



A CROSS SECTIONAL STUDY ON EPIDEMIOLOGICAL PROFILE OF ACUTE POISONING CASES REPORTED IN TERTIARY CARE HOSPITAL IN THANJAVUR DISTRICT-TAMIL NADU.

Community Medicine

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ABSTRACT

Poisoning is a most common suicidal attempt in India. Immense growth of science and technologies, industrialization, urbanization, invention of newer drugs for treatment and over usage of pesticides in agricultural farms has increased the incidence of poisoning. Cross sectional study was conducted among acute poisoning patient admitted in Thanjavur medical college and hospital by using semi structured questionnaire as a tool. A total of 98 patients were enrolled in the study after obtaining informed consent. More than 75% were male, nearly 30% were agricultural workers, more than 87% were belongs to rural area, most of them were Hindus, more than 50% were unmarried, more than 80% of the patients were belong to joint family. One third of patients were consume rat killer poison next to it were OPC, more than 50% of the patients availed poison from home, all of them had oral intake of poison. Most common age group among poisoning cases were 21-40 years of age with p value 0.039. poisoning cases are preventable by the proper health education, creating and implementing the effective prevention strategies.

KEYWORDS

Acute poisoning, organophosphorus, rat killer paste, health education

INTRODUCTION

A poison is a substance that is capable of causing illness or harm to living organisms on contact or upon introduction into the body and may be used deliberately with this intent. (1)

“Acute poisoning is the effect on human body of either a single exposure or repeated multiple exposures to a compound over a short period of time. Acute poisoning relates to adverse effects that occur within 14 days of exposure.” (2)

Acute poisoning is a major medical emergency that carries significant morbidity and mortality in patients of all age group across the world. The WHO estimates that poisoning results in an annual loss of 7.4 million years of healthy life. (3)

“Classification of poisons (INDIAN SOCIETY OF TOXICOLOGY)

1. Corrosives- sulfuric acid, nitric acid, ammonia, salts of sodium, calcium
2. Non-corrosives - arsenic, lead, copper, phosphorus, halogens
3. Organic poisons- castor, capsicum, venomous bites & stings
4. Neurotoxic poisons- opium, opiates, alcohols, datura, caffeine, cocaine
5. Cardiovascular poisons - antihypertensives, anticoagulants
6. Asphyxiant gases - CO, CO₂, N₂, CN, NH₃
7. Agrochemicals - pesticides, fertilizers
8. Pharmaceuticals - over dose of drugs (paracetamol, NSAIDS, antibiotics)
9. Miscellaneous- food poisons, abuse of depressants, kerosene, cleaning agents, cosmetics, radioactive agents” (4)

In our day-to-day life chemicals are unavoidable. “All living and inanimate matter is made up of chemicals and virtually every manufactured product involves the use of chemicals. Many chemicals can, when properly used, significantly contribute to the improvement of our quality of life, health and well-being.” at the same time due to improper management of chemicals, many have negative impact on health.

“Pyrethroids, rodenticides, carbamates, phenyl, detergents, corrosives” are commonly used household and agricultural chemicals. Antipsychotics, anticonvulsants, analgesics, antihistamines, tricyclic antidepressants, thyroid hormones and oral contraceptives” are most commonly used medicinal drugs. When these drugs used accidentally or intentionally above therapeutic range becomes harm to that individual.

Thanjavur, as a rice bowl of Tamil Nadu, agriculture is most common occupation, among the agricultural Pesticides organochlorines, organophosphates, ethylene dibromide, herbicides and fungicides most commonly used. Poisonous plants such datura and oleander was

the most commonly ingested. (5)

Due to growth of science and technologies, industrialization, urbanization, invention of newer drugs for treatment and over usage of pesticides in farms has increased the incidence of poisoning. In developed countries, most common chemicals causing poisoning death are cleansing agents, detergents, paracetamol, carbon monoxide and other cosmetic products (6).

