



# SCENARIO OF ACUTE POISONING IN A SUB DIVISION HOSPITAL OF WEST BENGAL, INDIA

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## ABSTRACT

**Background:** Acute poisoning is one of the leading causes of morbidity and mortality throughout the world. Review of the socio-demographic profile of poisoning is of much important for recognizing this public health concern and to find the way out.

**Objective:** Few literatures are available regarding the poisoning in eastern India. . In India incidence of accidental and self-poisoning are increasing day by day .Our objective is to study the sociodemographic profile of acute poisoning and its outcome.

**Materials and Methods:** This retrospective study was done among patients admitted with acute poisoning in a subdivision hospital of West Bengal, India, during the year 2011 and 2012. Our study included 1237 patients admitted with acute poisoning admitted through emergency in one year period. The demographic pattern, type of poisoning, route of exposure, seasonal variation, patient survival and referral were collected in a pre-structured proforma. Data collection was performed according to hospital regulations after approval by the hospital authorities. Then the data were analyzed by descriptive statistical method by using software.

**Results:** Acute poisoning cases are burden of 2.72% of total admission and 5.08% of medical ward admission. Highest number of admission are seen in September (n=147) and October (n=149) months. Male to female ratio of poisoning is 1.22:1. Organophosphorus (n=594) poisoning is the commonest and next is snakebite (n=451). Overall death rate is 4.36% (n=54). Commonly affected age groups are 11 to 20 years (n=435), 21 to 30 years (n=414). Death is also common in age group of 11 to 20 (n=18) and 21 to 30 years (n=16). Rate of referral to higher center is 2.10%. Average hospital stay is 2 days. Among self-poisoning cases (n=746), 1.73% (n=13) were already under treatment for psychiatric illness.

**Conclusion:** As the affected patients are mostly in adolescent and young age group and as they are the future of a nation, it is important to take measure to prevent poisoning. Psychological assessment, social and economic security is important in this regard.

**Key Words:** Acute poisoning; organophosphorus; snakebite.

## INTRODUCTION

A poison is any substance that is harmful to our body by means of inhalation, ingestion, injection or absorption through skin. Acute poisoning is an important cause of morbidity and mortality. In India incidence of accidental and self-poisoning are increasing day by day.

Over the last few decades, agricultural pesticides have become common household items in the developing world, which are commonly used for self poisoning. Acute poisoning is an important cause of body injury

which may be accidental or self-inflicted. During the year 2008 about 24.26% death occurred due to poisoning in India [1]. Acute poisoning is responsible for 10% hospital admission in U.K. and in-hospital mortality is less than 1%. [2]. Commonest cause of acute poisoning in India is pesticides (organophosphorus compounds) due to their low cost, easy availability, particularly in rural areas. Snake bite is the most common accidental poisoning and accounts for 0.47% of total deaths in India with male preponderance (59%) [3]. Anxiety, depression, isolation, unemployment, failure in examination, marital disharmonies are the common precipitating factors for self-

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poisoning [4]. Rural populations of low socioeconomic groups are commonest sufferer. It is important to know the patterns and outcome of acute poisoning.

## MATERIAL AND METHOD

The present study is a retrospective, observational, epidemiological study conducted over a period of one year (1.1.2011 to 31.12.2011) at Jangipur subdivision hospital, Murshidabad district of West Bengal (India). Ethical clearance was obtained before the study data were collected. Patients admitted with history of acute poisoning were included in this study but those who absconded were excluded. All patients in the study were examined clinically with details history taken from patients and their relatives. Previous psychiatric illnesses of poisoning cases were assessed from history and past medical records. After discharge patients were advised for psychiatric consultation. Patients economic condition, race, sex, educational qualification, residential area, age group, type of poison, hospital stay, death rate, referral rate were assessed. Total 1237 number of patients was included in this study. Socio economic status was judged by APL, BPL (above or below poverty line) card issued by government authority. Patients of non-municipality areas were designated as rural and of municipal areas were urban. Then the data were analyzed by descriptive statistical method by using computer based software.

