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Prevalence of Ingestion Poisoning in Patients Who are Admitted in Rims Hospital

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Abstract

Background: Poisoning is a major problem in children all over the world. However, the offending agent and the associated Morbidity and mortality vary from place to place and change over a period of time. Historically toxicology has been defined as the "basis of therapeutic and experimental medicine".

Materials and methods: The present study deals with precipitating factors for ingesting poisons and other phenomenon associated with patients to support the development of more efficacious preventive strategies. The objective of this study is to characterize the epidemiology, type of substance and precipitating factors for the Intentional poisoning (Self-poisoning). This study was conducted based on prospective and observational study carried out for a period of 6 months. Result: In our study rural area people mostly effected with poisoning, The order of the cases reported to the hospital were pesticides, house hold agent, medication, plant toxins, cosmetics, unknown substances. Incidences due to house hold agents were significantly higher 46.6% in young adult females. Poisoning incidences were higher in the age group 21-30 years 42.69% compared to other age groups.

Discussion: Out of 300 poisoning cases 96 intentional (self-poisoning) patients in that our study shows most of the female patients were affected with house hold poisoning (46.6%) where same as the other studies indicates young age group patients were affected.

Conclusion: Higher awareness is required to prevent poisoning among the population. Motivational counselling to the patients to avoid suicidal poisoning.

Keywords: Poisoning; Pesticides; Lethal dose; Toxicology; Agriculture poisoning; Household agents; Plant toxins

Introduction

Paracelsus over 400 years ago stated "All substances are poisons; there is no such thing as a non-poison". The right dose differentiates a poison and a remedy. The safety of a chemical is defined as therapeutic index ratio which is LD50/ED50 [1].

Poisoning is a major problem in children all over the world. However, the offending agent and the associated Morbidity and mortality vary from place to place and change over a period of time [2].

Historically toxicology has been defined as the "basis of therapeutic and experimental medicine". In recent field (since 1975) toxicology is defined as the application of discipline to the safety evolution and risk assessment [3]. According to British toxicologist Alfred Swain Taylor, defined poison as large dose of medicine act as poison as well as small dose of poison acts as medicine [4]. Toxicology can also be defined as the study of adverse effects [according to WHO adverse effect is defined as "a response to a drug which is noxious and unintended, which occurs at doses normally used in men for the prophylaxis, diagnosis (or) therapy of disease (or) for the modification of physiological function] of chemicals on living organisms (or) the branch of medicine that deals with the diagnosis and management of poisons [5].

Poison is a substance that is injurious or harm to our body (it causes damage to structure of the cell or disturbance in the function of cell), produce symptoms of illness or death or that either taken internally or applied externally [6,7]. In context of biology, poisons are substances that cause disturbances to organisms, usually by chemical reaction or other reaction or other activity on the molecular scale, when a sufficient quantity is absorbed by organisms. The fields of medicine and zoology often distinguish is a poison from a toxin, and form venom. Toxins are poisons produced by some biological function in nature; venoms are usually defined as toxins that are injected by a bite (or) sting to cause their effect, while other poisons are generally defined as substances absorbed through epithelial linings such as the skin or gut [8]. Poison is most applied in industry, agriculture and other uses for other reasons than their toxicity.

Poisoning is a one of the frequent cause of admission to Emergency Departments (ED) and often requires treatment in the Intensive Care Unit (ICU) around the globe in all age groups [9,10]. In past decades many reports have been shown that mortality rate is due to self-poisoning [11]. Studies have revealed that pesticides are the commonly used poisoning agents for intentional poisoning in India. As agriculture is major profession in the rural part of India farmers stock the pesticides to eradicate the weeds and pests. Due to easy availability

of the pesticides, they are commonly used by the individuals to end their life in stressful situations [12].

Srikakulam is a South Indian district where agriculture is the Major occupation in Rural Srikakulam. Rims Medical College Hospital is a 700 Bed tertiary care, Multi-Speciality Teaching Hospital Catering to the health requirements of Urban and Rural population. Many rural patients get admitted to emergency department of RIMS Medical College hospital due to poisoning.

The Aim and Objective of the present study the precipitating factors associated with this phenomenon should be studied to support the development of more efficacious preventive strategies and to analyse the objective of this study is to characterize the epidemiology, type of substance and precipitating factors for the Intentional poisoning (Self poisoning).

