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RESEARCH ARTICLE

“THE PROFILE OF COMMON POISONINGS AND ITS OUTCOME IN A TERTIARY CARE HOSPITAL MYSURU”

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Abstract

Background and Objective: Poisoning is a common medico-social problem worldwide. Its pattern and outcome varies from place to place causing significant morbidity and mortality. Hence this is an attempt to study the profile of common poisonings and its outcome in our tertiary-care hospital.

Materials and Methods: This is a cross-sectional observational study. We studied 100 admitted poisoning patients in Krishna Rajendra hospital, Mysore who met the inclusion and exclusion criteria. The demographic data, compound details, its complications and outcome were analyzed.

Results: In this study most of them were in the age group of 21-30 years (37%), 76% were males and 24% were females. Majority of them were married (74%), 48% were illiterate, 80% were from rural areas with lower socioeconomic status (65%). The most common poisoning was Non-Organophosphorus compound – Cypermethrin (35%), (20%) Organophosphorus compound, (15%) aluminum phosphide, (12%) multiple tablets, (7%) unknown, (4%) paraquat, (4%) Rat powder, (2%) Rat paste, (1%) acid ingestion. Majority were suicidal (88%), 13% had ICU admissions and 11% died.

Conclusion: In this study pesticides were the most common poison leading to significant mortality, with majority of them being suicidal. Hence there is a need for stringent pesticide regulation laws and suicidal prevention awareness in the society. This study also emphasizes the need of psychological counseling and mental health training programs to the targeted population to reduce the incidence of suicidal poisoning.

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Introduction:-

A poison is a substance that is capable of causing illness or harm to a living organism on contact or upon introduction to the body. Poisoning is a significant global public health problem ranking 45th in total death worldwide.

Nearly a million people die each year because of suicide, and it is estimated that deliberate ingestion of pesticides causes 3,70,000 deaths each year. WHO estimates that, in 2016, unintentional poisoning caused 1,06,683 deaths and the loss of 6.3 million years of healthy life (disability-adjusted life years)^[1].

The percentage of mortality due to acute poisonings in the developed nations is 2%, while in a developing nation like India, it is as high as 30% with approximately fifty thousand Indians dying annually.^[2] The low to middle economy nations carry disproportionately greater share (84%) of poisoning cases reported worldwide. This is due to a variety of factors, most important being their considerably higher rate of exposure to hazardous materials.^[3]

It was observed that agricultural or household pesticides and drugs are taken intentionally, whereas intake of corrosives, kerosene and other miscellaneous agents were consumed accidentally.^[4] The commonest cause of poisoning in developing countries is pesticides which includes organophosphates, carbamates, chlorinated hydrocarbons, paraquat, pyrethroids and aluminum or zinc phosphide. The reason behind this upsurge is the agriculture based economics, poverty, unsafe practices, illiteracy, ignorance and easy availability of highly toxic pesticides.^[5]

An understanding of acute poisoning patterns in a particular region will assist in preliminary diagnosis of poisoning cases and their effective treatment plans. Along with identifying the population at risk for suicidal poisoning, such information will also be used to provide social awareness and guidance in designing interventions like psychological counselling and educating those at risk. The data pertinent to poisoning cases in south India are deficient. Hence this study was executed to perceive pattern of poisoning cases and their outcome in our population.

Objectives:-

To study the profile of common poisonings and its outcome in a tertiary care hospital.

Materials and Methods:-**Source of data:**

In Patients admitted in medical emergency wards of Tertiary Care Hospital, KR Hospital, Mysuru. Secondary data from Published articles, journals, books, case sheets and related websites will be used for planning of the study and as supporting documents.

Method of collection of data:**Study Design-**

A Hospital- based cross- sectional observational study.

Study Period-

August 2022 to October 2022

Place of study-

KR Hospital, MMCRI, Mysore

Sample Size:

100 (In the present study, sample size was calculated with the formula $N = Z^2 PQ/d^2$)

Inclusion Criteria:

1. Age more than 18 years.
2. All the poisoning cases

Exclusion Criteria:

Patients with pre-existing co-morbidities like Chronic liver disease and Chronic kidney disease and neurological diseases.

