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Current Trends of Poisoning in Tertiary Care Hospitals Located in a Rural Area of Salem, Tamil Nadu, India

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Abstract

Time wise epidemiological studies are important to find out the trends of poisoning in each region. The present study was conducted by collecting data regarding age, sex, marital status, religion, occupation, type and manner of poisoning of cases which got admitted and treated over a period of 3 years to know the current pattern of poisoning in tertiary care hospitals located in a rural area of Salem, Tamil Nadu.

Total number cases studied were 170 cases, Among them 60cases (35.3%) belonged to 21-30yrs, males were 86 cases (50.6%) and females 84 cases (49.4%), both the sex were almost equally distributed, 103 cases(60.6%) were married, 151cases(88.8%) came from rural area, 160 cases (94.1%) were suicidal and all belonged to Hindu religion. Occupation-wise 56 cases (32.9%) were house wives, students 51 cases (31.8%), followed by farmers, laborers and others. Coming to the type of poisons, maximum were organophosphorous compounds 38 cases (22.4%), followed by Paraquat, 3% yellow phosphorous, oleander seeds and others.

***Keywords-** Poisoning, epidemiology, age, Organophosphorus*

Introduction

Any substances which make life better, if not used wisely and with proper care can become dangerous to human life and those substances can be termed as poisons[1]. A poison can be any substance that can harm our body when ingested, inhaled, injected, or absorbed through the skin. The history of poison stretches as early as 4500 BC to the day it was discovered in ancient times and was mainly used by the ancient tribes and civilizations as a hunting tool to kill their prey and enemies[2].

According to WHO (World Health Organization) data of 2012, approximately 193,460 people died due to unintentional poisoning, 84% of which occurred in low and middle income countries[3].The incidence of poisoning in India is among the highest in the world and is estimated that more than 50,000 people die every year from toxic exposure in India which is common cause of morbidity and mortality. This figure could be just the tip of the iceberg and most cases of poisoning actually go unreported especially in third world countries[4]. About 99% of these deaths occur in developing countries like India. Over the last few decades agricultural pesticides have been commonly used for intentional self-poisoning due to their easy availability[5].

Organophosphorus poisoning is very common mainly in farmers in southern India due to its easy availability and parathion being frequently used. Thus, due to the easy accessibility of these compounds, a large number of suicidal cases are encountered [6]. In addition to that, snake bites are acute emergencies in tropical and subtropical countries with heavy rainfall and humid climate[7].

Along with these various house hold poisons, plant toxins, drugs and other miscellaneous agents are

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being used for poisoning. This study is carried out with above mentioned interest and also to know incidence of poisoning which varies from place to place. Therefore it is very important to perform regional studies periodically to identify the extent and evolution of the problem. By this study we can make out the commonest poisons encountered, types of poisoning, and nature of poisoning and socio-demographics in and around Salem. The resulting evaluation will be instrumental in prevention and management of future cases along with providing proper education to all.

Materials and Methods

The present study was conducted at Annapoorna Medical College & Hospital, Salem, Tamil Nadu, after obtaining approval from the institutional Ethics committee. Data of poisoning cases that were brought to the causalty and got admitted and treated over a period of 3 years, 2016-2018 was collected after obtaining permission from the Tertiary Care Centers attached to Vinayaka Mission's Research Foundation, Salem. The patients included in the study are those who had undergone exposure to poison either by household or agricultural pesticides, stings, snake bites, industrial toxins, toxic plants, drugs or other miscellaneous products. Cases brought dead and died in the Casualty are excluded from the study. The following data regarding type, nature of poisoning, Socio-demographics were collected from hospital records. The obtained data were entered into Microsoft excel and SPSS version 23.0. Descriptive statistics and frequencies were used for data presentation.

Results

The data of 170 admitted and treated poisoning cases over a period of 3 years was collected from May 2016 to May 2018. Among these cases individuals belonging to age group 21-30 are 60cases (35.3%) which are the maximum. The number of cases above 50 yrs and below 10 yrs were only 9 cases (5.3%) and 4 cases (2.4%) respectively(Table-1) which indicates most of the cases belong to young adults. Coming to sex distribution, males are 86 cases (50.6%) and females 84 cases (49.4%), males are on higher side. 103 cases(60.6%) are married and 151cases(88.8%) came from rural area. Out of 170 cases a total of 160 cases (94.1%) were suicidal 8 cases (4.7%) were accidental (Table-2). If we look into the occupation 56 cases (32.9%) were house wives, students 51 cases (31.8%), followed by farmers, laborers and others (Table-3). All the 170cases (100%) belonged to Hindu religion. Coming to the type of poisons, maximum were organophosphorous compounds 38 cases (22.4%), followed by Paraquat, 3% yellow phosphorous, oleander seeds and others (Table-4)

Table-1- Distribution of age by years

Age group in years	Frequency	Percent	Valid Percent
0-10	4	2.4	2.4
11-20	54	31.8	31.8
21-30	60	35.3	35.3
31-40	32	18.8	18.8
41-50	11	6.5	6.5
50+	9	5.3	5.3
Total	170	100.0	100.0

Table-2- Manner wise distribution of cases

Manner	Frequency	Percent	Valid Percent
Suicidal	160	94.1	94.1
Accidental	8	4.7	4.7
Homicidal	2	1.2	1.2
Total	170	100.0	100.0

