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Demographic, clinical profile and outcome of acute poisoning cases in a tertiary care centre in Dakshina Kannada, Karnataka

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Abstract
Aim: To study the nature and mode of poisoning, the incidence, clinical profile, and outcome of all acute poisoning cases admitted in our hospital.
Methods: All patients admitted during the study period from October 2019 to March 2020 with acute poisoning were included in the study. Data regarding the age, gender, marital status, type, time and mode of poisoning, the time lag in reaching the hospital, pre-hospital treatment, reason for consumption, co-morbidities, duration of stay in hospital and outcome were obtained and analysed.
Results: Out of the 45 cases of poisoning, 60% were males and 40% females, the mean age was found to be 35.02 +/- 16. Poisoning was common among married (64.44%) when compared to unmarried (35.55%). Drug overdose comprised the largest fraction of cases (33.33%) followed by rodenticides (17.77%), organophosphorus (15.55%), corrosives (13.33%) and herbicides (11.11%). The most common route of poison intake was orally (95.55%) and the mode of intake of poisoning was intentional (95.55%). The most common symptom with which patient arrived was vomiting (88%). 35 cases (77.77%) stayed in hospital for duration of less than 5days. Among all the patients 30 (66.66%) recovered, 10 (22.22%) was referred to higher centre on request and 5 (11.11%) died.
Conclusion: Our study showed predominant use of drug overdose as agents for poisoning, which demonstrated a change in trend. Male gender and longer event-to-treatment delay at primary levels had a negative impact on survival.

Keywords: demographic, clinical profile, outcome of acute poisoning

Introduction
Poison is any 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 the intent of causing harm [1]. According to the World Health Organisation (WHO), nearly 200,000 people die worldwide from poisoning and around 84% of them occur in low and middle-income countries [2]. According to National Crime Records Bureau reports, poisoning was estimated to contribute 5.1% (21,196) of the 412,959 accidental deaths recorded in the country in 2019 [3].
Use of poison with suicidal ideation is common. The nature of poisoning shows a regional variation depending upon geographical area, socioeconomic factors and cultural diversity. In a retrospective study from South India, organophosphorus compounds (OPC) were reported as the most common cause of poisoning (36.0%) followed by snake bite (16.2%), drugs (11.0%) and rat poison [4]. The treatment goals in poisoning include support of vital signs, prevention of further poison/toxin absorption, enhancement of elimination, administration of antidote and prevention of re-exposure [1].

AIM
To study the nature and mode of poisoning, the clinical profile, severity and outcome of all acute poisoning cases admitted in our hospital, KVG Medical College & Hospital, Sullia.

Methodology
All patients admitted during the study period from October 2019 to March 2020 (6months) with acute poisoning were included in the study. Data regarding the age, gender, marital status, type, time and mode of poisoning, the time lag in reaching the hospital, pre-hospital treatment, reason for consumption, co-morbidities, duration of stay in hospital and outcome were obtained and analysed.
All cases of acute poisoning with drugs or chemicals irrespective of gender and age above 18 years and patients with doubtful history of ingestion of poison but with definite symptoms and signs of poisoning were included in the study. Chronic poisoning, snake bite, other animal bites, food poisoning, idiosyncratic drug reactions were excluded.
Attempt for the prevention of the toxin absorption (gastric lavage) was continued or started (if not started from the emergency department) in the patients presenting within 4 h of poisoning. Patients were managed with specific antidote if indicated. Data regarding demographic profiles including age, sex, education-level socioeconomic status, and premorbid conditions were recorded from the patient or patient relatives. The information regarding the poison included the type of poison, route of ingestion, intention of poisoning, and duration of visit to the hospital. The type of poison was confirmed from the clinical presentation, circumstantial evidence, and the remaining container or packets brought by the patient relatives. The patients were

grouped into drug overdose, organophosphorus, rodenticides, corrosives, herbicides, metal poisoning, plant poison and unknown compound consumption. The outcome of the patients was studied.

The patients' data were recorded in Microsoft Excel and IBM SPSS statistics was used for data analysis. The study included continuous, discrete as well as categorical data. The continuous data were presented as mean and standard deviation while categorical data were presented as frequency and percentage.

Results

atotal of sixty were admitted during the study period with poisoning of which forty-five cases of acute poisoning who fulfilled the inclusion criteria were included in the study.

In our study poisoning was seen common among males (60%) than females (40%). The median age was found to be 35.02 +/- 16.45.(table 1) Acute poisoning was found to be more common among married (64.44%) when compared to unmarried (35.55%). Of all the patients, 12 (22.66%) were suffering from comorbid conditions. Majority of patient belonged to low socioeconomic group (85%).

