Clinico-Epidemiological study of poisoning in a tertiary care hospital in Bangladesh

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Abstract

Objective: The scale of the problem of poisoning is enormous hence clinico epidemiological spectrum of all poisoning cases need to explore to generate the management tool.
Methods: This prospective study was done at two medicine units (Unit 5 and 10) of Dhaka Medical College Hospital from July to December 2010 where all poisoning cases were seen. A total of 2890 patients were admitted out of which 600 were taken into the study.
Results: Among the poisoning cases 29% were pesticide, 27% travel related poisoning, and 20% benzodiazepine. 70% of poisoning occurred below 30 years of age and male: female ratio was 3:2. Incidence of poisoning was highest among students (31%) and housewives (25%). Majority of the patients were from urban area (76%) and most common intention was suicidal (66%). Familial disharmony was the prime cause (63%) behind poisoning. 42% cases got admitted between 5-8 hours of poisoning and more than 80% patients were admitted in the hospital directly without getting any first aid anywhere. Sixty-eight percent had Glasgow coma scale (GCS) score above 10 during admission. Cardinal clinical features of poisoning were nausea/vomiting (63%), drowsiness (56%), miosis (31%). Seventy percent patients were treated with only general and supportive treatment and specific antidotes were used in 30% cases. Case fatality for pesticide, benzodiazepine/anti-psychotic, rodenticide and snake bite was 6.9%, 2.2%, 8.3% and 3.3% respectively.
Conclusion: To assess the magnitude of problem, awareness of the public for prevention, immediate first aid measures and quick hospital admission is crucial component of poisoning.
Keywords: Clinical, Epidemiology, Poisoning, Tertiary care center

Introduction

Poisoning is a common medico social problem now a days. The scale of the problem is enormous due to the increased incidence of morbidity and mortality (1).

Poisoning is a significant global public health problem. According to the World Health Organization (WHO) data in 2004 an estimated 346 000 people died worldwide from unintentional poisoning of which 91% occurred in low- and middle-income countries. In the same year, unintentional poisoning caused the loss of over 7.4 million years of healthy life (disability adjusted life years, DALYs). Snake bites cause considerable death and injury worldwide and pose an important yet neglected threat to public health. WHO estimates that at least 421 000 envenoming and 20 000 deaths from snakebites occur each year, especially in South and South East Asia and sub-Saharan Africa. India has the highest estimated annual envenoming and deaths including 81 000 and 11000 respectively (2).

Substances involved in poisoning vary widely between different countries. In the United Kingdom, poisoning with paracetamol accounts for 48% of all overdoses, but only 7% of those in the United States, and in Nepal it is very rare. Poisoning with tricyclic antidepressants, selective serotonin re-uptake inhibitors and drugs of misuse is very common in the United Kingdom and the United States. Australia has a similar range of ingested toxins to the United Kingdom but envenoming with snakes, spiders and marine creatures is also very common. In South and South-east Asia, pesticide ingestion is endemic, and constitutes the most common cause of death by poisoning. The toxicity of available poisons and the paucity of medical facilities in the developing world mean that the mortality rate for self-poisoning is high at 10%-20%, compared with 0.5%-1% in most industrialized countries (3).

The poisoning cases are increasing in our country day by day. According to Bangladesh Health Bulletin, Director General Health Service (DGHS) 2010 in Upazila hospitals poisoning was the fifth common cause of hospital admission and third common cause of death in 2009. Poisoning causes around 16 000 episodes and 1500 deaths per year. Also poisoning was among the top 10 diseases of morbidity and mortality in district hospitals, general hospitals and medical college hospitals (4). A nation wide survey was conducted in September 2002 in 13 Medical College hospitals in Bangladesh, which showed the main mode of poisoning was insecticide with mean age of poisoning was 27.99 years with greater intention to suicide. The mean duration of hospital stay was 2.3 days with male to female ratio 59.4: 40.6 (5). In 2004–2006, travel-related poisoning increased from 6.1 to 9.5% of all admissions, representing 46.6%–55.7% of all admitted poisoning cases. In 2006 alone, 55.7% of all poisoning cases were treated for travel-related poisoning (6). Some 700 000 people in Bangladesh are bitten by snakes every year and up to 6000 of those die, making snakebites the country's second leading cause of unnatural death, a ministry of health study has found (7). The nature of poisoning in our country, the distribution of poisoning cases in age and sex group, mode of poisoning, agents involved and its possible relationship with educational background are different from that of Western countries. The epidemiological pattern is different because the social structure, economic status, educational level, awareness of our people and availability of drugs are different (8).