### Observation

Our present study consists of 1237 patients, of which 682 were male and 555 were female (M: F=1.2:1). Total number of acute poisoning cases were 2.72% of total hospital admission (n=45375) and 5.08% of medical ward admission (n=24337) during that year. Among them self-poisoning cases were 746(60.30%) and accidental cases were 491(39.70%). Accidental cases included snake bite, wasp, bee or scorpion sting, ingestion of kerosene oil in children, exposure to organophosphorus compounds during spraying. 1008 cases (81.48%) were BPL category and 229 cases (18.51%) were APL category. 864 (69.84%) were Hindu and 373(30.75%) were Muslim. Age wise incidences were 0-10 years (n=36,2.91%), 11-20 years (n=435,36.16%), 21-30 years (n=414,33.46%), 31-40 years (n=184,14.87%), 41-50 years (n=96,7.76%), 51-60 years (n=46,3.63%), 61 years+ (n=26,2.10%). Month wise incidences were January (n=56,4.52%), February (n=32,2.58%), March (n=81,6.54%), April (n=109,8.81%), May (n=117,9.45%), June (n=142,11.47%), July (n=144,11.64%), August (n=129, 10.42%), September (n=147,11.88%) October (n=149,12.04%), November (n=93, 7.51%), December (n=38,3.07%). Types of poison were organophosphorus (n=594,48.01%), Snakebite (n=451,36.45%), sedatives (n=39,3.15%),

rat killer (n=38,3.07%) bee and wasp (n=25,2.02%), acid ingestion (n=23,1.85%), kerosene ingestion (n=21,1.69%), dhatu (n=9,0.72%), lice killer (n=8,0.64%), unknown (n=8,0.64%), organocarbamate (n=4,0.32%), paracetamol (n=4,0.32%), phenyl (n=2,0.16%), Gamoxene (n=2,0.18%) and contraceptive pills (n=2,0.18%), scorpion sting (n=2,0.18%). Snake bite was the major accidental poisoning (n=451) and month wise incidence were- January (n=5,1.1%), February (n=6,1.33%), March (n=12,2.66%), April (n=20,4.43%), May (n=35,7.76%), June (n=64,14.19%), July (n=72,15.96%), August (n=77,17.07%), September (n=73,16.18%), October (n=53,1.75%), November (n=29,6.43%), December (n=5,1.10%). Organophosphorus poisoning was the major self-poisoning and month wise incidences were- January (n=37,6.22%), February (n=21,3.53%), March (n=56,9.42%), April (n=69,11.61%), May (n=60,10.10%), June (n=58,9.70%), July (n=54,9.09%), August (n=35,5.89%), September (n=58,9.76%), October (n=72,12.12%), November (n=48,8.08%), December (n=26,4.37%). 13 patients (1.74% of self-poisoning cases) were under treatment for psychiatric illness (depression 69.23%, schizophrenia 23.07%, anxiety 7.69%). Other precipitating factors for self-poisoning were impulsion, unemployment, poverty, marital disharmony, stressful life events, alcohol abuse, divorce, isolation, failure in examination. 26 patients (2.10%) were referred to higher medical centre. Average hospital stay was 2 days. Among 1237 patients, 54 (4.36%) were expired in hospital. Among dead patients male were 33 and female were 21 (M: F=1.57:1) and age group wise incidence were 11-20 years (n=18,33.3%) 21-30 years (n=16,29.62%) 31-40 years (n=8,14.81%), 41-50 years (n=7,12.96%), 51-60 (n=5,9.29%). Month wise death (n=54) were - January (n=3,5.55%), February (n=2,3.70%), March (n=4,7.40%), April (n=6,11.11%), May (n=8,14.81%), June (n=7,12.96%), July (n=8,14.8%), August (n=4,7.40%), September (n=1,1.85%), October (n=4,7.40%), November (n=5,9.25%), December (n=2,3.70%). Among death cases 2 died from snake bite (0.44% of snake bite cases), 2 from acid poisoning (8.69% of acid poisoning cases) and 50 for organophosphorus poisoning (8.41% of organophosphorus poisoning cases).

## DISCUSSION

Acute poisoning may be self-inflicted or accidental. With increasing of population and socio-psychological hazards the burden of acute poisoning is increasing day by day. Poisoning ranked in the 5<sup>th</sup> position in India according to priority [5]. Acute poisoning accounts for about 10% hospital admission in United Kingdom in-hospital mortality is less than 1% [6]. Types of poisoning varies from

country to country and state to state. Paracetamol is the drug most commonly used in U.K while an insecticide (organophosphorus and carbamates) is more common in India. On the other hand aluminium phosphide is more common in Haryana followed by organophosphorus compounds [7].

