CHANGING TRENDS OF POISONING IN BANGLADESH

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Abstract:

Trends have been changed in poisoning in our country. Transport related poisoning is an emerging social and public health emergency in Bangladesh. As no remarkable studies has been done in this issue before, so there is no clear cut data about mode of poisoning. In this study it showed that the mode of poisoning is usually food with mixed benzodiazepines preparations. This prospective study was done in the Medicine unit of Sir Salimullah Medical College & Mitford Hospital, Dhaka, from July to December 2004. All the poisoning cases admitted in Medicine Unit of Sir Salimullah Medical College & Mitford Hospital, Dhaka are included in this study. A total 100 cases were studied. Among all the poisoning cases, 'street poisoning' by sedative hypnotic drugs were the highest percentage (37% of the total) and all were male. In males, 57.81% of poisoning caused by benzodiazepines (transport related poison), 20% by organophophorous, 3.12% by copper sulphate, 4.98% by benzodiazepines (attempted suicide), 4.98% by acid and 1.56% by kerosene. Among the female patients 41.66% of poisoning caused by organophophorous compounds, 19.44% by rat killer, 11.11 by coper sulphate, 8.33% by benzodiazepines, 5.55% by acid, 5.55% by savlon, 5.55% by herpic and 2.77% by phenol. Most of victims of street poisoning were businessman (67.56%) rest were normal/ domestic travelers (16.21%) and few were service holder (10.81%). Majority were from lower socio-economic classes. In analysis of the causes behind poisoning, 57% were due to familial disharmony/domestic trouble, 23% were poverty related, 15% were due to failure in affairs, 11% were due to failure in the examination, 4% were due to sexual abuse and 5% due to chronic illness and unknown cause.

Key words: *Poisoning, trends, street poisoning, socioeconomic condition.*

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Introduction:

A poison is a substance capable of producing adverse effects in a living organism. Humans come into contact with a great variety of drugs, chemicals, venomous animal and insect resulting varying degrees of poisoning in varying modes accidental, suicidal and homicidal[1]. In another way poison is any substances, which, when administered by any route, is capable of producing ill health, disease or death[2].

Bangladesh Health Bulletin under Directorate General of Health Service (DGHS) which was published in 1998 contained different numbers of poisoning cases which varied in different years probably for under reporting from remote thana and district level and below. The bulletin shows there is increasing frequency of poisoning cases from 1988-1996 except in 1990 and 1993[3]. The total of 7780 patient's attended in the emergency department of Dhaka Medical College Hospital in May 1999, of which 600 were poisoning cases, with an average of 20 patients per day[4].

A nationwide survey was conducted in September 2002 in 13 medical college hospitals, which showed main mood 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 which male to female ratio was 4:40.6[5]. The

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retrospective study revealed that the highest incidence of poisoning was among the people aged between 11-30 years (68% in 1985 and 65% in 1986). Pesticides were the commonest chemicals used for poisoning and addictive drugs were next to insecticides[5].

Trends have been changed in poisoning in our country. Transport related poisoning is an emerging social and public health emergency in Bangladesh. As no remarkable studies has been done in this issue before, so there is no clear cut data about mode of poisoning. In this study it showed that the mode of poisoning is usually food with mixed benzodiazepines preparations. Food like dub water, soft drinks, tea, coffee, *jal muri* and *traditional medicine* for instant pain relief, cough & asthma relief by *hawker* physician in the vehicles are used as media of poisoning for the purpose of pick pocket.

Materials & Methods:

Types of Study: Prospective study.

Place of study: Medicine unit of Sir Salimullah Medical College & Mitford Hospital, Dhaka.

Period of Study: From July to December 2004

Inclusion criteria:

All the poisoning cases admitted in Medicine Unit of Sir Salimullah Medical College & Mitford Hospital, Dhaka are included in this study. A total 100 cases were studied.

