

Clinical Profile of Acute Poisoning in Children at a Teaching Hospital in Lalitpur

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Abstract

Introduction: Acute poisoning is one of the common cause of emergency visits and hospital admissions and is a potentially preventable cause of childhood mortality and morbidity. The objectives of this study were to identify the common type of poisoning in children, to determine types of poisoning according to age and to find out the the common age group in which the incidence of poisoning was high. **Materials and Methods:** It was a descriptive observational study done in a teaching hospital in Lalitpur, Nepal in patients aged 1 month to 18 years who visited the emergency department and were admitted to hospital with history of alleged poisoning from 2009 July to 2014 January. **Results:** Fifty patients were included. Drugs, kerosene and organophosphorus were most common cause of poisoning. Drugs and kerosene below 10 years of age and organophosphorus and drugs above 10 years of age were common types of poisoning. Maximum numbers (50%) of children with poisoning cases were below five year of age. Mean duration of hospital stay was 2.1 days and mean age of poisoning was 7.8 years with a male (54%) predominance. Majority of poisoning occurred at home (84%) and 68% of patients were symptomatic at presentation to hospital with 84% of patients presenting to hospital within six hours. **Conclusion:** This study showed that drugs, kerosene and organophosphorus were most common forms of poisoning. While young children were most vulnerable for acute poisoning.

Key words: Acute poisoning, Drugs, Kerosene poisoning, Organophosphorus poisoning

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Introduction

Acute poisoning is an important cause of emergency department visits and hospital admission in children¹ and it is one of the potentially preventable causes of childhood morbidity and mortality in Nepal^{1,2}. The effects of poisoning have both short and long term health implications in children as well as in parents.

In Nepal, poisoning is common in an most household due to ignorance and carelessness of parents while storing potentially hazardous substances such as drugs, alcohol, hydrocarbons, rodenticides and insecticides. Petrol, kerosene and other hydrocarbons, for instance, are stored in water bottles and soft

drink bottles. Drugs are easily available from drug stores without prescriptions while insecticides and pesticides are widely used in agriculture but inappropriately stored. Unlike developed countries the drug packagings do not have child locking system in Nepal. Similarly, potentially toxic substances are likely to be stored with food items in the same place without proper labeling which could also increase the risk of poisoning². In Nepalese society, where many industries are located within the vicinity and even within the same household,

chemical substances which are potentially toxic are in easy reach of children. Children who are in normal developmental stage of exploration and autonomy are often left unattended which also put them in high risk for these mishaps. Various psychological stressors in adolescents are also now an important emerging cause of poisoning in Nepal. In a retrospective study from Nepal, one of most common mode of suicide in adolescents was intentional poisoning³. The problem is prevalent in all geographical regions from the plains of terai to mountainous areas, from lower socioeconomic status to higher, educated to uneducated parents, in all castes and ethnicity and throughout the year². The pattern of poisoning, however, may differ with insecticides and pesticides mostly occurring in rural farming regions and with most of drug poisoning occurring in urban area.

This study was performed with objectives to identify the common age and types of the poisoning in children, the knowledge of which could help in decreasing poisoning related mortality and morbidity.

Materials and Methods

It was a descriptive observational study done in a teaching hospital in Lalitpur. Ethical approval was taken from the hospital ethical review board before the initiation of study. Patients aged 1 month to 18 years who visited the emergency department and were admitted to hospital with history of alleged poisoning from 2009 July to 2014 January were included in the study. Data on age, sex, place of poisoning, type of poisoning, presentation time to hospital, state at presentation, duration of hospital stay were collected from medical records. Patients whose records could not be traced or those who presented with food poisoning were excluded from the study. For the study purpose, a patient was said to be symptomatic when the particular signs and symptoms of poisoning were present at the time of presentation. The duration of hospital stay included the time between initial presentation to hospital to the time when either patient is discharged after improvement or referred or expired. A total of 50 patients were enrolled for analysis. Data were entered and analyzed using SPSS 17.

Results

A total of 50 patients were included for analysis. The youngest patient was 14 months old while the

oldest was 18 years with mean age of 7.8 years. There were no patients of poisoning below the age of one year in this study. Out of all patients included, 54% cases were male while 46 % were female. The maximum number of poisoning 50% (25 out of 50) were within 1 to 5 year age group while 38% (19 out of 50) in the 10 to 18 year age group and 12% in 5 to 10 year group. 84 % of poisoning occurred at home while 16% occurred outside home.

