

Original Article

Recent Trends of Poisoning at Tertiary Care Hospital

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Poisoning is a common public health problem worldwide. This prospective study was carried out in Medicine department of Faridpur Medical College Hospital to observe the recent trends of poisoning including demographic distribution, types and outcome of poisoning from 3rd June, 2018 to 2nd December, 2018. Total 517 patients of acute poisoning were included in this study. Among them, 232 (44.9%) were male and 285 (55.1%) were female. Most of the patients were married (58.4%), muslim (93.8%) and they lived in rural area (88.8%). By occupation, housewives were the maximum (29%) followed by farmers (25.1%). Most of them were exposed to poisoning in oral route (99.2%) and only (0.8%) patients were exposed through inhalation. Organophosphorus compound poisoning was the most common type of poisoning (32.9%) and the death rate associated with OPC poisoning was highest (3.7%). The 2nd most common poisoning was sedative poisoning (17%) followed by commuter poisoning (13.7%), corrosives (10.8%), unknown (6.6%), herbicides (6.2%), mixed drug poisoning (6%), rat killer poisoning (1.9%), Others (4.8%). Age group 1 (10-20 years) was the most vulnerable group (45.6%). According to manner of poisoning, 481 (93%) were exposed to poisoning in suicidal attempt followed by accidental 33 (6.4%) and homicidal 3 (0.6%). Familial disharmony was the principal cause of suicidal poisoning (82.5%). Female patient ingest poison with suicidal attempt 267 (55.5%) more than male 214 (44.5%).

Key words: Trends of poisoning, Epidemiological pattern, Bangladesh.

Introduction:

Every unnatural death whether suicidal, accidental or homicidal represents a tragic waste of precious human life. Poisoning is a common cause of unnatural death. Poison is a substance that causes damage or injury to body and endangers life by means of ingestion,

inhalation or contact. According to WHO data 2012, an estimated 1,93,460 people died worldwide from Unintentional poisoning. Of these deaths 84% occurred in low- and middle-income countries. In the same year unintentional poisoning caused the loss of over 10.7

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million people each year¹. Nearly 1 million of people each year as a result of suicide and chemical exposure accounts for a significant number of these deaths². For example, it is estimated that deliberate ingestion of

pesticide causes 3,70,000 deaths each year³. The commonest cause of poisoning in Bangladesh and developing countries is pesticides, the reason being agriculture-based economics, poverty unsafe practice, illiteracy, ignorance and lack of protective clothing, easy availability of highly toxic pesticides. In advanced countries, it has been observed that poisoning deaths are mainly due to cleansing agent, detergents, paracetamol, carbon monoxide and cosmetic products⁴. In a survey done in primary sub districts, secondary district, tertiary medical college levels in Bangladesh, the total case load of poisoning was found to be 14.5%(n=4553) out of 31329 admitted patient⁵.

In another large series Chowdhury et al in Khulna medical college hospital recorded 3.2% case load of poisoning (n=1903) during 2003 to 2006 among 60,000 patients⁶. Poisoning remains the top ten health problem in Bangladesh according to annual report of Bangladesh health authority⁷. The pattern of poisoning changes from time to time, country to country, region to region depending on some factors like geography, accessibility, availability of poison, socioeconomic conditions, cultural and religious influences. In general, accidental poisoning is more common in children and suicidal poisoning is more common in young adults⁸. Knowledge of general pattern of poisoning in a particular region helps in early diagnosis and treatment of cases thus decreasing the rate of mortality and morbidity. Hence this study was carried to find out the recent pattern and epidemiological profile of acute poisoning in southern part of Bangladesh.

Materials and Methods:

This observational study was carried out in the departments of Medicine of Faridpur Medical College Hospital, Faridpur from 3rd June, 2018 to 2nd December, 2018. Total 517 samples were taken purposively in the specified time period. All the poisoning patient attending medicine department of Faridpur medical college hospital was included in this study. Poisoning was diagnosed through proper history taking, clinical examinations, specimen containers brought by the patient or attendant, investigation and treatment.

All patients / legal guardians were briefed about the study. Informed and written consent obtained from all patients who could give the consent and those who were unable to respond, their appropriate relatives/legal guardian gave the consent. Confidentiality and privacy was maintained throughout the study. Participant refusal and withdrawal from the study at any time was accepted.