Institutional ethical committee approval will be obtained. All subjects included in the study will were explained about the study and valid informed written consent was taken. Personal information, detailed history including risk factors, poisoning history, compounds involved, examination was done using a prestructured proforma. Routine investigations like complete hemogram, liver and renal function tests, Electrolytes, Random blood glucose, Electrocardiogram, Chest xray, Pseudo cholinesterase etc. were done

Statistical Analysis:

SPSS (Statistical Package For Social Sciences) version 20. (IBM SPASS statistics [IBM corp. released 2011] was used to perform the statistical analysis. Data was entered in the excel spread sheet. Descriptive statistics of the explanatory and outcome variables were calculated by mean, Standard deviation for quantitative variables, frequency and proportions for qualitative variables.

Results:-

A total of 100 patients admitted in KR hospital, Mysore were included in our study most of them were in the age group of 21-30y (37%). In that 76 % were males and 24% females. Majority of them were married (74%) and 48% were illiterate. 80% of patients were residing in rural area. 65% of them belonged to lower socioeconomic status. The most common poisoning compound was found to be pesticides like Non-Organophosphorus compound – Cypermethrin (35%). 20% had consumed Organophosphorus compound, 15% had consumed aluminum phosphide, (12%) multiple tablets, (7%) unknown, (4%) paraquat, (4%) Rat powder, (2%) Rat paste, (1%) acid ingestion. Majority were suicidal (88%) and 12% were accidental. 13% of them were admitted to ICU due to complications. Respiratory failure was the most common complication, all were secondary to OP compound consumption. Out of 13% who developed complications, 11% of them died. Most common cause of death was respiratory failure.

Characters	frequency	
age	<20y	11
	21-30y	37
	31-40y	25
	41-50y	13
	51-60y	8
	>60y	6
sex	male	76
	female	24
education	illiterate	48
	Literate	52
Marital status	unmarried	26
	married	74
Place	Rural	80
	Urban	20
Socio-economic status	lower	65
	Lower middle	26
	Upper lower	9
Comorbidities	Present	27
	absent	73

Table 1:- Showing demographic characteristics of the study population.

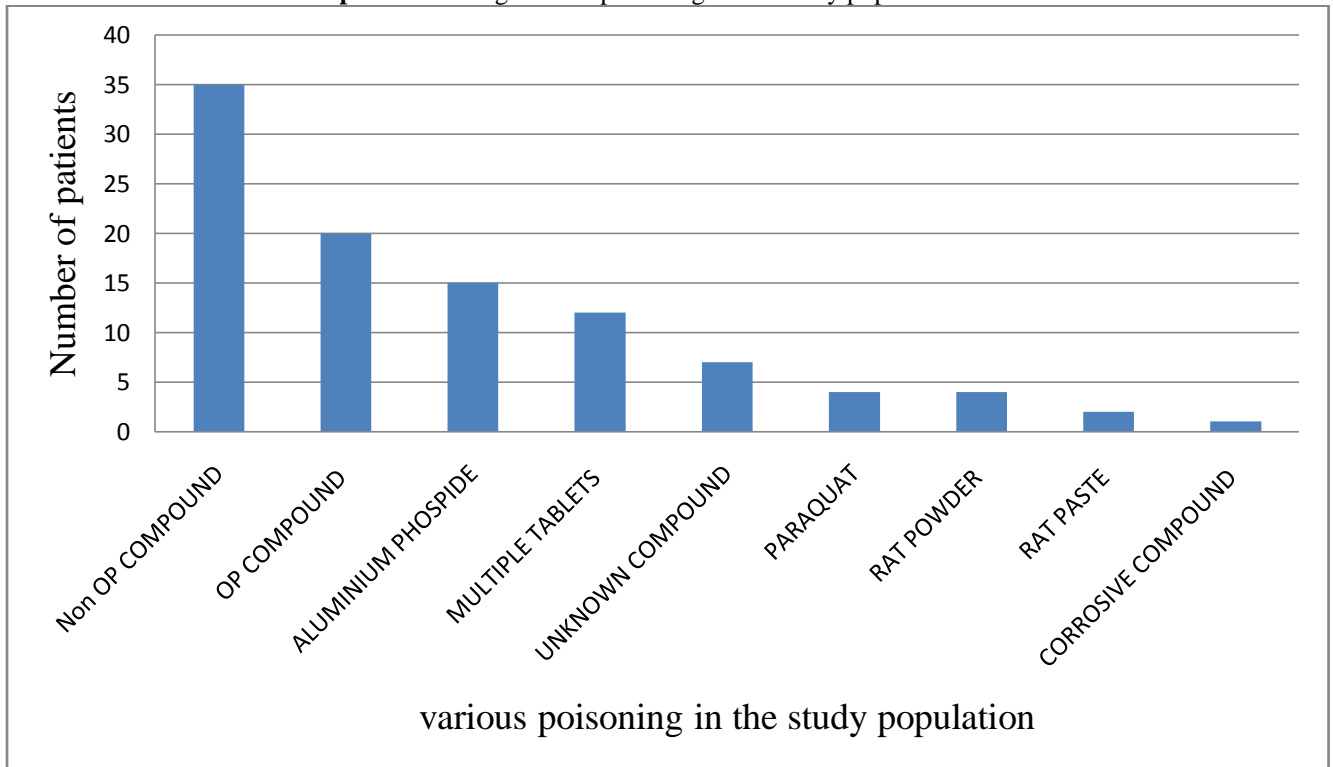
Characters		Frequency
Types	Suicidal	88
	Accidental	12
Compounds	Non OP compound	35
	OP compound	20
	Aluminum phosphide	15
	Multiple tablets	12
	Unknown compound	7
	Paraquat compound	4
	Rat powder	4
	Rat paste	2
	Corrosive compound	1