The duration of hospital stay ranged 1 to 11 days (mean duration of 2.1 days) of which 58% of patient stayed in hospital for less than 24 hour, 38% of patient stayed less than seven days and minority of patients 4% stayed for more than seven days. Majority of patients, 68% were symptomatic while 32% of patients did not have any symptoms of poisoning at presentation.

The mean time of presentation to hospital was five hours (range 10 minutes to 2 days) after ingestion of which 38% of patients presented within one hour of poisoning, 46% presented within period of 1 to 6 hours and 16% of patients presented after six hours. Overall, drugs were the most common cause of poisoning which was followed by kerosene as shown in table 1.

Table 1: Causes of Poisoning

Poisoning types	Frequency	Percent
Drugs*	12	24%
Kerosene oil	10	20%
Organophosphorus compounds	6	12%
Corrosives	5	10%
Dhatura	5	10%
Methanol	2	4%
Spirit	2	4%
Phosphamide	2	4%
Miscellaneous**	6	12%

*Drugs – Paracetamol, Carbamazepine, and Olanzapine were most common.

**Miscellaneous- Suspected carbon monoxide, Cannabis, Alcohol, Zinc sulphide, unknown chemical, pyrethrin liquid vaporizer.

The type of poisoning also varied according to age with drugs and kerosene being common in age group below 5 years while organophosphorus compounds was common above 10 year of age and dhatura poisoning in children between 5 to 10 years (Table 2).

Table 2: Distribution of Type of Poisoning by Age Group

Poisoning Name	Age Category			Total
	1month- 5 years	5-10 years	10-18 years	
Drugs	6	2	4	12
Kerosene oil	9	1	0	10
Corrosive	4	0	1	5
Organosphorus compounds	0	0	6	6
Dhatura	0	3	2	5
Methanol	2	0	0	2
Spirit	2	0	0	2
Phosphamide	0	0	2	2
Miscellaneous	2	0	4	6

Discussions

Poisoning is a common pediatric problem and is one of the important causes of hospital admission worldwide^{4,5}. The incidence of poisoning varies in different regions of world and one of the studies from Finland which analyzed acute poisoning below the age of six years over two decades found the incidence to be 5.2 per 10 000 per year⁴. Although the incidence of poisoning is exactly not known in Nepal, a hospital based study showed that 3.4% of hospital admissions below the age of 15 years were due to acute poisoning⁶.

Overall, drugs were the most common cause of poisoning in this study followed by kerosene oil, organophosphorus and corrosives which is similar to previous studies done in South East Asian region⁵. However previous studies from Nepal showed organophosphorus followed by kerosene as the most common cause of poisoning^{2, 6}. Kerosene followed by drugs was an important cause of poisoning below the age of 10 years and organophosphorus poisoning followed by drugs was more common in adolescent age group in this study. The vulnerability for unintentional poisoning in young children can be explained with developmental stage of exploration and autonomy. Easy reach of poison storage location, psychological stress in parents and lack of close supervision by parents and caregiver, lack of caregiver education and easy reach of drugs are other risk factors found for unintentional poisoning in children⁷. Nepal also does not have strict drug regulation policy, even if such regulations are there, it is not in practice, regarding where and how to store drugs and also provision of child lock container for drugs, which is also contributing for poisoning in young children. Adolescents are vulnerable to poisoning due to their immaturity to cope the stress and conflicts which arise during adolescence, depression, different problems at school, family problems, psychiatric illness,

academic failures and poor communication between adolescent and family^{3, 8, 9}. There should be increased awareness regarding various aspects poisoning at individual level, community level and policy level using different forms of media¹, organizing symposium among stakeholders and establishment of “National poison centre” among different parts of country will help to decrease incidence and improve outcome of poisoning¹.

Most of these acute poisoning in this study occurred at home while almost similar results were found from a previous study undertaken in a referral hospital in Nepal². This reflects that most of the hazardous substance may be present in households and these poisoning could be potentially preventable with simple measures such as proper storage and labeling of potentially dangerous substance in the households, anticipatory guidance to parents as well as proper management of stress in the adolescents.