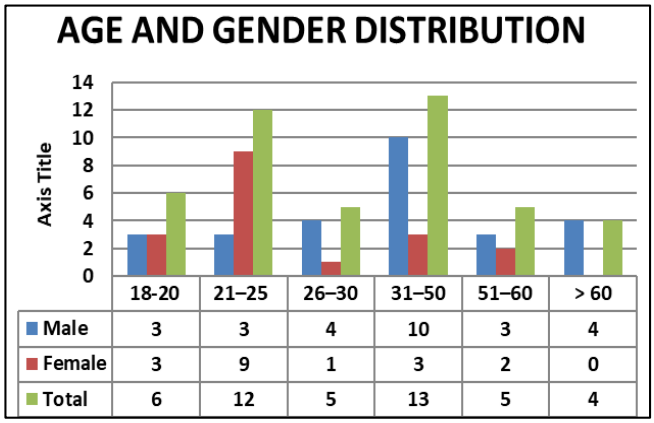

Fig 1

Drug overdose comprised the largest fraction of cases (33.33%) followed by rodenticides (17.77%), organophosphorus (15.55%), corrosives (13.33%) and herbicides (11.11%). There were also 2 cases of copper poisoning, 1 case of plant poison and 1 patient with unknown compound consumption. (*table 2*)

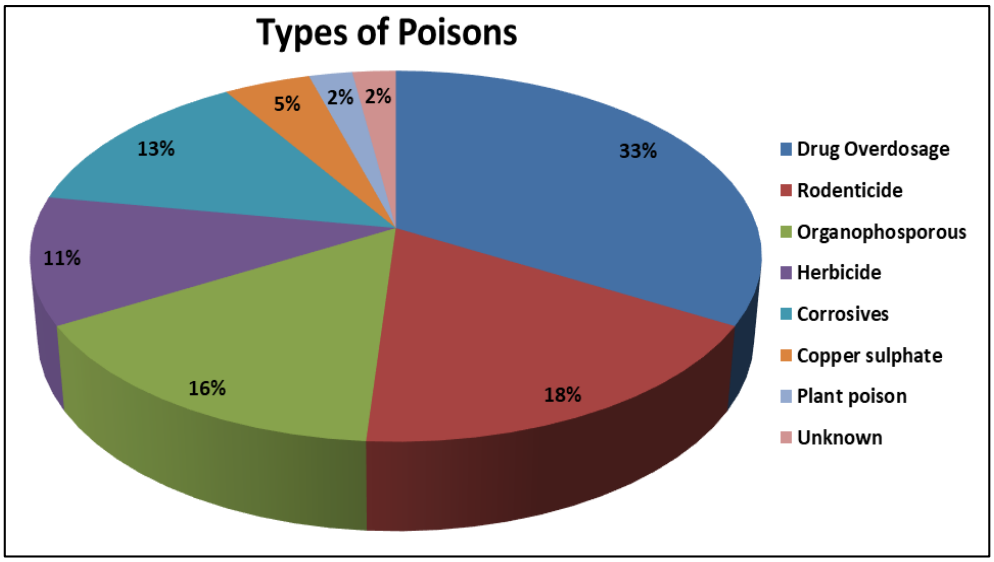

Fig 2

The time interval between poisoning and arrival at tertiary care centre was within 1hour to 4 hours. (*table* 3) The most common route of poison intake was orally (95.55%). (*table* 4)The most common mode of intake of poisoning in our study was intentional (95.55%) with interpersonal problem being the most common cause for poisoning.

