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Original Article

Evaluation of demographical, etiological and clinical characteristics of acute drug poisoning

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Abstract

Background: The poignant part of the problem is that these are mostly preventable. The word poison originates from the latin word potionem which means deadly draught. The Herald of modern Toxicology, Paracelsus, supposed that everything is poison and only the dose plays a pivotal role.

Objective: The aim of the study to investigated the demographical, etiological and clinical characteristics of acute drug poisonings.

Methodology: The study design was descriptive observational type of case study that was conducted in different public and private hospital in Dhaka city. A sample of 100 poisonings patients was taken by convenience sampling technique. The selection of cases was based on the patient's diagnosis on discharge and was accomplished through analysis of all the medical records of the patients hospitalized in Internal Medicine and Toxicology Department, from the Jan. 2017 to Dec. 2018.

Results: Acute drug poisonings incidence rate was 25.6%, majority (69.0%) patients were female. Majority (36.0%) of the patients were multiple drug poisonings followed by 14(14.0%) were benzodiazepines, 9(9.0%) anticonvulsants, 9(9.0%) barbiturates and 6(6.0%) cardiovascular medication. Category of acute drug poisonings were not statistically significant ($p>0.05$) between male and female groups.

Conclusion: Female were predominant and majority of them were multiple drug poisonings. Common drug poisonings were found benzodiazepines, anticonvulsants, barbiturates and cardiovascular medication.

Keywords: Acute drugs Poisoning, Mortality, Morbidity Demography, Etiology.

Introduction:

Morbidity and mortality as a result of poisoning, is a raging problem worldwide. The poignant part of the problem is that these are mostly preventable, if a basic treatment infrastructure facility is available with immediate accessibility.[1] The word poison originates from the latin word potionem which means deadly draught. The Herald of modern Toxicology, Paracelsus, supposed that everything is poison and only the dose plays a pivotal role.[2] Poison is any substance (solid liquid or gaseous) which when introduced in the living body or brought into contact any part, thereof will produced ill health or death by it constitutional or local effect or both. Poisoning both accidental and intentional is a significant contributor to morbidity and mortality throughout the world. According to WHO, three million acute poisoning cases with 2, 20, 000 deaths occur annually.[3] Poisoning with pharmaceutical products is ubiquitous, as we can see in the reports originating from very different countries.[4,5] There are many differences with respect to the pattern and cause of acute poisoning between geographical regions, even within the same country, and there is a constant need for new information in this field, in order to develop educational and prevention programs.[6] Our aim was to provide a detailed screening on aspects of the pattern of drug poisoning in our region and to compare our experience with the data reported by the researchers from other countries. The final envisaged end point was to identify the risk factors for drug poisoning.

Methods:

The study design was descriptive observational type of case study that was conducted retrospectively the medical charts of all patients with acute drug poisoning who were admitted in different Government Medical College in Dhaka City between January 2017 and December 2018. The selection of cases was based on the patient's diagnosis on discharge and was accomplished through analysis of all the medical records of the patients hospitalized in Internal Medicine

and Toxicology Department, for the last 2 years. This Data collection form was designed for this purpose and included the following variables: demographical characteristics including age, gender, occupation, residence (rural or urban area) and type of exposure (intentional or accidental); drug category; clinical form of poisoning (mild, medium, coma); number of pills; provenience of the drug (prescribed by the family physician, family members and pharmacy); the time between the poisoning and the admission to the hospital; previous history of poisoning; history of psychiatric disease; blood alcohol levels; length of hospital stay and clinical outcome. When the information was not available, it was classified as unknown.The data was assessed after the finalization of the medical records. Patients who did not require admission to the toxicology department and were discharged from the emergency unit were not included in this study. Also, the adverse reactions, the drugs secondary effects and chronic poisonings were excluded.The drugs were classified as benzodiazepines, barbiturates, neuroleptics, anticonvulsants, antidepressants, cardiovascular drugs, acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs) and nonopioid analgesics, antibiotics, hypoglycemiant drugs, opioids, tuberculostatics, other medications (vitamins, antithyroid drugs, iron compounds, etc.) and unknown. The database thus created was analyzed using SPSS for Windows 23.0 In the statistical analysis, the chi-square test for comparing nominal variables was used when proportions were analyzed for significant differences. Differences are considered statistically significant when p values are under <0.05.

Results:

Table I: Incidence of acute drug poisonings

	Number of patients
Total acute poisonings	390
Number of poisonings	100
Percentage of poisonings	25.6

Total 390 patients conducted in the department of Medicine of Dhaka Medical College during 1 year follow up. 100 patients were taken acute drug poisonings and their incidence rate of 25.6% (Table I).