The outcome of acute poisoning depends upon severity of illness which is determined by presentation time to hospital, amount, potency and nature of these chemical substances. Each of these factors independently and in combination influences the plan of management and outcome¹⁰. Severity of poisoning may also determine the duration of hospital stay independently and interacting with various factors mentioned above. One important factor which determines outcome is presentation time to hospital and in this study, 38% of patients presented within 1 hour of poisoning, 46% presented within period of 1 to 6 hours while 16% of patients presented after 6 hours of poisoning which is almost similar to another study from South East Asia⁵. Although it depends upon type of poisoning, majority (68%) of the patient were symptomatic at presentation in our study. The probable reason of such early presentation in this study may

be twofold, one is that most of the patient belongs to surrounding local community with easy access to hospital services and second is early development of symptoms of poisoning. Majority (58%) of the patient were discharged early within 24 hours of hospital admission and the mean duration of hospital stay was 2.1 days while it was as low as 0.66 day in a Nigerian study¹¹ to 3.8 days and 3.78 days in the studies from Nepal respectively^{2,6}.

Mean age of acute poisoning in this study was high (7.8 years) as compared to similar studies (5.84 year) done in Nepal⁶. The maximum number of patients (50%) were below the age of five years which is similar to most of studies done in similar setting where 60² to 64.89%¹ of acute poisoning occurred in the same age. The second largest proportion of patients (38%) in this study was the 10 to 18 years of age which is in accordance with study from a referral hospital in Nepal². One of the studies from Pakistan, however, showed 5 to 10 years of age group to be second commonest age group rather than 10 to 18 years age group⁵. There was male preponderance in all age groups of children with acute poisoning in this study which is also similar to other studies from Nepal^{1,2,6} and South East Asia⁵.

Conclusion

Children below five years of age are most vulnerable for acute poisoning. Drugs and hydrocarbons like kerosene were most common causes of poisoning in young children while organophosphorus poisoning was more common in adolescent. Parents should be counseled and educated about potential poisoning and preventative measures at home and school in the particular locality (rural vs. urban). Adolescent issues and problems leading to poisoning should be addressed timely to prevent any undesired mishaps. It is highly recommended that the government should develop policies to regulate over the counter (OTC) availability of drugs, insecticides and pesticides and strict implementation of safe drug packaging, drug storage and provision of a child lock containers for drugs to save those precious lives.

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References

1. Malla T, Malla KK, Rao KS, Gauchan E, Basnet S, Koirala DP. A Scenario of Poisoning in Children in Manipal Teaching Hospital. *J Nepal Paediatr Soc* 2011;31(2):83-8.
2. Chhetri UD, Ansari I, Shrestha S. Pattern of pediatric poisoning and accident in Patan Hospital. *Kathmandu Univ Med J* 2012;10(39):39-43.
3. Mishra N, Shrestha D, Poudyal RB, Mishra P. Retrospective study of suicide among children and young adults. *J Nepal Paediatr Soc* 2013;33(2):110-6.
4. Hoikka MH, Liisanantti JH, Dunder T. Acute poisoning in children under the age of six: a two-decade study of hospital admissions and trends. *Acta Paediatr* 2013;102(7):e329-33.
5. Aqeel M, Munir A, Khan A. Pattern and frequency of acute poisoning in children. *Pak J Med Sci* 2009;25(3):479-83.
6. Budhathoki S, Poudel P, Shah D, Bhatta NK, Dutta AK, Shah GS, et al. Clinical profile and outcome of children presenting with poisoning or intoxication: a hospital based study. *Nepal Med Coll J* 2009;11(3):170-5.
7. Schmettmann M, Williamson A, Black D, Wilson L. Risk factors for unintentional poisoning in children aged 1-3 years in NSW Australia: a case-control study. *BMC Pediatr* 2013;13:88.
8. Lifshitz M, Gavrilov V. Deliberate self-poisoning in adolescents. *Isr Med Assoc J* 2002;4(4):252-4.
9. Clarke CF. Deliberate self poisoning in adolescents. *Arch Dis Child* 1988;63(12):1479-83.
10. Cloup M, Kaminski M, Brauner-Karray R, Goujard J, Cloup I, Chlabovitch E, et al. Severity factors of poisoning in children admitted to intensive care units. *Arch Fr Pediatr* 1979;36(2):207-16.
11. Oguiche S, Bukbuk DN, Watila IM. Pattern of hospital admissions of children with poisoning in the Sudano-Sahelian North eastern Nigeria. *Niger J Clin Pract* 2007;10(2):111-5.