

Morbidity and Mortality Pattern of Poisoning Cases in a Secondary Care Hospital in Bishnupur District, Manipur, North East India: A Chart Review

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Abstract

Introduction: Globally more than three million of acute poisoning cases with 2,20,000 deaths occurs annually. In India, 7.8% of all accidental deaths is contributed by poisoning, being fourth common cause of mortality. Number of deaths due to poisoning in 2015 was 26,173 out of 4,02,947 un-natural causes. This study aimed to determine morbidity and mortality patterns of poisoning cases and assess its association with variables of interest.

Methods: A chart review study was conducted during Oct 23–Nov 21, 2019 after ethical approval. 182 poisoning cases attended a secondary care hospital in between Sep 1, 2012 and Aug 31, 2019 were retrieved from medical records using data abstraction form. Data were entered in IBM SPSS version 21 and presented in percentages, mean with standard deviation. Chi-square test was used for association between proportions.

Results: Of the 182 cases, more than one-third (37.4%) belonged to age group of 11-20 years. Majority (51%) of cases were female. Insecticide/herbicide poisoning was the commonest poisoning (26.9%). Only 2 cases of death (1.1%), which was due to insecticide poisoning were reported. Nearly two-third of the cases occurred in summer and monsoon season. Males had higher chance of getting alcohol poisoning, however, household chemical poisoning were more in females. Most of the kerosene and food poisoning cases were treated conservatively. However, most of the insecticide/herbicide poisoning cases required intervention. Majority of the cases (56.0%) required only one day hospitalization. Most of the cases (94%) were improved at the time of discharge.

Keywords: Poisoning, Mortality, Morbidity, Chart review

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I. Introduction

Death due to poisoning has been known since time immemorial. Poisoning is a major problem all over the world, as it is a silent weapon, which is used without any violence. Poisoning occurs when people drink, eat, breathe, inject, or touch enough of a hazardous substance (poison) to cause illness or death.^[1] Acute poisoning is one of the commonest causes of hospitalization to the emergency department.^[2,3,4] Industrialization and progress in agriculture has made a number of insecticides easily available to all, exposure to these products causes a severe toxicity.^[5] Globally more than three million of acute poisoning cases with 220,000 deaths occur annually.^[6] Nearly a million people die each year as a result of suicide and chemicals account for significant number of these deaths.^[7] Globally, over 106,000 deaths caused by unintentional poisonings in 2016.^[8] Poisoning is the fourth common cause of mortality in India.^[9] According to World Health Organization, India ranked 35th in mortality from unintentional poisoning in 2016. According to the National Health Profile 2018, the number of deaths in India due to poisoning in 2015 was 26,173 out of 402,947 unnatural causes. According to the National Crime Reports Bureau 2012, accidental death rate for Manipur in 2015 was much lesser (11.1) as compared to the national average (32.8). Study of poisoning pattern of a region is crucial in determining health needs, infrastructure and manpower requirements for dealing these cases effectively and efficiently. Few studies regarding morbidity and mortality patterns due to poisoning have been done in Manipur. So, this study was taken up to determine the morbidity and mortality patterns of poisoning cases attending secondary care hospital and to assess the association between morbidity patterns & variables of interest.

II. Materials and Methods

A chart review study was conducted in District Hospital, Bishnupur during October 23 to November 21, 2019. Poisoning cases attended this secondary care hospital in between September 1, 2012 and August 31, 2019 were retrieved from medical records using a data abstraction form. All cases of chemical poisoning, food poisoning and snake bite attended during these seven years period were included in the study. All cases of bee-sting were excluded from the study. Age, sex, sub-division, religion, date of admission (DOA), date of discharge (DOD), BP at the time of admission, treatment received were the independent variables. Morbidity and mortality patterns of poisoning cases were the dependent variables. Data were checked for consistency and completeness, then entered in IBM SPSS version 21.0. Data were presented in percentages, mean with standard deviation. Chi-square test was used to test the association between the proportions. A p-value of < 0.05 was considered as statistically significant. Approval was obtained from the Research Ethics Board, RIMS, Imphal. A written permission was also taken from Medical Superintendent, District Hospital, Bishnupur to access the secondary data. Data were anonymized and confidentiality was maintained using password encryption.