Table 2:- Showing poisoning characteristics of study population.

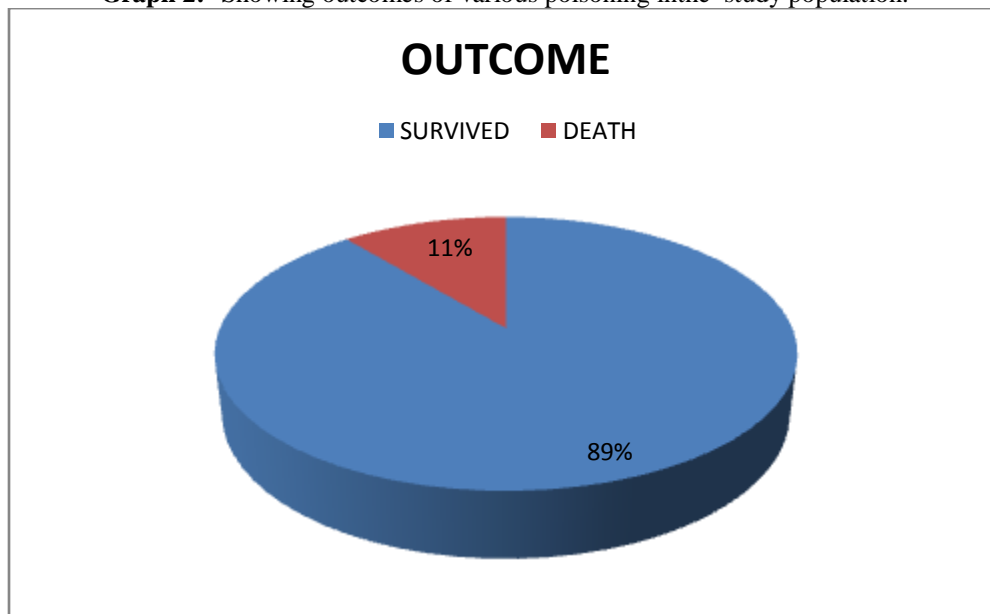
	Frequency	
ICU admissions	Present	13
	Absent	87
Complications	Nil	87
	Respiratory failure	7
	Acute hepatitis	1
	ARDS	1
	AKI with ARDS	1
	Cardiogenic shock	3
Outcome	Survived without any complications	87
	Survived complications	2
	Death	11