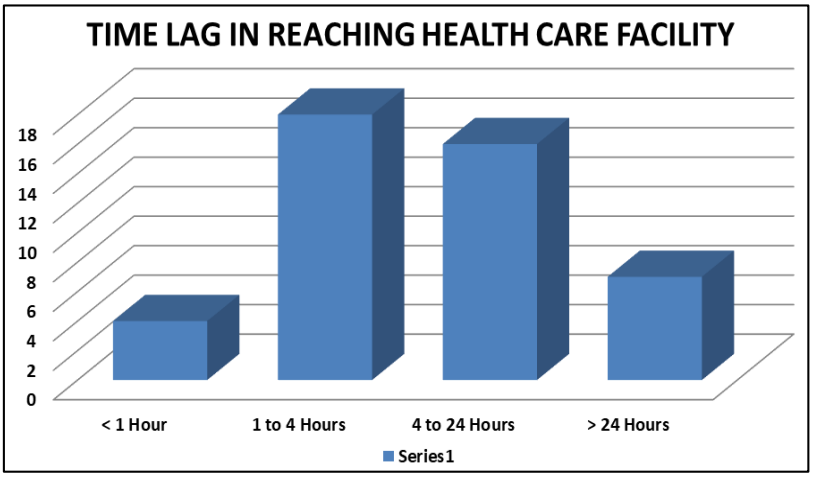

Fig 3

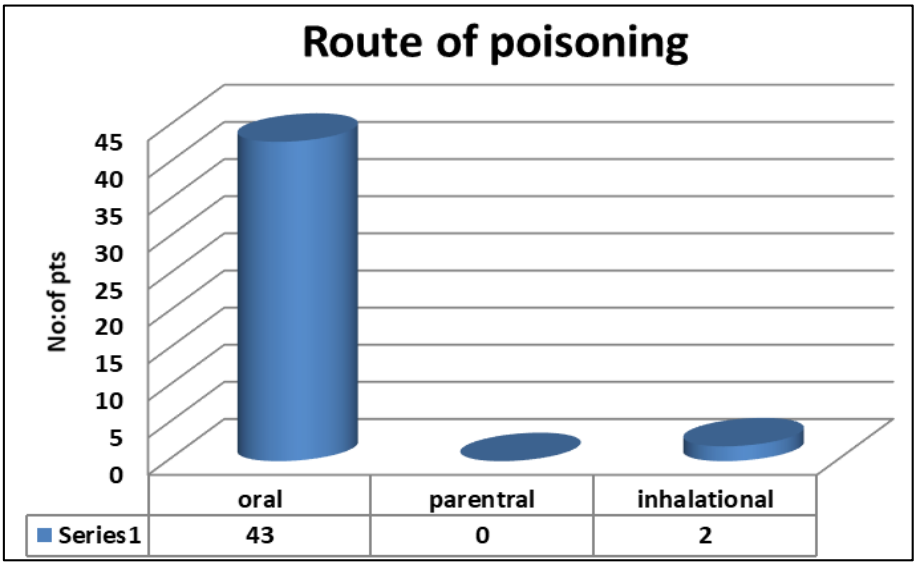

Fig 4

The most common symptom with which patient arrived was vomiting (88%). The other symptoms with which patient presented were nausea, pain abdomen and altered sensorium. (*Table* 5)

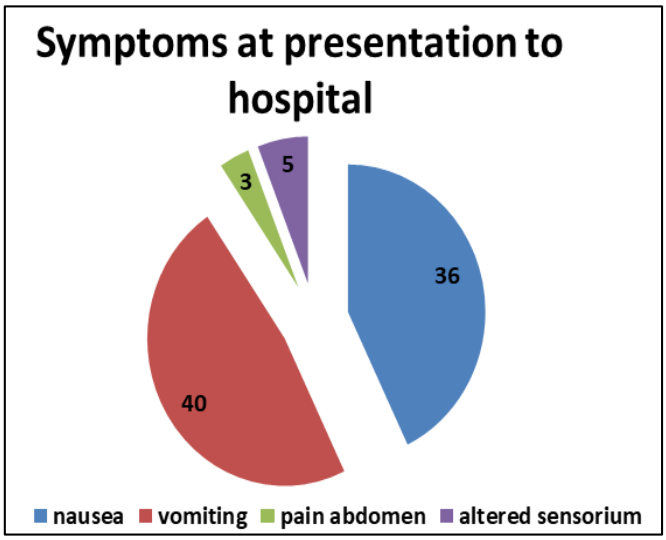

Fig 5

In our study majority of patients (64.44%) had taken poison less than the lethal dose. Of the 17 patients who took lethal dose only 5 succumbed. 35 cases (77.77%) stayed in hospital for duration of less than 5days. (*table*6)

Among all the patients 30 (66.66%) recovered, 10 (22.22%) got referred to higher centre on request (even after referral were followed up) and 5 (11.11%) died. All deaths were due to herbicide (paraquat) poisoning. (*table* 7)

