

Clinical profile and outcomes of childhood poisoning

Farzana Ahmed, Md. Masudur Rahman, Muhammad Tawfiq and Aftab Yousuf Raj

Article Info

Department of Pediatrics, Square Hospitals Ltd., Dhaka, Bangladesh

For Correspondence:

Farzana Ahmed
farzanaahmedpaed@gmail.com

Received: 20 November 2017
Accepted: 8 December 2017
Available Online: 9 December 2017

ISSN: 2224-7750 (Online)
2074-2908 (Print)

DOI: 10.3329/bsmmuj.v10i4.34868

Cite this article:

Ahmed F, Rahman MM, Tawfiq M, Raj AY. Clinical profile and outcomes of childhood poisoning. *Bangabandhu Sheikh Mujib Med Univ J.* 2017; 10: 264-266.

Copyright:

The copyright of this article is retained by the author(s) [Attribution CC-BY 4.0]

Available at:

www.banglajol.info

A Journal of Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

The patterns of accidental poisoning in children usually differ from country to country and from one region to another within the same country. This retrospective study was performed from January 2012 to December 2014 to determine the trends of childhood poisoning in urban area of Bangladesh. A total of 32 cases were analyzed completely; intention of poisoning was classified as accidental, suicidal and homicidal. The commonest age range for accidental poisoning was 1-5 years (64.7%). Suicidal poisoning was prevalent among mid adolescence group. The overall male to female ratio was 1:1; in case of accidental poisoning male to female ratio among preschooler was 2.66:1. All the patients were from urban background and drug overdose was the commonest cause of poisoning. Accidental poisoning was found in 53% of patients, suicidal 41% and homicidal 6% cases. The mortality was 3%. This study showed that boys at pre-school age group were at greater risk for accidental poisoning. Drug over dosage was the most common poisoning in this study. Alarmingly, accidental introduction of per rectal analgesic was the most common cause of acute poisoning during infancy in this study.

Introduction

Despite of archiving Millennium Development Goal 4 (MDG 4), childhood poisoning remains a major cause of morbidity all around the world. [1,2](#)

Although, some interventions successfully reduced the incidence of accidental poisoning, ingestion of drugs in toxic dose or toxic materials continued to be a common cause of poisoning in children. [3,4](#) Trend of children's acute poisoning changes overtime and the complications related to poisoning are not distributed evenly across the whole country. [2,4](#)

According to the Health Bulletin of Bangladesh, 2.3% of all admitted patients at the Upazilla levels were due to acute poisoning. [5](#) Although several preventive strategies had successfully reduced the incidence of acute childhood poisoning, it continues to be a common cause of health hazard in children. [6-8](#)

Younger children are more susceptible to poisoning because of their smaller size and less well-developed physiology, particularly as the toxicity of most substances relates to the dose per kilogram of body weight. [9-11](#)

This study was undertaken to assess the nature of acute childhood poisoning in an urban area and to identify children at higher risk over a period of three years.

Materials and Methods

This study carried out at the Pediatric intensive care unit from January 2012 to December 2014 to determine the mode, pattern, clinical presentation and outcome of acute poisoning cases among the urban children.

A total 32 patients, aged from one month to 18 years, either of the genders presenting with definite history of exposure to toxic substances were included. Exclusion criteria included cases presented with allergic reactions to food, chronic poisoning, and drug or chemical abuse. We reviewed the medical records to collect data of all the cases. These records were consistently assessed the age, gender, agents involved in the exposure, exposure time, type, route, reason, presenting symptoms and signs, management, clinical course, laboratory investigations, and final outcome. Mode of poisoning was classified as suicidal, accidental and homicidal.

The frequency of distribution was obtained by the descriptive analysis of variables. Quantitative variables were reported with frequency, range and percentage. The obtained data were recorded and statistically analyzed using Fisher's exact test or chi square test whichever applicable using an $r \times c$ exact contingency table. A p value of less than 0.05 was considered to be significant. Approvals for the study were taken from the ethical committee of the hospital.



Results

Accidental poisoning was common (53%) whereas homicidal and suicidal poisoning were 41 and 6% respectively (Data not shown). Table I shows boys were the common victim for accidental poisoning (n=8) especially among the toddlers and preschoolers (1-5 years).

Age (Year)	Boy	Girl
<1	1	2
1-5	8	3
6-9	0	2
10-13	0	1

Suicidal poisoning was exclusively found among the adolescent age group. Although suicidal cases were commonly found among the adolescent female (61.5%), male predominance was observed at the mid adolescence age group. The peak incidence of poisoning was observed in autumn and winter for the accidental cases and the summer for suicidal cases (Figure 1).