In our study total 1237 acute poisoning cases are 2.72% of total hospital admission and 5.08% of medical ward admission patients. Of them 81.48% was BPL category and 74.2% was of rural origin. It is 1% of medical ward admission in a study in Nepal [8]. In our study self-poisoning was 60.30% and accidental poisoning was 39.70%, whereas in a study conducted in Haryana, 91.4% was self-poisoning, 8.1% was accidental poisoning and 0.5% was homicidal poisoning, 75% patients were of lower socio-economic status [7]. In a study by Srivastava et al male to female ratio was 53:43, suicidal cases was 53% and accidental 45% [9]. Murad Zaffar Mari et al found male to female ratio 1.5:1 with 34.30% at the age group of 20-30 years [10]. In our study male to female ratio is 1.2:1 and commonly affected age groups are 11-20 years (35.16%) and 21-30 years (33.46%). Acute poisoning are more common in the month of June (11.47%), July (11.64%), August (10.42%), September (11.85%), October (12.04%). Among them snake bite are more common in the month of June (14.69%), July (15.96%), August (17.07%), September (16.18%), October (11.75%). Mahapatra B, Warrel DA et al found maximum cases of snake bite during June to September [3]. Organophosphorus poisoning are more common in the month of April (11.61%), May (10.10%) and October (12.12%). 1.05% of all acute poisoning cases and 1.74% of self-poisoning cases had history of treated psychiatric illness. Among them 69.23% (9/13) were suffering from depression, 23.07% (3/13) from schizophrenia, 7.69% (1/13) from anxiety disorder, which are correlating to previous studies. [8] Commonest type of accidental poisoning is snake bite (36.45%) and self-poisoning is organophosphorus poisoning (48.01%) but kerosene is more common in children. Ramesh KN et al [11] found that organophosphorus was the commonest suicidal poison and Thomas M. et al. found kerosene as the commonest poison in children. [12] In present study mortality is 4.36% among total acute poisoning cases and mostly in the age group of 11-20 years (33.33%) and 21-30 years (29.62%). Individually mortality are 0.40% in snake bite cases, 8.69% in acid poisoning cases and 8.4% in organophosphorus poisoning cases. The overall mortality in acute poisoning varies in different studies – 4% [11], 3.3% [12], 6.9% [8] and it is in organophosphorus poisoning varies from 5 to 20% in Asian countries [13].

## CONCLUSION

As the affected patients are mostly in adolescent and young age group and as they are the future of a nation, it

is important to take measure to prevent poisoning. Psychological assessment, social and economic security is important in this regard.

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**Table 1: Types of acute poisoning (n=1237) and their death**

| Type of poisons         | No. of patients (%) | No of death (%) |
|-------------------------|---------------------|-----------------|
| Organophosphorus        | 594(48.01)          | 50 (8.41)       |
| Snakebite               | 451(36.45)          | 02 (0.44)       |
| Sedatives               | 39 (3.15)           | 0               |
| Ratkiller               | 38 (3.07)           | 0               |
| Bee & Wasp              | 25 (2.02)           | 0               |
| Acid                    | 23 (1.85)           | 02 (8.69)       |
| Kerosene                | 21 (1.69)           | 0               |
| Dhatura                 | 9 (0.72)            | 0               |
| Licekiller              | 8 (0.64)            | 0               |
| Unknown                 | 8 (0.64)            | 0               |
| Organocarbamate         | 4 (0.32)            | 0               |
| Paracetamol             | 4 (0.32)            | 0               |
| Phenyl                  | 2 (0.16)            | 0               |
| Gamoxene                | 2 (0.16)            | 0               |
| Oral contraceptive pill | 2 (0.16)            | 0               |
| Scorpion sting          | 2 (0.16)            | 0               |

**Table 2: Age group wise distribution among admitted and death patients**

| Age group (years) | Admitted patients(%) n= 1237 | Death patients(%) n=54 |
|-------------------|------------------------------|------------------------|
| 0-10              | 36 (2.9)                     | 0                      |
| 11-20             | 435 (35.16)                  | 18 (33.33)             |
| 21-30             | 414 (33.46)                  | 16 (29.62)             |
| 31-40             | 184 (14.87)                  | 08 (14.81)             |
| 41-50             | 96 (7.76)                    | 07 (12.96)             |
| 51-60             | 46 (3.63)                    | 05 (9.29)              |
| 60 +              | 26 (2.10)                    | 0                      |

