



## Pattern and Outcome of Poisoning Cases Analyzed in Poison Detection Centre of a Tertiary Care Hospital: A 3 year Retrospective Study

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### ABSTRACT

**Introduction :** Poisoning is a problem throughout the world but its pattern vary from one place to other place. The deaths due to poisoning can be intentional or unintentional. The deaths due to poisoning is increasing at an alarming rate in developing countries like India because a large number of pesticides are easily accessible to the people with the development in industrial and agricultural fields.

**Objectives :** To know the pattern and outcome of poisoning cases admitted in a tertiary care hospital over a period of 3 years.

**Materials and Methods :** A retrospective record based study of all poisoning samples sent for analyzing to Poison Detection Centre (PDC) of KLE hospital, Belagavi from January 2014 to December 2016. The data regarding pattern of poisoning, age, sex, occupation, basic demographics profile and outcome were collected from hospital records.

**Results:** There were total 521 cases of which 426 were positive for various poisonous compounds and 95 were negative for the standard tested. Most of the poisoning cases were observed in males amounting 257 (60.3%). The commonest age group was 19-29 years (46.5%) and male to female ratio was 1.52:1. The maximum number of cases reported were among illiterate (71.8%) and were from rural background (70.6%) involved in agricultural activities (42.7%). Organophosphorus (57%) was commonest compound and least was Amitraz (1.2%). The total mortality was 39 and the maximum deaths were seen with Organophosphorus compound (66.6%).

### INTRODUCTION

Poisoning is a major medicosocial and legal problem all over the world but its morbidity and mortality vary from one place to other place. Among the unnatural deaths, death owing to poisoning stand next only to road traffic accident deaths.<sup>[1]</sup> The deaths due to poisoning is

increasing at an alarming rate in developing countries like India. A large number of pesticides are easily accessible to the people with the development in industrial and agricultural fields. The World Health Organization (WHO) estimates that about 3 million cases of poisoning occur

every year in the world and about 1,93,460 deaths occur due to unintentional poisoning.<sup>[2]</sup> Of these 90% of fatal poisoning occurs in developing countries particularly among agricultural workers. The commonest cause of poisoning in India and other developing countries is due to pesticides, the reason being agriculture based economy, poverty, illiteracy, ignorance and lack of protective clothing and easy availability of highly toxic pesticides.<sup>[3]</sup> A study on the pattern of poisoning is important as it will help us to gain a better understanding of the current trend in poisoning cases. The pattern or profile of poisoning in a specific region depends on diverse factors such as age, gender, place of residence, occupation, educational status, availability and accessibility of pesticides.

## RESULTS

There were total 521 cases of which 426 were positive for various poisonous compounds and 95 were negative for the standard tested.

Table 1 depicts that males predominated females and the male to female poisoning ratio is 1.52:1. The majority of cases belonged to age group 19-29 years (46.5%) followed by age group 2-18 years (19.7%) while least number of cases were seen with age group >70 years (1.4%).

**Table 1:** Distribution of cases according to age and sex

Age group	Male	Female	Total	Percentage
<1	05 (1.9%)	05 (3%)	10	2.3
2-18	47 (18.3%)	37 (21.9%)	84	19.7
19-29	122 (47.5%)	76 (44.9%)	198	46.5
30-39	33 (12.8%)	21 (12.4%)	54	12.7
40-49	26 (10.1%)	16 (9.5%)	42	9.9
50-59	13 (5.1%)	10 (5.9%)	23	5.4
60-69	07 (2.7%)	02 (1.2%)	09	2.1
>70	04 (1.6%)	02 (1.2%)	06	1.4
Total	257	169	426	100

Table 4 depicts that majority of cases were illiterate (71.8%) as compared to literates (28.2%)

**Table 4:** Distribution of cases according to educational status

Educational Status	Number of cases	Percentage
Illiterate	306	71.8
Literate	120	28.2
Total	426	100

## MATERIALS AND METHODS

It is a 3 year retrospective study of all poisoning samples analyzed at Poison Detection Centre (PDC) of KLE Hospital attached to Jawaharlal Nehru Medical College, Belagavi from January 2014 to December 2016. The study included data regarding pattern of poisoning, age, sex, occupation and basic demographics profile were collected along with the name of poisonous substances and outcome from hospital records. Statistical analysis was done by using SPSS software version 25 and the results were calculated in percentages.