Detailed history and clinical examination was done in all cases. Diagnosis was made on the basis of patients statement, statement of the witness, smell of poisoning agents and characteristic features of poisoning in majority of cases. Relevant investigations like RBS, CBC, SGPT, Serum Bilirubin, Prothrombin time, Blood Urea, Serum Creatinine, X-ray Chest was done to exclude other possibilities and to see the prognosis.

Exclusion criteria:

1. Snake bite, food poisoning, electrocution, drowning and drug reaction are not included in this study.
2. Unwilling to give informed consent by patient or patients relatives.

Data collection:

All the data collected in data sheet. According to the educational level. All the patients were classified into three groups:

1. Primary: Those who were illiterate or educated only upto class five level.
2. Secondary: Those who were educated upto higher secondary level.
3. Graduate : Educated above higher secondary level.

The economic status of the patients were labeled according to monthly income (approximately). These were as follows:

Low income group: <3,000 taka per month

Middle income group: 3,000-10,000 taka per month

High income group: > 10,000 taka per month.

Ethical aspect:

Before study informed consent was taken from the patient/attendant and aim of the study was explained clearly.

Results:

In this study observation were made from 100 cases of which 64% were male and 36% were female having the maximum of 20-45 years of age group.

Table-I

Age distribution of poisoning

Age range in years	Number of patients	Percentage
15-25	20	20
26-35	26	26
36-45	40	40
46-55	10	10
56-65	4	4

Among all the poisoning cases, 'street poisoning' by sedative hypnotic drugs were the highest percentage (37% of the total) and all were male. This finding are consistent with four previous study conducted in the Dhaka Medical College and District Hospital level [6,7]. But differ with the findings of other study conducted by others [8,9].

Table- II

Sex incidence

Sex	Number of patients	Percentage
Male	64	64
Female	36	36

Most of the poisoning occurs in the 3rd and 4th decade (40% of the total poisoning cases). Both suicidal and transport related poisoning are common in this group of people. As they are the earning members of the family, so all the responsibilities (both financial and social) are exposed upon them. They are the victim of poverty or any familial or social disharmony. In transport related poisoning these age group are commonly targeted, because the hijacker think that money is kept with them.

A large group of affected people were in young adult (30% of total), which is similar to finding of Khan et a1.[10] and most cases the motive behind poisoning in this age group were failure in affair, failure in the examination, sexual abuse etc. Overall, these groups of people are emotionally labile and they are not mature enough to tolerate extreme mental or physical pressure.

Table- III

Pattern of poisoning in male (n = 64)

Types	Number of patients	Percentage
'Street poisoning' with benzodiazepines	37	57.81
Organophosphorous (O.P.C)	20	20
Copper sulphate	2	3.12
Benzodiazepines	3	4.98
Acids	3	4.98
Kerosine	1	1.56

In analysis of the pattern of poisoning, in male, 57.81% of poisoning caused by benzodiazepines (transport related poison), 20% by organophophorous, 3.12% by copper sulphate, 4.98% by benzodiazepines (attempted suicide), 4.98% by acid and 1.56% by kerosene.

Table- IV

Pattern of poisoning in female (n = 36)

Types	Number of patients	Percentage
Organophosphorous	15	41.66
Rat Killer	7	19.44
Copper Sulphate	4	11.11
Benzodiazepines	3	8.33
Acid	2	5.55
Savlon	2	5.55
Herpic	2	5.55
Phenol	1	2.77

In analysis of the pattern of poisoning, among the female patients 41.66% of poisoning caused by organophophorous compounds, 19.44% by rat killer, 11.11 by coper sulphate, 8.33% by benzodiazepines, 5.55% by acid, 5.55% by savlon, 5.55% by herpic and 2.77% by phenol.

Street poisoning by sedative-hypnotics and datura ranked the highest among agents used for poisoning in this series (37%). Datura was found as predominant agent used for stupefying purpose by Khan et al. in 1985[10]. But the situation has entirely changed. Only 4 patients out of 37 stupefying poisoning cases in this series had datura poisoning. All the remaining 33 were sedative-hypnotics poisoning applied to the travelers for the purposes of theft. This finding is nearly similar to the finding of Sarker et al. in 2002 and Azhar et al. in 1992[9,11].