Epidemiology

Poisoning is the 4th most common cause for mortality in India [13,14]. Worldwide various agents such as agrochemicals, drugs or environmental agents are used as poisoning agents. Worldwide intentional poisoning is one of the important causes for mortality and morbidity [15,16]. World Health Organization (WHO) estimated 0.3 million people die every year due to various poisoning agents. Acute pesticide poisoning is one of the most common causes of intentional deaths worldwide [17]. Majorly Agriculture pesticides are used in Asian region for self-poisoning particularly in rural areas with a fatality range of 10-20%.From the last 5 years study period the poisoning agents used for self-poising Organophosphates (7.95%), parquet (6.6%), Rodenticides (3.0%), Unknown substances (4.8%), alcohol and household agent (4.0%) [18]. Majority of pesticide exposure is seen more in middle and low income countries due to increased use of agrochemicals in agricultural sector.

Manner of poisoning

There are three Manner of poisoning.

Suicidal poisoning

Suicide from Latin suicidum "The act of intentionally causing one's death", attempted suicide (or) non-fatal suicide behavior is self-injury with the desire to end one's life that does not result in death. The most commonly used method of suicide varies between countries and is partly related to the availability of effective means. Common methods of suicide include hanging, pesticide poisoning and Firearms. Approximately 0.5-0.4% of people dies by suicide, roughly 12 per 1, 00,000 individuals per year, The precipitating factors in suicidal poisoning due to mental illness, intimate partner, Marital disturbances, stress, Medical illness, Mood disorders, economic status [19,20].

Accidental/Unintentional poisoning

Unintentional poisoning/poison exposures can be defined as ingestion, inhalation, absorption (or) contact with a substance that produces a toxic effect (or) bodily harm. Approximately 0.5%-2% of people die by, roughly 15 per 1,00,000 individuals per year millions of people.

The most common unintentional poisoning for children were ingestion of household products such as cosmetics and personal care products, cleaning substances, pain relievers, foreign bodies. For adults were pain relievers, sedatives, Cleaning substances, antidepressants and bits/strings [21,22].

Homicidal poisoning

Homicide is the act of one human killing another. A homicide requires only a volitional act by another person that results from accidental, reckless, or negligent acts even if there is no intent to cause harm. Homicides can be divided into many overlapping Legal categories, including murder, manslaughter, justifiable homicide, killing in war. These are different types of homicide are often treated very differently in human societies, some are considered crimes, while others are permitted or even ordered by the legal system [23,24].

Precipitating factors

The precipitating factors that effecting poisoning includes mental illness, drug misuse, psychological states, cultural, family and social-economic problems etc. Socio-economic problems such as unemployment, poverty, homelessness and discrimination. Mental illness half of the people who die by suicide are about may have depressive disorder, bipolar disorders. Other conditions implicated include schizophrenia, personality disorders, obsessive disorder, and post-traumatic stress disorder [25]. Substance misuse is the second most common risk factors for poisoning after depression and bipolar disorder. This is also associated with mental health disorders. Use of prescribed benzodiazepines is associated with an increased rate attempted and completed suicides and also analgesics, alcohol. Psychological states increase the risk of suicide including hopelessness, loss of pleasure in life, depression, and anxious [26].

Majorly adults were effected with poisoning due to precipitating are physical and psychological changes, socio economic status, cultural influence, occupation, family stress, love failure, agriculture based economics, poverty, unsafe practices, depression [27]. Childhood poisoning is due to improper storage of agents, illiterate parents, psychological factors, family problems, behavioral abnormalities in children [28]. Exposure to agrochemicals, medicines and environmental agents are the major causes of poisoning. Distress due to loss in the business, failure in romance or differences with the intimate partner, or examination, emotional disturbances and chronic diseases are the common reasons for intentional poisoning.

Materials and Methods

The studies will be conducted depending on applied research to improve pharmacy practice for counselling the patient. The data will be collected depending on cohort study, based on patient questioners like occupation, ingestion of poison, economical status; family structure etc.

Study location

This study will be carried out in RIMS Hospital, Srikakulam.

Study approval

EC Registration No: ECR/492/Inst/AP/2013.

