

Sociodemographic Profile of Cases of Deaths Due to Poisoning -1 Year Study

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How to cite this article: Sadasivam S, Uthayakumar R, Menon M. Sociodemographic Profile of Cases of Deaths Due to Poisoning -1 Year Study 2023;17(2): 42-45

ABSTRACT

Poisoning is a major public health problem globally, with thousands of deaths occurring every year, & those who survived the same, live with a life long suffering. In a developing country like India where more than half of the population is still engaged in occupational activity of agriculture, accessibility to toxic substances is not much hard. That is the reason, organophosphorus compounds are the most commonly used poisonous substance creating a burden of poison related morbidity & mortality.

Objective: 1) To determine sociodemographic profile of poisoning cases brought for autopsy. 2) To assess their pattern.

Methodology: A cross sectional study was conducted for a period of 1 year (January 2021 - December 2021), in cases of poisoning brought for autopsy at Tertiary care teaching hospital, Thoothukudi. All the data were regarding age, gender, residence, type of poison, manner, duration of hospitalisation & outcome was collected based pre structured proforma & further chemical analysis report. Data was analysed using standard statistical method.

Results: Of the total, 140 cases, poisoning studied, 77% cases were males, 23% females. Maximum case was noted in age group of 31-40 years (22.9%), majority belong to lower socioeconomic class (88%), Organophosphorus compounds contribute 60% of cases, & majority of it is suicidal poisoning - 89%. , the maximum duration of treatment taken was between 1-7 days(51.4%).**Conclusion:-** Males contribute majority of poisoning cases. It is the middle age group, with suicidal poisoning tendency more contributing to total cases. Early & proper treatment care in acute poisoning cases, with increasing mental health awareness among the common public can help in reducing the mortality due to poisoning.

Keywords: Organo-phosphorus, suicidal poisoning,

INTRODUCTION

Poisoning is a major public health problem globally, with thousands of deaths occurring every year, & those who survived live with a life long suffering. In the last few decades, with the improvement in knowledge of science & technology a revolution has been

created, whereby man has found new ways to lead a healthy life as well as to early end his life. In the scenario of developed world, it is the household chemical agents and prescribed drugs commonly used as poisoning agents, whereas in the developing countries, agricultural - chemicals, in spite

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of their invaluable contribution increasing the food production and pest control, are the most common offenders. There are more than 9 million natural and synthetic chemicals worldwide and the list keeps on growing inexorably. Pesticides are the commonest cause of poisoning and according to WHO estimates approximately 3 million pesticides poisoning so occur annually worldwide causing more than 220000 deaths(1). India accounts for one third of pesticide poisoning cases in the third world and the worst affected are the farm workers who contribute nearly three quarters of the labour force. In general accidental poisoning is more common in children whereas suicidal poisoning is more common young adults. Most of the fatality rate is of intentional poisoning by OP (Organo-phosphorous) compounds, which has been reported in southern and central India. As per National Crime Records Bureau (ncrb) studies, the rate of suicides is 12% in 2021 which was 9.9% in 2017. Among the states with higher percentage of share of suicide during 2019-2021 was Maharashtra (13.6%), followed by Tamil Nadu (9.7%). The most common method adopted by victims was hanging (57%) followed by poison (25.1%) as per 2020-2021 studies(). Hence It is very important to know the nature and severity of poisoning in order to take appropriate preventive measures. The aim of present study is to determine the socio-demographic profile and assessing the pattern of commonly used poisons in the cases being brought for medico legal examination.

MATERIALS AND METHODS

The present cross-sectional study was conducted for a period of one year from January 2021- December 2021, in the cases of death due to poisoning, subjected to autopsy at Government Thoothukudi medical college. Cases of Snake bite, food poisoning and alcohol intoxication were excluded in the study. Data regarding age, gender, residence, time elapsed after intake, type of poison, manner of poisoning, duration of hospitalization and outcome was collected in a pre-structured proforma based on inquest report, post mortem examination & report of chemical analysis of viscera from forensic science laboratory. The data was analyzed using standard statistical methods.

RESULTS

Out of total -895 cases brought for medicolegal autopsy in 1 year study period, 140 (15.64%) poisoning cases were present. In this, males (n=108, 77%), contributed the majority of cases compared to females (n=32, 23%). The incidence of poisoning death was noted to be higher in age group of 31-40 years (n=32, 22.9%) & lowest was recorded in 71-80 years age group (n=4, 0.03%) - (table 1)

The incidence of poisoning was found to be more among married (n=102, 72.86%), while among singles (n=38, 27.14%). In our case, majority of the deceased belong to lower socioeconomic status (n=124, 88.57%), while minimal no. in upper class (n=1, 0.07%). The majority of case was found to have occurred in time period from July- september

Table 1: Age Distribution

Age Group	Male(N)	%	Female(N)	%	Total
10-20 YRS	6	50%	6	50%	12
21-30 YRS	14	73.68	5	26.31	19
31-40 YRS	28	87.5	4	1.25	32
41-50 YRS	20	83.33	4	1.66	24
51-60 YRS	20	80	5	20	25
61-70 YRS	16	66.66	8	33.33	24
71-80 YRS	4	100	0	0	4
TOTAL	108	77.14	32	22.857	140

Table 2

Commonly used poison	No.of cases (n)	%
organophosphorous	84	0.6
Herbicide	9	6.4
Rat paste	9	6.4
Tablet overdose	8	5.7
Hairdye	5	3.57
Others	25	17.85
TOTAL	140	

(n=52, 37.14%), while least in january – march time period (n=25, 17.87%). The most common manner of death was found to be suicidal (n=125, 89%), while the least common was homicidal (n=1, 0.007%).