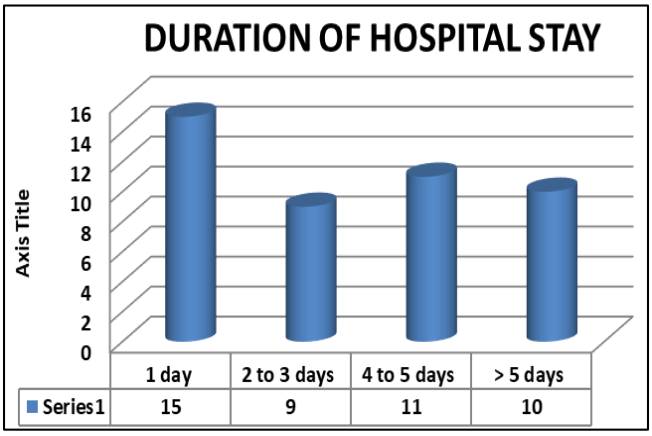

Fig 6

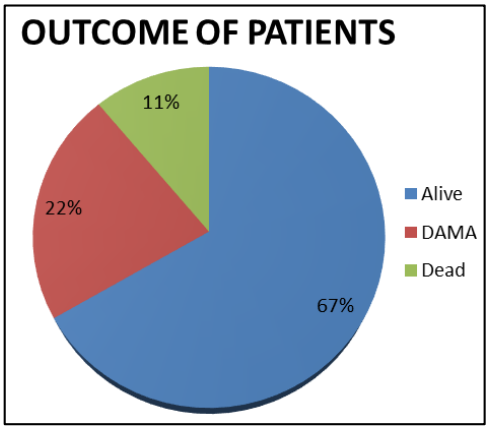

Fig 7

Discussion

Acute poisoning is an important health hazard and the cause of mortality and morbidity worldwide. Toxidromes, characteristic clinical syndrome, may be associated with certain poisoning and thus helps in diagnosis. All patients may not have all features associated with toxins and toxindromes can overlap. The diagnosis and management can be challenging and complicated by the wide variation in the pattern of poisoning which depends on the various factors such as geographical area, socioeconomic status, literacy rate, age, availability of the poison and presence of various comorbid conditions [5].

In the study period of 6months majority of cases of acute poisoning who got admitted were in the age group of 31 to 50 years (28.8%) with a higher proportion of males (60%) compared to females (40%). Dash S K *et al*. study on socioeconomic profile on poisoning cases also showed similar result [6]. A five-year retrospective study by TanujKanchan *et al*. also showed poisoning were more common among adult males [7]. The high proportion of poisoning among adult males in their most active age may be due to a lot of personal and social responsibilities related with the career and family responsibilities.

In our study drug overdose comprised the largest fraction of cases (33.33%) followed by rodenticides (17.77%), organophosphorus (15.55%), corrosives (13.33%) and herbicides (11.11%). There were also 2 cases of copper poisoning, 1 case of plant poison and 1 patient with unknown compound consumption. In retrospective observational study on pattern of acute poisoning in a tertiary care hospital Karnataka, pesticide poisoning accounted for 62.8% of the cases. In another large 5-year retrospective study on hospitalized patients admitted with poisoning in Kerala, poisoning by pesticides and other non-medicinal substances accounted for 45.5% of the cases. These differences in the type of poisoning may partly stem from the varying catchment areas of the concerned hospitals [8, 9].

In our study the most common route of poisoning was through intentional oral intake (95.55%). The most common symptom at presentation to hospital was vomiting which was seen in 40 (88%) of 45 cases. The study on poisoning profile and outcomes by Roshan Mathew *et al*. showed intentional intake as the major mode of poisoning (57%). The most common symptom was vomiting [10].

In our study the median time interval between poisoning and arrival at tertiary care centre was within 1hour to 4 hours and these patients had better outcome, whether the patient came directly to our institute or received medical attention outside. The study by Nithi Mittal *et al*. noticed a trend for better survival chances in patients who had received first aid at home and some outside treatment before reaching hospital. In another observational study on acute poisoning in West Bengal showed that delay in reaching treatment centres, particularly primary care, can negatively impact outcome [11, 12].

The mortality with acute poisoning in a well-established centre with advanced life support is 1%–2% [13]. The mortality has been seen higher in the centre with limited critical care resources and with the delayed initiation of specific management. Among all the patients in our study 30 (66.66%) recovered, 10 (22.22%) got referred to higher centre on request and 5 (11.11%) died. All death in our study was due to herbicidal poison (paraquat consumption) and had taken lethal dose. Those patients who were referred on request also recovered, on follow up. A five year study on outcome of paraquatpoisoning by JS Sandu *et al*. showed high mortality among paraquat poisoning [14]. Another retrospective study on fatality of paraquatpoisoning by Sabzghabaee A M *et al.* also showed high mortality [18]. Our series compares well with other Indian studies, such as one done at a tertiary care hospital in Mangalore which reported overall mortality to be 15.4% and older studies where it was 17.3% [15, 16]. Singh *et al*. had observed very low mortality in acute poisoning, i.e., 2.8%, and this was due to the aluminium phosphide poisoning only [17].

Limitations

This is a single centre-based study with small catchment area. The epidemiological data do not include cultural and religious data, and occupational data that could have provided additional information regarding clinical spectrum of poisoning.

Conclusion

In our study, we found predominant use of drug overdose as agents for poisoning, which demonstrated a change in trend from previous similar studies in which pesticides were commonly used. The ease of availability of drug may be the cause for this finding. Male gender and longer event-to-treatment latency at primary care levels had a negative impact on survival. Measures to reduce lag time and provide immediate treatment at initial encounter may be effective in reducing duration of hospitalisation and possibly mortality in poisoning.

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