Table-3- Occupation wise distribution of cases

Occupation	Frequency	Percent	Valid Percent
Business	5	2.9	2.9
Child	1	0.6	0.6
Driver	1	0.6	0.6
Farmer	33	19.4	19.4
HW	56	32.9	32.9
Labourers	18	10.6	10.6
Retired	1	0.6	0.6
Student	54	31.8	31.8
Unemployed	1	0.6	0.6
Total	170	100.0	100.0

Table-4- Type of poison

Type of poison	Frequency	Percent	Valid Percent
OPC	38	22.4	22.4
Paraquat	34	20.0	20.0
3% yellow phosphorus	33	19.2	19.2
Oleander seeds	13	7.6	7.6
Cow dung powder	8	4.7	4.7
Aluminium phosphide	5	2.9	2.9
Glyphosate(herbicide)	4	2.4	2.4
Imidacloprid (insecticide-neurotoxin)	3	1.8	1.8
Cypermethrine(pyrethroid)	3	1.8	1.8

Cont... **Table-4- Type of poison**

Alprazolam	2	1.2	1.2
Carbolic acid	2	1.2	1.2
Metformin	2	1.2	1.2
Oduvanthalai	2	1.2	1.2
Paracetamol	2	1.2	1.2
Unknown	2	1.2	1.2
Snake bite	2	1.2	1.2
Scorpion Sting	2	1.2	1.2
Clonazepam-10 tabs	1	0.6	0.6
Sulphuric acid	1	0.6	0.6
Lysol	1	0.6	0.6
Ant powder- cybermnemtcin	1	0.6	0.6
Sedatives-14 tabs, Antihypertensives-nebevelol	1	0.6	0.6
Humic acid and amino acid	1	0.6	0.6
Sodium Acifluorfen (herbicide) with alcohol	1	0.6	0.6
Tab.oxytol overdose(anticonvulsant)-600mg 8tabs, lamitol-50mg 8 tabs	1	0.6	0.6
Hair dye	1	0.6	0.6
Nutmeg- 4 seeds	1	0.6	0.6
Savlon-chlorhexidine+citremide	1	0.6	0.6
Thyroxine- tabs	1	0.6	0.6
Zincphosphide	1	0.6	0.6
Total	170	100.0	100.0

Discussion

Poisoning cases are one of the major socioeconomic burdens on the community. Trends of poisoning vary from place to place and needs to be addressed periodically. Although there is tremendous progress in the field of medicine, poisoning is considered to be one of the major causes of morbidity and mortality in India. In this study, maximum number of poisoning cases was seen in the age group between 21-30 years followed by 11-20 years and less in extreme ages. Similar findings were observed in previous studies[8, 9].This can be described by the fact that young people put up with stress, financial problems, unemployment, marital conflicts, failure in love etc. Poisoning cases were more in males (50.6%) than females (49.4%) which were also observed by previous studies [10, 11]. This is because of high exposure of men to various agrochemicals and occupational hazards at work. But in studies, done in other countries showed female predominance[12, 13]. With respect to marital status, 103 (60.6%) were married and 67 (39.4%) were unmarried which was similar to the study[14]. Majority of the poisoning cases were observed in rural area, because of its easy availability, lack of immediate medical care. Other studies have reported similar reports [1, 15]. But study conducted by Chaudhary et al[16] showed poisoning cases were more seen in urban areas as compared to rural areas. Coming to the religion, all the victims were Hindus which were almost similar to the study conducted by Bhoopendra S et al[17] where most of the victims were Hindus (80%) followed by Christians (15%) and Muslims (5%). This is probably because Hindus are the majority of population in India. With regard to manner of death most of the cases were suicidal (94.1%) than followed by Accidental cases (4.7%) which were similar to other studies[18, 19]. This signifies committing suicide by poisoning is easiest method because of easy availability of various agrochemicals and other substances. In this present study poisoning is seen mainly in housewives (32.9%) followed by students (31.8%) and farmers (19.4%). But in study carried out by Prashant Gupta et al states more poisoning cases in farmers (39.60%) followed by housewives (20%) and students (16.85%)[20]. This increasing trend of poisoning in housewives indicates that they are under lot of psychological stress because of family conflicts and other related issues. In this study the commonest poisoning encountered was the organophosphorous compounds (22.4%), followed by Paraquat (20%) and 3% yellow phosphorous (19.2%). This was consistent with the observations made in previous studies [21, 22] where Organophosphorous compound is the main poison consumed. In the present study, we observed Herbicide Paraquat as second highest poison consumed, this signifies the awareness of people about this highly toxic compound which has no antidote and high fatality rate.

Conclusion

The younger generation of both sexes happens to be affected by poisoning every year and the incidence is increasing day by day. Though there are restrictions for sales of agrochemicals and drugs, the susceptibility to these poisonous substances should not be overlooked. So it is very much important to bring out rapid changes and further strengthen the laws regarding sale of agrochemicals and drugs. This will definitely reduce the misuse of these harmful substances by general public. Farmers who frequently handle agrochemicals should be properly educated and trained regarding safety measures. All hospitals mainly in rural areas should be well equipped to treat poison cases. Hospitals should have mandatory access with poison information centers to get relevant information of the particular poison for prompt treatment. Focus should be given for psychological counseling of patients to prevent suicide by poisoning. Periodically the policy makers should review and implemented poison prevention measures.

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