Table II: Demographic variables of the study patients

Demographic variables	Number of patients	Percentage
Age (years)		
≤20	17	17.0
21-30	29	29.0
31-40	25	25.0
41-50	13	13.0
51-60	10	10.0
>60	6	6.0
Sex		
Male	31	31.0
Female	69	69.0
Educational status		
Illiterate	11	11.0
Primary	55	55.0
Secondary	14	14.0
Graduate	20	20.0
Occupational status		
Unemployed	41	41.0
Employed	59	59.0
Residence		
Urban	62	62.0
Rural	38	38.0

Majority (69.0%) patients were female, 55.0% of the patient's complete primary education, 41.0% patients was unemployed and 62.0% of the patients came from urban areas (Table II).

Table III: Categories of drugs involved in acute drug poisonings

	Number of patients	Percentage
Multiple drug	36	36.0
Benzodiazepines	14	14.0
Anticonvulsants	9	9.0
Barbiturates	9	9.0
Cardiovascular drugs	6	6.0
Neuroleptics	4	4.0
NSAIDs and nonopioid analgesics	3	3.0
Antidepressants	3	3.0
Tuberculostatics	2	2.0
Antibiotics	1	1.0
Acetaminophen	1	1.0
Sedatives	1	1.0
Snake bite	1	1.0
Puffer fish	1	1.0
Unknown drugs	9	9.0

Majority (36.0%) of the patients were multiple drug poisonings followed by 14(14.0%) were benzodiazepines, 9(9.0%) anticonvulsants, 9(9.0%) barbiturates and 6(6.0%) cardiovascular medication (Table III).

Table IV: Association between acute drug poisonings with gender

Category of acute drug poisonings	Total cases	Male (n=31)		Female (n=69)		p value
Multiple drug	36	11	30.6	25	69.4	0.943^{ns}
Benzodiazepines	14	5	35.7	9	64.3	0.449^{ns}
Anticonvulsants	9	4	44.4	5	55.6	0.287^{ns}
Barbiturates	9	2	22.2	7	77.8	0.430^{ns}
Cardiovascular drugs	6	2	33.3	4	66.7	0.607^{ns}
Neuroleptics	4	1	25.0	3	75.0	0.635^{ns}
NSAIDs and nonopioid analgesics	3	1	33.3	2	66.7	0.676^{ns}
Antidepressants	3	1	33.3	2	66.7	0.676^{ns}
Tuberculostatics	2	1	50.0	1	50.0	0.526^{ns}
Antibiotics	1	0	0.0	1	100.0	0.690^{ns}
Acetaminophen	1	0	0.0	1	100.0	0.690^{ns}
Sedatives	1	0	0.0	1	100.0	0.690^{ns}
Snake bite	1	0	0.0	1	100.0	0.690^{ns}
Puffer fish	1	0	0.0	1	100.0	0.690^{ns}
Unknown drugs	9	3	33.3	6	66.7	0.750^{ns}

ns= not significant
p value reached from chi square test

Category of acute drug poisonings were not statistically significant (p>0.05) between male and female groups (Table IV).

Table V: Association between acute drug poisonings with age

Category of acute drug poisonings	Age (years)					
	≤20	21-30	31-40	41-50	51-60	>60
Multiple drug	7	8	9	7	3	2
Benzodiazepines	2	5	5	0	1	1
Anticonvulsants	2	4	0	1	1	1
Barbiturates	0	3	4	1	1	0
Cardiovascular drugs	1	1	1	1	1	1
Neuroleptics	1	1	1	0	0	1
NSAIDs and nonopioid analgesics	0	1	0	1	1	0
Antidepressants	0	1	1	1	0	0
Tuberculostatics	0	1	1	0	0	0
Antibiotics	1	0	0	0	0	0
Acetaminophen	1	0	0	0	0	0
Sedatives	0	1	0	0	0	0
Snake bite	0	0	1	0	0	0
Puffer fish	0	0	1	0	0	0
Unknown drugs	2	3	1	1	2	0
Total	**17**	**29**	**25**	**13**	**10**	**6**

The 21–30 years age group had the biggest incidence, 29.0%, while patients over 60 years old, 6%, were less frequently hospitalized for drug poisonings (Table V).

Discussion:

In this study conducted in the department of Medicine of different Government Medical College in Dhaka City between January 2017 and December 2018, 100 patients were taken acute drug poisonings and their incidence rate of 25.6%. Sorodoc et al.[7] a number of 2852 cases of acute poisonings were recorded in our clinic, and among those, drug poisonings represented 28.43% (811 cases). Consistent with the data from the majority of the studies from different countries[5,8-10] attempting suicide was the most common cause of poisoning. In the Romanian region we surveyed, the 28.43% drug poisonings is a result that aligns us with reports from Zimbabwe (30.4%), India (New Delhi 18.8%) and Thailand (19%), where the top leader in poisonings are the organophosphorus compounds.[11-14]

