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# Study of Deaths due to Poisoning among the Autopsies Conducted at Civil Hospital Ahmedabad

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**Abstract:** ***Background: Pesticide poisoning that occurs suddenly and severely is a major global issue. Knowing the typical patterns of poisoning in a certain area may help to identify and manage poisoning crises early, reducing morbidity and mortality to the absolute minimum.. The goal of the current study was to identify some key epidemiological characteristics, patterns, and other aspects of poisoning among cases of poisoning at Civil hospital Ahmedabad. Material and Methods: The current study was a retrospective investigation of cases of medico-legal autopsies where poisoning had previously been suspected and in which poisoning had been identified during post-mortem examination. Results: Of the total 8069 cases of postmortem, poisoning constituted 357 cases during this study period. Majority of cases were from 21-30 years (109 cases) which is 30.5%. Majority of cases were Male 58.8 % (210 cases). Majority were Literate 75.6 % (270 cases). In present study, majority were married 70.6 % (252 cases). Majority cases survived for greater than24 hours 48.2% (172 cases) &had manner of death as suicidal (284 cases) 79.6 %. In present study, most common poison used wereorgano-phosphorous compounds 40.1 % (77 cases). Conclusion: An analysis of all the autopsies from poisoning cases revealed that suicide was the most common cause of death and that persons were more likely to swallow poison in their second to fourth decade of life.***

**Keywords:** Poisoning, male sex, young age, low socioeconomic status, suicidal, organophosphate

## 1. Introduction

Pesticide poisoning that occurs suddenly and severely is a major global issue. Pesticide poisoning is thought to be the cause of three million serious poisoning cases and 200,000 fatalities annually. Over 90% of these instances are reported from underdeveloped nations like India[1, 2].

Human poisoning instances are more prevalent in India than they are in the West 2013[3] as a result of the relative ease with which poisons are accessible, either naturally or on the market. Poisoning is mostly caused by exposure to agrochemicals, medications, and environmental pollutants.Additionally, it has been observed that the majority of these pesticide poisonings and consequent deaths took place in poor nations as a result of intentional self-ingestion and convenient access to the poison[4].

Knowing the typical patterns of poisoning in a certain area may help to identify and manage poisoning crises early, reducing morbidity and mortality to a minimum[5].The goal of the current study was to identify some key epidemiological characteristics, patterns, and other aspects of poisoning among cases of poisoning at Civil Hospital hospital.

## 2. Material and Methods

Material for the study comprises death cases because of Poisoning autopsied in the Department of forensic medicine B J Medical College, Civil Hospital Ahmedabad, from January 2018- March 2020 at Mortuary Civil Hospital. Data is collected from the Medico-legal record room under the supervision of the Forensic Medicine Department of Civil Hospital Ahmedabad.

**The information includes:**

1) History of the cases
2) Case history papers and other related hospital documents of the victims.
3) Postmortem reports of the above said cases.
4) Toxicology report.
5) The statistical examination of the data will be done and will be presented as findings and observations in tabular form, charts and graphs.

The current paper includes a retrospective analysis of poisoning cases that were autopsied at the B.J. Medical College in Ahmedabad's department of forensic medicine.

Study group Cases of Medico-legal autopsy brought to the postmortem room of a civil hospital in Ahmedabad.

The inquest paper and the history of the cases brought by the police for the conduction of postmortem examination are studied carefully and include all the necessary details which are required for the study.

**Inclusion Criteria:**

1) All poisoning deaths that are autopsied at the mortuary Civil Hospital Ahmedabad

**Exclusion Criteria:**

1) Bodies that are unidentified and have never been poisoned.
2) Decaying bodies without history of Poisoning.

Strict confidentiality was kept for identity & medicolegal data of autopsy cases. In all cases ofpoisoning the detailed history and information was collected from the autopsy reports, inquestreports and post mortem findings were

analysed with the chemical analysis reports fromForensic Science Laboratory for Chemical analysis and report.

