

# Demographic Profile of Acute Poisoning Cases Excluding Animal Bite at MBGH, Udaipur

Sumit Yadav<sup>1</sup>, Mahesh Dave<sup>2</sup>, Archana Gokhroo<sup>3</sup>

## ABSTRACT

**Introduction:** Poisons are the substances that can cause severe organ damage or death, if ingested, breathed, injected into the body or absorbed through the skin.<sup>1</sup> The word poison was firstly used in 1200 A.D., which means a deadly potion or substance.<sup>2</sup> This word was derived from Latin word 'potionem' (a drinking of drink). Every substance may act as poison and only the dose plays an important role. Aims and objectives: 1) to study the demographic profile of poisoning in the patients admitted in MBGH, Udaipur. 2) To study the incidence of different types of poisoning.

**Material and methods:** This study was hospital based prospective study. The study was conducted from Jan, 2017 to Jan, 2018; carried out in Department of Medicine RNT medical college and MBGH hospitals Udaipur (Raj). 200 patients were included who fulfilled the eligible criteria.

**Results:** Males (54.50%) were affected more than females (45.50%). Maximum numbers of patients 34.00% were in the age group between 21-30 years. Most of the people were from rural area (67.00%). Highest numbers were reported among agricultural worker (21.50%) followed by students (21.00%). Intentional poisoning was found among 159 cases (79.5%). Family problems (n=78, 39%) were contributing factor for committing suicides. The leading poison was Organophosphorous group of compounds 33.00%. Highest mortality was seen in aluminum phosphide which constituted 16 cases (51.61%).

**Conclusion:** Acute poisoning is one of the common problems in a clinical practice and our study suggests that Insecticides are one of the most common agents causing this problem.

**Keywords:** Acute Poisoning, Animal Bite

## INTRODUCTION

Poisons are the substances that can cause severe organ damage or death, if ingested, breathed, injected into the body or absorbed through the skin.<sup>1</sup> The word poison was first used in 1200 A.D., which means a deadly potion or substance.<sup>2</sup> This word was derived from Latin word 'potionem' (a drinking of drink). Every substance may act as poison and only the dose plays an important role.<sup>3</sup>

Poisoning is one of the most common problems in day to day clinical practice and the incidence of poisoning is increasing worldwide due to many of the factors such as psychological, financial, industrial, easy availability of poisonous substances, low costs of poisonous substances etc. Poisoning is one of the leading causes of death in India and it has been estimated that, five to six persons per lakh of population die due to acute poisoning every year.<sup>4</sup> Knowledge regarding epidemiology and management of poisoning plays a very

important role for the treating physician and is also beneficial for the patient.<sup>5</sup>

Hence, regional epidemiological data on poisoning are helpful in planning rational use of resources for the prevention and management of poisoning and in targeting research.<sup>6</sup>

Poisoning is a major health problem in many developed countries but is till now ill-defined in many developing countries like India. In countries like India the problem is getting worse with time as newer drugs and chemicals are developing in vast number and there is no stringent rules and regulations for their dispensing and use. There are more than 9 million natural and synthetic chemicals worldwide which are enlisted and it keeps growing.

World Health Organization (WHO) estimate approximately that 3 million pesticide poisoning annually worldwide and causing more than 2, 20,000 deaths per year.<sup>7</sup> Developing countries like India and Srilanka report high rate of toxicity and death due to poisoning. India accounts for about one third of pesticidal poisoning cases of the total number of the cases reported worldwide.<sup>8</sup> The reason could be attributed to the availability of toxic chemicals, their sale at large scale, use without proper testing of their toxic properties and banned products also continue to flow in the market. Household material like cleaning materials and medicines have further widened the spectrum of toxic materials which people may get exposed.<sup>9</sup>

To know the details of the pharmacokinetics and pharmacodynamics of a poison will be helpful in the management of poisoning.<sup>10</sup> By using these principles a treating physician will be plan and manage better a poisoning case.

Demographic Knowledge of general pattern of will help in early diagnosis and treatment of cases, thus decreasing the rate of mortality and morbidity.<sup>11</sup> It also helps in framing appropriate policies, introducing new guidelines, counseling

<sup>1</sup>Junior Resident, Department of General Medicine, <sup>2</sup>Senior Professor and Head, Department of General Medicine, <sup>3</sup>Professor, Department of General Medicine, Rabindra Nath Tagore Medical College, Udaipur affiliated to Rajasthan University of Health Sciences, Jaipur, India

**Corresponding author:** Dr. Mahesh Dave, Senior Professor and Head, Department of General Medicine, Maharana Bhupal Government Hospital, Udaipur - 313001, India

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and sensitization to society, proper use and storage of chemical and toxins.<sup>12</sup>

Hence current study was undertaken to see the demographic profile of acute poisoning in our area and its outcome.

