

**Original Article**

**Clinico - epidemiological study of corrosive poisoning by different agents in Dhaka Medical College Hospital**

Chowdhury MSJH<sup>1</sup>, Baqui M<sup>2</sup>, Chowdhury TI<sup>3</sup>, Ahmed H<sup>4</sup>, Faiz MA<sup>5</sup>, Islam ASMN<sup>6</sup>

**Abstract**

*Acute poisoning is a serious threat to society and one of the commonest causes of mortality and morbidity. The purpose of this study was to have an idea about the pattern of corrosive poisoning and their socio-demographic background. This study was conducted in Dhaka Medical College Hospital over a period of six months from January to June, 2008. The total respondents were 126 in number. All patients, aged 13 years and above with acute corrosive poisoning were included. The results revealed that 23% were male and 77% female. Male, female ratio was 1: 3.34. Age between (13-30) years (88.09%) was the most vulnerable. Most of the patients (45.25%) had a background of secondary education. Students (43.7%) were the dominant group followed by housewives (30.2%). Most of the patients (80.2%) came from urban area. 88.9% attempted to commit suicide. Familial disharmony (75.4%) was the leading motive of poisoning. Twenty five types of corrosive agents were identified; out of which 83.34% cases took either Savlon (51.59%) or Harpic (31.75%). Female is the most vulnerable target who attempted to commit suicide.*

**Key words:** Corrosive poisoning, suicide, female

**Introduction**

Deliberate self-harm is a major problem in the developing world, responsible for 5,93,000 deaths in 1990.<sup>1</sup> Poisoning may occur by swallowing a harmful amount of a potentially toxic substance (ingestion), by breathing in (inhalation), by getting it on the skin (dermal exposure) or in the eyes (ocular exposure).<sup>2</sup>

1. \*Dr Mohammad Shah Jahirul Hoque Chowdhury, Assistant Professor, Clinical Neurology, National Institute of Neurosciences & Hospital, Sher-E- Bangla Nagar, Dhaka
2. Dr Murshed Baqui, Medical Officer, National Institute of Neurosciences & Hospital, Sher-E- Bangla Nagar, Dhaka
3. Dr Md Towhidul Islam Chowdhury, Assistant Professor, National Institute of Neurosciences & Hospital, Sher-E- Bangla Nagar, Dhaka
4. Dr Habib Ahmed, Medical Officer, Upzilla Health Complex, Fulbari, Kurigram
5. Professor Dr MA Faiz, Professor of Medicine, Sir Salimullah Medical College & Mitford Hospital, Dhaka
6. Dr ASM Nazmul Islam, Registrar, Gastrointology, Sir Salimullah Medical College & Mitford Hospital, Dhaka

*\*For correspondence*

Fourteen of all deaths amongst 10-50 year old women in Bangladesh were due to poisoning, the majority following suicidal ingestion of pesticides.<sup>3</sup> Any chemical when ingested causing tissue injury to the gastrointestinal mucosa may be termed as caustics-which are also known as corrosive agents. When come in contact with tissue, strong acids and alkali locally produce corrosion and tissue necrosis. There is coagulation and fixation of tissue proteins followed by ulcer formation, sloughing of the necrosed tissue and scar formation.<sup>4</sup> They cause intense damage to the pharynx, oesophagus and stomach, often producing perforations.

Bangladesh Health Bulletin under DGHS published in 1998, shows that there is increasing frequency of poisoning cases from 1988-1996 except in 1990 and 1993.<sup>5</sup> This study was aimed to obtain credible baseline data to estimate a prevalence of Clinico-epidemiology of corrosive poisoning by different agents.

**Methods**

This study was a prospective and descriptive in nature. The study was conducted in Dhaka Medical College Hospital and the data was collected from five medicine units. The study period was from January 2008 to June 2008. All patients, age above 13 years with history of poisoning by different corrosive agents admitted in five medicine units of DMCH were included in this study and evaluated. Diagnosis of other causes of poisoning or presence of any other pervious organic cause of altered consciousness or coma was excluded from the study. Patients were categorized into different demographic variables. Different types of corrosive agents were observed in association with motive of poisoning. The diagnosis was made on the basis of history and physical examination. Glasgow Coma Scale (GCS) was used in each cases and ultimate outcome was mentioned. The patients were managed according to standard clinical protocols. Verbal or written informed consent was taken from patients or their relatives. All data were collected in an individual case record form. Data were analyzed using the SPSS version 12.0 and presented as mean and percentage as applicable.