Study design

This study will be conducted based on prospective and observational study, these study samples were randomized by the study

quaternaries. We document the data from the patient questioners like occupation; workplace; types of food ; ingestion of poison ;any laboratory test; manner of poison and also include precipitating factors like patients behaviour ;economic status; toxic exposures improper storage of chemicals.

Study duration

The study was planned to be carried out for a period of 6 months from date 1st September 2018 to 1st February 2019.

Inclusion criteria

This study includes

- Age groups and gender of the patient.
- Analyse the type of poisoning ingestion by patient
- Analyse the precipitating factors for poisoning

Exclusion criteria

Excludes criteria includes:

- Animal bites and insect bites
- Neonates, infants.
- Those who doesn't sign in consent form
- Those who are not cooperative.

Study setting

In this study we are collected data from the primary source means emergency ward admitted poison ingested cases in Rajiv Gandhi Institute of Medical Science and Hospital, Srikakulam.

Source of data

The data will be collected from the primary source like patient case profile form which is diagnosed by the physician, from that case poison history was gathered Interviewing patient by the using study questioners.

Study procedure

After getting ethical committee approval, we are conducted ward rounds. Approaching to patient/patient representative and collecting the data from them in patient consent form. After conducting ward rounds, we will collect and review the cases present in the ICU and General medicine with history of exposure to poising. (Self-poisoning) and it those were not sufficient we will also collect from the case data from the medical record department. We will also collect Informed consent from eligible patients/Patients' representatives if the MLC cases is from MRD. We will also approach. the patient with the help Contact details provided by the patient. Cases with only inform consent were added to this project, then the study design will be explained to the patient in common language before collecting poison history from the patient. After understanding by the patient, poison related history, occupational history, family structure information is collected and based on this information the most common gender that is affected with ingestion of poison is ruled out and then documented. In this study we are using data collecting annexures like patient consent form, standard questionnaires form. Based on this study requirement we can include or exclude the annexure.

Data collection

After conducting ward rounds in General Medicine and ICU, case report forms of poison effected patients are collected and reviewed. Then the study design will be explained to the patient in common language before collecting poison history from the patient. After understanding by the patient, poison related history, occupational history, family structure information is collected and based on this information the most common gender that is affected with ingestion of poison is ruled out and then documented. In This study data collecting annexure like patient profile form, patient consent form.

Study Questionnaire's

- What are the demographic details of the patient?
- To which Community do you belong Urban or Rural?
- Which type of poison do you consumed?
- What is your Occupation?
- a)Manual labour b) House wife c) Agriculture d) Employee (business/self-employee) e) Unemployed f) Student g) Others
- What is your marital status: Married or Unmarried?
- Are you Educated or not?
- What is your Family type?
- What is the Reason for poison intake?

Results

During the study period, 300 poisoning cases were reviewed prospectively. Among them, 96 intentional (self–poisoning) poisoning cases where we classified it based on the Age, Gender, Types of poison and Precipitating Factors, the results of which were thoroughly analyzed and reported in (Table 1 and Figures 1-3).

Age Groups	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
Nov-20	6	14.60%	10	21.70%	16	17.97%
21-30	17	41.40%	21	46.60%	38	42.69%
31-40	8	19.50%	17	15.50%	25	21.85%
41-50	5	19.50%	4	8.88%	9	10.11%
51-60	3	12.10%	2	4.54%	5	5.61%
61-70	2	7.31%	1	2.65%	3	3.37%
71-80	0	0	0	0	0	0

Table 1: Incidences of intentional poisoning cases as per age and gender.

Based on demographic details of the participants involved in the study were categorized on Gender and Age criteria, Majority of the poisoning incidences were seen in age group between 21-30 years. Among them young adult females are 55 (42.69%) predominated over young adult males are 41 (41.4%). It was also observed that the incidence of poisoning was indirectly proportional to age. In this study incidence rate were 103 cases per 6 months in total population these data shown in (Figure 1).

