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Examining the poisoning deaths among autopsies performed at the Civil Hospital in Ahmedabad

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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 present research was a retrospective evaluation of instances of medico-legal autopsies in which poisoning had been suspected in the past and in which poisoning had been discovered during post-mortem examination after the body had been examined.

Results: 357 of the 8069 postmortem cases that fell within the purview of this study were linked to poisoning. Thirty to sixty years of age constituted thirty-five percent of all cases (109 cases). Majority of cases were Male 58.8 % (210 cases). The majority were Literate 75.6 % (270 cases). In the present study, majority were married 70.6 % (252 cases). Majority cases survived for greater than 24 hours 48.2% (172 cases) & had manner of death as suicidal (284 cases) 79.6 %. According to the current study, 40.1% of the poisons utilised were organophosphorous chemicals (77 cases).

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Conclusion: After reviewing all of the autopsies from poisoning cases, it was found that the leading cause of death was suicide, and that people were more prone to ingest poison between the ages of 20 and 40.

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

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].

Since poisons are relatively easy to get, either naturally or via the market, human poisoning cases are more common in India than in the West 2013[3]. The main causes of poisoning include drugs, agrochemicals, 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.

Material and Methods

The forensic medicine department of B J Medical College conducted autopsy on poisoning cases at the morgue of Civil Hospital Ahmedabad between January 2018 and March 2020, providing the data utilised in this research. 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. The victims' health records, including their case histories and any other relevant information.
3. Postmortem reports of the above said cases.
4. Toxicology report.
5. The data will be statistically examined, and the results and observations will be presented as tabular data, charts, and graphs.

In this study, the forensic medicine department at B.J. Medical College in Ahmedabad looks back at poisoning cases that had autopsies performed.

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

The history of the cases the police presented for a postmortem examination and the inquest document are thoroughly examined and include all the information needed for the inquiry.

INCLUSION CRITERIA:

1. The Civil Hospital Ahmedabad morgue examines all cases of poisoning that result in death.

EXCLUSION CRITERIA:

1. Bodies that are unidentified and have never been poisoned.

2. Decaying bodies without history of Poisoning.

Autopsy case identification and medicolegal data was treated with the utmost secrecy. A comprehensive history and analysis was compiled using the chemical analysis and report from the forensic science laboratory, the autopsy reports, post mortem findings, and inquest reports for each poisoning case. Numerous details were documented on the study proforma, such as the ages and sexes of the participants, the kind and time of the poisoning, the cause of

the poisoning, and the entry point into the body. We used descriptive statistics to analyze the data that we gathered and organized in Microsoft Excel.

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

1. The 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. The majority were Literate 75.6 % (270 cases).
4. In the present study, majority were married 70.6 % (252 cases).
5. The majority of cases survived for greater than 24 hours 48.2% (172 cases).
6. Suicidal behaviour was the cause of death in 284 instances, or 79.6% of the cases.
7. According to the current investigation, 40.1% of the poisons utilised were organophosphorous compounds (77 cases).
8. The majority of the fatalities were Hindu, 346 cases (96.9%).
9. The occupational distribution reveals that 119 cases (33.3%) were not known followed by housewife 104 cases (29.1%).
10. The urban population 253 cases (70.9 %) is higher than the rural population, according to the residence distribution of Poisoning 104 cases (29.1 %).
11. In the summer, there were more instances of suicide poisoning 153 cases (42.9 %).
12. In 309 cases (86.6%) of instances, poison was taken orally. This is so because the majority of poisons were pesticides, and the simplest technique is to consume them orally.
13. Most of the cases 300 cases (84%) took place at home.
14. In our investigation, the majority of instances 97 cases (27.2%) swallowed poison between 12 p.m. and 6 p.m.
15. Among poisoning victims, 341cases (95.5%) hospitalization was done.
16. In 247 cases 69.2% of the cases, cause of poison intake was not known.
17. A strange fragrance was detected after postmortem in 98 cases (27.5%) of cases.

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18. 280 cases 78.4% of people had congested stomach mucosa.
19. Forensic science laboratory detected Poison in 194 cases (54.3%).

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

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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 –	1	0.5

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CYPERMETHRIN PYRETHROID		
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

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COPPER SULPHATE	1	0.5
TURPENTINE OIL	1	0.5
SULFURIC ACID	1	0.5
HYDROGEN SULFIDE	2	1
CORROSIVE POISONING	2	1

TABLE 8 – DISTRIBUTION ACCORDING TO RELIGION

RELIGION	NO. OF CASES	%
HINDU	346	96.9
CHRISTIAN	1	0.3
MUSLIM	9	2.5
JAIN	1	0.3
OTHERS	0	0

TABLE 9 – OCCUPATIONAL WISE DISTRIBUTION

OCCUPATION	NO. OF CASES	%
UNEMPLOYED	30	8.4
STUDENT	46	12.9
HOUSE WIFE	104	29.1
DAILY WAGE WORKER	16	4.5
PROFESSIONAL	6	1.7
BUSINESS	4	1.1
FARMER	31	8.7
OTHER JOBS	0	0
NOT KNOWN	119	33.3