**Results**

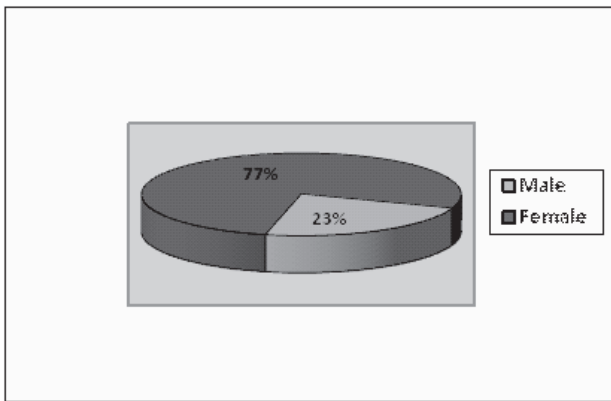
Total patients admitted in five adult medicine units of DMCH from January 2008 to June 2008 were 11747; of which 1649 cases (14.03%) were due to poisoning. Among total cases of poisoning, poisoning by corrosive agents were 126 (7.76%).

Majority (46.83%) of cases were between 13-20 years of age followed by 41.26% between 21-30 years and 6.35% between 31 to 40 years. 88.09% cases were below 30 yrs of age. Only 7 cases (5.56%) were above the age of 40 years.(Table-I)

**Table-I:** Age pattern of corrosive poisoning patients (n=126)

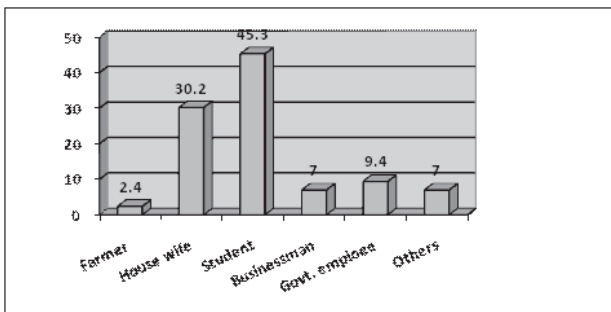
Socio demographic feature	Age group	Number	Percentage
Age (years)	13-20	59	46.83
	21-30	52	41.26
	31-40	8	6.35
	41	7	5.56

Among the study subjects, 77% were female and 23% were male with a M:F ratio of 1: 3.34 (Figure-1).



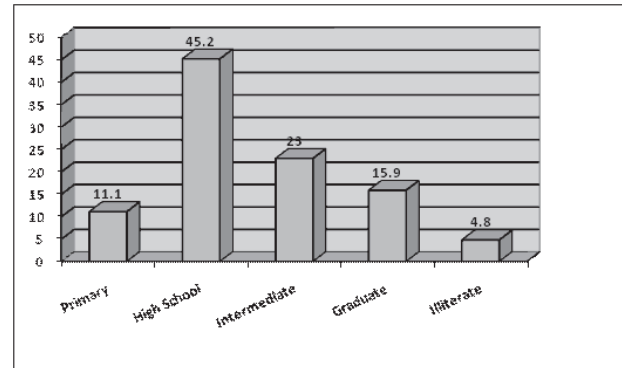
**Figure-1:** Pattern of sex ratio of corrosive poisoning patients (n=126)

Among the patients with corrosive poisoning, 45.3% were student, 30.2% housewife, 7% businessman, 9.4% Govt. employee, 7.0% were engaged in other occupations (Figure-2).



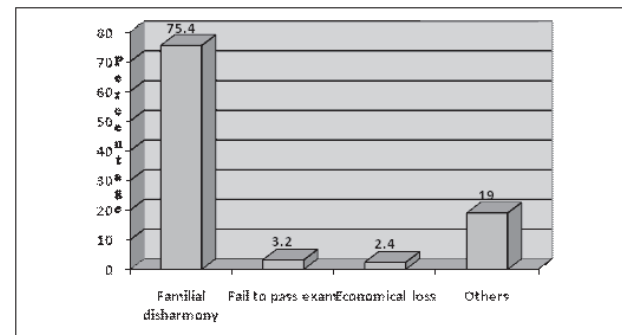
**Figure-2:** Pattern of occupation of corrosive poisoning patients (n=126)

45.2% patients were educated upto high school, 23% upto college, 15.9% were graduate and only 4.8% were illiterate (Figure-3). 80% of the patients were from urban areas.