A structured questionnaire was provided to the patients. All necessary investigations were done. Results were evaluated and interpretation was done meticulously, findings of observations were recorded on prescribed data collection form.

All the data was appropriately recorded in a computer and then statistical analysis was carried out by using SPSS version 19. The test statistics used for analysis of data were descriptive statistics, chi-square test. The level of significance was 0.05 and p value \leq 0.05 was considered significant.

Results:

During the study period a total 517 patients of both gender were studied, females were slightly more than the males (55.1% vs 44.9%) and the female:male ratio was 1.22 : 1. Minimum and maximum age of the study population was 13 years and 70 years respectively and means age was 27 years. Married people were more commonly affected than unmarried people (58.4% vs 41.6%). By occupation, House wives were most predominantly affected (29%) followed by farmer (25.1%), others (18.8%), students (17.4%), service holder (5.8%) and businessman(3.9%). Most of the study populations were Muslim(93.8%) and only (6.2%) people were hindu. They were exposed of poisoning through oral route (99.2%) and 0.8% people were exposed through inhalation (Table I).

Table-I: Distribution of study population according to sociodemographic characteristics (n=517)

Variable	Frequency (%)
Age (Years)	
10-20	236 (45.6%)
21-30	146 (28.2%)
31-40	67 (13.0%)
41-50	38 (7.4%)
>50	30 (5.8%)
Gender	
Male	232 (44.9%)
Female	285 (55.1%)
Marital status	
Married	302 (58.4%)
Unmarried	215 (41.6%)

Occupation	
Farmer	130 (25.1%)
Housewife	150 (29%)
Student	90 (17.4%)
Service holder	30 (5.8%)
Business	20 (3.9%)
Others	97 (18.8%)
Residence	
Rural	459 (88.8%)
Urban	58 (11.2%)
Religion	
Islam	485 (93.8%)
Hindu	32 (6.2%)
Mode of Exposure	
Oral	513 (99.2%)
Inhalation	4 (0.8%)

In this study, different type of poisons was used in acute poisoning. Among them OPC (32.9 %) was the principal type of poison that the patients took for acute poisoning, sedatives (17 %) was second to OPC. Third most common poisoning was commuter (poisoning during travelling) poisoning (13.7 %), corrosives (10.8 %). Many people travel towards city for various purposes and during travelling different types of poison mixed with food, drinks, chocolate, jhalmuri and offered to passenger with a view to took off their money and products along with them. Some corrosive agent like herpic, nitric acid, hair dye, tarpin oil, dettol were used by some patients in acute poisoning. Diazepam, Bromazepum, TCA, clonazepum were used as sedative poisoning (Figure-1).

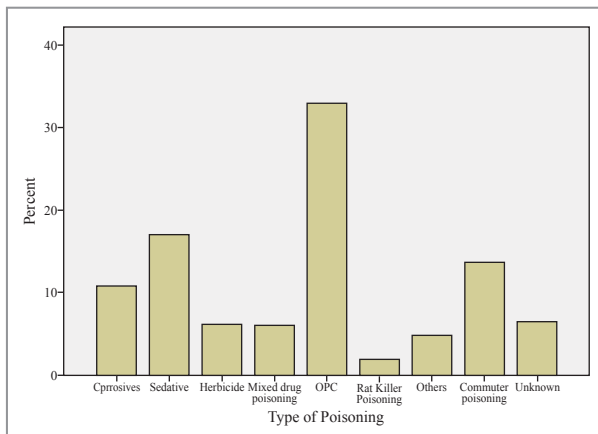


Figure 1: Distribution of study population according to different types of poisoning.

During the study period among 517 cases, 29 cases died which constituted 5.6% and 94.4% were alive. Maximum patient died due to OPC poisoning (3.7%) and minimum was corrosives (0.6%) and unknown (0.6%). No patient died due to sedatives, rat killer poisoning, commuter poisoning, mixed drug poisoning (Figure 2).