In present study showed majority (69.0%) patients were female, 55.0% of the patient's complete primary education, 41.0% patients was unemployed and 62.0% of the patients came from urban areas. Sorodoc et al.[7] reported that the total number of drug poisonings, the highest incidence was recorded in women 66.46%, 39.94% patients were unemployed, 35.78% had undergraduate education and 19.11% were retirees. The lowest incidence of drug poisonings was observed in the group with graduate education (5.17%). The majority (61.67%) of the patients came from urban areas. Sungur et al.[15] studied that the poisoning cases, 437 (52.1%) were female, and 402 (47.9%) were male. The mean age was calculated as 33.50. Chowdhury et al.[16] study observed that among 1903 cases, 1012 (53.1%) were male and 891 (46.8%) female with a ratio of 1.4: 1. Khanum et al.[17] study also reported among 84 patients, 51 (60.71%) were male and 33 (39.29%) were female. Regarding occupation, 33 (39.28%) cases were housewives followed by students 18 (21.43%), service holders 09 (10.71%), businessmen 10 (11.90%), farmers 12 (14.29%) and retired persons 2 (2.38%). Educated persons (84.43%) ingested poison more than the illiterate persons (15.47%).

In this study showed that majority (36.0%) of the patients were multiple drug poisonings followed by 14(14.0%) were benzodiazepines, 9(9.0%) anticonvulsants, 9(9.0%) barbiturates, and 6(6.0%) cardiovascular medication, 4(4.0%) neuroleptics, 3(3.0%) NSAIDs and nonopioid analgesics, 3(3.0%) antidepressants, 2(2.0%) tuberculostatics, 1(1.0%) antibiotics, 1(1.0%) acetaminophen, 1(1.0%) sedatives, 1(1.0%) snake bite, 1(1.0%) puffer fish and 9(9.0%) unknown drugs. Sorodoc et al.[7] the most frequently involved drugs were the benzodiazepines (13.69%), followed by anticonvulsants (8.63%), barbiturates (8.51%) and cardiovascular medication (5.92%).[5,6,18,19]

Recently Rahman et al,[20] found that it is noticeable that puffer fish poisoning comprised 0.53% of total poisonings which was quite rare in other parts of Bangladesh. Evidence was reported from only Khulna district before, though recently largest outbreak occurred in inland districts (Natore, kishoreganj and Dhaka).[21,22]

Robed et al.[23] Study showed that 29.0% poisoning occurs due to anti cholinergic pesticide, 37.1% by sedative, 9.5% following snake bite, 3.0% by Kerosene, and rest 22.5% were due to other substances like methanol, copper-sulphate, puffer fish, harpic, drugs except sedative, naphthalene, nail polish, Dhutura, Chlorine gas, depilatory cream, mortein, rat killer, anti-louse, anti-scabies, inorganic acid, etc.

In present study showed category of acute drug poisonings were not statistically significant (p>0.05) between male and female groups. Comparable findings have also been reported in several studies conducted in Iran, Taiwan, Turkey and Hong Kong.[5,6,24-26] but differs from epidemiological studies from the western part of Iran and India, where the poisonings are more frequent in men, possibly due to the religious characteristics in these regions, reasons actually mentioned by the authors.[12,13] Sungur et al.[15] reported there was a statistically significant difference between the cause of poisoning and gender ($P < 0.001$).

In this study showed that the 21–30 years age group had the biggest incidence, 29.0%, while patients over 60 years old, 6%, were less frequently hospitalized for drug poisonings. Sorodoc et al.[7] study showed the 21-30 years age group had the biggest incidence, 29.8%, while patients over 70 years old, 3%, were less frequently hospitalized for drug poisonings (24 cases). The highest incidence was recorded in young adults (21–30 years of age), situation also reported by investigators from Iran and developing countries.[5,9,24,27,28]

In this study observed that the cases arrived in the clinic at 6.5±6.2 hours from ingestion. The raised value of standard deviation indicates the higher variability of the parameter in our group. The patients were hospitalized for 3.2±2.2 days, the longest hospitalization period being registered for neuroleptics poisoning, 4.0±3.1 days. From all patients, 21.0% were admitted in the intensive care unit. Sorodoc et al.[7] the cases arrived in the clinic at 6.42±7.80 hours from ingestion. The raised value of standard deviation indicates the higher variability of the parameter in our group. The patients were hospitalized for 3.12±2.39 days, the longest hospitalization period being registered for neuroleptics poisoning, 4.04±3.41 days. From all patients, 20% were admitted in the intensive care unit. Another study reported in literature was 1.5 days in studies from North Eastern England and Western Iran, 3.02±2.8 days in Tabriz/Iran and 4 days in Karnataka/India.[9,13,29]

Conclusion:

In conclusion female were predominant and majority of them were multiple drug poisonings. Common drug poisonings were found benzodiazepines, anticonvulsants, barbiturates and cardiovascular medication.

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