Poisoning is a potentially serious problem and it consumes not only the valuable health service resources and disrupts domestic, social and individual life but also causes considerable morbidity and mortality. Identification of high risk circumstances, susceptible groups within the population, chemical substances, commercial products and natural toxins involved in poisoning cases in the community can help in improving the preventive and management programmes (9).

The purpose of this study was to investigate the clinical symptomatology and epidemiological profile of these poisoning cases with the expectation that, this study would help to know the current situation, will aware us, reduce the damage and help to avoid such types of situation by taking appropriate measures.

Methods

A prospective study in two medical indoor departments (unit 5 and unit 10) of Dhaka Medical College Hospital, Dhaka was done from 1st July 2010 to 31st December 2010 (over a period of six months) in all patients with history of poisoning or suspected to be such case. Presence of any other organic cause of coma detected by means of history, clinical examination and investigations like complete blood count, blood sugar, liver function test, renal function test s. electrolytes, and others where required was the exclusion criteria for selecting specific cases.

The patients admitted as suspected cases of poisoning through emergency and outdoor admission were initially screened by study physician. All adult poisoning cases were enrolled and it was ensured by checking nurses 'Patient Register' and 'Admission Book.' After doing the exclusion criteria detailed history and clinical examination were done in all enrolled cases. Diagnosis was made on the basis of patient's statement, statement of the witness, smell of poisoning agents, brought specimen and characteristic features of poisoning in majority of cases (clusters of syndrome). Relevant investigations like CBC, RBS, SGPT, serum bilirubin, prothrombin time, blood urea, serum creatinine, s. electrolytes, x-ray chest was done to exclude other possibilities and to see the prognosis. Those having relevant investigation confirming other metabolic or structural causes were not included in the study and not analyzed therefore. In most cases, after giving gastric lavage in emergency department, poisoned patients were admitted to medical indoor department. All patients were initially assessed for vital signs and managed accordingly. Subsequent management were done as per instruction of consultant physician of respective medical unit depending upon type, amount, nature and time of poisoning. Then everyday follow-up until his/her recovery and discharge or death. Clinical recovery was observed when patient become fully conscious, all vital signs become stable. The patients requiring intubation for assisted ventilation were tried to transfer to the intensive care unit but due to lack of available bed all patients requiring assisted respiration were intubated at ward then transferred to intensive care unit (ICU) when bed became available. The outcome of the enrolled patients in this study was recorded as discharge with advice, discharge on risk bond (DORB), left hospital by own without doctors advice (absconded) and death. Cause of death was searched and death summary was noted. Psychiatric evaluation of the patients was done by a psychiatrist of mental health department of DMCH. All the data collected in 'Case Record Form – CRF.'

For the statistical analysis, Microsoft windows based SPSS software products was used (SPSS, version 17.0 SPSS Inc., Chicago, IL, USA). A detailed multiple-variable database was formed. Statistical comparisons were carried out using chi-square and student t test. P values of 0.05 or less were considered statistically significant.

Table 1. Demographic characteristics of poisoning cases (n = 600)

Demographic characteristics	Number	%
Age (y)		
≤20	159	26.5
21-30	260	43.3
31-40	113	18.8
41-50	42	7.0
>50	26	4.3
Sex		
Male	361	60.2
Female	239	39.8

Table 2. Other socio-demographic features of the poisoning cases (n = 600)

Socio-demographic features	Number	%
Education		
Illiterate	46	7.6
Primary	111	18.5
High school	223	37.2
Intermediate	190	31.6
Graduate and above	30	5.0
Occupation		
Service	133	22.1
Farmer	42	7.0
Student	181	31.1
House wife	147	24.5
Businessman	77	12.8
Others	20	3.3
Religion		
Islam	553	92.2
Hindu	47	7.8
Marital status		
Married	320	53.3
Unmarried	269	44.8
Other (separated, divorced or widow)	11	1.8
Setting (residence)		
Rural	143	23.8
Urban	457	76.2

Figure 1. Name of poisoning agents (n = 600).

