



Accidental Poisoning in Children in Bilaspur

KEYWORDS

Poisoning, Ratanjot, Hydrocarbons

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ABSTRACT *Background: Childhood poisoning is preventable problem with considerable morbidity and mortality. This retrospective study was carried out to describe the epidemiology of accidental poisoning of children with seeds, drugs and chemicals in Bilaspur Methods: In a 5 years retrospective review of accidental poisoning 273 children were admitted to paediatrics department (CIMS). The following information was collected from inpatient records: age, sex, and type of toxin, symptomatology, source of poison, time of the year, hospital stay and final outcome. Results: Most cases of poisoning involved children under the age of 4 years except of seed poisoning which was more common in children over the age of 4 years and male were slightly predominant. There were 10 deaths, 3 from organophosphorus poisoning, 1 from sulphas, 1 from kerosene, and 3 cases of unknown poisoning. Most of the children were symptomatic at presentation. Seed were the most commonly ingested substance (49.45%), followed by hydrocarbon products (21.34%), and medicines (15.38%). Hydrocarbon ingestion occurred mostly in children under 2 years of age while poisoning with seeds was more common in those over 4 years of age. No seasonal variation in the incidence of poisoning was noted. A slight decline in the incidence of poisoning during last 2 years of study was noted. Most cases of poisoning under the age of 4 years occurred at home. Conclusion: Accidental poisoning with seeds, medicinal and non-medicinal products contribute to significant morbidity and hospital admissions in Bilaspur.*

Although the incidence of serious accidental poisoning of children with seeds, drug and chemicals has declined in the developed countries, it remains a global problem and it has continued to be a major cause of considerable morbidity and significant mortality in the developing world. (1,2) Childhood poisoning is preventable as it was evident from previous research which was documented deficiencies of parental knowledge of poisoning prevention measures and their prevention practice. Epidemiological data about the pattern of childhood exposure to drugs and chemicals are needed for successful introduction of interventional programs. This retrospective study was carried out to describe the epidemiology of accidental poisoning of children with seeds, drugs and chemicals.

METHODS

The study was carried out in paediatrics department of CIMS. Inpatient records of all the children under 12 years of age, admitted to the paediatric wards with the diagnosis of accidental poisoning were reviewed for the period, January 2009 through December 2013.

It is the departmental policy to admit every child presenting with a history of accidental poisoning. Diagnosis of accidental poisoning was based on information from parents, domestic help, siblings and relatives. Physical evidence of injury in and around the mouth and odour of the offending chemical was also taken into account. The following information was collected from the inpatient records: age, sex, type of toxin, symptomatology, source of poison, time of the year, hospital stay and final outcome.

RESULTS

During the period of study a total of 12095 children were admitted to the paediatric wards. Out of these 273 were admitted for accidental exposure to seeds, medicinal products or other chemicals (table 1) of all admissions to the paediatric wards.

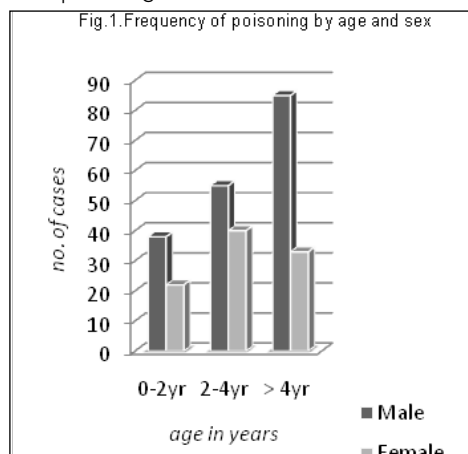
Most of the patients were symptomatic mostly due to poisoning with seeds (135), hydrocarbons (54) and drugs (42).

Table 1: Total number of poisoning and the mortality from 2009 to 2013 in Bilaspur dist.

Year	Admission	Poisoning (%)	Mortality(%)
2009	2598	70 (2.69)	3
2010	2807	62 (2.2)	2
2011	2151	64 (2.97)	2
2012	2153	27 (1.25)	1
2013	2386	50 (2.09)	2
Total	12095	273(2.24)	10(3.66)

Age and sex distribution (fig 1)

Most of the children affected under the age of 4 years except of seed poisoning which was more common in children over the age of 4 years. 21.9% were below age of 2 years. 34.79% were between the age of 2-4 years and 43.22% were above the age of 4 years and most children above 4 year were of seed poisoning.



Type of poison, Frequency in relation to Age, and total hospital stay. (Table 2)

Seeds were the most common toxins involved in accidental poisoning accounting for 49.45%. Ratanjot (Jatropha curcas) was the most common seed ingested (81.48%). Hydrocarbons were the next common cause of accidental poisoning (21.34%), followed by medicinal products (15.38%). Among this group common drugs involved were antipyretics, cough syrup & anticonvulsants. Miscellaneous group of drugs were involved in about half the total number of cases of poisoning with medicinal products. Chemical pneumonitis following kerosene (hydrocarbon) ingestion occurred in 20 patients. All recovered without any sequelae except one which expired. Acute upper GI ulcerations following ingestion of corrosives occurred in two cases without any long term sequelae.

There were 10 deaths during the 5 years of the study period. 3 children of organophosphorus, 2 children of lice powder (pyrethrin), 1 child of kerosene, 1 child of sulphas and 3 children of unknown poisoning were died.

Seasonal variation (Fig 2)

No significant seasonal variation was noted. However, a higher incidence of poisoning was noted during the month of November and the lowest in the month of June.

