A STUDY AND MONITORING OF POISONING CASES AND ITS MANAGEMENT IN SECONDARY CARE PUBLIC HOSPITAL

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Abstract: There is a huge public health issue with poisoning, and it is the most common reason people go to the emergency department (ED). However, characteristics that help predict total poisoning-related death have only been discovered in a handful of studies around the world As a result of the easy access to so many chemicals and medications, acute poisoning has become a prevalent medical emergency around the world. Although strategies to prevent toxic intake have been successful, acute poisoning remains a significant public health issue. The consequences of poisoning are more common in underdeveloped countries than in the developed world due to lax laws and insufficient access to health care. In this study, poisoning cases that were admitted to a secondary care hospital were characterised. All patients with acute poisoning, drug overdose, or envenomation was admitted throughout the study period were included. We didn't include things like food borne illness, animal bites, or long-term drug or chemical poisonings in our calculations. Interviews with caregivers and an examination of medical records were used as research tools. Patients' personal information, as well as information about the type and circumstances of their poisoning data was collected.

Keywords: Poisoning, emergency department, Public hospital.

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INTRODUCTION

Public and private healthcare services, primary healthcare, acute and chronic care, as well as geriatric care are all part of today's health systems. It is imperative that health systems evolve in order to keep pace with changing epidemiological, demographic, and socioeconomic trends. There is a complex agenda for global health because of new technologies, as well as societal and political factors. As a result, non-state actors have become increasingly important in controlling population demands and encouraging innovation. Global health systems and service delivery have been built on the concept of 'collaborative governance,' in which non-health actors collaborate with health actors to fulfil shifting expectations and new goals [1]. In low and middle-income countries, the SDGs and universal health coverage have been powerful motivators [2]. Reforms aimed at enhancing efficiency, access equity, and the general quality of public services have captured reform agendas.

Accessibility to chemicals and pharmaceuticals on a global scale contributes to frequent medical emergencies as a result of poisonings whether by accident or design [1]. Even if poisonous consumption is prevented, acute poisoning is still a significant public health issue [2]. There is a poison exposure in the US every 15 seconds, according to the Poison Control Centers Association. Most nations lack the necessary antidotes, screening tests, and treatment protocols to deal with such situations.

Poisoning is relatively common in low- and middle-income nations, and the negative consequences of poisoning are significantly worse than in high-income countries due to inadequate laws and poor healthcare services [4]. In 2010, unintentional poisoning caused an estimated 180,000 deaths globally, according to the recently released Global Burden of Disease Study. There are 2.6 deaths per 100,000 people, making poisoning one of the world's 50 most common causes of death [5].

Many farmers in southern India are poisoned by organophosphorus pesticides like parathion because they use these chemicals as insecticides on a regular basis. As a result of the ease with which these drugs are available, this region sees a high number of suicidal people. [2] Snakebite is also a prevalent acute medical emergency for rural communities in tropical and subtropical areas with excessive rainfall and humid climate. Snakebite is a leading source of morbidity and mortality in India, killing 35,000–50,000 people each year. Kraits are primarily active at night. During the night, they sneak inside human residences in quest of rodents, mice, and lizards for food. During the paddy sowing and harvesting season, which runs from June to November, snakebite cases are at their highest. A venomous snake found only in the Indian subcontinent, the common krait, Bunganrs caeruleus, is widely regarded as the most dangerous. The study's goal is to

determine the characteristics of poisoning patients admitted to a tertiary care hospital in the Andhra Pradesh state of south India regions.

LITERATURE REVIEW

Poison is a material that can harm or injure a live organism when it comes into touch with it or is ingested into it. Poisons of biological origin include toxins and venoms, the latter of which is used to describe poisonous animal bites or stings. Poisoning has grown in prominence in India and around the world in the last decade[1].

Around 800,000 people died by suicide worldwide in 2016, resulting in an annual suicide rate of 10.5 per 100,000 people. However, the suicide rate in India is more than twice as high (18.5 suicide deaths for 100 000 population). Suicides are more common in countries with low and intermediate incomes (79% of all suicides). India, a low- and middle-income country, has a high rate of suicide by ingestion of poison, according to the World Health Organization [2].

Pesticide poisoning is a common problem in India since pesticides are widely used in agriculture and the home. Poisons used in the home, envenomation, and pharmaceuticals are examples of other poisons. Pesticides and medications used in agriculture or the home are taken knowingly, whereas corrosives, kerosene, and other random substances, as well as animal bites, are taken accidentally [3].

According to the WHO, envenomation-related deaths occur at a rate of approximately 100 000 each year, with approximately three times as many individuals who survive being crippled as a result of amputation and incomplete recovery. Throughout India, about half of these deaths were attributable to toxic animals including snakes, scorpions, and spiders that are naturally present in the nation. Thus, the WHO launched a campaign to reduce deaths and disabilities caused by snakebites [4].

The pattern of poisoning is different depending on where you are in the United States. Understanding a country's geographical pattern of poisoning aids in the discovery of risk variables for that country. Prevention and promotion of health services can assist lower death rates by helping people stay healthy and live longer [5].