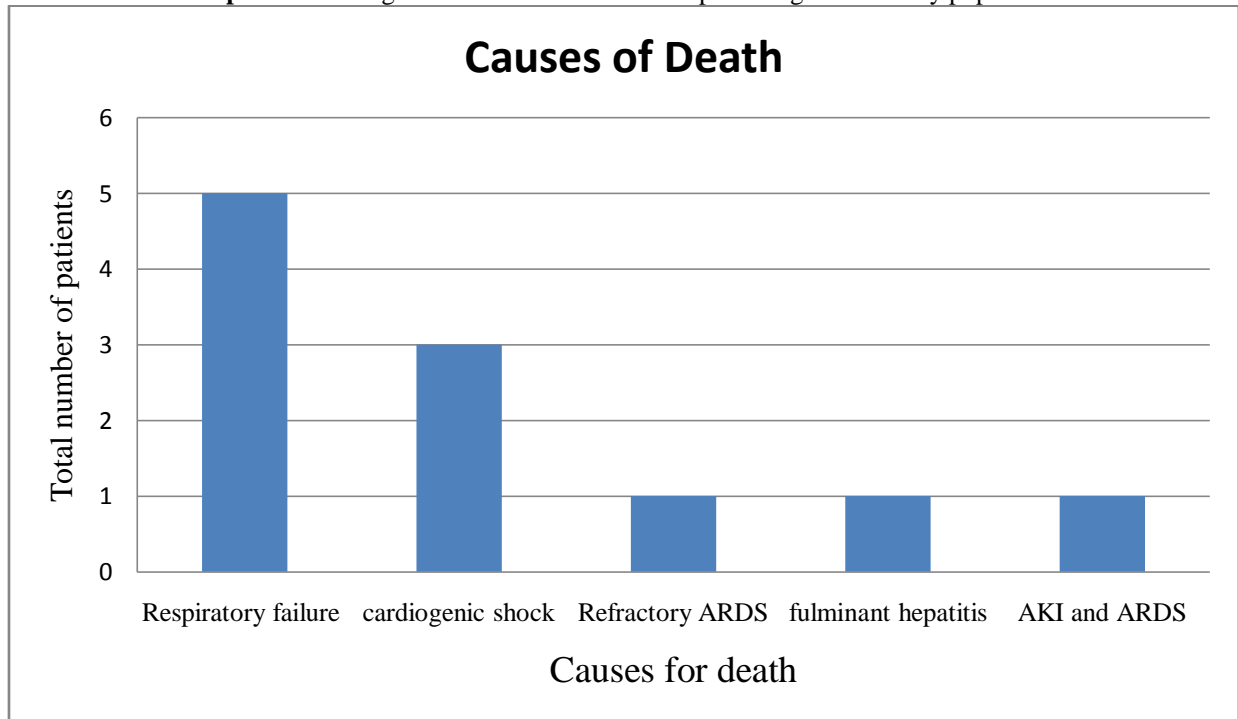
Table 3:- Showing ICU admissions, complications and outcome of the study population.

Graph 1:- Showing various poisonings in the study population.



Graph 2:- Showing outcomes of various poisoning in the study population.



Graph 3:- Showing causes of death of various poisoning in the study population.**Discussion:-**

Many data suggested that pesticides were the most common poisoning in the rural and low socio-economical group. The results of present study show that acute pesticide poisoning still remains as a major public problem

In this study 100 poisoning patients admitted in KR hospital were studied. Most common age group with poisoning in the study was between 21 to 30 years which is consistent with Nadeem MN et al study(2020)^[5]. Majority of them were males (76%) which is similar to Souza and S.A Kora et al^[15] study(2020). In our study 74% were married which was similar to 78% in Souza and S.A Kora et al study(2020) and 78.6% in Nadeem M.N et al study (2020) respectively. 80% of poisoning patients were from rural areas which is consistent with 84% of Souza and S.A Kora et al study(2020). The above results show that poisonings are more common in younger age group in 2nd or 3rd decade, more in rural areas than in urban. Married patients were involved more commonly signifying its effect on patients mental health.

Majority of poisoning in our study were suicidal (88%) consistent with Bambathy et al study^[7] and Nadeem MN et al study (2020). Mean time of presentation after poisoning was 2.5 hours which is consistent with Souza et al study. 20% of them were Organophosphorous compound poisoning comparable to Mukul et al study(2015) which was 25%. Pesticides were found to be commonly poisoned than other compounds because of their low cost and easy accessibility so it is important to restrict hazardous pesticide use. ICU stay and Mortality was also found to be higher in pesticides poisoning particularly with compound in our study which is comparable to Asawari R et al and Karunaratne et al study^[6].

The outcome of the poisonings depends on various factors one of which being the characteristics of the poison itself. In current study out of 100 patients 13% patients required ICU admission. 7% patients had respiratory failure secondary to OP compound (2% dimethomate and 1% chlorpyrifos), 3% patient had cardiogenic shock secondary to aluminium phosphide consumption. 1% had AKI with ARDS and 1% only ARDS secondary to paraquat poisoning. 1% developed acute fulminant hepatitis secondary to rat poison. Out of these 13% only 2% of patients survived from respiratory failure and others succumbed to death. Pesticide poisoning being common has various hazardous complications significantly affecting the mortality and morbidity so early diagnosis and effective early treatment remains the main stay to prevent complications.

Conclusion:-

In this study pesticides were the most common poison leading to significant mortality and majority of them being suicidal. Hence there is a need for stringent pesticide regulation laws and suicidal prevention awareness in the society. This study also emphasizes the need of psychological counseling and mental health training programs to the targeted population to reduce the incidence of suicidal poisoning.

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