Table 3. Clinical features of the poisoning cases (n = 600)

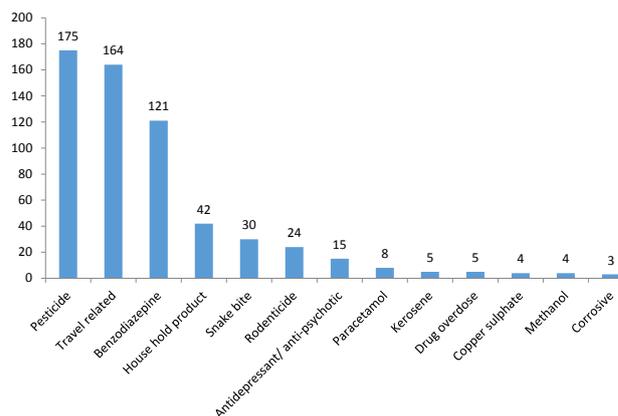| Clinical features	Number	%
No symptom/sign	76	12.7
Nausea/vomiting	376	62.7
Abdominal pain	92	15.3
Miosis	183	30.5
Mydriasis	18	3.0
Visual disturbance	25	4.2
Increased sweating/ salivation	48	8
Dry skin/dehydration	32	5.3
Bradycardia	17	2.8
Tachycardia	63	10.5
Hypotension	25	4.2
Hypertension	18	3
Tachypnoea	64	10.7
Bradypnoea	13	2.2
Muscle weakness	32	5.3
Headache	15	2.5
Drowsiness	334	55.7
Seizure	9	1.5
Coma	27	4.5

Results

Total patients admitted in the study medical units of DMCH in period of six months from 1st July 2010 to 31st December 2010 were 2890; of them 243 (8.4%) patients Out of total admitted cases 620 (21.45%) were poisoning cases and 20 cases did not give consent and excluded from further study. Six hundred cases were taken for study total death due to poisoning were 18 (2.9%).

Table 1 demonstrates that most of the patients were of younger age group. 159 (26.5%) patients were 20 or below 20 years and 260 (43.3%) patients were between 21-30 years. The mean age was 28.29 years and the lowest and highest ages were 13 and 80 years. Male were predominant than female with a sex ratio of male: female = 3:2.

The educational background of the poisoned patients was mostly high school 223 (37.2%) and intermediate 190 (31.6 %). Incidence of poisoning was highest among students 181 (31.1%) and the next common group was housewife 147 (24.5%). In this series, Muslim were 553 (92.2%) and 320 (53.3%) patients were married. Majority of the patients (76%) came from urban area (Table 2).

One hundred sixty patients (26.7%) of the poisoning cases got admitted within 4 hours of poisoning, 249 (41.5%) from 5-8 hours, 158 (26.3%) from 9-12 hours and 33 (5.5%) patients attended after more than 12 hours. Majority of the poisoning patients had suicidal intention (397,

66.2%) followed by stupefying (164, 27.3%). Thirty-five (5.8%) patients had accidental and 4 (0.7%) cases were homicidal intention. Two-thirds (376, 62.7%) of the poisoning cases were prompted by family disharmony. One hundred sixty-four (27.3%) patients were victim of stupefying agent. Fail to pass in examination was the cause in 12 (2%) cases, economical loss in 8 (1.3%) cases and other motives including accidental was 40 (6.7%) cases.

Among the poisoning cases 175 (29.2%) patients used pesticide, 121 (20.2%) used benzodiazepine. The rest are house hold products, rodenticide, oral drugs, kerosene, copper sulphate, methanol and corrosive agent. One hundred sixty-four (27.3%) patients were victim of travel related poisoning and 30 (5%) were case of snake bite (Figure 1).

