote activated charcoal except in hydrocarbon and corrosives poisoning. The most vulnerable population exposed to poisoning is usually children of age 1-15 yrs. The incidence of poisoning ratio is highest for kerosene oil. Mortality rate is usually more with organophosphate compounds. Outcomes can be improved, by identifying the substance ingested, route of exposure, amount of time poison was since ingested, signs and symptoms and any associated illness or injury, the name of product and strength,

immediate access to emergency medical services (EMS). Pharmacist plays a vital role in creating awareness to the public about immediate poison management, counsel the patient as well as guidelines to their caregivers and providing information to doctors about antidotes to specific poisons.

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