



Factors Leading to Accidental Poisoning in Children Presenting in Tertiary Care Hospital.

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Abstract: Background. Poisoning can be defined as the ingestion or other contact with one or more substances that are detrimental to human health. Childhood poisoning is the leading causes of morbidity throughout the world. **Objective:** To determine the factors leading to accidental poisoning in children presenting in a tertiary care hospital. **Methods:** It was a Cross Sectional study done from February 2022 to August 2022. 200 children were selected from department of pediatrics unit II Mayo hospital Lahore. Children were recruited from Emergency of department of pediatrics unit II Mayo hospital Lahore. Socio-Demographic characteristics like age, sex, type of poison ingested, mothers education level, socio-economic class, easy accessibility to poison, family system and number of siblings were also recorded. **Results:** The mean age of the children was 5.41 ± 2.56 years. There were 120(60%) male and 80(40%) female children. There were 90(45%) children whose socio economic class was low, 117(58.5%) children living in isolated family system and 118(59%) mothers were illiterate in this study. There were 71(35.4%) children who had siblings more than five. There were 62(31%) children reported with acid poisoning, 70(35%) with alkali, 68(34%) with kerosene. **Conclusion:** Accidental poisoning in children occurs frequently, according to this study. It was more typical for isolated family structure, having more than five children, and mothers' literacy levels. Therefore, it is appropriate to launch a public awareness campaign, and increasing the usage of child-resistant storage containers for dangerous chemicals is a crucial preventive strategy that demands more attention

Keywords: Accidental poisoning, Children, Tertiary care hospital

1. Introduction

Poisoning is defined as the ingestion or other contact with one or more substances that are detrimental to human health. Poisoning in Childhood is one of the leading causes of morbidity in the world (Alazab et al., 2013). The curiosity of children is the main cause of high prevalence, especially those under the age of five, to actually taste or swallows contaminants. (Haghighat, Moravej, & Moatamedi, 2013). Depending on the environment, a different assault chemical is applied. Although the clinical outcome of these exposures is typically favorable, fatalities sometimes happen. (Rathore et al., 2013). Most people lack knowledge about addiction, so it is important to educate them utilizing all available media, including written, electronic, and other medical education approaches (Azemi et al., 2012)

Several factors are involved in accidental poisoning in children. A study has shown that among children presented with accidental poisoning, 73% had illiterate mother, 80% belonged to low socio-economic class, 76% had easy accessibility to poison, and 15% had >5 number of siblings. (Manzar et al, 2010a) . Another study showed that in children presented with accidental poisoning, 52% had illiterate or primary education of mother, 72% belonged to low socio-economic class and 41% living only with parents (isolated family) (Osaghae & Sule, 2013). Another research

found that the most common risk factors for unintentional poisoning were women with just a high school diploma or less (80.20%) and the availability of dangerous substances in situations where they were easy to get (75% of cases) (Saleem et al., 2015).

The purpose of the current study is to identify the most common causes of accidental poisoning in children who are admitted to hospitals that offer tertiary support and care. According to published research, the most frequent causes of child poisoning are illiterate mothers, low socioeconomic position, and easy availability to poison. Although there is a lot of national and international research and knowledge on the subject, it has been found that unintentional poisoning still happens often in pediatrics emergency rooms and has a high death rate. Therefore, our research's goal is to determine the exact burden of factors as stated above. In order to avoid children from suffering harmful effects of unintentional poisoning, we must create techniques for educating parents about deadly materials in the future.

2. Materials and Methods

Accidental poisoning was defined as if child ingests corrosive material including, acid, alkali, kerosene oil, pesticides, insecticides, or medicines (tablets and syrups). Child presenting with symptoms i.e. vomiting, drowsiness, distress pinpoint pupil, loss of coordination or loss of consciousness. The other symptoms include shortness of breath, difficulty swallowing, coughs, rashes and low blood pressure with palpitations.