Cardinal clinical features of poisoning were nausea/vomiting (62.7%), drowsiness (55.7%), miosis (30.5%), other clinical features were not very common. 12.7% had only history of poisoning and no symptom or signs (Table 3). Forty-two (7%) patients had a Glasgow coma scale (GCS) score of 3 on admission, 150 (25%) patients had GCS score between 4-10 and 408 (68%) patients had GCS score above 10 (Table 3).

Four hundred eighty (81.2%) patients were admitted in the hospital directly without getting any first-aid anywhere. Among the 116 (19.3%) patients who received first-aid, 63 (10.5%) patients attended at Govt. hospital, 38 (6.3%) patients attended at private hospital. Nine patients were treated by 'Ozha' (snake charmer) out of 30 cases of snake bite (30% of snake bite cases).

The patients attended in medical units of DMCH were treated with only general and supportive treatment in more than two-thirds of the cases (417, 69.5%). Specific antidotes were used in 183 (30.5%) cases. In absence of diagnostic laboratory facility for poison detection no toxicological investigation was done. Non-toxicological investigation was done only in 32 (5.3%) cases to exclude other possibilities and to see the prognosis or any complication. Nearly three-quarter (426, 73.3%) of the patients recovered completely and were discharged with advice, 130 (21.1%) patients left hospital by own without doctors advice 'absconded', 26 (4.3%) patients discharged hospital on risk bond 'DORB' and 18 (3%) patients had died of the condition. Most of the poisoning patients (66.5%) stayed hospital for 1-3 days, 26% stayed 4-6 days and the rest 7% stayed at hospital for more than 6 days. Mean hospital stay was 2.81 days.

Among the poisoning death 12 (66.6%) patients ingested pesticide, 3 (16.7%) patients took benzodiazepine/anti-psychotic/anti-depressant, 2 (11.1%) patients used rodenticide (rat killer) and 1 (5.5%) died of snake bite. Out of total 175 cases of pesticide poisoning 12 patients died; case fatality 6.86%. Out of 136 cases of self induced benzodiazepine/anti-psychotic/anti-depressant 3 patients died; case fatality 2.21%. Out of 24 patients of rodenticide poisoning 2 patients died, case fatality 8.33% and out of 30 patients of snake bite 1 patient died; case fatality 3.3%. Age between 21-40 years is significantly prone to die of poisoning accounting about 83.3% (15 cases). A male preponderance (65.7%) was also observed. Poisoning due to suicidal and homicidal intention is more common among female patients, whereas accidental and stupefying is common among male patients (Table 4). Travel related poisoning is much more common among male patients (97.6%) whereas poisoning by pesticide, rodenticide, benzodiazepine or anti-psychotic agent is common among female patients. Snake bite is also common (60%) in male gender group (Table 5).

There was no significant difference was observed between cases who received first-aid and who did not in terms of outcome of treatment ($P=0.113$; Table 6). Forty-two patients were admitted in DMCH in fully unconscious state with GCS score 3, and out of them 35 patients survived and 7 patients died; case fatality was 16.7%. In GCS 4-10 group, out of 150 patients 142 survived and 8 died; case fatality was 5.3%. In GCS 11-15 group, out of 408 patients 405 survived and only 3 patient died; case fatality was 0.7%. So, lower the GCS score on admission, higher was the mortality rate.

Discussion

Acute poisoning has been found as a major clinical problem with 21% of total admission and around 3% of mortality in two adult medicine units in DMCH, Dhaka, Bangladesh. The incidence of poisoning is much higher (21%) in comparison to other studies in Bangladesh (2.93%) (10) and European countries (10%) (3). The difference in incidence may be due to that the study of Rahman and Salad (10) was based on a rural hospital (Thana Health Complex) and this study has been conducted in DMCH, Dhaka. Therefore, in order to obtain the overall picture, it is necessary to study of poisoning in the communities and all sort of health facilities. Eighteen patients died of poisoning. Among the poisoning deaths 12 (66.6%) cases were due to pesticide poisoning. Case fatality rate of poisoning cases was 3%, which is lower than the study of Ahmed et al (11.8%) (8), Rahman and Salad (7.06%) (10) and other earlier studies in Bangladesh (11-13). The lower mortality rate in this study may be due to changing trends in poisoning in our country; transport related poisoning with sedative hypnotic drugs is an emerging social and public health problem (13) which are less fatal. And also there is increased use of less toxic sedatives (14) and house hold products instead of more toxic agents for the purpose