Causative agent	Suicidal (%)	Accidental (%)
Drugs	69	65
Corrosive substances	23	12
Hydrocarbon	0	17
OPC	8	0
Naphthalene	0	6

Both in accidental and suicidal cases, drugs were responsible for the majority of poisoning cases (Table II). Surprisingly, all the infants of this study were accidentally poisoned by their mothers with per-rectal introduction of analgesic.

Drowsiness and vomiting were the common clinical presentations (Table III).

One patient (3%) died of unknown poisoning with shock and multiple organ failure.

Discussion

The present study showed that 53% of all poisonings were accidental. The higher incidence of accidental poisoning occurred among preschool and male children. This could be because of the age related carelessness. These findings are similar to other studies reported from the surrounding

Signs and symptom	n
Drowsiness	16
Vomiting	15
Unconsciousness	6
Hypotension and shock	6
Dyspnoea and respiratory failure	4
Convulsion	3
Erosive gastritis	2
Methemoglobinemia	1

countries by Taft et al.¹² Fatmi et al.¹³ and Tandukar et al.¹⁴ Boys have higher rates of poisoning than the girls in all regions of the world, probably because of differences in socialization.¹¹⁻¹⁴ In some older children, hyperactivity could be a predisposing factor for poisoning at home.^{13, 14} A similar trend also was observed in Australia¹⁵ and USA.¹⁶ Admission due to accidental poisoning decreased significantly as their age increased. This may be explained by better understanding and awareness as they grow older. None of the poisoning below 10 years was self inflicted in this study. This was

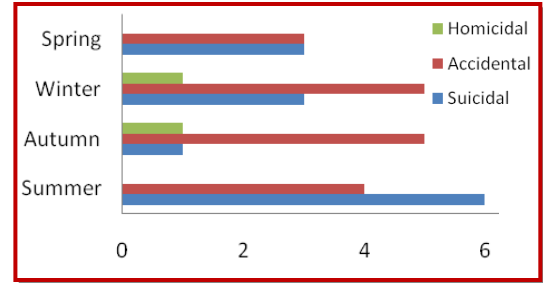


Figure 1: Seasonal variation

similar to other studies conducted in Bangladesh.¹⁷ and also in Saudi Arabia.¹⁸ In this study, suicidal poisoning was reported exclusively among adolescent groups where female predominance was observed. Now-a-days, suicide is a burning issue all over the world. It is the third most common cause of adolescent's death in USA.¹⁹ In this study, the incidence of suicidal poisoning was much lower than that in Western countries. The reason for this is not known but might be because of the presence of strong religious sanctions against the suicide in Islam, the religion practiced by the majority of our population.

Unlike other previous studies conducted in Bangladesh by Amin et al.²⁰ and Howlader et al.²¹, the present study showed that the majority of children ingested prescribed drugs followed by corrosives and hydrocarbon compound while OPC poisoning was found only in few cases. Easy availability of any kind of medicine at the market in the urban area of our country along with illiteracy, lack of awareness and storage of drugs in an unsafe place probably some of the important risk factors of drug poisoning in Bangladesh. Although previous studies conducted in Bangladesh^{20, 21} reported OPC was the most common causative agent for poisoning probably due to easy access to pesticides in the rural area in Bangladesh. The studies in some surrounding countries showed that the prescribed drugs represent the most common causative agent of poisoning, a pattern similar to that of the developed countries.²² This was explainable by the change in people's life style as well as economic, and social problems existing in the society. With regard to poisoning due to drugs, sedatives take the top of the drug followed by the anti-hypertensive and analgesic medicine. Although few cases of poisoning during the infancy was found in this study, all those cases were accidentally done by their mothers; maternal stress was probably implicated but lack of awareness could not be ruled out.

Regarding seasons, the highest incidence of accidental pediatric poisoning occurred in autumn and winter. Seasonal variation of poisoning observed may be related to some social factors which need further study.

Only one fatal case was reported in this study, as

compared to higher mortality rate was reported in previous studies conducted in Bangladesh by Amin et al.²⁰ and Howlader et al.²¹ Lower mortality rate in this study could be due to better management in improved logistics and facilities in the Hospital where the study was done. But it does not reflect the exact result as the population size was small.

Conclusion

The age less than 5 years, male child, living in urban areas were significantly associated with poisoning mainly due to drug over dosage.

