ORIGINAL RESEARCH PAPER

Forensic Medicine

AN ANALYSIS OF DEATHS FROM RURAL AND URBAN AREAS OF ANANTHAPURAMU DISTRICT DUE TO INTENTIONAL AND UNINTENTIONAL POISONING

KEY WORDS: poisoning, gender, socioeconomic status, mode of poisoning.

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ABSTRACT

BACKGROUND: Pesticides poisoning is most common in developing countries, whereas psychiatric medications top the list in developed countries. In this study, an analysis of deaths due to poisoning is done with respect to age, gender, nature of poisoning, type of poison, and socioeconomic status to propose some precautions to prevent deaths. **MATERIAL AND METHODS:** The present study is conducted after collecting details of 75 cases of intentional and unintentional poisoning who were brought to the Department of Forensic Medicine, Government Medical College, Ananthapuramu for medicolegal autopsy. Children were excluded from the study due to insufficient data. **RESULTS:** Total of 75 cases are selected to conduct the study. Organophosphorus poisoning tops the list. Most of the cases are suicidal in nature. Lower class people and males are involved mostly. **CONCLUSION:** Poisoning in India is a socio-economic problem. Regulation of sale of poisons cannot not prevent the incidence of cases. Hence a holistic approach is necessary to uplift society as a whole by solving the problems of poverty, unemployment, industrial development, adequate health care, suitable and sufficient education, etc.

INTRODUCTION:

Poisoning implies suicidal or intentional, accidental or unintentional and homicidal modes of exposure. Incidence of poisoning in the world is 3 million cases per year, out of which 220000 deaths occur[1]. According to WHO data, 1,93,460 people died due to accidental poisoning in 2012. 84% of them have occurred in low and middle-income countries[2]. In developing countries such as China and India, pesticides remain the most common agent because of the same reason, the easier availability. Among the developing countries, Srilanka records highest suicide rate, around 40 cases per 100000 population when compared to the UK (7.4), the USA (12 and Germany (15.8)[3]. Out of all countries, India ranks one among the highest. Over 50,000 people die every year due to toxic exposure in India. According to statistics in India from National Poisons Information Centre, the highest incidence of poisoning was due to household agents (44.1%) followed by drugs (18.8%), agricultural pesticides (12.8%), industrial chemicals (8.9%), animal bites and stings (4.7%), plants (1.7%), unknown (2.9%) and miscellaneous groups (5.6%). The commonest cause of poisoning in developing countries is pesticides such as organophosphates, carbamates, chlorinated hydrocarbons, pyrethroids and aluminium or zinc phosphide. The reason behind the rise in a number of cases is due to the agriculture-based economy, poverty, unsafe practices, illiteracy, ignorance and easy availability of pesticides. Many of the cases are not reported due to non-availability of published data and accessible databases and few database centres in India[4]. Similar challenges have been observed in other developing countries such as Botswana, China, and South Africa. These challenges prevent the government to undertake any measures to control and regulate pesticide consumption and targeted intervention programs. This study has been conducted to know the type of poison, most common gender, socioeconomic status and mode of poisoning so that proper measures can be taken to reduce unintentional deaths.

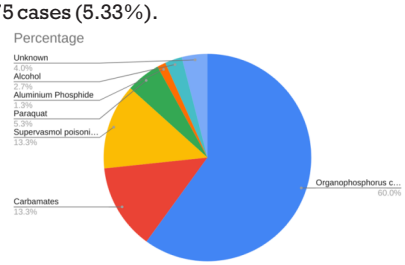
MATERIALS AND METHODS:

The present study was conducted, using a sample taken by stratified sampling method, in the Forensic Medicine and Toxicology Department, Government General Hospital, Ananthapuramu, A.P. All the cases that were brought to Government General Hospital, Ananthapuramu are chosen. Only the deaths due to intentional and unintentional poisoning were selected from all the cases. Children were excluded from the study because of insufficient data. All the 75 adult cases that were brought to the Department of Forensic Medicine due to intentional and unintentional poisoning were selected for medico-legal autopsy with history of poisoning or diagnosed after autopsy during the period of one and a half year from January 2019 to December 2019. In all cases detailed history was taken from the relatives, hospital records, post Mortem questionnaire, post Mortem findings and chemical analyses of poison extracted from the body fluids and viscera after examination in regional forensic laboratories.

Inclusion Criteria: Deaths due to homicidal, suicidal and accidental poisoning.

Exclusion Criteria: Deaths due to Snakebite, other stings, and cases other than poisoning.

RESULTS: Total of 75 cases are selected to conduct the study. Of them, organophosphorus poisoning (60.00%) was in 45 cases, carbamates in 10 cases (13.34), Supervasmol poisoning in 10 cases (13.34%) Paraquat in 4 cases (5.34%), aluminium phosphide in 1 case (1.33%), Alcohol in 2 cases (2.67%), and unknown in 3 cases (4.00%). Poisoning is most common in males, 45 out of 75 cases (60%), followed by females, 30 out of 75 cases (30.00%). Most of the cases, 42 cases (56.00%) out of 75, are suicidal in nature. Deaths due to accidental poisoning are 33 cases out of 75 (44.00%). Poisoning is most common in people belonging to the lower class, 50 out of 75 cases (66.67%), followed by the middle class, 21 out of 75 cases (28.00%), and least in the upper class, 4 out of 75 cases (5.33%).