III. Results

Study was conducted on 182 cases of poisoning retrieved from a single secondary care hospital. Minimum and maximum age of the cases were 1 year and 70 years respectively. Median age of the cases was 21.0±23.0. More than one-third of the cases (37.4%) belonged to age group of 11-20 years, least of them (2.2%) were of age group 61-70 years. More than half (51.0%) of the cases were female. More than fourth-fifth (85.7%) of the cases belonged to Bishnupur sub-division. More than two-third of the cases (66.5%) had normal blood pressure at the time of admission. One-fourth (25.0%) of the cases were treated with conservatively (IV fluids, antibiotics, antiemetic, analgesic, etc). However, three-fourth (75.0%) of them required Intervention (gastric lavage). Majority of the cases (56.0%) required only one day hospitalization.

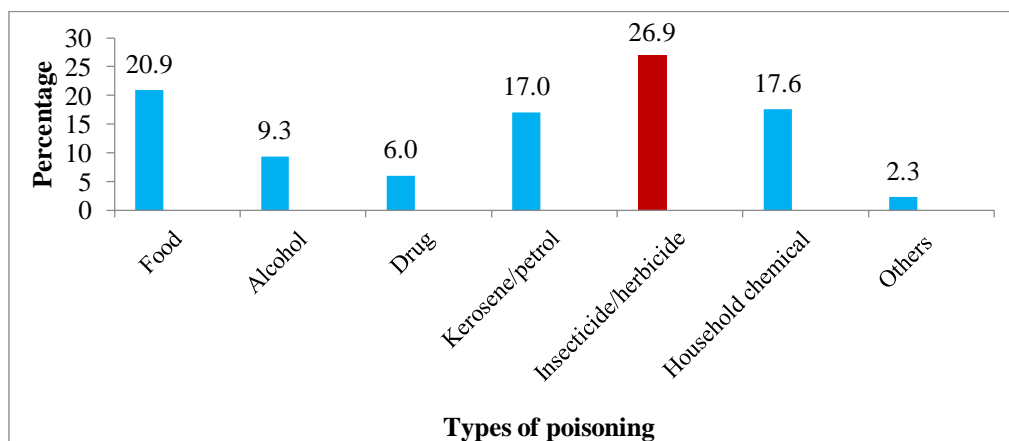


Fig 1. Distribution of cases according to their diagnosis (N=182)

Figure 1 shows that insecticide/herbicide poisoning was the most common type of poisoning among the cases, followed by food poisoning and household chemical poisoning.

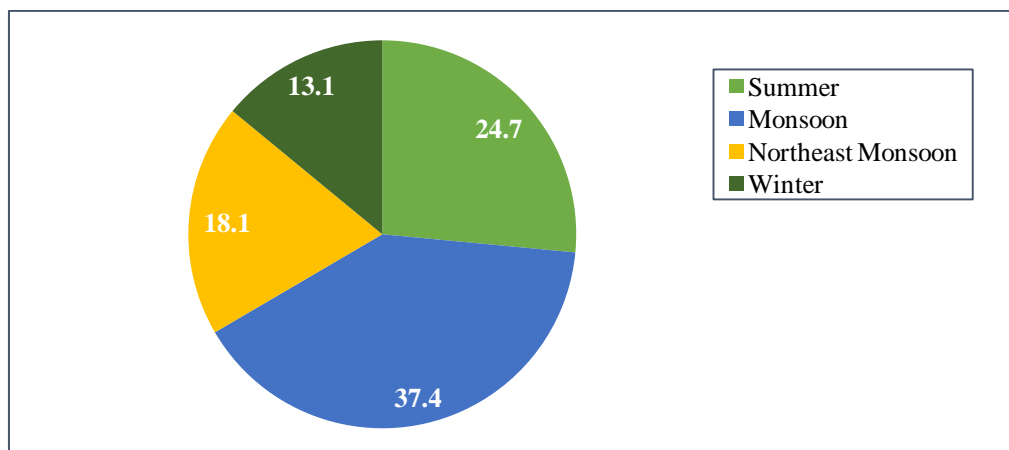


Fig 2. Distribution of cases by seasons of admission (N=177); Missing data = 5 (2.7%)

Figure 2 shows that more than one-third of the cases (37.4%) had poisoning during monsoon season.