References

1. CDC. Poisoning among children- United States. *MMWR*. 2010; 33: 129-31.
 2. Hyder AA, Sugerman DE, Puvanachandra P, Razzak J, Sayed HE, Isaza A, Rahman F, Peden M. Global childhood unintentional injury surveillance in four cities in developing countries: A pilot study. *Bull World Health Organ*. 2009; 87: 345-52.
 3. Hyder AA, Wali S, Fishman S, Schenk E. The burden of unintentional injuries among the under-five population in South Asia. *Acta Paediatr*. 2008; 97: 267-75.
 4. World Health Organization, UNICEF. Child and adolescent injury prevention: a global call to action. 2005. Available from: http://whqlibdoc.who.int/publications/2005/9241593415_eng.pdf
 5. Bangladesh Health Bulletin. 2nd ed. MIS, DGHS, Dhaka, 2014.
 6. Basher A, Islam QT. Plants and herbal poisoning in Bangladesh. *J Clin Toxicol*. 2014; 28: 1-19.
 7. Anwar S, Rahman AKMN, Houqe SKA, Moshed AKMA, Yasmin L, Saleh ASM, Mohsin M. Clinical profile of kerosene poisoning in a tertiary level hospital in Bangladesh. *Bangladesh J Child Health* 2014; 38: 11-14.
 8. Walton WW. An evaluation of the poison prevention packaging act. *Pediatrics* 1982; 69: 363-70.
 9. Marchelet S, Leiller H. Epidemiology of serious poisonings. *Clin Toxicol Rev*. 2009; 5: 111-17.
 10. Jepsen F, Ryan M. Poisoning in children. *Curr Paediatr*. 2005; 15: 563-68.
 11. Ahmed B, Fatmi Z, Siddiqui AR, Sheikh AL. Predictors of unintentional poisoning among children under 5 years of age in Karachi: A matched case control study. *Pediatr Res J*. 2011; 70: 566-66.
 12. Taft C, Volkaner M, Sarmerick S, Freick N. Childhood unintentional injury worldwide: Meeting the challenge. *Am Pediatr Emerg Care*. 2010; 21: 248-51.
 13. Fatmi Z, Hadden WC, Razzak JA, Qureshi HI, Hyder AA, Pappas G. Incidence, patterns and severity of reported unintentional injuries in Pakistan for persons five years and older: Results of the National Health Survey of Pakistan 1990-94. *BMC Public Health*. 2007; 7: 152.
 14. Tandukar PK, Nakahara S, Ichikawa M, Poudel KC, Joshi AB, Wakai S. Unintentional injuries among school adolescents in Kathmandu, Nepal: A descriptive study. *Public Health*. 2006; 120: 641-49.
 15. Steel RC. Childhood poisoning in Australia: AIHW national injury surveillance unit at Flinder University, South Australia. 2006. www.theconferences.com/publication/9999620
 16. Franklin RL, Rodgers GB. Unintentional child poisonings treated in United States hospital emergency departments: National estimates of incident cases, population-based poisoning rates and product involvement. *Pediatrics* 2008; 122: 1244-51.
 17. Chowdhury FR, Rahman AU, Mohammed FR, Chowdhury A, Ahasan HAMN, Bakar MA. Acute poisoning in southern part of Bangladesh: The case load is decreasing. *Bangladesh Med Res Counc Bull*. 2011; 37: 61-65.
 18. Zeinab AE, Elhaleem A, Badar AM, Muqhem A. Pattern of acute poisoning in Al-Majmaah region, Saudi Arabia. *Am J Clin Exper Med*. 2014; 2: 79-85.
 19. Schwartz KA, Pyle SA, Dowd M, Sheehan K. Attitudes and beliefs of adolescents and parents regarding adolescent suicide. *Pediatrics* 2010; 125: 221-27.
 20. Amin MR, Awwal A, Sattar MA, Hasan R, Islam R, Jalil MA, Khandaker AK, Faiz MA. Pilot survey on cases of poisoning and its outcome on different category of hospitals in Bangladesh. *J Med*. 2009; 10: 15-17.
 21. Howlader M, Hossain M, Morshed M, Begum H, Sardar M, Uddin M, Azad KAK. Changing trends of poisoning in Bangladesh. *J Dhaka Med Coll*. 2011; 20: 51-56.
 22. Guavin F, Bailey B, Bratton SI. Hospitalization for pediatric poisoning in Washington State, 1987-1997. *Arch Pediatr Adolesc Med*. 2001; 155: 1105-10.
-