MATERIALS AND METHODS

An whole year's worth of research was put in place for this effort. Study participants were poisoned people who had been exposed to pesticides in the home or farm, stings, bites, snake bites, industrial toxins, toxic plants, drugs, or other goods of various types. Poisoning cases were documented using a WHO-recommended proforma, regardless of the patient's age, gender, kind of poisoning, manner of poisoning, or chemicals in the substance that caused the poision. Residents up to six kilometres west of middle town can access the emergency department. As soon as hospital authorities gave their clearance, data collecting began in accordance with hospital procedures. The setting was the emergency room of an inner city level-one trauma facility, which sees about 85,000 patients a year. Patients between the ages of 1 and 89 who have been exposed to poisons such as chemical, recreational, and/or pharmacological substances were included in this study. A total of 2,226 poisoning cases were included in the research between the months of January and December of the same year.

To collect data, a poisoning report form was created, which was then analysed and improved on a regular basis based on the preliminary findings. In addition to demographic information, the researchers also gathered data on the subjects' health history (such as past suicidal attempts, psychiatric conditions such as schizophrenia, substance abuse, or major systemic diseases), symptoms and signs, and information from psychiatric consultations, management methods, clinical observations, ED results, and laboratory findings. All enrolled patients, with the exception of those with food poisoning, filled out poisoning report forms. Medical assistants and members of the ED staff conducted in-depth interviews with patients and carers before collecting the report from data. The reports were completed by certified interns who stayed with the patients while they were in the hospital. A minimum of one outpatient clinic visit was required for all patients who were discharged in stable condition, so we knew how they were doing once they were no longer under our care. Patients who were discharged in an unstable state, transferred to another hospital, or could not return to the outpatient clinics received follow-up phone calls from the staff or friends and family members.

Primary data analysis

Demographic characteristics (age and gender), exposure types (acute or chronic), nature of the exposure agents, number of exposure agents (multiple or single), suicidal intent as a cause of poisoning, and concurrent alcohol use were all considered in this study as potential predictors of poisoning-related death When the patient first arrived at the ED, vital indicators like awareness, body temperature (BT), breathing pattern and rate, blood pressure and heart rate were evaluated. The patient's medical records yielded information on past attempts at suicide, psychiatric disorders (such as schizophrenia, significant depression, or a sleeping condition), and other serious or chronic illnesses (such as malignancies and diseases that require long-term treatment). There were also x-rays and blood gas tests recorded in the laboratory for reference. Blood cell counts were also recorded.

Either at the emergency room or in the wards where they were admitted, observations were made. Each participant's baseline demographic and clinical data was gathered, and they were tracked until release or death, whichever came first. Participants' medical records were examined, and caregivers were questioned as necessary. This data was gathered on a variety of factors such as gender and age as well as occupation and family structure. It also included information on past medical history, type of poison, and route of exposure, as well as time elapsed between when the poisoning occurred and when the patient was admitted to the hospital and any events that occurred during that time period. We gathered and analysed information on the types of treatment provided, the length of the hospital stay, mortality, and morbidity outcomes (such as ventilatory support, dialysis, and sequelae). It was determined how common acute poisoning was among all patients admitted to emergency hospitals.

Meta-analysis (quantitative synthesis)

A dichotomous set of data was analysed and provided with a 95% confidence interval, which shows the percentage of participants who had a certain type of poisoning. R was used for the meta-analysis of proportions, specifically the meta and metafor packages. Both the random and fixed effect models' outcomes were computed. There is no difference between the fixed and random effect models in that the random effect model considers both the variance within and between studies. The results of the random effect model are more indicative of the data if the heterogeneity is more than 40%. We utilised the Freeman-Tukey double arcsine transformation to prevent underestimating of the size of the CI around the weighted average percentage and overestimation of the degree of heterogeneity amongst the observed proportions (DAT). Statistical analysis' validity and generalizability will be improved because the data will be closer to a normal distribution.

RESULTS

The hospital poisoning registries recorded 543 cases during the course of the research. We could use the whole data from just 344 of these cases (63.4%). During the study period, 48,619 patients visited the three emergency centres, with poisoning cases making up around 1.1% of those visits. Sixty percent of all poisoning cases involved females, whether they were on purpose or not. Three months to 67 years of age were represented (mean 23.4, SD of 10.75). 55% of the patients were between the ages of 15 and 24. (Fig. 1). About 7% of all cases were paediatric (affecting children ages 0–14).

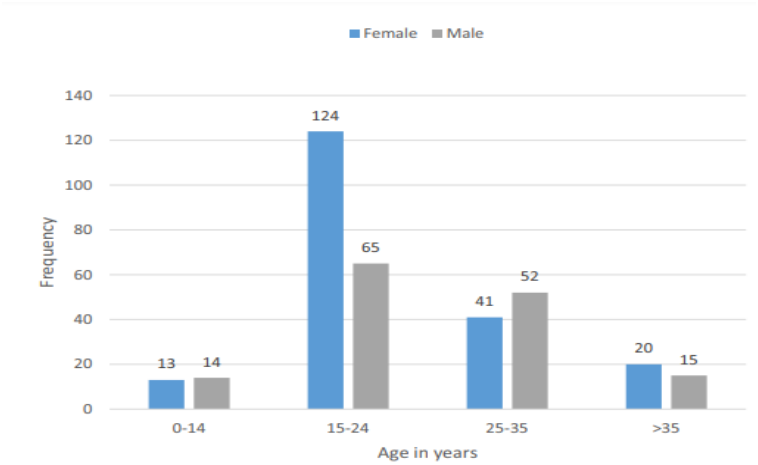

Figure 1. Frequency of poisonings compared with age distribution and sex.

