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Original Research Article

Pattern of Poisoning among the Autopsies Conducted at Dhaka Medical College Hospital, Dhaka, Bangladesh

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Abstract: *Introduction*: Acute poisoning is an important medical emergency. The nature of poison used varies in different parts of the world and may vary even in others parts of the same country depending on socioeconomic factors and cultural diversity. Self-poisoning accounts for about one-third of the world's suicides. Objective: To assess the pattern of poisoning among the autopsies. *Materials and Methods:* This retrospective cross-sectional study was conducted at Dept. Of Forensic Medicine & Toxicology, Dhaka Medical College Hospital, Dhaka, Bangladesh January to June 2022. The study included alleged poisoning deaths, inquest reports, and suicidal notes; PM Reports, hospital records, and FSL reports were scrutinized. The inclusive parameters included Age, sex, socioeconomic status, hospital treatment, motive, and type of poisoning. Exclusion criteria: Highly decomposed cases. *Results:* The incidence of poisoning was highest in the age group of 31-40 years (21.67%) followed by 21-30 years (20%), and the least was encountered in the elderly age group. Male (51.67%) preponderance was more over female (48.33%). The most common type of poison consumed was Organophosphorus Compound (48.33%) followed by Phosphide (18.33%), Alcohol (15%), and the rest were due to Carbamates (10%) and over-the-counter medications OCT (8.33%). The common reasons for consuming poison were financial constraints (21.4%) followed by ill health (15.55%). The maximum incidence of poisoning was found in the age group of 31 to 40 years. The common reasons for consuming poison were Familial discord (26.66%) followed by Financial matters (16.67%), Unemployment (15%). Out of 60 cases 44 cases were treated in hospital but not survived and the rest died at the site of poisoning or before reaching the hospital.*Conclusion:* Deaths due to poisoning are on the steep rise due to which there is a huge loss of lives and a devastating impact on communities. Health care services particularly emergency resuscitative services should be made available at all levels, promoting poison information centers, and introducing separate toxicological units in the hospitals to manage cases of poisoning in emergencies could possibly help us to bring down the morbidity and mortality rate.

Keywords: Pattern of poisoning, Autopsy of poisoning case.

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INTRODUCTION

According to WHO reports poisoning is one of the most common causes of increased morbidity and mortality rates worldwide. Various substances such as pesticides and drugs have been used for accidental or intentional poisoning in different countries. [1] The prevalence of poisoning in a region depends upon a variety of factors including accessibility and availability of poison, socio-economic conditions, cultural and religious influences, etc. Acute poisoning is an important medical emergency. The nature of poison used varies in different parts of the world and may vary even in other parts of the same country depending on socioeconomic factors and cultural diversity. Intentional self-poisoning accounts for about one-third of the world's suicides. [2] The proportion of all intentional or accidental poisoning by pesticides in a region is not concordant with the volume of pesticides sold in that region; it is the pattern of pesticide use and the toxicity of the products, not the quantity used, that influences the likelihood that they will be used in acts of fatal self-harm [3]. Studies of this nature will be a helpful tool in the planning and management of critically ill acute poisoning cases [4]. In this context, the present study was carried out with the objective to investigate the pattern of poisoning among the autopsies conducted at Dhaka Medical College Hospital, Dhaka, Bangladesh. It will also help to make the required treatment facilities easily available at every place, health education for prevention and for adequate teaching in the institutes of medical education, and upgrading the peripheral health centers to manage cases of poisoning in an emergency could possibly help us to bring down the morbidity and mortality rate [5, 6]. It is not easy to say which kind of poisoning is more frequent as the nature of poisoning varies from one region to another depending upon the poison availability and the knowledge of the local population regarding the properties of poisons. So this study has aimed to determine the various parameters of poisoning such as mode of poisoning, type of poison consumed, apparent causes of poisoning, and treatment availability after poisoning.

MATERIALS AND METHODS

This retrospective cross-sectional study was conducted at Dept. Of Forensic Medicine & Toxicology, Dhaka Medical College Hospital, Dhaka, Bangladesh January to June 2022 The study included alleged poisoning deaths, inquest reports, and suicidal notes; PM Reports, hospital records and FSL reports were scrutinized. The inclusive parameters included Age, sex, socioeconomic status, hospital treatment, motive, and type of poisoning. Exclusion criteria: Highly decomposed cases. Then the collected data was computed in the SPSS Statistics data editor and was analyzed by the same software.