WHO seeks the importance of poisoning and its management in both developed and developing countries by strengthening the manpower in early identification and treatment of poisoning cases in facilities and to build capacities in important area to promote the establishment and strengthening the poison centers. (7)

MATERIALS AND METHODS:

Cross sectional study was conducted among acute poisoning patient admitted in medicine ward in Thanjavur medical college and hospital, from December 22 to march 23, by using semi structured questionnaire as a tool. sample size was calculated using a formula $N = \left(\frac{Z\alpha}{pq/L} \right)^2$ based on reference study – “Pattern and outcome of acute poisoning cases in a tertiary care hospital in Karnataka, India by KN Ramesh, et al.” Based on this study, the prevalence was 36%, and absolute precision of 10%, with 10% excess sampling to account for nonresponse, the sample size was calculated.

$$N = 1.96 \times 1.96 \times 36 \times 64 / 100 \quad (N = \left(\frac{Z\alpha}{pq/L} \right)^2 \times pq / L^2) = 8851.04 / 100 = 88.51 + 9 = 98 \text{ (10\% Excess)}$$

Non probability sampling method was used. Every third day visited all medicine ward and collect the samples till reaches the required sample size. the acute poisoning patients admitted in medicine ward are my study population. Inclusion criteria are all accidental and suicidal poisoned, acute poisoning <14 days of exposure, age group >10 years of males and females. Exclusion criteria are those who are not willing for this study, mentally ill patients, unconscious patients.

Questionnaire includes two parts. Part 1 contains socio demographic profile such as name, age, gender, occupation, address, religion, marital status, family type. Part 2 contains relevant information on poisoning such as poison type, route of administration, symptoms, reason, any attempt in past, ventilator assisted or not. The study was approved by the institutional ethics committee. by using SPSS version 16, the statistical analysis was done. chi square test and fisher exact test were applied. level of significance (p)<0.05 was considered as statistically significant.

RESULTS

The current study was a hospital based cross sectional study conducted to estimate the epidemiological profile of acute adult poisoning cases

in medicine ward in tertiary care hospital in Thanjavur district. Observation of 98 acute adult poisoning patients admitted in Thanjavur medical college.

The following observations were made of the data collected from this study.

Table–1 frequency distribution of demographic details

S.no	Variables	Frequency (98)	Percent (%)
1	Age group(years)		
	10-20	14	14.3
	21-40	65	66.3
	41-60	17	17.3
	>60	2	2.0
2	Gender		
	Male	24	24.5
	Female	74	75.5
3	Occupation		
	Agriculture worker	27	27.6
	Driver	10	10.2
	Electrician	4	4.1
	Working in foreign	3	3.1
	Hotel worker	3	3.1
	House wife	9	9.2
	Students	15	15.3
	Building workers	7	7.1
	Other daily wage workers	20	20.4
4	Address		
	Rural	86	86.7
	Urban	12	12.2
5	Religion		
	Hindu	97	99
	Muslim	1	1
6	Marital status		
	Married	47	48
	Unmarried	51	52
7	Family type		
	Joint family	82	83.7
	Nuclear family	16	16.3

Among the study population, Age ranged from 13 to 64 years with mean age 30.84years of age and SD-11.79, more than 75% were male, nearly 30% were agricultural workers, more than 87% were belongs to rural area, most of them were Hindus, more than 50% were unmarried, more than 80% of the patients were belong to joint family.

Table 2. Frequency distribution of acute poisoning patients

s.no	Variables	Frequency (98)	Percent (%)
1	Type of (poison)		
	OPC/herbicides/insecticides	31	31.6
	Rat killer poison	35	35.7
	Ant killer poison	14	14.3
	Mosquito repellent	1	1.0
	Kerosene	2	2.0
	House cleaning agents	4	4.1
	Poisonous plants/seeds	8	8.2
	Medicine over dosage	3	3.1
2	Availability of poison		
	Home	54	55.1
	Brought from shop	44	44.9
3	Route of administration		
	Oral	98	100
4	Reason of poison intake		
	Family stress	56	57.1
	Work related stress	25	25.5
	Study related stress	9	9.2
	Accidental intake	3	3.1
	Abdominal pain	2	2.1
	Depression	1	1
	Love failure	1	1

	Sexual abuse	1	1
5	Admitting time after poison intake		
	More than 6 hours	17	17.3
	Less than 6 hours	81	82.7
6	Admitted person		
	Family members	82	83.7
	Friends	13	13.3
	Unknown person	3	3.1
7	Condition of the patient admission		
	Conscious	80	81.6
	Unconscious	18	18.4
8	Managed in ICU		
	NO	52	53.1
	YES	46	46.9
9	Ventilator support		
	Yes	16	16.3
	No	82	83.7

Among the study populations (98), one third of patients were consume rat killer poison next to it were herbicides/OPC/insecticides, more than 50% of the patients availed poison from home, all of them had oral intake of poison, most common reason for poison intake was family stress.

Most of the patients (80%) were arrived hospital within 6 hours of consumption of poison and admitted by family members and had conscious during admission. forty percent of the patients were managed early in ICU, nearly 20% had ventilator support in ICU.