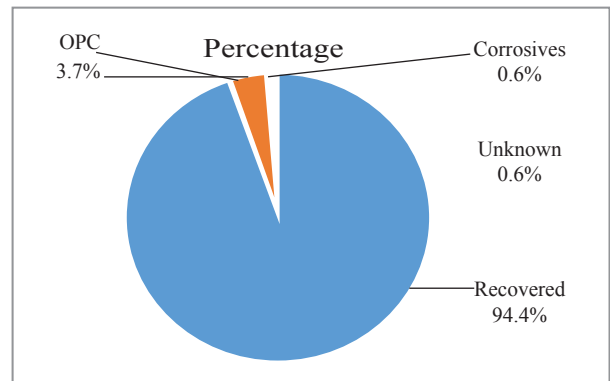


Figure 2: Distribution of study population according to mortality upon poison exposed.

Most of the study population was exposed to acute poisoning with the intention of suicide which constituted (93%). Suicidal tendency was more in female (55.5%) than in male (44.5%)(Table II). Accidental poisoning occurred during spraying in the field, poison bottle mistakenly took as the medicine syrup, cold drinks and in some cases patient suffering from psychiatric illness accidentally took the drugs.

Table-II: Showing the relationship between gender and intention of poisoning (n=517)

Intention of poisoning	Gender		Total	Percentage	*P value
	Male	Female			
Suicidal	214	267	481	93%	0.034
Accidental	18	15	33	6.4%	
Homicidal	1	2	03	0.6%	

*Chi-square test was done

Different patient took poison with the intention of suicide due to different cause, among them familial disharmony was the prime cause of suicidal poisoning (82.5%). Depression was the 2nd most leading cause of suicidal motive. Other causes of suicidal poisoning were rebuking from parents(3.5%), failure of exam (2%), unemployment (1.4%), chronic illness (0.6%) (Figure-3).

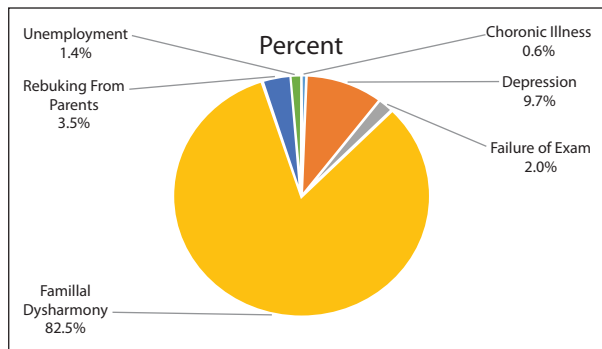


Figure 3: Distribution of study population according to causes of suicidal poisoning.

Table-III showed that time lapse had a significant relationship with in hospital mortality of the patients. Out of 517 study population, 316 patient came to hospital within 12 hours since exposure of poisoning and out of 316, 305 were alive and 11 cases were died. Total 201 cases came to hospital after 12 hours and out of 201, 183 cases were alive and 18 cases were died. This report showed that delayed arrival at hospital is associated with increased mortality. Here P value was 0.008 (≤ 0.05) which was statistically significant.

Table-III: Distribution of study population according to time lapse since exposure of poison to hospital arrival and mortality. (n=517)

Time	Gender		Total	*P value
	Alive	Expired		
< 12 hours	305	11	316	
>12 hours	183	18	201	0.008
Total	488	29	517	

*Chi-square test was done

Table- IV showed that there was no significant relationship between gender and hospital outcome of patients. Out of 232 male patients 178 cases were discharged, 30 cases were absconded, 10 cases died and 14 cases were referred to higher centers. Out of 285 female patients, 216 cases were discharged, 40 cases were absconded, 19 cases were died, and 10 cases were referred to higher centers. P value was 0.369 (> 0.05) which was not statistically significant.

Table-IV: Distribution of study population according to relationship between gender and hospital outcome of the patients. (n=517)

Gender	Hospital outcome				Total	*P value
	Discharged	Absconded	Death	Referred		
Male	178	30	10	14	232	
Female	216	40	19	10	285	0.369
Total	394	70	29	24	517	