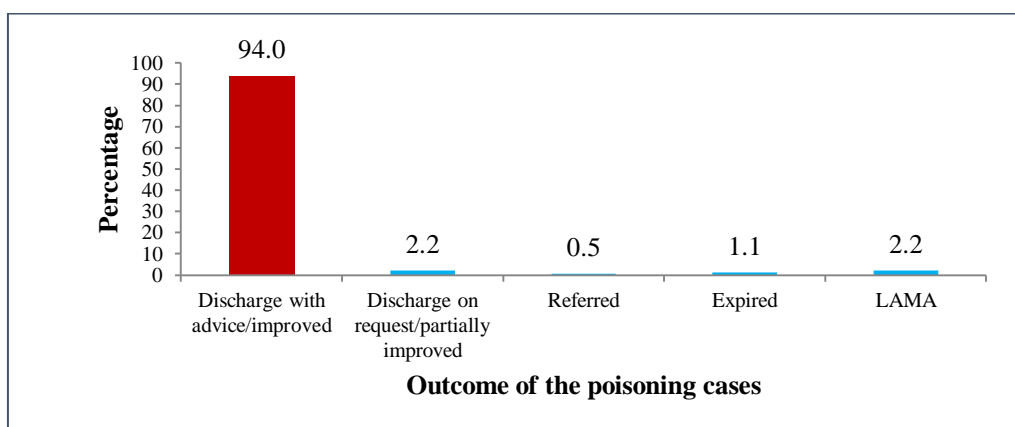


Fig 3. Distribution of cases according to their outcome (N=182)

Figure 3 shows that most of the cases (94.0%) were improved at the time of discharged. Only 2 cases of death (1.1%) were reported.

Table 1. Association between types of poisoning and sex of the cases [All cases, N=182]

Male	Household chemical poisoning		p-value	Alcohol poisoning		p-value
	Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Male	10 (11.2)	79 (88.8)	0.033	14 (15.7)	75 (84.3)	0.004
Female	22 (23.7)	71 (76.3)		3 (3.2)	90 (96.8)	

Table 1 shows that household chemical poisoning were significantly ($p=0.033$) higher among female cases. However, alcohol poisoning were more prone among male cases and it was found to be statistically significant ($p=0.004$).

Table 2. Association between types of poisoning and treatment received by the case [All cases, N=181; (Missing data=1)]

Treatment received	Kerosene poisoning		p-value	Insecticide/ herbicide poisoning		p-value	Food poisoning		p-value
	Yes n (%)	No n (%)		Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Conservative only	29 (21.3)	107 (78.7)	0.011	23 (16.9)	113 (83.1)	0.000	37 (27.2)	99 (72.8)	0.000
Intervention with conservative	2 (4.4)	43 (95.5)		25 (55.6)	20 (44.4)		1 (2.2)	44 (97.8)	

Table 2 shows that most of the kerosene poisoning and food poisoning cases were treated conservatively and it were found to be statistically significant ($p=0.011$, $p=0.000$). However, most of the insecticide/herbicide poisoning cases required both intervention and conservative treatment and it was also found to be statistically significant ($p=0.000$).

IV. Discussion

In the present study, the most common cause of poisoning was due to organophosphorus. With the increasing development of applied chemistry in industry, agriculture and household use, the availability and accessibility of insecticides and pesticides are increasing day by day. In addition to easy availability, their low cost and extensive use make the population more vulnerable to accidental as well as suicidal poisoning. Rapid increase of indebtedness by farmers and failure to reimburse due to natural calamities like draught is the reason behind the increase during summer season. The result shows an alarming sign where government need to make policies for strict and rationalized usage of such product. Organophosphorus poisoning is an acute emergency.

Early diagnosis, prompt and efficient treatment as well as prevention are crucial in reducing the burden of poisoning related deaths in any country. At the same time, primary health care provider at peripheral level should be trained enough to manage these kind of specific poisoning case.

In this study, poisoning was most commonly seen in the age group of 11 to 20 years (37.4%). It may be due to immaturity of thoughts, competition in education, peer pressure, early marriage and inability to cope with the post marital stress especially in the rural areas.

There was not much variation between males and females in poisoning cases in the present study.

Majority of the patients (56.0%) were discharged after one day hospitalization. More than 90% of the cases were improved at the time of discharge. Mortality rate was found significantly low, 1.1% only, which might be due to well-functioning of emergency unit of this district hospital.

