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

Sagar K.C.¹, Sagarananda Giri², Santosh Gupta³, Ghanshyam Pandey³

¹Department of Pharmacy, Mayadevi Technical College, Rupandehi-32900, Nepal
²School of Health and Allied Sciences, Pokhara University, Kaski-33700, Nepal
³Department of Pharmacy, Devdaha Medical College Teaching Hospital, Rupandehi-32900, Nepal

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.

Keywords:
Fatal,
Insecticides,
Nepal,
Pesticides,
Poisoning,

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.¹² 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 burden.¹³ 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- 2015.⁷ Pesticides and insecticides are the most commonly used poisoning agents in Nepal.⁵ 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.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.

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).

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.

4 Discussions
Poisoning is among the most common cause of hospital admissions and poisoned patients are frequently encountered in the emergency department. 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. However, male predominance was found in studies from different regions of Nepal. 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., 2011 and Jha et al., 2014. 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. and Jha et al., 2014. 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 bought 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 studies, 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. 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

The author expresses sincere gratitude to the Devdaha Medical College Teaching Hospital (DMTCH) for their kind co-operation during this research work.

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.

9 References

1. Chaudhary R, Rai B, Poudel M, Yadav AK, Kaffe N, Khadga Shambhu N and Regmi S. Trend of Poisoned Patients’ in Emergency Department of a Tertiary Care Hospital of Eastern Nepal. International journal of Health Economics and policy. 2017; 2(1): 1-9.
2. Henry J.A. Management of poisoning: a handbook for health care workers / J.A. Henry Wiseman.
3. Baral D, Rajbhandari S, Shrestha A, Basyal B and Prasad N. Acute Poisoning cases in emergency department of tertiary level hospital, Kathmandu, JGPEMN. 2011; 54-58.
4. Karki RK, Risal A. A study of Poisoning Cases in a Tertiary Care Hospital. Kathmandu Univ Med J. 2012; 10(4):70-73.
5. Jha S, Yadav BN and Jha S. An analysis of acute fatal poisoning cases coming to mortuary of BPKIHS, Dharam. International Journal of Therapeutic Applications, 2014; 17:10-15.
6. Owais K, Khan I. Acute poisoning: etiological agents and demographic characteristics in patients coming to ER of a tertiary care hospital. Professional Med J. 2015; 22(12): 1591-1594.
7. "Suicide rates Data by country". World Health Organization. 2015. Retrieved 13 June 2015.
8. Panda BB, Hansda MK, Mishra K and Samantisinghar P. Study of Poisoning cases in an Indian Tertiary Care Teaching Hospital. Journal of Indian Academy of Forensic Medicine. 2015; 165-168.
9. Lohani SP. An epidemiological Study of Poisoning Cases Reported to the Nepal Drug and Poison Information Center, Kathmandu, Nepal Drug and Poison Center.
10. Singh DP, Aacharya RP. Pattern of poisoning cases in Bir Hospital, Journal of Institute of Medicine, 2006; 28: 3-6.

11. Chhetri HP, Khan GM, Acharya A, Maharjan S, Manandhar M, Manandhar R and Gautam S. Acute organophosphate poisoning: pattern, management and outcomes. Pharmacologyonline. 2008; 48-54.

12. Prajapati K, Merchant SP and Patel PR. Trends of Suicidal Poisoning In Ahmedabad (Retrospective Study). NHL Journal of Medical Sciences. 2012; 1(1): 18-22.

13. Pokhrel D, Pant S, Pradhan A, Mansoor S. A comparative study of poisoning cases in central, zonal and district hospitals. KUJSET.2008; 5: 40-48.

14. Thapa SR, Lama P, Karki N, Khadka SB. Pattern of poisoning cases in Emergency Department of Kathmandu Medical College Teaching Hospital. Kathmandu Univ Med J. 2008; 8: 209.

15. Marahatta SB, Singh J, Shrestha R, Koju R. Poisoning cases attending Emergency department in Dhulikhel Hospital- Kathmandu University Teaching Hospital. KUMJ. 2009; 2: 152-156.

16. Kar SM, Timalsina S, Agrawal. An Epidemiological study of Organophosphorous Poisoning at Manipal Teaching Hospital, Pokhara, Nepal. JIAFM. 2010; 32(2): 108-109.

17. Isayeh ZMM, EBshena AA. Study of Poisoning Cases Presenting in Emergency Department of Medical Teaching Hospital in Libya. Pharmaceutical and Biosciences Journal. 2020; 8(1): 11-14.

18. Maskey A, Parajuli M, Kohli SC, Baral C, Basnet S and Poudel N. Scenerio of Poisoning cases in Adults admitted in Manipal Teaching Hospital, Pokhara, Nepal. Nepal Journal of Medical Sciences. 2012; 1(1): 23-26.