

## ORIGINAL PAPER

# Clinical Spectrum of Poisoning in a Tertiary Care Hospital in Assam: A Retrospective Analysis

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## ABSTRACT

**Purpose:** To collect hospital based data on the ever-increasing menace of household substance poisoning; so as to gauge the magnitude of the problem for formulating therapeutic and preventative strategies of the same. **Method:** Retrospective single center observational study for a period of one year.

**Results:** Overall incidence was 3.2%; highest between 20 to 40 years. More incidences in the female sex were found in the rural population. Phenol and agricultural chemicals were mostly used. Familial disharmony and failure in examinations were the most common precipitating factors. Mortality rate was 1.2%.

**Conclusion:** Knowledge for proper handling and first aid measures following exposure should be dissipated amongst the masses.

**Keywords:** Household Poisoning; Phenol; Familial Disharmony; Suicidal Ideation, Poisoning, phenol poisoning, agricultural poisoning

## INTRODUCTION

Poison is a substance capable of producing damage or dysfunction in the body by its chemical activity. Since ages, the difficulties of poisoning both accidental and homicidal have been present. It was mostly accidental in the earlier times. Poisoning is a medical emergency and a patient is always invariably rushed to the hospital at the earliest for medical management. Uncontrolled use of poisons in the developing country has led to many deaths and devastating consequences in terms of case fatality.<sup>1,2,3</sup>

Poison can be defined as, “a substance (solid, liquid or gas), which if introduced in a living body or brought in contact with any part thereof will produce ill health or death by its constitutional or local effects or both”. Due to rapid development in the field of science and technology and vast growth in the industrial and agricultural sector, poisoning is spreading like a wild fire.<sup>4,5</sup> Poisoning both accidental and suicidal is a significant

contributor of mortality and morbidity worldwide. The pattern of poisoning again depends on many factors like socioeconomic condition, cultural and religious influences and availability in India. The exact data is yet not available but it seems that around 5-6 persons die due to poisoning every year.<sup>4, 5, 6, 7</sup> Organophosphorus poisoning forms the largest bulk in India.

Hazardous occupational practices and unsafe storage expose millions of people to the toxic effects of pesticides. The act of self-harm has been done to express anger, rebellion or revenge in some cultures. However deliberate self poisoning account for majority of fatal episodes and put tremendous stress on hospital services particularly in Asia.<sup>8, 9</sup> Many studies have shown that deliberate poisoning has a far higher mortality than accidental poisoning. Determinants for a fatal event include poison's toxicity, time taken in receiving clinical attention and the efficacy of the treatment.<sup>10</sup>

Poisoning is an important public health problem in the developing countries of the world. Poisoning with household substances seems to be on the rise with a large number of patients presenting to the emergency department with the same. To gather further knowledge on this seemingly increasing public health menace, a retrospective data analysis was planned to know the magnitude of the problem as well as its pattern and to identify the kind of material used for the act, as also to know the clinical spectrum and complications arising out of it.

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**MATERIAL AND METHODS**

It was a single center, retrospective observational study done at the Medicine Department of Gauhati Medical College and Hospital for six months, from 1<sup>st</sup> January to 30<sup>th</sup> June of 2014.

**Inclusion criteria:** All adult patients aged above 12 years admitted to the medicine department with poisoning.

**Exclusion criteria:** Age <12 years, overdose due to alcohol, food poisoning, snake envenomation and insect bite poisoning were excluded from the study analysis.

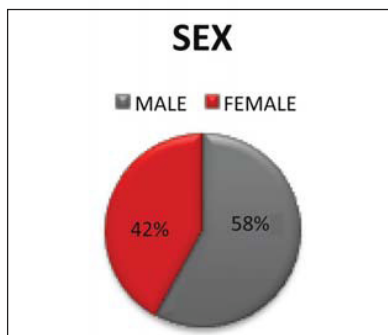
**RESULTS AND OBSERVATIONS**

A total of 10,492 patients were admitted for the duration at GMCH out of which 343 patients were with various poisoning, the incidence being 3.2%. Highest incidence was in the age group of 21-39 yrs (56%) followed by 12-20 years (31%). Among them 2% patients belonged to the age group of >60 years (**Table 1**).

**Table 1** Distribution of poisoning cases in relation to age groups

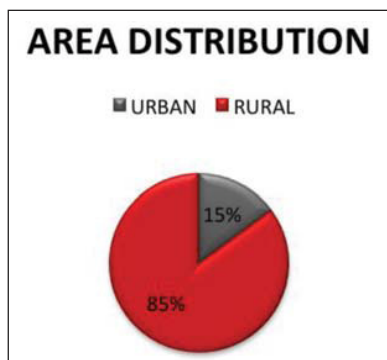
Age Group	Number of Patients	Percentage
<20	106	31%
21-39	194	56%
40-59	35	11%
≥60	8	2%

Our analysis has revealed 58% incidences in the female sex (**Figure 1**). Similarly, incidence was more from the rural populace (85.27%) is shown in **Figure 2**.



**Figure 1** Distribution of poisoning cases in relation to sex

Almost equal incidence was seen in married and unmarried people (50.2 and 49.8%) as shown in **Figure 3**.