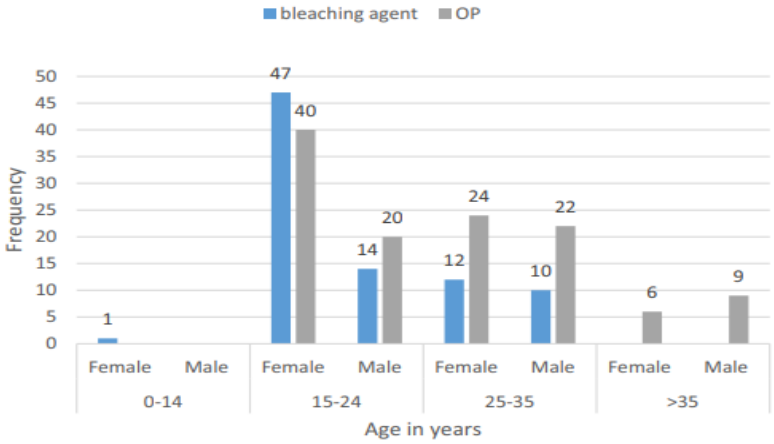

Figure 2. The two most common poisoning agents with their sex and age distribution.

87% (298/344) of instances have evidence of a poisonous agent being the cause. About 35% (121/344) of cases involved pesticides ingested, whereas about 25% (84/344) involved bleach use (Fig. 2).

Characteristics of the poisoning cases

A total of 1512 patients visited the emergency departments of both medical centres between January 1 and December 31, 2020, with poisoning-related complaints, which equates to an average of 4.2 per 1000 ED visits. Around 0.41 poisoning exposures per 1000 people treated in the Tainan area each year were assessed in terms of poisoning incidence.

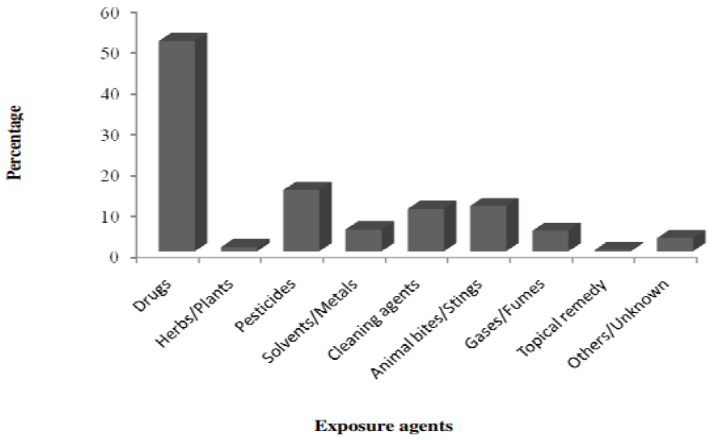

Figure 3. Categories of exposure agent.

98.0% of the poisoning cases entered were acute, with more women (828) than men being the victims (684). The majority of cases (66.8%) involved adults aged 19 to 50, notably those aged 19 to 30 years (29.4 percent). The average person was 38.8 years old (with a standard deviation of 18.8 years) when they were interviewed. Drugs (49.9%) and pesticides (14.5%) accounted for the majority of the 1548 toxic agents identified during the study years (Figure 3). And the Type of poisoning and its related mortality was shown in table 1.

Table 1. Type of poisoning and its related mortality

Type of poisoning	Number of patients	%	Total number of deaths
Snake bite	208	9.3	19
Organophosphorus	383	17.2	37
Overdose	187	8.4	16
Scorpion bite	280	12.5	6
Unknown pill	173	7.7	21
Hair dye	58	2.6	2
Corrosive substance	65	3	11
Endosulphan	143	6.42	29
Rodenticide	71	3.1	16
Kerosene ingestion	48	2.15	6
Unknown bite	112	5.03	7
Alcohol intoxication	134	6	4
House hold item	63	2.83	3
Nail polish	31	1.33	0
Multitablets	270	12.1	9

CONCLUSION

Despite the fact that it was conducted from the perspective of a hospital, our research has provided an extensive prospective profile of poisoning in India. The survival rate was lower in men and in primary care settings with longer times between an occurrence and therapy. When it comes to poisoning, rapid hospital transfer is critical. The study indicates key concerns that planners and policymakers need to pay attention to, such as raising public knowledge about the necessity of prompt hospital transfer for all poisoning cases. While conducting field studies on poisoning is difficult in light of these hospital-based findings, some issues that have not been addressed will be clarified, such as the underlying causes that lead to poisonings, the reasons for the delay in seeking treatment, and the extent of ignorance regarding pesticide safety.

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