Scenario of poisoning cases in Devdaha Medical College Teaching Hospital, Rupandehi, Nepal: A Retrospective Study

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Abstract

Poisoning is a major global health problem and one of the leading causes of morbidity and mortality in the developing world including Nepal. The scenario of poisoning can vary among demographics and geography within the country. This study aims to find out the scenario of poisoning cases in Devdaha Medical College Teaching Hospital (DMCTH), Rupandehi, Nepal. It is a hospital-based retrospective study that was carried out in the Emergency Department of DMCTH from August 2013 to July 2015. Out of the total 107 cases, more of the poisoning cases were found in the third decade of life (21-30 yrs) followed by the second decade (11-20 yrs). The minimum cases of poisoning were observed among females aged above 60 years and males aged 51-60 yrs. Most of the patients recovered and were discharged within three days of admission. Five fatal cases were found. Pesticides and insecticides were the common poisoning agents used. The incidence of poisoning was prevalent among the young adult (15-29 yrs) patients admitted to DMCTH. A higher incidence of intentional poisoning was found in this study. Implementation of effective prevention strategies can minimize the incidences of poisoning while early detection and effective management of poisoning can minimize mortality.

1 Introduction

Poison is any chemical substance or xenobiotic that may cause harm when swallowed, inhaled, and absorbed or injected into the living bodies from either accidental or intentional exposure^{1,2}. Poisoning is frequently encountered health threats among people of all demographics and geography especially in developing countries like Nepal.

It is a medical emergency with serious health risks and requires immediate hospitalization causing a huge financial burden³⁻⁶. It is the ninth leading cause of death in young adults (15-29 years old)⁶. Nepal is ranked seventh by suicide rate as per the WHO report- 2015⁷. Pesticides and insecticides are the most commonly used poisoning agents in Nepal^{8,9}. Due to the poor medical services, easy availability of WHO Class I hazardous pesticides (parathion, dichlorvos, etc.) and weak implementation of Narcotic Drug Control Act 2033 and Pesticide act 2035, self-poisoning

has higher mortality and accounted for the majority of fatal episodes and put tremendous stress on hospital services over the last decades in Nepal^{3-5, 10, 11}.

The scenario of poisoning may vary within different regions of the same country^{12, 13}. There are very limited studies on this issue and thus the present study aims to find the demographics (age, gender, and marital status), chronology (time of hospital arrival, referred cases, duration of hospital stay and outcome) and trends (nature and agent) of poisoning cases attending Emergency Department of DMCTH, Rupandehi, Nepal, which will be helpful to prepare necessary treatment plans.

2 Materials and Methods

2.1 Study Design

This study was a retrospective analysis of hospital records with a diagnosis of poisoning, carried out in the emergency department

of DMCTH, Rupandehi, Nepal during the period of two years from August 2013 to July 2015.

2.2 Inclusion and Exclusion criteria

This study was focused on patient demographics (age, gender, and marital status), chronological order (time of hospital arrival, referred cases, duration of hospital stay, and outcome) and trends (nature and agent). Patients with a case of snakebite, insect bite, food poisoning, allergic reactions to drugs were excluded.

2.3 Ethical Clearance

The study was approved by the institutional review committee of Devdaha Medical College Teaching Hospital.

2.4 Statistical analysis

Data were entered into Microsoft Excel 2013 and analyzed with SPSS 20.0. Descriptive data were presented as frequency and percentage.

3 Results

A total of 107 poisoned patients meeting inclusion criteria were included in this study.

3.1 Age, marital status and gender distribution

There were 69 females and 38 males and the female to male ratio was 1.82:1. Most of the patients were from the age group 21-30 yrs (35.51%) followed by 11-20 yrs (30.84%) and 31-40 yrs (18.69%) (Figure 1).

The majority of patients in this study, 104 (97.20%) were from Rupandehi and Nawalparasi district of Nepal which might be due to the hospital is situated in Rupandehi district and Nawaparshi is a neighboring district. Among them, 69.57% of the female patients were married compared to 60.53% of male patients.

Fig 1: Age and gender distribution of poisoned patients

3.2 Chronological findings

Most of the patients 44 (41.13%) were directly brought in the evening hours (6:00 PM-12:00 AM) to the emergency department of DMCTH. Only three cases were found to be referred from nearby hospitals and healthcare centers after getting primary

treatment. The cases were mainly non-fatal (Figure 2) and more than half of the admitted patients were discharged from the hospital within three days of admission (Figure 3).

Fig 2: Outcomes of treatment

Fig 3: Duration of hospital stay

3.3 Trends of poisoning

Of the total cases, 97 (90.65%) were intentional while remaining were accidental (9.35%) in nature. In this study, cypermethrin (25.23%) and organophosphorus (19.63%) groups of pesticides and insecticides were found to be the most consumed poisoning agents (Figure 4). The average cost of the patient including medication and hospital charge was found to be NRs. 8691.77.

Fig 4: Poisoning agents

4 Discussions

Poisoning is among the most common cause of hospital admissions and poisoned patients are frequently encountered in the emergency department¹⁴⁻¹⁶. This study found a higher incidence of poisoning in the female population (female to male ratio of 1.82:1). Similar to our findings, female predominance was observed in various studies^{1,3,6,11,17}. However male predominance was found in studies from different regions of Nepal^{4,5,18}. The cases of married females were higher than married males. Trends of male working away from home, indoor chores and outdoor fieldwork makes female vulnerable to stressors. This could be a contributing factor for more cases of poisoning among females, especially married.

The higher incidence of poisoning in second and third decades in our study is similar to those found in the study of Baral *et al*, 2011³ and Jha *et al*, 2014⁵. It might be because people in this age group face different challenges of life and stress to cope with the expectations of life. More importantly, sociological and psychological problems cause them to commit poisoning.

The time of hospital arrival of the patient in our study complies with findings of Chhetri *et al*³ and Jha *et al*, 2014⁵. Only three patients were referred from nearby hospitals and healthcare centers after getting primary treatment. The mean hospital stay day was 3.7 days and most of the patients were discharged after recovery, five patients died while five left against the medical advice (LAMA). The majority of the patients being brought earlier and directly to the hospital might be accounted for the less duration of hospital stay and non-fatal outcomes.

Similar to findings of various studies³⁻⁵, most of the poisoning cases were intentional (90.65%) followed by accidental. Accidental poisoning is more common in children. Being an agriculture-based country, pesticides and insecticides were found to be the most commonly used poisoning agent (58.88%), this collaborates with the findings in studies conducted in different centers of Nepal^{9,11,18}. In our study, cypermethrin (n=27) and dichlorvos (n=9) were the most common pesticides and insecticides used for poisoning. Gastric lavage, activated charcoal, and antidotes like atropine, pralidoxime, etc were found to be used variably in the management of poisoning cases in our study.

5 Conclusion

In the present study, most of the cases were in the second and third decades among the married population with a female predominance. The use of cypermethrin and dichlorvos for intentional poisoning was common.

To conclude, mutual understanding, proper psychological counseling, coping up with stressful situations, and implementation of effective prevention strategies to control the easy availability of poisonous substances in society can minimize the incidences of poisoning. Early detection and effective

management of poisoning can minimize mortality. Further study is sought to find out the exact pattern of poisoning.

6 Acknowledgment

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7 Conflict of Interest

The authors have no current conflict of interest.

8 Author's contributions

S KC and SG carried out the literature review and draft the manuscript. SG and GP participated in the collection of data and arranged in tabular form. All authors read and approved the final manuscript.

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