Pie Chart 1 showing no. of deaths based on the type of poisonn

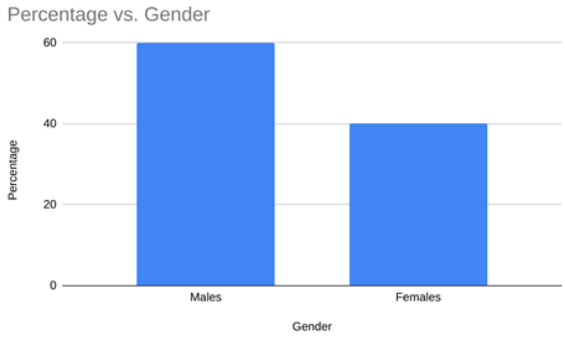


Chart 2 showing no. of deaths due to poisoning based on Gender

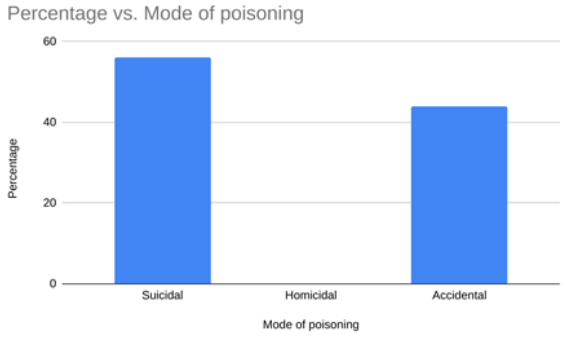


Chart 3 showing no. of deaths due to poisoning based on the mode of poisoning.

DISCUSSION:

In India cases of poisoning are on the rise day by day and the incidences of poisoning are mainly suicidal, homicidal, Exhibitional (for creating sympathy), Stupefying, Aphrodisiacal, Abortifacient, Accidental, etc. The study is mainly undertaken to determine the most common type of poisoning so that regulation of the availability of poison can be done and proper training to the people, who use various pesticides in agriculture fields, can be given. The cases are divided according to gender, socioeconomic status, manner of poisoning. In our study, most of the cases are suicidal in nature due to the better availability of pesticides and poor education, training, illiteracy, poverty. Most of the accidental poisoning is due to inhalational organophosphorus poisoning due to inadequate protective measures and is common in males.

Indian profile of the cases of poisoning can be known by a study conducted on autopsies of fatal poisoning at Manipal University [5] during 5 years from January 1993 to December 1997. Out of all fatal cases, 20 percent of the cases were due to poisoning. Of them, 10 percent of the cases were brought dead and 90 percent of the cases were treated at public or private hospitals. The study revealed gradual upward tendencies of poisoning from 20 percent to 40 percent with 35 percent of cases were of the 20 to 30 years age group and with a male to female ratio of 2.5:1. Suicides were common in low socioeconomic groups of study population, followed by accidental (24 percent) deaths.

In a study conducted by Sharma DC, Bhullar D[6] at the chemical laboratory, Government of Punjab, out of 1000 autopsies done, most of the cases were due to aluminium phosphide poisoning and were suicidal, and males are three times more common than females. Most common age group was 21-40 years.

In a study conducted by Viswajeet Pawar at MGIMS, Sevagram, males are commonly involved than females, and suicidal deaths were prevalent[7].

In a study conducted at B. M. Patil medical college, Bijapur, Karnataka, out of 210 cases, males, 21-30 years age group, suicidal nature were commonly involved. Organophosphorus poisoning was common in 64.3% followed by organochlorine poisoning and carbamates[8].

In a study conducted by Vikram Palimar at Kasturba Medical College, Manipal, out of 372 cases, 287 were of op poisoning, and 90 per cent were suicidal, and males were most commonly involved[9].

In a study conducted by Sinha U S, Kapoor A K, at SRN hospital, Allahabad, 69.47 percent were males, 15-30 years were the most common age, aluminium phosphide poisoning was most common[10].

In a study conducted by Tejus Prajapathi at Civil Hospital, Ahmadabad, 70.8 percent were male, 71.6 percent were rural, and op compound poisoning was most common[11].

Most of the deaths in females are due to suicidal intentions and are rising because of rising stress because of domestic violence[12]. Household usage and routine use in fields by farmers often associated with inadequate knowledge in using them and ineffective implementation of regulations on the sale of these products lead to easy availability and regular usage[13].

CONCLUSION:

Poisoning in India has become a socio-economic problem due to the agricultural economy, high level of poverty, agriculture exposed to natural vagaries, easy availability of pesticides, higher unemployment levels, etc. Regulations regarding the sale of pesticides could not prevent the cases to occur, which may be due to ineffective implementation or intentional causes. Some of the people resort to taking poison for want of sympathy. They can be controlled by awareness measures. Poisons like paraquat, Aluminium phosphide and Zinc phosphide must be banned from sale in markets due to lack of antidote. Adequate measures should be taken to enhance the quality of health care at the levels of primary and community health centres as the right time for management might be lost during the time of travel as most of the cases reach hospitals and some time may be available for a physician to treat a patient. As it is a socio-economic problem, a holistic approach is needed for the upliftment of society as a whole to improve the living standards of the people and thereby to cause free deaths.

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