A detailed information regarding the age, sex, time of consumption of poison, type of poison, reason for poisoning, route of entryinto the body, otherparameters were noted in study proforma. Data was collected and compiled using MicrosoftExcel, statistical analysis was done using descriptive statistics.

## 3. Results

Of the total 8069 cases of postmortem, poisoning constituted 357 cases during this study period.

1) Majority of cases were from 21-30 years (109 cases) which is 30.5%.
2) Majority of cases were Male 58.8 % (210 cases).
3) Majority were Literate 75.6 % (270 cases).
4) In present study, majority were married 70.6 % (252 cases).
5) Majority cases survived for greater than 24 hours 48.2% (172 cases).
6) Manner of death was suicidal in majority cases (284 cases) 79.6 %.
7) In present study, most common poison used were organo-phosphorous compounds 40.1 % (77 cases).

**Table 1:** Age Wise Distribution

| Age | No. of Cases | % |
|---|---|---|
| 0-10 | 4 | 1.1 |
| 11-20 | 54 | 15.1 |
| 21-30 | 109 | 30.5 |
| 31-40 | 76 | 21.3 |
| 41-50 | 59 | 16.5 |
| 51-60 | 37 | 10.4 |
| 61-70 | 15 | 4.2 |
| 71-80 | 3 | 0.8 |
| 81-90 | 0 | 0 |

**Table 2:** Sex Wise Distribution

| **Sex** | No. of Cases | % |
|---|---|---|
| Male | 210 | 58.8 |
| Female | 147 | 41.2 |

**Table 3:** Educational Status

| Education | No. of Cases | % |
|---|---|---|
| Illiterate | 68 | 19 |
| Literate | 270 | 75.6 |
| Not Known | 19 | 5.3 |

**Table 4:** Marital Status

| Marital Status | No. of Cases | % |
|---|---|---|
| Married | 252 | 70.6 |
| Single | 88 | 24.6 |
| Divorced | 4 | 1.1 |
| Not Known | 13 | 3.6 |

**Table 5:** Duration of Survival

| Duration of Survival | No. of Cases | % |
|---|---|---|
| Seen Dead | 7 | 2 |
| Brought Dead | 13 | 3.6 |
| < 6 H | 53 | 14.8 |
| 6-12 H | 45 | 12.6 |
| 12-24 H | 67 | 18.8 |
| >24 H | 172 | 48.2 |

**Table 6:** Manner of Death

| Manner of Death | No. of Cases | % |
|---|---|---|
| Suicidal | 284 | 79.6 |
| Accidental | 55 | 15.4 |
| Homicidal | 1 | 0.3 |
| Not Known | 17 | 4.8 |

**Table 7:** Poisons Detected in FSL

| Poison Detected | No. of Cases | % |
|---|---|---|
| DIMETHOATE OP | 4 | 2.1 |
| PHORATE OP | 3 | 1.5 |
| DICHLOROVOS OP | 10 | 5.2 |
| CHLORPYRIFOS OP | 34 | 17.5 |
| MALATHION OP | 7 | 3.6 |
| MONOCROTOPHOS OP | 5 | 2.6 |
| PROFENOFOS OP | 4 | 2.1 |
| HERBICIDE GLYPHOSATE OP | 1 | 0.5 |
| PROFENOFOS OP – CYPERMETHRIN PYRETHROID | 1 | 0.5 |
| PROFOS OP | 1 | 0.5 |
| CHLORPYRIFOS OP – ZINCPHOSPHIDE | 1 | 0.5 |
| ZINC PHOSPHIDE OP | 3 | 1.5 |
| FENVALERATE PYRETHROID OP | 1 | 0.5 |
| CHLORANIL FUNGICIDE OP | 1 | 0.5 |
| CYPERMETHRIN SYNTHETIC PYRETHROID | 1 | 0.5 |
| PENDIMETHALIN HERBICIDE | 1 | 0.5 |
| BENFURACARB CARBAMATE | 1 | 0.5 |
| CARBOFURAN CARBAMATE | 2 | 1 |
| HYDROCHLORIC ACID | 54 | 27.8 |
| PROPOFOL | 1 | 0.5 |
| SODIUM HYPOCHLORITE | 3 | 1.5 |
| ETHYL ALCOHOL | 1 | 0.5 |
| PHENYL | 6 | 3.1 |
| HYDROGEN PEROXIDE | 1 | 0.5 |
| MERCURY | 1 | 0.5 |
| ALUMINIUM PHOSPHIDE | 39 | 20.1 |
| COPPER SULPHATE | 1 | 0.5 |
| TURPENTINE OIL | 1 | 0.5 |
| SULFURIC ACID | 1 | 0.5 |
| HYDROGEN SULFIDE | 2 | 1 |
| CORROSIVE POISONING | 2 | 1 |

