

## Toxicoepidemiology of Positioning Cases in South India

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### Abstract

**Background:** Poisoning is a major preventable cause of mortality in a developing Middle Income Country like India. Different types of poisons lead to death. Cases of poisoning can be suicidal or homicidal with paramount Medico Legal Importance.

**Aims and Objectives:** The present study was undertaken to study the toxico-epidemiology of poisoning deaths in the geographical territory of Hyderabad city, India.

**Materials and Methods:** This Prospective Observational study included 396 poisoning death cases which were examined at the mortuary of Osmania General Hospital, Hyderabad. Data regarding case demographics and poisoning agent was collected and analyzed. Data was collected in MS Excel and represented as numbers and percentages in the form of tables and figures.

**Results:** Males cases were predominant accounting to 67.4% of the total. The most common age groups were 21-30 years followed by 41-50 years and 31-40 years. 95.7% of the cases succumbed to known poisoning agents whereas the rest 4.3% were of unknown poisoning agents. Insecticidal poisoning was the most common cause of death. Among insecticidal poisoning and overall, the most common poisoning was Organophosphate poisoning.

**Conclusion:** The results of this study will help the doctors and governmental agencies in devising appropriate treatment and prevention strategies in poisoning cases.

**Keywords:** Poisoning, Suicide, Homicide, Death, Forensics, Toxicology.

### Introduction

According to the International Health regulating authority, The World Health Organization, almost 300,000 poisoning deaths are reported every year.<sup>1</sup> Of these 0.3 million deaths, majority belong to the low and middle income countries.<sup>2</sup> Poisoning is a major cause of mortality in a developing country like India.

Poison is a substance that causes illness or

mortality when inhaled, ingested or contacted, through its chemical action. Poisoning cases can be intentional - suicidal/homicidal and unintentional, accidental. This renders poisoning cases to be of paramount Medico Legal Importance. Different types of poisons are found across the country which cause significant mortality. Insecticides, Pesticides, Herbicides, Snake Bites and Acid poisons are the most common mortality causing poisons in India.<sup>3,4</sup>

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Epidemiological data of poisoning cases is very much essential in prevention, management of poisoning related morbidity and mortality.

We have hence undertaken this research to study the toxico-epidemiology of poisoning related deaths in the geographical location of Hyderabad city, anticipating the results to be helpful to healthcare professionals and governmental policy makers in devising appropriate management and prevention strategies.

### Materials and Methods

**Study Design:** This was Prospective Observational Study.

**Study Setting:** The present study was conducted at the Mortuary, Osmania General Hospital and the Department of Forensic Medicine, Osmania Medical College, Hyderabad.

**Study Duration:** The present study was conducted for a period of one year.

**Sample Size:** 396 cases of poisoning deaths examined at the mortuary of Osmania General Hospital were studied and analyzed during this study.

**Inclusion and Exclusion Criteria:** All ages and poisoning cases except drug and food poisoning were included in the study.

**Statistical Analysis:** The data was collected in MS Excel and represented as numbers and percentages in the form of tables and figures.

**Ethical Clearance:** Ethical clearance was obtained from the Institutional Ethical Committee.

### Results

**Table No. 1 Gender Distribution**

Gender	No. of Patients	% out of 396
Male	267	67.4%
Female	129	32.6%
Total	396	100%

Table 1 depicts the gender distribution of the study. Male cases accounted for 67.4% and were more common than the female cases which accounted for 32.6%.

**Table No. 2 Age Distribution**

Age	No. of Patients	% out of 396
1 - 10	5	1.3%
11 - 20	44	11.1%

Age	No. of Patients	% out of 396
21 - 30	99	25%
31 - 40	79	19.9%
41 - 50	94	23.7%
51 - 60	45	11.4%
61 - 70	20	5.1%
71 - 80	10	2.5%
Total	396	100%

From the above table it can be stated that in our study the most number of deaths were reported in individuals aged 21-30 years followed by 41-50 years and 31-40 years. 5 deaths were reported in children aged 1-10 years.

**Table No. 3 Etiology of Poisoning Agent**

Poisoning Agent	No. of Patients	% out of 396
Known	379	95.7 %
Unknown	17	4.3%
Total	396	100%

Almost 96% of cases were of known poisoning agent and the rest 4% cases were of unknown poisoning agent.

**Table No. 4 Type of Poison**

Category	No. of Cases	% out of 396
Insecticide	221	55.8%
Corrosive Acid	44	11.1%
Herbicidal	22	5.6%
Phosphide (Rodenticide)	6	1.5%
Pesticide	1	0.2%
Alcohol Intoxication	33	8.3%
Snakebite Poisoning	15	3.9%
Unknown Poisoning	21	5.3%
Other categories	33	8.3%

Table no. 4 depicts that Insecticide poisoning was the most common cause of death which accounted for 55.8% which was followed by corrosive acid poisoning-11.1%, Alcohol intoxication-8.3%, Herbicidal poisoning-5.6%, Unknown poisoning-5.3%, Snake bite poisoning-3.9%, Rodenticidal poisoning-1.5% and Pesticidal poisoning-0.2%. Among insecticidal poisoning Organophosphate poisoning was the most common.

## Discussion

The present study included 396 poisoning cases and was a prospective observational study conducted at the mortuary of Osmania General Hospital and the department of Forensic Medicine, Osmania Medical College. It aimed to study the toxico-epidemiology of poisoning related deaths in the geographical region of Hyderabad city. Male cases were predominant in our study and accounted for 95.7% of the total 396 cases. In a study by Nadeem N. N et al<sup>5</sup> similar male predominance in gender distribution was observed with the male gender accounting for 58%. On the contrary a female predominance was noticed in an acute poisoning study conducted by Akash et al<sup>6</sup>. In our study, the most commonly affected age group was 21-30 years followed by age groups 41-50 years and 31-40 years. In a study by Gupta R et al<sup>7</sup> almost 90% of the cases were younger than 40 years of age. Rakesh B et al<sup>8</sup> studied poisoning in urban setting and the most common age group affected according to their study was 18-30 years which is very similar to that in our study. Additionally, 5 cases were reported of children aged 1-10 years. 95.7% cases in our study were of known poisoning agent, the rest 4.3% cases were of unknown poisoning agent. In our study, Insecticide poisoning was the most common cause of death which accounted for 55.8% which was followed by corrosive acid poisoning-11.1%, Alcohol intoxication-8.3%, Herbicidal poisoning-5.6%, Unknown poisoning-5.3%, Snake bite poisoning-3.9%, Rodenticidal poisoning-1.5% and Pesticidal poisoning-0.2%. Among insecticidal poisoning Organophosphate poisoning was the most common. Similar results have been observed in other studies<sup>9,10</sup>. Amit et al<sup>11</sup> studied acute poisoning in Navi Mumbai and found that pesticides were the second most common type of poisoning agent. Snake bite cases also have been reported in densely populated area of Hyderabad city. Our study results will be helpful for healthcare professionals and governmental policy makers in devising appropriate management and prevention strategies.

## Conclusion

The results of this study will help the doctors and governmental agencies in devising appropriate treatment and prevention strategies in poisoning cases.

**Ethical clearance:** Taken from Institutional Ethical Committee

**Source of funding:** Self

**Conflict of Interest:** Nil

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