*Chi-square test was done

Discussion

Acute poisoning is an important medical emergency. The trends of poisoning vary at different parts of the world and may vary even in different regions of the country depending upon socioeconomic and cultural factors. The appropriate management of poisoning at emergency needs accurate assessment and immediate treatment. The immense chance for better outcomes occur in early diagnosis and treatment. In this study female was slightly higher than the male. Female:Male ratio was 1.22 : 1. Female dominated study was conducted in Shenyang, China where female: male ratio was 1.2: 1 which is similar to this study⁹. The high proportion of poisoning among females might be due to increased stressful relationship, domestic violence, lack of financial support and emotional liability. However, most of the studies conducted at different regions of Bangladesh showed males were more commonly affected group than females. In this study majority of the poisoning cases were between 10-20 years (45.6%). In another study majority (39.3%) was between 21 to 30 years age group¹⁰ and Similar findings in other studies¹¹. Married people (58.4%) were observed more than unmarried in acute poisoning in this study which was similar to other studies of Bangladesh and other countries. Most of the study population exposed to acute poisoning lived in rural areas (88.8%) which was almost similar to study conducted at MGM hospital, Warangal, Andhra Pradesh, India (65%)¹². By occupation Housewives (29%) were the maximum followed by farmer (25.1%), Others (18.8%) and student (17.4%). This findings showed similarities with study on pattern of poisonous snake bite in Rangpur medical college hospital, Rangpur, where (31.53%) were housewives and (31.53%) were farmers¹³.

This study showed OPC as the predominant type of poisoning (32.9%) and also provided the highest number of death (3.7%). The findings was almost similiar (28.5%) with the baseline survey done in 2007 throughout the country and another pilot study recently done in different categories of hospital in Bangladesh¹⁴. The mortality rate was much higher in

few studies of India where it was 40%. But the rate was much lower in America, Eastern Mediterranean region and in Europe which was 4.9%, 7% and 3.7% respectively¹⁵. A systematic review showed that global mortality due to OPC poisoning is around 30% (27% to 37%)¹⁰. Sedative poisoning (17%) was observed to be the 2nd most common type of acute poisoning. Benzodiazepines, bromazepam, clonazepam, antidepressants were the drugs used as sedative poisoning. The reason behind this was the easy availability of the drugs that can be brought without any authorized prescriptions. The 3rd most common poisoning was commuter poisoning (13.7%). Commuter poisoning was more common in male than female. Out of 517 cases, 71 cases were commuter poisoning and among them 53 cases were male and 18 cases were female. A four year study on Acute poisoning cases admitted to a tertiary hospital conducted at Sylhet M.A.G. Osmani medical college, Sylhet, Bangladesh showed that commuter poisoning was the most frequently occurring type of poisoning (43.3%) in both men and women¹¹. Corrosive poisoning was (10.8%) and in similar type of study by Karki et al showed it was 2.9%¹⁶. Household cleaners such as harpic, detergents, terpin oil, savlon were used as corrosive as they were easily available at house. Manner of poisoning was suicidal (93%), accidental (6.4%), homicidal (0.6%). In another study by Chowdhury et al suicidal poisoning was (68.7%) and accidental poisoning was (15.9%). The most common reason behind suicidal poisoning was familial disharmony (82.5%) and other causes of suicidal poisoning was depression (9.7%), rebuking from parents (3.5%), failure of exam (2%), unemployment (1.4%), chronic illness (0.6%). The cause of suicidal poisoning was almost same in other studies¹⁷. There was significant relationship between gender and intention or manner of poisoning (p=0.034). Females predominantly take poison with the intention of suicide than male. Time lapse had a significant role in total outcome of the patients. This study showed that mortality rates were higher in those people who came to hospital more than 12 hours. In another study by Ramesha et al in Karnataka, India showed that mortality rates were higher in those people who came more than 8 hours since exposure to poisoning¹⁸. So, timely transport and treatment of all critically ill patients is required to prevent the high mortality among victims.

Conclusion:

Acute poisoning is common in admitted patients in medicine ward of tertiary level hospital in our country. This study gave an insight regarding sociodemographic distribution, most important type of poisoning,

associated mortality and also shows that delayed hospital arrival since exposure to poison is associated with increased mortality. So to reduce the burden of poisoning and associated mortality risk pesticide regulatory policies should be reviewed and strict rules and regulations should be applied to restrict the over the counter pharmaceutical products. To reduce the stressful relationship among the family members different peer support program should be arranged and in certain circumstances appropriate psychiatric counseling is needed. Different centers should be established at different parts of the country for toxicological analysis of different poison.

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