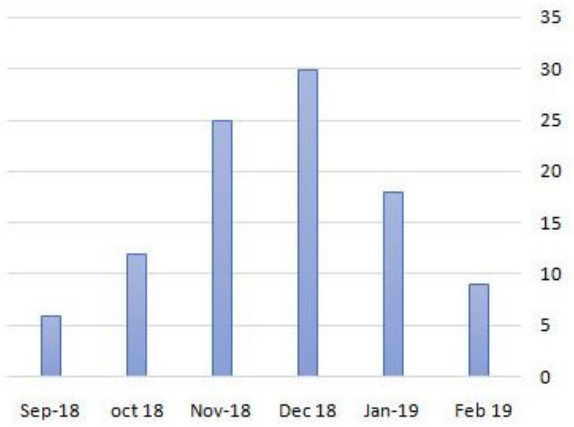

Figure 1: The details of cases during 6 months of prospective study were reported.

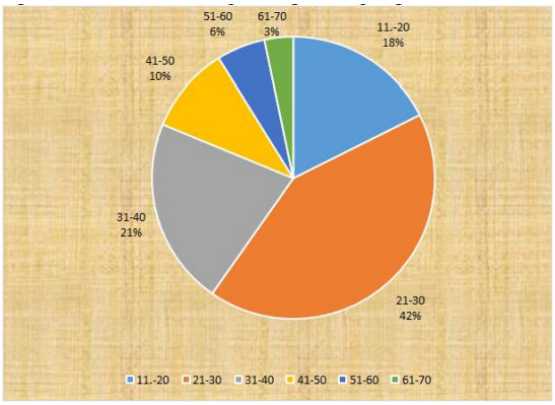

Figure 2: Incidences of international poisoning cases as per age.

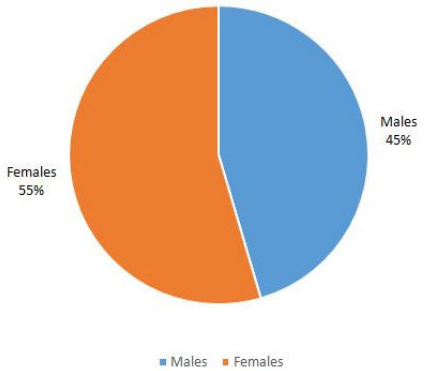

Figure 3: Incidences of international poisoning cases as per gender age.

Most Common agents responsible for poisoning were household agents followed by medicines, pesticides, unknown substances, Heavy metals, plant toxins, Cosmetics. Intentional poisoning cases were seen more due to house hold products, followed by pesticides and medicines. Out of 90 total cases reported with poisoning were due to House hold products (45.6%) related poisoning was observed most commonly used agents were hydrocarbons followed be phenyl (6.5%), supervasmol-33 (17.76%), Gammaxene (12.80%), Harpic poisoning (2.5%), Lysol poisoning (2.5%), Lice poisoning (2.0%), acetone (2.0%) were the agents used for intentional poisoning. Out of Household agents were due to supervasmol-33.Next Major identified was due to pesticides (27.70%). Among the pesticides (27.70%), followed organophosphates (17.5%) Insecticide (6.0%), herbicide (4.5%) for intentional poisoning. reported in (Table 2 and Figure 4).

Type of poisoning	Total	
	No	%
Household agents	39	45.30%
Pesticides	25	27.70%
Medications	13	14.11%
Plant toxins	3	3.37%
Unknown substances	9	10.11%
Cosmetics	1	1.10%

Table 2: Agents commonly used for poisoning.

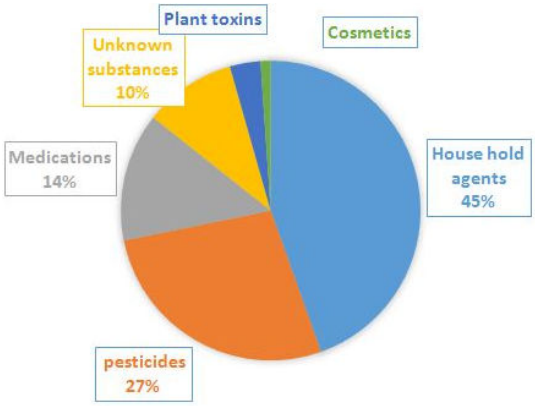

Figure 4: Agents used for poisoning.