Table- V

Economic status of poisoning patients

Economic class	Number of patients	Percentage
Low	48	48
Middle	47	47
High	5	5

In analysis of economical status of the victims, 48% were from low income group, 47% from middle and 5% from high income group.

Most of victims of street poisoning were businessman (67.56%) rest were normal/

domestic travelers (16.21%) and few were service holder (10.81%). Majority were from lower socio-economic classes. Possibly poor people move more frequently through bus and can be offered food more easily and easily approachable. Majority of people live hand to mouth and their educational status were also in the primary and secondary level. This finding closely resembles with the finding of other western countries[12]. The miscreants were deliberately mixing the poison with various foods for the purpose of theft. Initially they creates a relationship with the victim and then offered foods mixed with poison to them. Majority of people were made stuporous with dub water, soft drink, tea, banana, smaller parentage of victims were offered with betel leaf and nut, biscuits, *jhal muri*, friut juice and *traditional medicine* for instatnt pain relief, cough & asthma relief by *hawker physicians* in the vehicles are used as media of poisoning for the purpose of pick pocket.

The similar results were seen in a study in Chittagong Medical College Hospital (CMCH) and in a hospital in New Delhi (Jain and Bhatnagar 2000) because these items were familiar with this group of victims, popular as fast food, cheaper to buy and easily available and widely accepted. Most of the victims were long route traveler. Sometimes poisons were forcefully offered to the victims and they compelled to ingest the poison. Most of the victims were transfer to the hospital emergency department by the police or helper of the bus or by accompanying person in the unconscious or semiconscious state. Regarding clinical profile majority (65%) of the patients Glasgow Coma Scale (GCS) was >10, most were drowsy (80%) with normal respiration (83%) with normal pulse (90%) and normal temperature.

Seventy percent had bilateral flexor planter response, 15% had equivocal and only 2% patients had bilateral planter extensor response, which were nearly consistent with the result of Chittagong Medical College Hospital (CMCH), Chittagong, Bangladesh, and in hospital in New Delhi[13.14].

Table- VI

Causes behind poisoning

Cause	Percentage
Familial disharmony/Domestic trouble	57
Poverty	23
Failure in affairs	15
Failure in the examination	11
Sexual abuse	4
Others (chronic illness, unknown etc)	5

In analysis of the causes behind poisoning, 57% were due to familial disharmony/domestic trouble, 23% were poverty related, 15% were due to failure in affairs, 11% were due to failure in the examination, 4% were due to sexual abuse and 5% due to chronic illness and unknown cause.

Organophosphorous compound poisoning was the second leading causes of admission (33%) in this series. Similar results found by five separate groups of authors in four separate study place[15-17]. OPC is commonly used as a suicidal poisoning by the poor rural people in the tropical Country[18], for these compounds are easily available in the rural agricultural based area. This indicates poverty, illiteracy and early marriage is an important contributing factor. Incidence of suicidal poisoning among married housewives was high indicating that they become the victim of domestic trouble, many being dowry related. This observation correlates with the finding of Azhar, Faiz and Hasan & Khan et al.[9, 10, 19]. But in western countries the type of poisoning is entirely different and the incidence of insecticide and pesticide poisoning is minimal. Barbiturate, alcohol and other sedative hypnotics are the most common offenders in suicidal poisoning[20].

Other agents used for the suicide were rat killer, which was 7% of the whole poisoning cases. This finding is consistent with Sarker et al.[11]. These agents were mostly used by the poor female. Few of them were maid servant.

Discussion:

A study on poisoning was carried out in four general hospitals in Chittagong Division. It was found that 231 and 259 cases of poisoning were admitted in 1985 and 1986 in four hospitals.

The retrospective study revealed that the highest incidence of poisoning was among the people aged between 11-30 years (68% in 1985 and 65% in 1986). Pesticides were the commonest chemicals used for poisoning and addictive drugs were next to insecticides[5].