RESULTS

Out of 150 reported suspected poisoning cases, 60(40%) cases were confirmed for poisoning by laboratory tests. At the same time, 57 cases (38%) were negative for poisonous substances at laboratory tests. Also in 33 (22%) of the suspected poisoning cases were awaiting laboratory test reports, and their status was unknown during our study period as shown in **Figure 1.** The incidence of poisoning was highest in the age group of 31-40 years (21.67%) followed by 21-30 years (20%), the least was encountered in elderly age group (11.67%). Male (51.67%) preponderance was more over female (48.33%).**Table-1** The most common type of poisons consumed were Organ Phosphorus Compound (48.33%) followed by Phosphide (18.33%), Alcohol (15%) and rest were due to Carbamates (10%) and over the counter medications OCT (8.33%).**Table:3**The common reasons of consuming poison were Familial discord (26.66%) followed by Financial matters (16.67%),Unemployment (15%), Love failure (13.33%), Education failure (8.33%), Ill health (8.33%), Depression (6.67%) and Unknown(5%).**Figure:2** In 44 cases (73.3%) they were treated in hospital but not survived and 16 (26.7%) cases were died at site of poisoning or before reaching hospital.**Table:2**

Table-1: Age and Sex distribution (N=60)

AGE	Sex		Total	
	Male	Female	N	%
Sex				
0-10	0	0	0	0
11-20	4	4	8	13.33
21-30	6	6	12	20
31-40	8	5	13	21.67
41-50	6	4	10	16.66
51-60	4	6	10	16.66
61-70	3	4	7	11.67
Total	**31**	**29**	**60**	**100**

Table-2: Treatment status (N=60)

Treatment	N	%
Treated	44 cases	73.3
Untreated	16 cases	26.7

Table-3: Type of Poisons Detected During the Chemical Examination (N=60)

Type	N	%
OPC Compound	29 cases	48.33
Phosphide	11 cases	18.33
Alcohol	9 cases	15.0
Carbamates	6 cases	10.0
OCT	5 cases	8.33

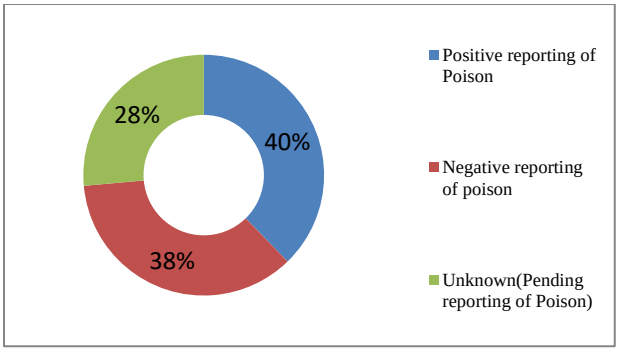

Figure-1: Distribution of cases with their status of poisoning report.

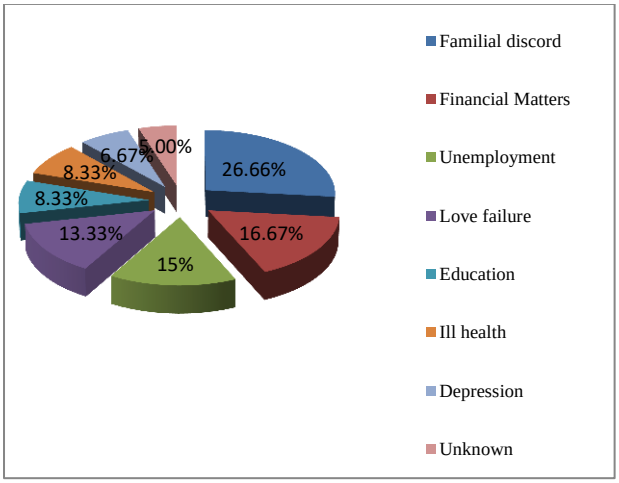

Figure-2: Causes of Poisoning.