Table 4. Association between sex and intention of poisoning (n = 600)

	Intention of poisoning			
	Suicidal (n=397)	Homicidal (n=4)	Accidental (n=35)	Stupefying (n=164)
Sex				
Male	177 (44.6)	1 (25)	23 (65.7)	160 (97.6)
Female	220 (55.4)	3 (75)	12 (34.3)	4 (2.4)

Table 5. Association between sex and poisoning agent (n = 600)

	Poisoning agent				
	Pesticide + Rodenticide (n=199)	Travel Related (n=164)	Benzodiazepine +Antidepressant (n=136)	Snake bite (n=30)	Others (n=71)
Sex					
Male	87 (43.7%)	160 (97.6%)	61 (44.9%)	18 (60%)	35 (49.3%)
Female	112 (56.3%)	4 (2.4%)	75 (55.1%)	12 (40%)	36 (50.7%)

Table 6. Association between first-aid received and outcome of treatment (n=600)

First-aid received	Outcome of treatment				P value
	Recovered (n=426)	Absconded (n=130)	DORB (n=26)	Death (n=18)	
Yes	81 (19.0)	22 (17.0)	7 (27.0)	6 (33.3)	
No	345 (81.0)	108 (83.0)	19 (73.0)	12 (66.6)	

of self harm. The lower mortality rate may also indicate the improvement in health facility for these patients.

In this study, around 70% of poisoning occurred below 30 years of age (26.5%) and mean age was 28.29 years and male female ratio of 3:2. It indicates that poisoning is common among young people. Present findings are in close approximation with the findings of Ahmed et al (8) and Faiz et al (15). The involved active age group is vulnerable to poisoning in Bangladesh which indicates attention is needed in this age group regarding social perspective. The age incidence differs with the study of Khan (9) but similar to the studies done at CMCH (11). The more number of male victim may be due to large number of travel related poisoning cases and most of whom were male (97.6%). Possibly male are more approachable at travel and social behavior let the women not to become vulnerable victim of stupefying agents. Poisoning by pesticide, rodenticide, benzodiazepine or anti-psychotic agent is common among female patient.

The study shows that maximum poisoning patients were either high school (37.16%) or intermediate (190, 31.6%) education group. Among the illiterate and primary education group the most common poisoning agent was pesticide/rodenticide and among high school, intermediate and graduates benzodiazepine and anti-depressant are prevalent. This finding is consistent with the study of Ahmed et al (8) where suicidal and homicidal poisoning were common in educated group and accidental poisoning (88.2%) was common in non-educated group. Due to agriculture based economy and easy availability of pesticides, this is the most common method of poisoning in non-educated group. The high incidence of benzodiazepine/anti-depressant poisoning in educated group is possibly due to unemployment and the unrest prevailing in our society and easy availability of such drugs by them (4). The study also shows that the incidence of poisoning was highest among students (31.1%) followed by housewife (24.5%). The highest incidence among students reflects that this group is vulnerable to failure in affair or examination and victim of sexual abuse etc. Overall they are emotionally labile and not mature enough to tolerate extreme mental or physical pressure. The high incidences among housewives indicate that family instability may be the underlying cause and it also suggests that poisoning agent is easily available among the reach of this group. These findings simulate with other study Karki et al (16) The relative lower rate of poisoning among farmers was due to most of the patients of this study were from Dhaka or nearby the capital.