## MATERIAL AND METHODS

This was a prospective observational study which was carried out in 200 patients admitted in medical wards of M.B. Hospital Udaipur (Rajasthan) India from Jan, 2017 to Jan 2018.

**Inclusion criteria:** 1) Patient of acute poisoning having age more than 18 years. 2) Patients willing to participate in the study

**Exclusion criteria:** 1) Patient admitted with snake bite, insect bite, food poisoning and chronic poisoning.

All these 200 patients of acute poisoning admitted were evaluated with detailed history, cause of poisoning, socio-economic status, nature of poison, professional history, intention of the poisoning and their outcome were noted.

## RESULTS

Present study was done in order to analyze the trends of poisoning in Udaipur Division keeping in mind various demographic factors. 200 patients were enrolled in the present study and it was found that males (54.50%) were more commonly involved than females (45.50%). Maximum

Age (years)	Frequency	%
≤ 20	66	33.00
21-30	68	34.00
31-40	37	18.50
41-50	21	10.50
>50	8	4.00
Total	200	100

**Table-1:** Age Wise distribution

Occupation	Frequency	%
Farmer	43	21.50
Student	42	21.00
Labourer	13	6.50
Private job	26	13.00
Government job	4	2.00
Housewife	41	20.50
Unemployed	17	8.50
Others (business, teacher, driver, shop-keeper, etc.)	14	7.00
Total	200	100

**Table-2** Occupation wise distribution

Socioeconomic status	Frequency	%
Upper	3	1.50
Upper middle	32	16.00
Lower middle	56	28.00
Upper lower	62	31.00
Lower	47	23.50
Total	200	100

**Table-3:** Socioeconomic status wise distribution

Causes	Frequency	%
Family dispute	78	39.00
Money issue	27	13.50
Education	13	6.50
Accidental	41	20.50
Others	41	20.50
Total	200	100

**Table-4:** Distribution according to causes

Nature of poison	Frequency	%
OPC(Organophosphate)	66	33.00
Rate killer	18	9.00
Aluminium phosphide	44	22.00
Phenol	8	4.00
Insect repellent	7	3.50
Tablets	17	8.50
Unknown	30	15.00
Others	10	5.00
Total	200	100

**Table-5:** Nature of Poison wise distribution

numbers of patients 34.00% were in the age group between 21-30 years (Table-1). Most people from rural areas (67.00%) were involved than from urban areas (33.00%). The highest numbers of poisoning cases were reported among agricultural workers (21.50%) followed by students (21.00%)(Table-2). People from lower socioeconomic status (54.50%) consumed poison more frequently than the upper socioeconomic status (1.50%)(Table-3). Married people (71.00%) were more frequently involved. Intentional poisoning was found among 159 cases (79.5%) and accidental poisoning was found in 41 cases (20.5%). Family problems (n=78, 39%) were contributing factor for committing suicides (Table-4). In our study suicide was the major cause of poisoning contributing to 159 cases (79.5%) and the most common agent used was organophosphorous compound (33%), followed by aluminum phosphide (22%) and rat killer poison (9%). Out of all poisoning agents used the mortality was found highest in aluminum phosphide 16 cases (51.61%).

## DISCUSSION

In this study, males were more affected (54.5%) than the females (45.50%). Similar observations were made by Dalal et al.<sup>12</sup> where he found that males (58.82%) and female (41.8%) out of 923 cases studied. Aggarwal et al.<sup>13</sup> also noted 72% male cases of the total number of poisoning cases studied.

The maximum number of cases belonged to 21-30 years age group which includes 34% (n=64). Similar findings were observed by Surendra Khosya et al.<sup>14</sup> He found 42.92% poisoning cases among age group between 21 – 30 yrs. Tejas Prajapat et al.<sup>15</sup> showed that the majority (45.08%) cases were from age group of 21-30 years. High rate of poisoning in this young age group (21 -30yrs) can be explained by the fact that these populations probably have more stressful life due to modern life style, examination failure, scolding from parents and teachers and love affair failures etc.

Present study showed that 67.00% cases were from rural area and 33.00% cases from urban area. Study done by Kaur S, Gupta S, Sadiq S, et al.<sup>16</sup> at Government Medical College, Jammu, India showed that the majority of patients (61.3%) were of rural background.<sup>30</sup> This maybe because widespread availability of pesticide along with poverty, failure of crops, family problems and in rural areas

Out of 200 patients recruited in the study, majority 142(71%) were married and rest 58(29%) were unmarried. Similar observations were obtained by B. Maharani et. Al<sup>17</sup> 101 cases (67.33%) were married. Poisoning is more common in married persons because of more responsibility, conflict with spouse or with other family members.

Present study were carried out in 200 patients and we found 36 cases(18%) were illiterate.108 cases (54.05%) were educated up to high school,19 cases(9.50%) up to intermediate and rest of 37 cases (15.83%) were graduate/post graduate.