Ethical Clearance was Taken from Institutional Ethical Committee.

Table 2 depicts that majority of the cases were from rural background (70.6%) followed by urban population (29.4%)

**Table 2:** Distribution of cases according to place of residence.

Place of Residence	Number of cases	Percentage
Rural	301	70.6
Urban	125	29.4
Total	426	100

Table 3 depicts that the most common population affected were the people involved in agricultural activities (42.7%) followed by housewife (25.6%) and students (19.5%).

**Table 3:** Distribution of cases according to occupation

Occupation	Number of cases	Percentage
Farmer	182	42.7
Housewife	109	25.6
Student	83	19.5
Self employed	28	6.6
Others	24	5.6
Total	426	100

Table 5 depicts that Organophosphorus (57%) was the commonest poisonous compound used followed by Medicine and Drugs (17.5%). The total mortality was 39 in which maximum mortality was seen with organophosphorus compound (66.6%).

**Table 5:** Distribution of cases according to type of poisoning and mortality

Type of Poisoning	Number of patients	Percentage	Mortality	Percentage
Organophosphorus	243	57	26	66.6
Medicine and Drugs	75	17.5	08	20.5
Alcohol and Phenol	31	7.3	02	5.1
Carbamate	25	5.8	01	2.6
Bromodiolone	16	3.8	01	2.6
Pyrethroid	12	2.9	00	00
Amitraz	05	1.2	01	2.6
Others	19	4.5	00	00
Total	426	100	39	100

Table 6 depicts that when the patient arrived to hospital in less than 2 hours the mortality was 5 (12.8%) out of 116 cases. But as more time elapsed since exposure to hospital arrival more was the mortality.

**Table 6:** Distribution of cases according to time elapsed since exposure to hospital arrival; and their prognosis.

Time lapsed to reach Hospital (Hours)	Total cases	Mortality	Mortality	Percentage
<2 hours	116 (27.2%)	05 (12.8%)	26	66.6
2-4 hours	121 (28.4%)	09 (23.1%)	08	20.5
5-8 hours	108 (25.4%)	11 (28.2%)	02	5.1
>8 hours	81 (19%)	14 (35.9%)	01	2.6
Total	426	39	01	2.6

## DISCUSSION

In our study, males (60.3%) predominated females (39.7%) and the male to female poisoning ratio was 1.52:1 which is similar to the study conducted by Kiran et al.<sup>[4]</sup> This could be due to risk taking behavior of males and indulging in outdoor activities. The present study shows that most of the cases belong to age group 19-29 years which constitute 46.5%. This observation is consistent with the studies conducted by Gupta et al<sup>[5]</sup>, Dash et al<sup>[6]</sup> and Srivastava et al.<sup>[7]</sup> In this study rural population (70.6%) was affected more as compared to urban population (29.4%) which is similar to findings noted by Tejas et al<sup>[8]</sup> and Virendar et al.<sup>[9]</sup> It could be due to the fact that rural people are more exposed to pesticides as they are involved in agricultural activities. In this study it has been observed that the most vulnerable occupation

group was the people involved in agricultural activities (42.7%) and people who were illiterate (71.8%) which is similar to studies done by Sandhu et al<sup>[10]</sup>, Pate et al<sup>[11]</sup> and Karamjit et al.<sup>[12]</sup> According to a study done by Dhanya et al<sup>[13]</sup> and Marahatta et al<sup>[14]</sup> the organophosphorus poisoning constitute maximum number of cases (57%) followed by unspecified drugs (17.5%) which is similar to our findings. It was found in our study that more the time elapsed since exposure to hospital arrival more was the mortality which is similar to studies done by Gupta et al<sup>[15]</sup> and Ramesha et al.<sup>[16]</sup>

## CONCLUSION

In our study there were total 426 cases in which male predominated female with ratio of 1.52:1 and 19-29 years was the commonest age group. Most of them

were illiterate from rural/agricultural background. The commonest compound was organophosphorus. The total mortality was 39 and maximum mortality was seen with organophosphorus compound. Since we are a developing country its our duty to handle multifunctional tasks in providing information about the various hazards of pesticides and drugs and by establishing poison

information centers. Various health care centers need to organize mass education programs to create awareness to prevent poisoning and its fatalities. There should be strict pesticide regulation laws to decrease the burden of incidence of poisoning. Along with this various training programs should be organized and proper counseling should be done.

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