## 4. Discussion

In present study, majority of cases were from 21-30 years (30.5%). Similar findings were observed in the studies conducted by Adarsh Kumar *et al*, [6]. Dhalbir Singh *et al.*, [7]. Karamjit Singh *et al.*,[8].&B.R.Sharma*et al.*,[9].While, aboveobservation was against the studies done by Tharuni Ng *et al.*, [10].

The reason for the most people consuming poison in the age of 21-30years can be cited varyingfrom academic pressure, differences of opinion between a couple, unemployment,

lovefailure, conflict with parents, improper judgment. The individual is in the pressure and increasing demand to establish themselves and hence they are prone to take a brazen route to most problems and thus eventually commit suicide when failure of motives are imminent.

Majority of cases were males (58.8%) as compared to females (41.2%). Similar findings were observed by Dalbir Singh *et al*, [7].J Gargi *et al*., [11]. BR Sharma *et al*., [9]. Murari Atul[12].& SKDhattarwal[13]. While our observation was in disagreement of the studies doneby Tharuni Ng v., [10].And Karamjit Singh V.,[8].

The reason for this can inferred that male,being the sole breadwinner in majority of the families are under more duress both emotionallyand economically, thus being more prone to searching a means to end it all.

In present study, majority 75.6% were found to be literate.

In present study, majority were married (70.6%). The study done by Dalbir Singh *et al*., [7], Karamjit *et al*., [8]. SK Dhattarwal, [13]. & J Gargi *et al*., [11]. Shows similar findings, however BR Sharma *et al*.,[9]. Observed the other way round. The reason for the married people consuming poison more commonly than single individuals can be enumerated from trivial to serious[8].The married males usually consume poison due tomarital disharmony, financial problems and unemployment. The married females though turnto poison due to cruelty of In-laws, dowry tortures, quarrel with husbands and excessive dependency on their spouses [7].

Maximum number of cases succumbed to death on treatment after 24 hours. The reason for maximum deaths can be attributed to theDelay in detection, toxic nature of poison consumed, the individual's body response to thepoison, any pre-existing illness in the victim.

In present study, majority had manner of death as suicidal (79.6%) as compared to accidental manner of death (15.4%). Dalbir Singh *et al*.,[7]. Karamjit Singh *et al*.,[8]. SK Dhattarwal,[13]. Taruni Ng *et al*.,[10].And Anil Kohli *et al*.,[14].Have made studies along the similar subjects and have come up with similar information regarding the manner of deaths of the victims.

A death from poisoning has been ruled suicidal due to the history, suicide note and other such Circumstantial evidences. Adults have been found to be the greatest number of cases in suicidal poisoning and children have been found mostly to be the victims of accidental poisoning. The accidental poisoning is mainly due to the ignorance of the parents keeping the poison within the reach of children, misinterpretation of the chemical by children and sometimes even by adults under intoxication.

In present study, most common poison used were organo-phosphorous compounds (40.1%). A Similar Result was obtained by B. Maharani [15], Sanjeev Kumar *etal*.,[16].And Akhilesh Pathak *et al*.,[17]. The reason for Organo-Phosphorous being the preferred poison is due to the high exposure of individuals to the chemical which is very easily available and accessible owing to the extensive agricultural background of our region. Organo-phosphorous compounds give off a Kerosene like smell.

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