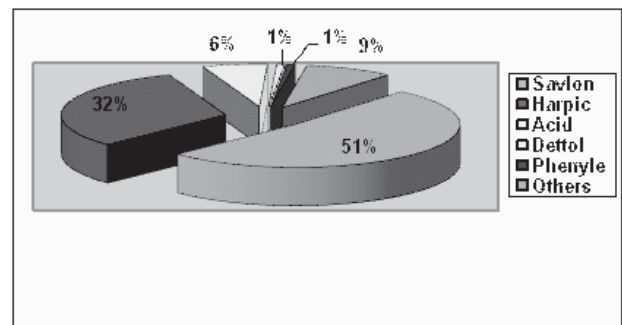
**Figure-3:** Pattern of education of corrosive poisoning patients (n=126)

Familial disharmony was the main cause of poisoning (75.5%). In other cases, 19% were due to psychiatric illness, 3.2% originated from fail to pass in exam and 2.4% were due to economical loss. (Figure-4)



**Figure-4:** Circumstances of poisoning (n=126)

Out of 126 patients 51.59% (66) used savlon followed by 31.75% (40) harpic, 6.35% (8) acid, 0.80% (1) dettol, 0.80% (1) phenyle, and 8.73%(11) used other corrosive substances like finix powder (3), hexisol (2), wheel powder (2), sampoo (2), tarpin (1) and Mosquito coil (1). (Figure-5)



**Figure-5:** Brand of poison used (n=126)

In the majority of cases, poisoning was suicidal (88.9%), 6.3% was accidental, 0.8% was homicidal and 4% was due to unknown cause (Table-II).

**Table- II:** Cause of poisoning (n=126)

Cause	Number	Percentage
Suicidal attempt	112	88.9
Accidental	8	6.3
Homicidal	1	0.8
Unknown	5	4

### Discussion

Poisoning due to corrosive agents is particularly common in developing countries like Bangladesh. The objective of the present study was to know the clinico-epidemiological perspective of corrosive poisoning by different agents. We enrolled 126 cases of poisoning with corrosive agents which is about 7.64% of total poisoning cases.

Acute poisoning affected both males and females in similar proportions but deliberate poisoning was more prevalent in females than males giving M: F = 1: 3.34. This finding is consistent with reports by other investigators.<sup>6</sup>

This study shows that most of the patients were between 13 to 20 years of age (46.8%). Maximum incidence (88.09%) of poisoning occurred below the age of 30 years. A study in Chittagong Medical College Hospital in 1987 showed that most of the poisoning patients (84.2%) were between 16 to 45 years of age,<sup>7</sup> and another study in Dhaka Medical College hospital in 1994 showed that most of the poisoning patient (59.8%) were between 10 to 30 years.<sup>8</sup> These indicates that the overall poisoning is common in young people in our country.

The incidence of corrosive poisoning among the students were 55 (45.3%), housewives 38 (30.2%), 9 (7.0%), and the government employee 11 (9.4%). The high incidence among the students reflects that they are emotionally vulnerable group and among the housewives indicates that familial instability is the underlying cause. In comparison, a study conducted by Islam AHMS and Faiz MA showed that poisoning occurred among 18.3% of student, 16.7% housewife, 11.7% businessman, and 40% were engaged with other occupations.<sup>9</sup>

Regarding educational status among the poisoning with corrosive agents, most of the patients were educated. Among them 15.9% were graduate, 23% were college student and 45.20% were high school student. In contrast,

Islam AHMS and Faiz MA showed that 58.3% patients could read and write whereas 36.7% were illiterate.<sup>9</sup>

Regarding circumstances of poisoning, familial disharmony was the underlying cause in 75.4% cases, fail to pass exam in 3.2% cases, financial problem in 2.4% cases and 19% poisoning were due to some other causes like psychiatric illness etc.

In this study majority (88.9%) of the poisoning was suicidal, 6.3% was accidental, 0.8% was homicidal and in 4% cases causes were unknown.

Savlon (51.59%) and Harpic (31.75%) were the major corrosive agents used. A study reported from Hong Kong showed that 187 adult patients presenting to hospital of which 95% took these products (mostly Dettol or cleaning products) with the intention of self harm.<sup>10</sup> Another study from Hong Kong showed that nearly 50% of adolescents used Dettol or detergent for self harm.<sup>11</sup>

The corrosive poisoning cases are very high in Dhaka city. Female are the most vulnerable who attempted to commit suicide. This needs further attention from the healthcare managers, planners, policy makers and researchers in respect to its occurrence in the society and better management. Measures to prevent such corrosive poisoning should get prime attention.

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