Sources of poisons

In most cases of seed poisoning the source were plants in the field. Soft drink bottles and glass tumblers were used for storing hydrocarbons and these constituted the main sources of poisoning, in poisoning with hydrocarbons, medications and other chemicals were frequently kept in unsafe areas within easy reach of children.

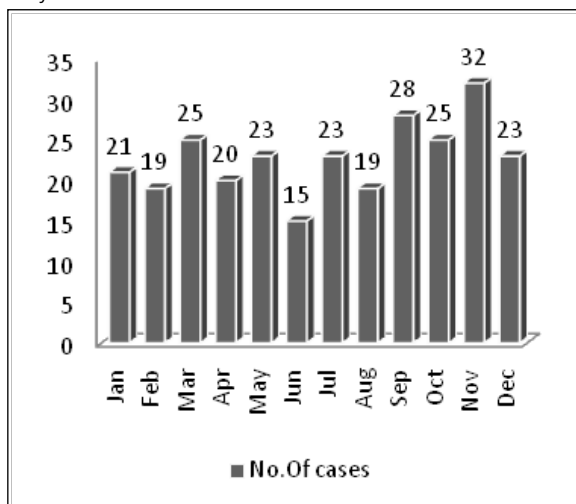


Fig.2. Seasonal Prevalence

Hospital stays (Table 2)

Average hospital stay for seeds (two days), hydrocarbons (three days), medicinal plants (one day), pesticides (three days) and household detergents (one and a half days). We did not take into consideration the exceptionally long stay of a few cases.

Prevalence (Table 1)

A slight decrease in the prevalence of accidental poisoning was noted in the last two years of the study period.

DISCUSSION

An admission rate of 2.24% in our study is higher compared to that reported from developed countries (1,2). The peak prevalence of accidental exposure to hydrocarbon between 1 to 4 years of age and the slight male preponderance in this age group was

Table.2. Type of poison, frequency with relation to age and total hospital stay.

Substance	Age(years)			Total no. of cases (%)	Hospital stay (days)
	0-2	2-4	>4		
A. Seeds				135(49.45)	2
1) Ratanjot	3	29	78		
2) Dhatura	2	8	3		
3) Kaner	0	4	8		
B. Hydrocarbons				54(21.34)	3
1) Kerosene	39	9	2		
2) Turpentine	3	1	0		
C. Pesticides				26(9.52)	3
1) Organophosphorus	4	6	11		
2) Naphthalene	0	1	1		
3) Sulphas	0	1	2		
D. Household agents				16(5.86)	1.5
1) Lice poison powder	0	4	2		
2) Detergent	0	3	1		
3) Mosquito coil	1	3	0		
4) Phenol	0	2	0		
E. Medications				42(15.38)	1
1) Antipyretics	2	5	1		
2) Cough syrup	2	6	0		
3) Anticonvulsants	0	5	1		
4) Others	4	8	8		

similar to other surveys including reports from India (6).

Our study verified earlier reports of poisoning with non-medical products, like household detergents and hydrocarbons etc. being more common in infants and younger children. Following the pattern observed in the developing countries and in contrast with that in the developed countries seeds were the most common substance involved in poisoning. Jatropha (Ratanjot) seed oil is being tried as a biofuel in India. Hence large scale productions are being encouraged in Chhattisgarh. Ratanjot poisoning usually occurs as mass poisoning, children eats these seeds because of the taste of seed which is similar to groundnut (4,5). Ingestion of oleander (Kaner) seeds is a common cause of accidental poisoning worldwide particularly among children (3). The yellow oleander contains at least eight different types of cardiac glycosides, including Thevetin A and B, Thevetoxin, Ruvoside. All parts of the plant are dangerous especially seeds (4). Kerosene is still used in many households for various purposes other than as a fuel alone. Unfortunately, the method used for its storage is very improper. Our investigation found that kerosene and other hydrocarbons are commonly stored in soft drink bottles and glass tumblers and kept

in places within easy reach of infants and young children.

Kerosene ingestion can cause gastrointestinal, respiratory and central nervous system toxicity (6). We had 20 patients out of 50 with chemical pneumonitis and all of them recovered without any serious complication except one who expired. There were three deaths out of the 21 cases of poisoning with organophosphorus compounds. The other two fatalities were from ingestion of Lice killer poison (pyrethrin+piperonylbutoxide) who presented with muscle paralysis and respiratory arrest. Another fatality occurred in an infant with kerosene poisoning who ingested around 100 ml of kerosene.

There is a need to initiate a poison prevention interventional program for children. The hazards of poisoning with potentially toxic drugs and seeds could be highlighted through the

media. The focus should be on improving the family practices of storing chemicals, and household detergents in proper container in secure areas, out of reach of young children. Dispensing of all oral medicinal products in child resistant containers should be enforced by appropriate legislation.

Physicians prescribing medicine can also play a role by giving precautionary advice to parents.

CONCLUSION

Accidental poisoning of children with medicinal and non-medicinal products contributes to significant morbidity and hospital admissions in Bilaspur. It is essentially a preventable condition. This pilot study has highlighted the need for initiation of a poison prevention program for the education of the whole community. Appropriate legislation should be introduced for child resistant packaging of necessary poisonous agents (e.g. Medicines, household chemicals and other toxins). There is also an urgent need for creating public awareness about poisonous plant and encourage the observance of safety precautions by caretakers of young children through dissemination of information.

There should be establishment of a poison control centre to triage poisoning, dispensing accurate and timely advice to caregivers and health facilities.

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