Most commonly used poison was organophosphorous (n= 84, 60%), while least common was hair dye (n=5, 3.57%), we included in other poisons (carbamates/kerosene/ plant poison/acid poison/cow dung poison) which contributed n=25, 17.857% (TABLE 1.2) .Of all the samples from poisoning cases sent to viscera analysis -positive report was less (n=47, 33%), while negative report was obtained more (n=93, 67%).

Majority of cases occurred at home (n=96, 68.57%) while those occur outside home was comparatively less (n=44, 31.4%) .The time duration of survival after poisoning till death, maximum deaths occurred in 1-7 days (n=72, 51.4%), while those who survived more than 7 days was only (n=12) 8.57%.

DISCUSSION

There has been an ongoing trend in increase in no. of deaths due to poisoning. The sociodemographic profile plays major role in it. The regional variations & accessibility to different sorts of poison can vary from place to place at times. In our present study of the total- 865 cases, 140 cases account for poisoning which is 15.62%. Almost similar pattern was observed in incidence of poisoning case study conducted in various parts ranging between 10-20%, as in studies by Kumar TN et al -11.7%, Kanchan T et al - 17.9%,

Raut PK et al -14.54, Rangu Sridhara chary et al-15.7%, while exceptions were noted in studies of Harish D, Shetty AK et al, Singh SP et al ,Haloi m et al with incidences of - 24%, 25%, 5.25%, 3.7% respectively^(3,4,5,6,8,11). Rural background as the common background correlates with almost every study. The most common manner being suicide was noted in our study (89.28%), similar to findings by Siddhapur KR et al (93.1%), Haloi .M. et al(92.7%), Kumar D R et al(91.53%)^(10,12). This implies that poisoning is most commonly used method for suicide, as it is easily available in any house, & mere enrage ment or stress factor or even under effect of addiction, compel the person to take it as soon as possible. Majority deaths was seen in males (77.14%) similar to other studies. This shows though women are said to be mentally weak, when it comes to handling social, economic stress, many a times men fall prey to thought of losing their lives.

As per our study , majority of deceased belong to age group-31-40 yrs (22.85), which is a bit different from other studies, where more predominant age group was 21-30 years , as per studies of Raut P K et al (45.71%), Shetty AK et al (43%), Singh S P et al (41.82%).^(4,7,12) This variation might be possibly due to variation in living conditions of people over here compared to other regions. The working class bear more stress , are more addicted to substance abuse which often leads to family problems, emotional breakdown ultimately ending up in deaths. As similar to other studies , in our study also the incidence of poisoning among married people was more (72.857%) , other studies also supporting the same as per Haloi. M et al. (66.6%), Singh SP et al(60%), Raut Pk et al(60%).^(4,7,10) The unsatisfactory married life, unemployment , substance abuse, extra marital affairs all contribute to the increasing incidence among married groups. The most common poison used is organophosphorous (n=84,60%), which is almost same in every region of india with exceptions seen in studies of Singh SP et al (aluminium phosphide = 50.9%), Harish D et al (aluminium phosphide = 50.2 %),

Gargi J et al (aluminium phosphide-43.6%).^(4,8,9) In general insecticides with organophosphorus compound contribute maximum as it is easily available for agricultural purpose. But as per our study viscera analysis came positive for less cases (n= 47, 33.57%), while negative for majority of cases (n=93, 66.42%) which is contradictory to studies of Rangu Sridhara Chary et al (88.97% positive), Gargi J, Tejpal HR Chanana A.^(2,9) The variation may be due to presence of very trace amounts of poisons in samples available, can be due to effective initial treatment of eliminating poison, or may be due to the false history alleged regarding the poison consumed or may even be due to the laboratory analysis difference. In majority of cases the incidence of poisoning occurred while they were at home (n=96, 68.57%), indicating no matter whatever the cause is, majority of them prefer their last times at home itself.

CONCLUSION

Organophosphorous contribute the major cause of poisons contributing to death. In a developing country like India where majority of its earnings come from agriculture activities, the use of insecticides/ pesticides cannot be fully avoided. The same is with the industries involved in producing these chemicals. Rather than banning these items, putting a control over their accessibility is what can be done at the maximum. The increased health awareness among common public including the mental health care programmes to tackle the serious life situations can very much reduce the sudden provocative thought of committing suicides. The various government schemes & financial supports to support the rural class can help in their upbringing socially & economically thereby reducing the burden. The increased setting up of poison information & control centres with sophisticated technologies can help in effective diagnosis & management of cases thereby reducing the mortality.

SOURCE OF FUNDING: SELF

CONFLICT OF INTEREST: NIL

Ethical clearance taken from institutional ethical committee, government thoothukudi medical college.

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