Table 3. Frequency distribution of previously intake poison

s.no	variables	Frequency (98)	Percent (%)
1	Previously taken poison		
	No	91	92.9
	Yes	7	7.1
2	Type of poison previously taken (7)		
	Herbicides/OPC	3	3.1
	Poisonous plants	1	1
	Rat killer paste	3	3.1
3	Reason (7)		
	Family members	4	4.1
	Occupational issues	1	1
	Study related stress	2	2.1
4	Psychological counselling		
	Given in Hospital	7	7.1
	no	0	0
5	Psychological support from family, friends		
	Present	47	48
	Absent	51	52

Among the study populations (98), only 7% of the patients had history of previous intake of poison, had psychological counselling for the same, nearly 50% of the patients had no psychological support from family/ friends.

Among the study population, most common type of poison consumed by male were OPC/herbicide/insecticide (94%), next to it were ant killer poison (78%) and rat killer poison (74%). Most common type of poison consumed by female were mosquito repellent (100%) next to it were medicine over dosage (67%). Comparing to female, prevalence of poisoning among males were more with p value 0.05 100% of the mosquito repellent, kerosene consumption and medicine over dosage, 75% of the cleaning agents, 65% of the OPC poisoning and rat killer poison were consumed between age group 21-40 years of age with the p value 0.039.

DISCUSSION

Among the study population, large proportion 75% were men, more than 80% belong to rural area, one third proportions were agricultural workers, next to it were other daily wage workers and students. 50% of the populations were unmarried, most of them belong to joint family. most common were oral poison, one third patients consume rat killer poison, more than 50% had poison due to family stress and availed it from home, 80% of the patient were arrived hospital within 6 hours of consumption of poison and admitted by family members and had

conscious during admission, 40% of the patients had initially treated in ICU, 20% of the patients had ventilator support in ICU.

Among the study populations (98) only 7% of the patients had history of previous intake of poison had psychological counselling for the same, nearly 50% of the patients had no psychological support from family/ friends, which signifies acute oral poisoning as a major public health issue.

In the present study, more than 75% of the poisoning patients were male, age group ranged from 21-40 years of age, 30% Were agricultural workers similar results were obtained by the study conducted in Karnataka by K. N. Ramesha et al (8), B. Unnikrishnan et al (9), more than 80% of the patients belong to rural populations similar to the study conducted by A. K. Batra et al (10) 74% were married and 26% unmarried, similar results were in study done by B. Unnikrishnan et al (9) Irteqa ali et al (12).

In my study, all the cases the route of exposure were oral. more than 75% of the poisoning patients were male, the instances of poisoning cases decreased with increasing age, peak becomes 21-30 years, 30% were agricultural workers, religion wise mostly among Hindus (99%), most of them were from rural area (87.8%) similar results were obtained by the study conducted in Salem by B. Maharani et al (11) Irteqa ali et al (12), due to similar social and cultural practice prevalent in Tamil Nadu.

In the current study, poison consumption was found to be more in rural population (87.8%) as compared to urban population (12.2%) similar to the study done by Suparna Chatterjee et al (13), motive of consumption of poison Were suicidal similar results were obtained by the study conducted in North India by, irteqa ali et al (12). in their study accidental exposure to poison was more (46.33%), but in my study accidental exposure is very minimal (3.1%). This may be due to increased awareness regarding the use of poisons in Tamil Nadu when compared to North India.

Regarding family structure, in the study done by Suparna Chatterjee et al (13) 59.3% hailed from nuclear family, but in my study poisoning cases were more common in joint family (83.7%), this is mainly because of joint family culture in Tamil Nadu. Regarding occupation, in the above study there were a minimal poisoning cases in farmers (1.86%). But in my study, prevalence of poisoning were more in farmers (27.6%) followed by daily wage workers (20.4%), most of them were agricultural workers particularly in Thanjavur district.

In our study, most of the patients are admitted to the tertiary care hospital within 6 hours of intake of poison (82.7%) similar results were obtained in the study conducted in Karnataka by Ramesha, et al. in the above study majority of the poisoning cases (36.0%) were due to organophosphorus compound (OPC). But in my study majority of the poisoning cases were due to rat killer paste (35.7%) followed by OPC (31.6%).

CONCLUSIONS

This study reveals the high prevalence of acute poisoning among the 21-40 years of rural males. Among them most of the patients were agricultural workers. Even though rat killer paste was commercially banned by the government of Tamil Nadu, most common type of poisoning was rat killer paste (35.7%) in my study. The poisoning cases are preventable by the proper health education, creating and implementing the effective prevention strategies.

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