DISCUSSION

Bangladesh still is an agriculture-based country. Though industrialization in Bangladesh is growing along with agriculture. Using agricultural poison (e.g.OPC, Carbamate, Phosphide, etc) is the common method of controlling pests to meet the increasing demand for crop production. As a result, the supply and availability of agricultural poison become much easier. Accessibility of alcohol and OCT drug also added more number of poisoning-related death in Bangladesh.[7] One hundred and fifty cases were subjected and studied in our study period among them positive report of poising was established in 60 (40%) cases. The incidence of poisoning was highest in the age group of 31-40 years (21.67%) followed by 21-30 years (20%), and the least was encountered in the elderly age group (11.67%). The prevalence of poisoning in males (51.67%) was more in females (48.33%). (Table-1) Similar findings were observed in the studies conducted by Goswami O, Mahanta P et. al.[8] The common reasons for consuming poison were Familial discord (21.4%) followed by financial matters 16.67%, and unemployment (15%) which corresponds to the findings observed in the studies conducted by S.K Dhattarwal et al., [9] and disagreement with Taruni Ng [10]. This is attributed to factors like failures in academics, romantic failure, family disputes, marital disharmony, unemployment, romantic failures, ill health, and dowry harassment in the case of females. As this age group is at the threshold of building their career and has the utmost zeal and urge to move ahead of others, the ever-increasing demands and stress of the modern mechanical lifestyle, contribute to such an act. In children, the common reasons were due to conflict with parents for trivial issues and failure or less percentage in exams. Males being the main breadwinner in the family bear the burden of earning for livelihood. This was found to be the prime reason for the increased incidence of poisoning in males. Since the study involved the subjects residing more in an urban setup, the annual income of the lower middle class could not suffice to meet the basic amenities resulting in disillusionment. Table 2 shows that the one of common reasons for consuming poison was financial constraints (16.67%) followed by familial discord (26.66%). Among financial constraints the reason was excessive debts, poverty, not being able to pay the loan, extravagant lifestyle, and engaging in activities in an urge to achieve instant richness were the prominent financial causes noticed. Among ill health, in the majority of cases, evidence of chronic illness like bronchial asthma, tuberculosis, gastrointestinal disorders, diabetes, hypertension, and gynecological problems as procured through the history and hospital records, on autopsy corroborated with the findings. It is in disagreement with studies conducted by Dalbir Singh [11]. Out of 60 cases, 44 cases (73.3%) received treatment, and the rest (26.6%) did not receive the medical attention (Table 3). The reasons for the rise in the number of victims culminating in death in spite of treatment may be due to the consumption of highly toxic poisons and also due to differences in individual responses. The treatment not received may be due to the delay in transportation and shifting of the victims to the nearby hospital from the site of the incident. Improper and inadequate treatment in hospitals could have also played a key role in victims culminating in death without receiving treatment [4]. The majority of cases were due to organophosphorus compounds it comprising 29 cases (48.33%) followed by Phosphide (18.33%) and the rest were due to alcohol(15%), carbamates(10%), OCT drugs (8.33%) (Table-4). The reason for more number of victims choosing organophosphorus compound was due to low cost, easy availability of highly toxic pesticides, and agricultural-based In an urban setup, though ample opportunities for employment are present, there is stiff competition for these jobs by better qualified, which is the main cause for this group to take this extreme step of ending their lives. Similar opinions have been stated by Dalbir Singh [4], but studies conducted by Karamjit Singh [12] disagree with this view. The easy availability and accessibility of over-the-counter medication like barbiturates, benzodiazepine, antihistaminic, analgesics, etc., and a belief that it causes less suffering assuring peaceful death, are the other causes for choosing these drugs.

Limitation of this study: Poor preservation of hospital records and confidentiality of postmortem and FSL(Forensic Science Laboratory) reports, moreover our limited resources and financial support did not permit us to continue and to explore or present some conclusive data regarding this study.

CONCLUSION

Deaths due to poisoning are on the steep rise due to which there is a huge loss of lives and a devastating impact on communities. Health care services particularly emergency resuscitative services should be made available at all levels, promoting poison information centers, and introducing separate toxicological units in the hospitals to manage cases of poisoning in emergencies could possibly help us to bring down the morbidity and mortality rate. Enlightenment through educating young people about the harmful effects of drugs. It is also imperative to provide psychological and counseling services to an attempted suicide victim.

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