2.1 Factors

They were measured as follows: Illiterate mother: if mother was illiterate and do not have knowledge about corrosive or poisoning material on history

1. Low socio-economic class: if child belong to low SES (<10,000/month income)
2. Easy accessibility to poison: if poison was on floor/ground, or on table approachable to child in kitchen or store
3. Isolated family system: if child belong to isolated family system. No grandparents or guardians to take care of baby except mother
4. Number of siblings>5: if parents have >5 number of children

This present study is a cross-sectional research and it was conducted at the department of pediatrics, unit II, Mayo hospital Lahore. The study was conducted From February 2022 to August 2022. Sample of was 200 children calculated using poisoning expected percentage of 15% with accidental poisoning.

2.2 Sampling

Non-Probability, convenient Sampling technique was used. Children of age 1-10years of either gender presenting with accidental poisoning. Children given poison intentionally child abuse or attempt murder was excluded. Children were recruited from department of pediatrics unit II Mayo hospital Lahore. Parents were informed about the purpose of the study and their consent was obtained before data collection. Details regarding demographic such as name, gender, age and type of poison ingested were also obtained. Then parents were asked about the factors including mother's education level, socio-economic class, and easy accessibility to poison, family system and number of siblings.

2.3 Data Analysis

Data was analyzed using the SPSS version 20.0. Mean and Standard deviation of the demographic variables like age and duration of poison ingested was calculated. Frequency and percentage was calculated for categorical variables like gender of child, type of poison and factors including illiterate mother, low socio-economic class, easy accessibility to poison, isolated family system and >5 number of siblings. P-value \leq 0.05 was considered as significant.

3. Results

The mean age of the children was 5.41 ± 2.56 years the minimum age was 1 year and maximum was 10 years. There were 120(60%) male children and 80(40%) female children in our study. There were 90(45%) children from low socio economic class and 110(55%) were not from low socio economic class. There were 117(58.5) children living in isolated family system while 83(41.5) children were not living in isolated family system. There were 71(35.4%) children who had siblings more than 5 and 129(64.6%) were having siblings less than 5. There were 62(31%) children reported

with acid poisoning, 70(35%) with alkali, 68(34%) with kerosene. In our study 118(59%) mothers were illiterate while 82(41%) mothers were Literate. Table-1

Table-1 Children's' socio demographic characteristics

Characteristics	f (%)
Age (Mean±SD)	5.41±2.56
Gender	
Male	120(60%)
Female	80(40%)
Low Socio-economic class	
Yes	90(45%)
No	110(55%)
Isolated Family system	
Yes	117(58.5)
No	83(41.5)
Siblings greater than five	
Yes	71(35.4%)
No	129(64.6%)
Type of poisoning	
Acid	62(31%)
Alkali	70(35%)
Kerosene	68(34%)
Illiterate mother	
Yes	118(59%)
No	82(41%)

Moving forward, analysis revealed that there is a significant association between gender and easy accessibility to poison as the p-value was not significant (p-value=0.036) (Table 2).

Table-2 Association between Gender and study Outcomes

Gender	Easy accessibility to poison		P value
	Yes	No	
Male	32(59.3%)	23(50.0%)	0.036
Female	22(40.7%)	23(50.0%)	

In addition to this, further analysis showed that accidental poisoning in children is significant associated with mothers' education (p value= 0.002), low socio-economic class (p value= >0.001), easy accessibility to poison (p value= 0.05) and number of sibling greater than 5 (p value=0.012). The detailed percentages and p values can be observed in Table 3.

Table-3 Association between Poisoning and study Outcomes

Poisoning	Illiterate mother		P-value
	Yes	No	
Acid	40(33.8%)	22(26.8%)	0.002
Alkaline	49(41.5%)	21(25.6%)	
Kerosene	29(24.5%)	39(47.5%)	

Poisoning	Low Socio-economic class		>0.001
	Yes	No	
Acid	25(22.7%)	37 (41.1%)	
Alkaline	31(28.1%)	39(43.3%)	
Kerosene	54(49.0%)	14(15.5%)	
Poisoning	Easy accessibility to poison		0.0528
	Yes	No	
Acid	37 (33.6%)	25 (27.7%)	
Alkaline	35(31.8%)	35(38.8%)	
Kerosene	38(34.5%)	30(33.3%)	
Poisoning	Isolated Family system		7.00067
	Yes	No	
Acid	50(42.7%)	12(14.4%)	
Alkaline	31(26.4%)	39(46.9%)	
Kerosene	36(30.7%)	32(38.5%)	
Poisoning	No. of siblings>5		0.012
	Yes	No	
Acid	29(40.8%)	31(24.0%)	
Alkaline	17 (23.9%)	55(42.6%)	
Kerosene	25(35.2%)	43(33.3%)	