Muslim were (92.2%) the common religion affected by poisoning. According to Sample Vital Registration Sys-tem 2008, Bangladesh Bureau of Statistics, the majority of Bangladeshi people are Muslim about 89.35%, followed by Hindu 9.64%, Buddhist 0.57%, Christian 0.27% and others 0.17%. So there is no significant preponderance of poisoning in any religious community and the large sample is proportional to the population of Bangladesh. Among cases, 53.3% patients were married which indicates that poisoning is a little common among married groups but might not a major factor for self harm. It simulates with the study on 2003 in rural India which also showed that 63% victims of self poisoning were married and marital disharmony is the prime cause.

Majority of the cases were suicidal (66%) followed by stupefying (27%). This data closely simulates with the findings described by Faiz et al (12). It suggests that suicide by poisoning is a common cause of unnatural death in Bangladesh like other developing countries. Transport related poisoning by short acting sedative-hypnotics for the purpose of hijacking the belongings of the travelers is increasing (13). Accidental poisoning was lower in this study than it was found in the study done by Ahmed et al (8) (16.7% versus 5.5%). The difference of incidence is possibly due to lack of pediatric patients in current study who are vulnerable to accidental poisoning especially kerosene in Bangladesh. Poisoning due to suicidal and homicidal intention is more common among female patients, whereas accidental and stupefying is common among male patients. It is similar with study of Howlader et al (17). About two-thirds (63%) of the poisoning cases were prompted by family disharmony. Self-harm, in particular self-poisoning, is used for many reasons to gain attention, express distress, or get revenge not just for ending life. Eddleston (18) showed that many deaths from self poisoning in Asia Pacific region occur in people who do not intend to die; they die because the poisons ingested are very toxic and patients are very difficult to treat (19).

Following ingestion of poison 41.5% got admitted within 5-8 hours. This is similar to the result of a study in CMCH, where 44.5% of patients were admitted beyond 4 hours (3). Community awareness for seeking early treatment for health facilities is to be created. More than 80% patients were admitted in the hospital directly without getting any first-aid anywhere. Among the patients who received first-aid outside most of them attended at Govt. hospital. This poor pre-hospital management may contribute to the relative high death rate in severely toxic agent poisoning like OPC and poisonous snake bite. Intensive community awareness is necessary for improvement of such a basic first-aid measures following poisoning. In absence of diagnostic laboratory facility for poison detection visual inspection and identification was made in this study. In

about 50% cases we could identify the used poison possibly because the victims threw it into the pond or toilet or hid it in some other places after using the poison. Ninety-five percent of the patients had done no investigations, only 32 (5.3%) cases underwent non-toxicological investigation to exclude other disease or assess the severity or detect any complication.

Incidence of poisoning with pesticide (29.2%) topped the list of poisonous agents which differ with studies done in European countries (3,20). Nature and type of poisoning varies from country to country possibly due to social, economic and educational background of the society. Pesticide is still relatively a common item of poisoning in agricultural country like Bangladesh, which is consistent with other studies done in South Asian region (12,13). This indicates poverty, illiteracy and early marriage is an important contributing factor (15). Among all the poisoning cases, homicidal 'travel related poisoning' by suspected short acting sedative or hypnotic drugs were the second common cause (27.3%) and most were male. This finding is consistent with previous study conducted in the Dhaka Medical College and District Hospital level (8,10,15,21). But differ with the findings of other study (3,22). Datura was found as predominant agent used for stupefying purpose by Khan in 1985 (9), but the situation has entirely changed. No patient in this series had datura poisoning; all were applied sedative-hypnotics. This finding is nearly similar to the finding of Azhar et al (14) and Howlader et al (17). About 23% patients used anxiolytic, antidepressant or antipsychotic. It was commonly used by educated and rich people. This is, probably due to the knowledge among this class of people about the ability of these drugs to produce a peaceful death (death in sleep), occasionally it is used due to emotional crisis or attempts to draw attention which is evidenced by taking a minimal amount (only few tablets) and preserving the strip of the drugs (15). This finding indicates that poisoning with these agents are increasing and may be the cause is these drugs are easily available in our country. The provision of safety handling and restriction of selling drugs without prescription of registered physician is urgently required for prevention of poisoning.