**Table 3: Month wise incidence of acute poisoning, organophosphorus, snakebite and total death**

| Month     | Acute poison(%) n= 1237 | Organ phosphorus (%) n=594 | Snakebite(%) n=451 | Total death(%) n=54 |
|-----------|-------------------------|----------------------------|--------------------|---------------------|
| January   | 56(4.52)                | 37(6.22)                   | 5(1.1)             | 3(5.55)             |
| February  | 32(2.58)                | 21(3.53)                   | 6(1.33)            | 3(5.55)             |
| March     | 81(6.54)                | 56(9.42)                   | 12(2.66)           | 4(7.40)             |
| April     | 109(8.81)               | 69(11.61)                  | 20(4.43)           | 6(11.11)            |
| May       | 117(9.45)               | 60(10.10)                  | 35(7.76)           | 8(14.81)            |
| June      | 142(11.47)              | 58(9.76)                   | 64(14.19)          | 7(12.96)            |
| July      | 144(11.64)              | 54(9.09)                   | 72(15.96)          | 89(14.81)           |
| August    | 129(10.42)              | 35(5.89)                   | 77(17.07)          | 4(7.40)             |
| September | 147(11.88)              | 58(9.76)                   | 73(16.18)          | 1(1.85)             |
| October   | 149(12.04)              | 72(12.12)                  | 53(11.75)          | 4(7.40)             |
| November  | 93(7.51)                | 48(8.08)                   | 29(6.43)           | 5(9.25)             |
| December  | 38(3.07)                | 26(4.37)                   | 5(1.10)            | 2(3.70)             |

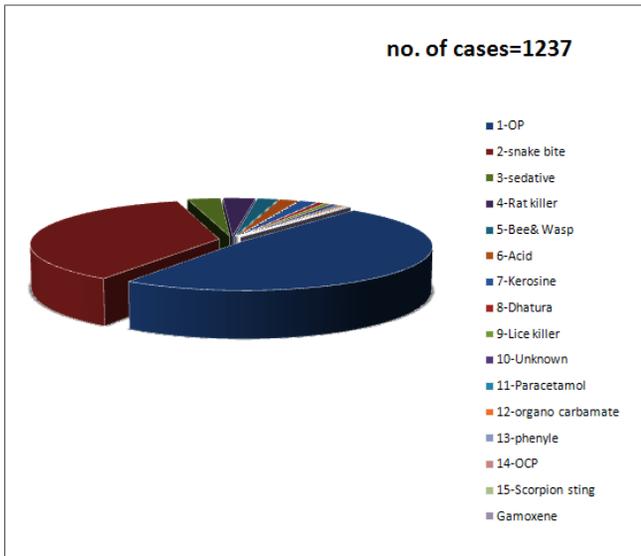


FIGURE 1: Pie diagram of different types of poisoning

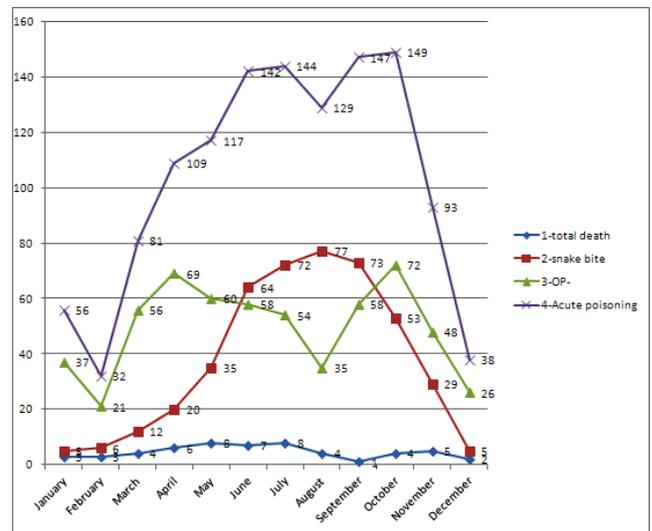


Figure 3: Line diagram- Month wise incidence of acute poisoning, organophosphorus, snakebite and total death

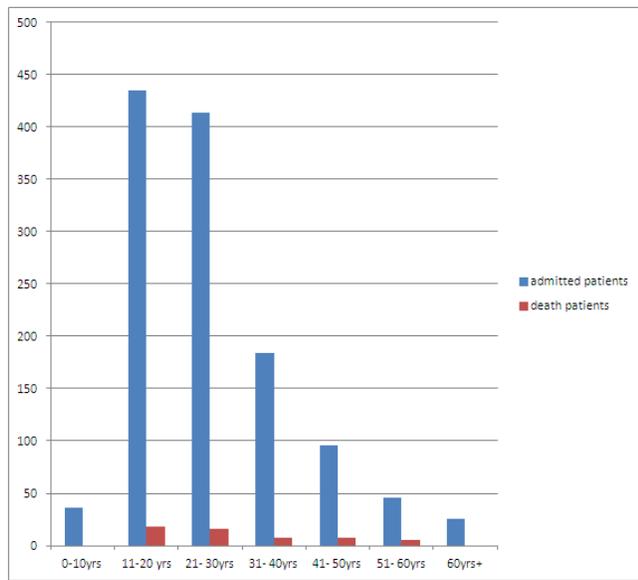


Figure 2: Bar diagram: Age group wise distribution among admitted & death patients