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TABLE 10– RESIDENCE

RESIDENCE	NO. OF CASES	%
RURAL	104	29.1
URBAN	253	70.9

TABLE 11 – SEASONAL DISTRIBUTION

SEASON	NO. OF CASES	%
SUMMER	153	42.9
RAINY	110	30.8
WINTER	94	26.3

TABLE 12 -ROUTE OF EXPOSURE

ROUTE OF EXPOSURE	NO.OF CASES	%
ORAL	309	86.6
IV	1	0.3
IM	0	0
INHALATION	6	1.7
OTHERS	12	3.4
NOT KNOWN	29	8.1

TABLE 13- PLACE OF CONSUMPTION

PLACE OF CONSUMPTION	NO.OF CASES	%
HOME	300	84
WORKPLACE	20	5.6
OUTSIDE	31	8.7
OTHERS	1	0.3
NOT KNOWN	5	

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TABLE 14 – TIME OF CONSUMPTION

TIME OF CONSUMPTION	NO.OF CASES	%
6AM-12PM	86	24.1
12PM-6PM	97	27.2
6PM-12AM	75	21
12AM-6AM	13	3.6
UNKNOWN	86	24.1

TABLE 15- HOSPITAL ADMISSION

HOSPITAL ADMISSION	NO. OF CASES	%
DONE	341	95.5
NOT DONE	16	4.5

TABLE 16- CAUSE OF CONSUMPTION OF POISON

CAUSE	NO.OF CASES	%
DEBT	3	0.8
FAMILY FIGHT	18	5
CHRONIC DISEASE	18	5
PSYCHIATRIC / DEPRESSION	11	3.1
ACCIDENTAL	51	14.3
ALCOHOLIC	3	0.8
NOT KNOWN	247	69.2
OTHERS	6	1.7

TABLE 17 PRESENCE OF PECULIAR SMELL

SMELL	NO.OF CASES	%
PRESENT	98	27.5
NOT PRESENT	259	72.5

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TABLE 18 APPEARANCE OF STOMACH MUCOSA

STOMACH MUCOSA	NO.OF CASES	%
CONGESTED	280	78.4
ERODED/BLACKENING/PERFORATION	54	15.1
NORMAL	23	6.4

TABLE 19 FORENSIC SCIENCE LAB REPORT

FSL REPORT	NO.OF CASES	%
DETECTED	194	54.3
NOT DETECTED	163	45.7

Discussion

In this study, 30.5 percent of the patients belonged to the age range of 21–30 years. Similar findings were also made by Adarsh Kumar et al. [6] in their investigation. Dhalbir Singh together with associates, [7]. As per the findings of B.R. Sharma et al. [9] and Karamjit Singh et al. [8]. Although the aforementioned finding ran counter to the research of Tharuni Ng et al., [10].

Academic pressure, marital discord, job loss, failed romantic relationships, arguments with parents, and poor decision-making are among the most common causes of poison use among those aged 21 to 30. Because they are under so much pressure to prove themselves, these people often act recklessly, which only leads to further issues and, in the end, suicide when they feel their efforts are failing. There were more men than females in the total number of cases (58.8% vs. 41.2%). Dalbir Singh et al. revealed similar results [7]. J Gargi et al.,[11]. BR Sharma et al.,[9]. Atul Murari [12] and SK Dhattarwal [13]. Even yet, our results contradicted Tharuni Ng v.'s [10] findings. And Karamjit Singh V.,[8]. It may be deduced that this is because men, being the main earner in most households, experience more mental and financial strain, making them more likely to seek out ways to terminate their lives.

The current survey indicated that 75.6% of the participants were literate. Among the participants in this research, 70.6% were married. This research was carried out by Karamjit et al. [8] and Dalbir Singh et al. [7]. [13] SK Dhattarwal published.and J. Gargi et al., 11. However, BR Sharma et al. [9] shows comparable results.Observed the other way round. There is a wide range of reasons, from little to major, why married people are more likely to consume poison than unmarried persons [8]. Marital strife, money woes, and joblessness are common reasons why married men ingest poison. Married women resort to poisoning as a defense mechanism against abusive in-laws, dowry torture, marital strife, and unhealthy reliance on their husbands or wives [7]. After 24 hours of therapy, the most number of patients died. The amount of time it takes for a poison to be discovered, the poison's potency, the victim's body's response to the poison, and any underlying medical issues are among the factors that contribute to the largest number of deaths.

The bulk of the participants in this research listed a suicide as their cause of death (79.6%), whereas just 15.4% reported an accidental cause of death. (Singh et al., 2013) [7]. Singh Karamjit and associates, [8]. Author: SK Dhattarwal, [13]. Taruni Ng and associates are the study's authors [10]. Also, [14] Anil Kohli et al. Have done research along similar lines and found comparable details about the victims' causes of death.

Evidence such as a suicide note, medical history, and other circumstantial evidence has led to the conclusion that a poisoned death was self-inflicted. The majority of poisonings that end in suicide occur in adults, whereas unintentional poisonings mostly affect youngsters. Parents' carelessness in leaving poisons within children's reach, children's misunderstanding of chemicals, and adults' drunkenness are the leading causes of unintentional poisoning.

Organophosphorous chemicals were found to be the most often utilized toxin in this investigation (40.1%). B. Maharani [15] and Sanjeev Kumar et al.[16] both came to similar conclusions.Akhilesh Pathak and colleagues, as well as [17]. The widespread agricultural history of our area makes organo-phosphorus a readily available and accessible chemical, which contributes to the high exposure of persons to the toxin. The aroma of organophosphorous substances is similar to that of kerosene.

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