In a special period in 2003 over 7 days among 292 cases admitted in Chittagong Medical College Hospital (CMCH) 28 were poisoning cases (9.6%), among them 18(67%) were due to travel related poisoning. This study showed that insecticides or pesticides were the most common agents of poisoning, while Datura was the most common agent of poisoning in the general hospital of Noakhali[20].

Different studies in Rajshahi and Rangpur Medical College Hospitals were conducted in different times, which showed OPC is the commonest mode of poisoning with 3.96% of total poisoning in Rangpur and 4.3% in Rajshahi. Seventy four percent were with suicidal intention in Rajshahi Medical College Hospital.

In Khulna division, another study was conducted in different district level hospital where main mode of poisoning was insecticide, majority with intention to suicide with greater fatality rate (83-90%).

Poisoning differs among populations, according to their social classes and financial conditions. The methods of poisoning vary from country to country and in the same country it varies in different locations. Bangladesh is a developing country, which mostly depends on agricultural resources.

Organophosphorus compounds (OPCs) are widely used as insecticide in agricultural sector by the farming community for the control of insect vectors. They are not ideal agents as they lack target vector selectivity and causes severe toxicity and even death in human and in domestic animals.

Ninety nine percent cases of pesticide poisoning occurred in developing country (Bangladesh Health Bulleting 2001). Numerous Organophosphours compounds and carbamates insecticides are available in Bangladesh. In fact it is the household item in rural Bangladesh. Nation wide information on poisoning is not available from Bangladesh. In Sri Lanka available information on hospital admission due to poisoning for the period 1980-1989 shown all poisoning ranged 154-200/ 1,00,000 population, while those due to pesticide poisoning varied between 80-108/ 1,00,000 population[21].

Almost every part of the house contains substances that may pose a danger to health. Small children are particularly more likely to be exposed to accidental poisoning. Every day we may use many poisoning in the home substances like detergent and other cleaning agents, fuels, paints, weed killers, insect spray, cosmetics, medicines etc. Usually, poisoning from these substances is accidental and children between the ages of nine months and five years are most at risk, although adults may also be poisoned.

Coloring agents, preservatives, pesticides sprayed in vegetable and fruit garden are great concern as they can cause both immediate and long morbidities and mortalities. Experience shows people are poisoned even by inhalation of cigarette smoking.

Some poisoning cases occur in rural Bangladesh by snake bites, commonly hilly areas like Chittagong and Sylhet with some cases of sea snake bite in costal areas.

Poisonous fishes are available in the Bay of Bengal and also in the fresh water of Bangladesh. Potka fish (Puffer fish) is an example. Reports of such fish poisoning are reported in newspaper. It contains deadly Channel toxin causing paralysis and electrolyte disturbances.

Pattern of poisoning in Bangladesh reflects the socioeconomic condition of the country. The cause of poisoning in majority of cases is due to dispute among the family members because of complex relationship in our country. Due to antimalarial drug and random use of pesticide, poisoning from this substance is very common which are predominantly fatal. Availability of pesticide to the farmer and their family member are key factor of high incidence of poisoning. The usual story is that some

chemical was bought for purpose or destroying pests and insects, part of which was used up and remainder was preserved in an accessible place. Overwhelmed by frustration or unable to cope with domestic problem, the victim takes the chemical intentionally.

Conclusion:

Trends have been changed in poisoning in our country. Transport related poisoning is an emerging social and public health emergency in Bangladesh. In this study it showed that the mode of poisoning is usually food with mixed benzodiazepines preparations. Food like dub water, soft drinks, tea, coffee, *jal muri* and *traditional medicine* for instatnt pain relief, cough & asthma relief by *hawker physician* in the vehicles, are used as media of poisoning for the purpose of pick pocket. Improvement of, socioeconomic condition, law & order situation, level of education, removal of oppression, people's attitude and knowledge about poisoning is essential for reducing the incidence of poisoning.

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