The cardinal clinical features of poisoning were nausea/vomiting (62.7%), drowsiness (55.7%), miosis (30.5%). Other clinical features were variable and not very common. Majority (68%) of the patients had GCS score above 10. The case fatality is consistent with lower GCS at presentation which indicated the importance of simple scoring system like GCS and or IPCS PSS to use judiciously in clinical settings. All patients were initially assessed for vital signs and managed accordingly. Subsequent management was given upon type, amount, nature and time of poisoning. Most patients with self-poisoning required only general care and support of the vital systems. The challenge for clinicians managing poisoned patients is to identify at an early stage, those who are at risk of developing serious complications and who might potentially benefit from an antidote or treatment to in-

crease elimination of the poison (3,18,19). Such essential drugs (antidote) should be available free of cost in public hospitals. In this study only 3 patients got ventilator support and of them one was survived after 1 week under ventilation. Rest 2 patients died within 24 hours of ventilation. Another 20 patients (3.3%) also needed assisted ventilation as per criteria but ventilation was not available at that time and so could not be resuscitate the patients, which needs to be addressed seriously in order to reduce poisoning related deaths in major teaching hospitals in Bangladesh. This situation is likely to be worse in other small and peripheral hospitals where ICU is non existent (3-21).

Nearly three-quarter (73%) of the patients recovered completely and 21% patients were absconded. In comparison to the outcome of Amin et al (13) where 84% patients survived, 7.98% died and 7.98% absconded, the number of absconded patients were more in current study and this may be due to the huge number of poisoning cases by self induced benzodiazepine and short acting sedative-hypnotic travel related poisoning cases which recovered early and leaved hospital before 'ward-round'. There may be other causes of early leaving of hospital like lack of available bed (poisoning patient are kept in floor or 'veranda'), poor facilities and hospital environment and to avoid social embarrassment. Insecticide was found to be the commonest (67%) agent responsible for poisoning death and case fatality for insecticide in this series was 6.86%, which is very similar with the other studies in Bangladesh, India, Nepal, Pakistan and Sri Lanka (10-23). This data suggest that pesticide poisoning is one of the commonest cause of death in Bangladesh as well as in other South Asian countries which might be contributed by insufficient first-aid before hospital arrival, inappropriate dose of antidotes and non availability of ICU support facilities. The second common (17%) cause of death was benzodiazepine with anti-depressant and anti-psychotic. The newly developed anti-psychotics are prescribed in large number now a day and the abuse of these medications are alarming for tertiary level health care provider as no antidote is available.

The overall mortality was 3% which could be improved by providing early first-aid management to poisoned patient before reaching hospital, creating public awareness for quick hospital admission following poisoning, providing antidotes and other drugs available and free of cost in govt. hospitals, providing immediate ICU support to poisoned patient when required and careful observation.

Limitation of the study

Samples were collected from only two units of DMCH. If the samples were collected from all units of DMCH, more precise information could be found. Objective evidence by toxicological investigation was not done; e.g. urinary level of benzodiazepine and plasma or RBC cholinesterase was not available to confirm or to assess the severity of disease. Long-term outcome of poisoning was not possible to follow up.

Conclusion

It is a simple observational study and though scientific diagnostic measurement was not possible it may reflect the total poisoning situation of Bangladesh and much work is needed to tackle the situation like, survey in the community to assess the magnitude of poisoning in Bangladesh. Awareness of the public should be created for its prevention, for immediate first aid measures and quick hospital admission, aware doctors should be created by giving adequate importance of poisoning by continued medical education. Legislative measures on storage, sale and usage of pesticide, toxic chemicals and drugs which may be abused. National poison centre should be active from which clinicians, health care providers and even the general public can obtain immediate and accurate information on the treatment, clinical features and identification of poisons. Special care should be taken for depressed persons, showing suicidal tendency.

Ethical issues

The study was ethically reviewed and clearance was taken from "The Ethical Review Committee of Dhaka Medical College Hospital."

Authors' contributions

MRH and ARH collected the data and took patient care. MRA designed the study and wrote the initial manuscript. FRC did the statistical analysis; MAK supervised the study and contributed to the editing of the manuscript.

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