Similar results were reported by Irteqa Ali et. al<sup>18</sup> and he observed that approximately one third of the patients (n=128; 33.77%) were illiterate. Educational status of 139 (36.68%) patients were up to high school, 52 (13.72%) were up to intermediate and rest 60 (15.83%) were graduates/postgraduates. Maximum patients of the present study were in the group of illiterate and education up to high school (72%).This is due to the fact that the maximum patients enrolled in present study was from rural areas where the literacy rate is less.

The present study showed that 21.50% of patients were agricultural workers and students comprised of 21% followed by house wives (20.50%). De alwis et al.<sup>19</sup> also found that 45% cases of poisoning were among agricultural farmers. Surendra Khosya et al<sup>20</sup> also observed that the highest numbers of poisoning cases were reported among agricultural worker (41.35%).This could be due to accidental exposure to insecticides easy availability of insecticides, financial problems, social problems, psychological problems among agricultural workers(farmers) of rural area of Rajasthan.

The present study showed the highest numbers of poisoning cases are in the lower socioeconomic class (54.50%) followed by middle class (44%) and lowest in upper class (1.50%).Similar results were reported by Yogesh Sharma et. Al<sup>21</sup> and he found 58.76% of cases in low socio economic class. Surendra Khosya et. al<sup>22</sup> observed that highest number of poisoning cases were in lower socioeconomic status 592 cases (74.09%), followed by middle class 171 cases (21.4%) and then the upper class which constituted 47 cases (5.88%). This can be explained by the fact that individuals of lower and middle socioeconomic class having less education, unemployment, more family responsibilities, financial crisis, poverty, large family size etc.

In our study the most commonly used agent for poisoning was organo phosphorus (66 cases, 33.00%) followed by Aluminum phosphide poison (44 cases, 22.00%) and other agents. The most common used drugs are sedatives followed by antipsychotic, antidepressants and paracetamol. Khosya et. Al<sup>22</sup> observed that leading poisoning was

Organophosphorous group of compounds 30.65%. Next common poisoning was by aluminum phosphides (13.14%), 3rd most common poisoning was rat killer which constituted 83 cases (10.38%).Similar observations were noted by Maharani et al. and Yogesh Sharma et al.<sup>17,21</sup>

The present study done in 200 patients of poisoning, we found 78.39% was due to family disputes, 29.50% was due to accidents, 13.50% was due to financial problems, 6.50% was due to failure in exams. Dr. Bholu Kumar Singh et. al<sup>23</sup> observed same results that most common cause was family dispute (n=24, 52%). Irteqa Ali et al.<sup>24</sup> observed that family problems (46.33%) and marital discord (33.20%) were the most common cause poisoning.

In present study we found 159 cases (79.50%) were due to intentional poisoning (Suicidal), 13.50% were due to accidents. Various other studies also showed the same results. Das et al 2007<sup>25</sup> showed that suicidal cases were 83.88% (78), while accidental poisoning were 16.12% (15). Ramesha et al., (2009)<sup>26</sup> found that 77.9% (n=106) of cases were of suicidal intention and 22.1% (n=30) of cases had accidental poisoning. This may be because of the reasons like economic crisis, examination failure, love failure, quarrels, unemployment, and chronic illness.

Out of 200 patients included in our study, 169 (84.5%) improved while rest of the 31 (15.00%) expired. Majority of deaths was due to Aluminum phosphide, 16 (51.61%) followed by OPC 10 (32.25%). A study conducted at Government Medical College, Jammu, By Kaur et. al showed that Case fatality rate was highest with aluminum phosphide (43.4%) followed by organophosphates (16%) and unknown agents (12.8%).Another study conducted at J.N. Medical College, Aligarh, Uttar Pradesh by Zaheer et. Al<sup>27</sup> showed that maximum mortality was there in the aluminum phosphide group (37.5%) which was significantly different from other groups (Pearson Chi-square value 21.29, P=0.002). The highest rate of mortality due to Aluminum phosphide poison is due to toxic nature of the poison and no specific antidote available for the poison till date.

## CONCLUSION

Acute poisoning is one of the common problems in day to day clinical practice. Our study suggests that it is common in males, in young age group, people living in rural areas with low socio economic status and illiterate and married people. Intent poisoning (suicide) was found more common than accidental poisoning. The most common agent was organophosphorous followed by aluminum phosphide and the highest mortality rate was observed with the later.

## Suggestions

To reduce morbidity and mortality due to poisoning we recommend strict implementation of pesticide act, so that import, manufacture, sale, transport, distribution and use of pesticides can be under the supervision of the government. Controlling access to dangerous pesticides and follow secure storage practice. Poison information center should be created in each district throughout the country. All the hospitals should have separate toxicological unit and primary health

center should be upgraded to provide immediate effective treatment to poisoning. Further research is needed to introduce safer pesticides

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