In poisoning cases, treatment plan determined by the type of poisoning agent and duration of ingestion. Majority of the cases (75.0%) were managed by conservative treatment alone while the rest (25.0%) of them were needed intervention (gastric lavage) as well as conservative.

It was found that more than one-third of the poisoning cases (37.4%) occur on monsoon season. It may be due to easily availability of insecticide and herbicide in rural areas as majority of the population are farmers.

There was high prevalence of food poisoning in the present study which may be due to the accidental consumption of wild and poisonous mushrooms, consumption of fermented food items like fermented soybeans, fermented bamboo shoots, etc.

Kerosene poisoning cases were also high in the present study which may be due to the easy availability of kerosene in most of the households.

Poisoning act, intentionally or unintentionally both are dangerous. Once it occurs, it has to be identified, evaluated by poisoning severity score and intervene rapidly where the primary care physician, nurses, or other health care provider need to render first aid care and insist family/friend for rapid transport to the tertiary care center where poisoning cases can be managed with advanced health care facilities.

This study is one of the very few studies done in Manipur attempted to highlight the morbidity and mortality Pattern of Poisoning Cases. Moreover, secondary data of full seven calendar years were able to access and retrieve. These were some of the strengths of this study. However, some missing data on certain important independent variables were there, which might be the limitation of this study.

V. Conclusion

One-fourth of all the cases were insecticide/herbicide poisoning. Food poisoning accounts for one-fifth of all the poisoning cases. Only one-fourth of the cases needed intervention (gastric lavage). Most of the cases required minimal days of hospitalization to get discharge with advice/improved. Nearly two-third of the cases occur in summer and monsoon season. Alcohol poisoning were more common among males, but household chemical poisoning were more common among female cases. Most of the food poisoning and kerosene poisoning cases required only conservative treatment. However, insecticide/herbicide poisoning requires both intervention (gastric lavage) and conservative treatment.

VI. Recommendations

Since more than half of the cases occurs during summer and monsoon season, might be relevant with keeping insecticides/herbicides at home during cropping season, steps can be taken up to minimize unwanted incidents. Females have to be sensitized to minimize unwanted or accidental household poisoning cases. Since treatment modality are significantly associated with most of the poisoning cases, government can take up more initiatives to improve early health seeking behavior of common people.

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References

- [1]. World Health Organisation. Environmental health in emergencies: Poisoning;[1 screen]. Available at: https://www.who.int/environmental_health_emergencies/poisoning/en/. Accessed December 10, 2020.
- [2]. Srinivas Rao CH, Venkateswarlu V, Surender T, Eddleston M, Buckley NA. Pesticide poisoning in south India: opportunities for prevention and improved medical management. *Trop Med Int Health* 2005;10(6):581-8.
- [3]. Dash SK, Raju AS, Mohanty MK, Patnaik KK, Mohanty S. Sociodemographic profile of poisoning cases. *J Indian Acad Forensic Med* 2005;27(2):133-8.
- [4]. Bamathy B, Punngai K, Amritha CA, Chellathai DD. Incidence and patterns of acute poisoning cases in an emergency department of a tertiary care hospital in Chennai. *Biomed Pharmacol J* 2017;10(3):1285-91.

- [5]. Das RK. Epidemiology of Insecticide poisoning at AIIMS Emergency Services and role of its detection by gas liquid chromatography in diagnosis. *Medico-Legal Updat Int J* 2007;7(2):49–60.
- [6]. Bertolote JM, Fleischmann A, Eddleston M, Gunnell D. Deaths from pesticide poisoning: a global response. *Br J Psychiatry* 2006;189(3):201-3.
- [7]. World Health Organisation. International Programme on Chemical Safety: Poisoning Prevention and management;[1 screen]. Available at: <https://www.who.int/ipcs/poisons/en/>. Accessed December 2, 2020.
- [8]. World Health Organisation. World Health Statistics data visualizations dashboard: Unintentional poisoning;[1 screen]. Available at: <https://www.who.int/ipcs/poisons/en/>. Accessed December 2, 2020.
- [9]. Taruni NG, Bijoy TH, Momonchand A. A profile of poisoning cases admitted in RIMS Hospital, Imphal. *Indian J Med Forensic Med Toxicol* 2001;18(1):31-3.

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