**Figure 2** Distribution of poisoning cases in relation to area



**Figure 3** Distribution of poisoning cases in relation to marital status

With regard to educational background, highest incidence was found in people with education till primary school level (65%) followed by secondary school level (22%) and illiterate (13%) are shown in **Table 2**.

**Table 2** Distribution of poisoning cases in relation to education background

Education	Number of Patients	Percentage
Illiterate	45	13%
Primary Education	223	65%
Secondary Education	75	22%

Phenol (46%) and agricultural chemicals (44%) were the highest used substances (**Table 3**). Suicidal intention was the driving force for 80% of cases, with accidental ingestion being alleged by the rest 11% of them (**Table 4**).

**Table 3** Types of poisoning cases

Types	Number of Patients	Percentage
Agricultural	151	44%
Phenol	158	46%
Medication	20	6%
Others	14	4%

**Table 4** Nature of poisoning cases

Causes	Number of Patients	Percentage
Suicidal	275	80%
Accidental	37	11%
Homicidal	31	9%

Amongst probable etiology, familial disharmony topped the chart (69%) followed by examination failure (10%), emotional turmoil due to love affair (9%) and financial crisis (7%) and psychiatric illness at last (5%) as shown in **Table 5**.

**Table 5** Etiology of the cases

	Number Of Patients	Percentage
Familial Disharmony	236	69%
Love Affair	31	9%
Failure In Exams	34	10%
Financial Crisis	25	7%
Psychiatric Illness	17	5%

Among the admitted cases 98.8% cases recovered (98.8%); only 1.2% of them were died and referred for medico legal investigation in accordance of law.

## DISCUSSION

Cases of suicidal poisoning by various chemical compounds are being reported very frequently from all parts of India and other countries. The WHO estimated that there were 8,73,000 suicides worldwide in the year 2002, which makes suicide a major cause of premature mortality globally. The WHO reports that pesticides are now the most common method of suicide worldwide.<sup>11</sup> Acute poisoning is a clinical emergency and early diagnosis, treatment and prevention are crucial in reducing the burden of poisoning related injury in any country.<sup>11</sup> A thorough review of the risk factors helps to decrease the incidence and mortality.

We found females (58%) to be more affected as compared to males (42%). Khokan MK<sup>3</sup> while Kumar SV found similar observations; Panda BB, Karki RK and Prajapati BK found males were more involved than females in their study.<sup>11, 12, 14, 15</sup>

The incidence of poisoning is maximum in the 3<sup>rd</sup> and 4<sup>th</sup> decade (56%) followed by 2<sup>nd</sup> decade (31%) in our study. This is similar with studies from Kumar SV, Panda BB, Karki RK and Prajapati BK.<sup>11, 12, 14, 15</sup> Khokan MK found maximum incidences in 2<sup>nd</sup> decades in their study.<sup>13</sup>

We found highest incidences in married people (50.2%). Kumar SV, Panda BB and Khokan MK also observed similar findings.<sup>11, 12, 13</sup>

Incidence of poisoning was more common in rural areas (85.27%) than urban areas (14.73%). This was similar to Karki RK and Prajapati BK.<sup>14, 15</sup> However Khokan MK found higher incidence in urban areas.<sup>3</sup>

We found highest incidence in primary school goers (65%) which was similar to Khokan MK.<sup>13</sup>

Familial disharmony was the most common precipitating circumstance in our study (69%) followed by failure in exams (34%) and love affair (31%). Khokan MK also reported highest incidence with familial disharmony (70%).<sup>13</sup>

Suicide (80%) was the most common cause followed by accidental ingestion (11%) and homicide (9%). Khokan MK and Karki RK also observed similar findings.<sup>13, 14</sup>

Phenol (46%) was the most common type of poisoning followed by agricultural poison (44%) in our study. Prajapati BK and Karki RK saw similar observations.<sup>14, 15</sup>

Case fatality was low in our study (1.2%). Kumar SV and Panda BB reported case fatality ratio of 8.3% and 3.84% in their study.

## CONCLUSION

Poisoning by household chemicals seems to be a rather increasing problem in this part of the country. With introduction of modern amenities of life, more and more new chemical substances are going to be used in the household. This has the potential of

human exposure accidentally or by intentional purpose. Proper precaution to keep the household chemical substances is required. At the same time knowledge for proper handling and first aid measure following exposure need to be given to the public. . To formulate strategies for prevention we need to compile data from all regions of the country to find the risk factors and then address those. We therefore pledge all concerned to come up with their regional data so that national strategy to tackle the menace can be prepared soon. More research is needed to better understand this fast growing menace of poisoning for better management and possible intervention programmes are needed to tackle this problem urgently.

**Conflict of Interest:** No conflict of interest associated with this work.

## Ethical Clearance: Taken

**Contribution of Authors:** We declare that the authors named in this article did this work and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. We declare that this work does not infringe any copyright or violate any other right of any third parties; the article has not been published (whole or in part) elsewhere, and is not being considered for publication elsewhere in any form, except as provided herein. We declare that all the authors have contributed sufficiently in the article and take public responsibility for it. All authors read and approved the final manuscript.

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