4. Discussion

The results of a study conducted in Kuwait by Akhtar and colleagues (2006), were the same as those of a study done in Pakistan, which discovered that males were more likely than females to poison children (62.5%) (Akhtar, Rani, & Al-Anizi, 2006). According to current study the gender distribution was 60% males and 40% females. The mean age of the children was 5.41 ± 2.56 (minimum was 1 year and maximum was 12 years).

In 2013, Haghight et al., (2016) revealed in their study that there were more female children and less male children. However, this ratio is exactly the opposite in other investigations. Contrary to previous research from around the world, women outnumbered men in the survey by a ratio of 2:1. The male to female ratio, according to earlier surveys, was 1.09:1.8 (Manzar, Saad, Manzar, & Fatima, 2010b). Manzar et al., (2010b) discovered a 1.2:1 male to female ratio. In an Arab investigation, the male to female ratio for chemical substances was 1.5:1 while the male to female ratio for biological poisons was 1.2:1. In the age range of 1 to 7 months, males predominate. But in every other age category, women were more prevalent. In the age group of 8 months to 5 years the male to female ratio was around 1:1 (Rwimal et al., 2017).

According to a study by Alazab and colleagues in 2012, toxicology departments were investigated in 18.5% of cases of acute poisoning. In 489 cases of poisoning, the majority of victims were male and under the age of 10, according to a study done in Turkey by Andiran & Sarikayalar (2004). It was mostly ladies. 51.4% to 73.3% of all poisoning cases seen in Turkey, according to certain research, involved children under the age of five.

Putting a little foreign object, like a pill, in a child's mouth can be harmful to them at this age. 23.3% of the cases examined in this study were related to consumption, while 99.3% of the cases were oral poisonings. This could be caused by medications being improperly placed in settings where kids can easily obtain them. This might be because the medication was put in an area where it was simple to get to (Azab et al., 2016).

Kerosene is a toxic substance which can be accidentally ingested by children. Ahmed et al reported that 24.3% of the investigated cases were of kerosene poisoning. (Ahmed, Fatmi, Siddiqui, & Sheikh, 2011; Lucas, 1994). In current study 62 (31%) children reported with acid poisoning, 70 (35%) with alkali, 68 (34%) with kerosene.

Surprisingly, cases of kerosene poisoning are still being reported from developed countries despite extensive awareness on media platforms (Bandyopadhyay & Mandal, 2017). Some studies have also showed its prevalence in developing countries including India (Fernando & Fernando,

1997; Lucas, 1994) and Sri Lanka (Fernando & Fernando, 1997). Similar findings were seen in the current study; 62 (31%), 70 (35%), and 68 (34%), respectively, of the children reported poisoning by acid, alkali, and kerosene.

Its toxic effects on the body are attributed to its chemical properties. It is more aromatic, less viscous and has a lower surface tension reported in the Iraq study (Petridou et al., 1996). The most common cause of death from poisoning was hydrocarbons, again predominantly kerosene (56.2%), followed by drugs, pesticides, household products, carbon monoxide, and rat poison in the children having age less than 5 years. While researches conducted in the Arab countries like Dubai (UAE), (Dawson, 1997) Oman, (Hanssens, Deleu, & Taqi, 2001) Turkey, (Andýran & Sarykayalar, 2004) and Europe (Petridou et al., 1996) found that the cause of poisoning was drugs in children.

5. Conclusions

Accidental poisoning in children occurs frequently, according to this study. It was more typical for isolated family structure, having more than five children, and mothers' literacy levels. Therefore, it is appropriate to launch a public awareness campaign, and increasing the usage of child-resistant storage containers for dangerous chemicals is a crucial preventive strategy that demands more attention.

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