Out of 96 total cases reported with poisoning were medicines (14.1%) Benzodiazepines followed by analgesics (0.56%), anti-depressants (1.55%) were the commonly used medications for poisoning. Multiple drug poisoning was observed in cases Medicines like alcohol (1.1%), iron (3.5%), and folic acid (1.5%) and anti-thyroid tablets (0.1%), Diclofenac (2%), Antibiotics (1.9%) were used rarely for intentional poisoning. Along with these agent's plant toxins (3.37%), Unknown Substances (10.11%), cosmetics (1.1%), results reported in (Table 2 and Figure 4). Various studies have projected the raise of incidence of intentional poisoning cases. During the study period a total of 300 cases were collected with an average of 20-30 cases per month. The possible precipitating for increased poisoning in these marital disturbances, Stress, Depression, Anxiety, socio-economic status, The precipitating factors in this study seen in (Table 3 and Figure 5), Out of 90 cases only 72 Patient was accepted given the

precipitating factors. In that cases the major precipitating factor for poisoning were Psychological factors due to depression, anxiety, Mental illness reported. Next major identified due to marital disturbances due extra-marital affairs, arguments with wife, daughter-in-law, Father. Other precipitating factors were socio-economic status, Family Stress, Educational stress due to exam fear, love failure. The precipitating factors were reported in (Table 3 and Figure 5). Among them precipitating factors responsible for poisoning were Psychological factors (38.8%), Marital disturbances (20.83%), Socio-economic status (13.8%), Family stress (8.33%), Educational (8.33%), Love failure (2.77%).

Precipitating factors	No	%
Marital disturbances	15	20.83%
Psychological factors	28	38.80%
Socio-economic status	10	13.80%
Family stress	6	8.33%
Education	6	8.33%
Love failure	2	2.77%

Table 3: Precipitating factors for poisoning.

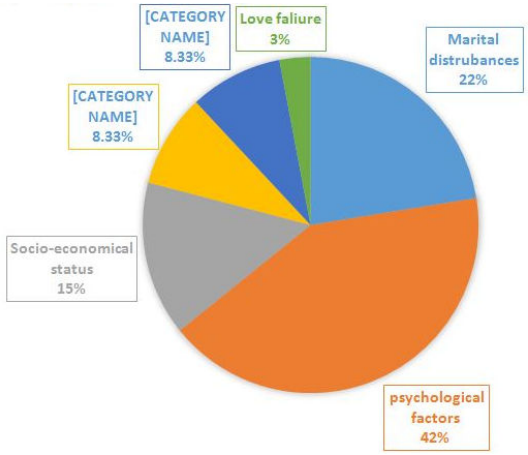

Figure 5: Precipitating factors for poisoning.

Discussion

Various National and International have projected the rise of incidence of intentional self-poisoning cases. During this study period a total of 300 cases were collected among them 96 cases are self-poisoning cases. The result of study report that the incidence of poisoning was more in adults than in children. Intentional poisoning was seen more in adult male groups because they are more often exposed to the stress and strain in their profession in work places and in day to day life but in our study reported that intentional poisoning was more seen in adult group because they are more often exposed to depression and family stress. Most of the poisoning was seen in adult females' age group i.e. 21-30 years. The possible reason for increasing poisoning age groups may be because of problems in family studies, life settlement and employment which make themselves stressed and this makes them to attempt suicide [29,30]. In adult age, majority poisoning cases were seen in Females than in Males due to stress factors like family arguments, love failures, failure in studies and mental conflicts [31]. Several studies have been reported that pesticides were more commonly used agents for poisoning in Asia pacific regions in our study reported that household agents often contributed that for the maximum poisoning cases followed by medicines (14.7%) and pesticides (27.4%). House-hold products induced poisoning was seen more in females. Most commonly used agents are hydrocarbons, phenyl, supervasmol-33, bleaching powder, Rat poisoning, lice poisoning and corrosive agents [32]. Incidence of international/self-poisoning is rising day by day due to social, emotional and professional stress. Most commonly used agents for international poisoning are household agents or pesticides, medicine by the people [33]. The findings of the study conclude that intentional poisoning was more often in female adults then male adult groups. Mostly people living in rural area were affected with poisoning when compared to people living in urban area. Self-poisoning can be reduced by conducting educational programs in rural areas and providing counselling services and poison information services to the needy people [34].

Conclusion

In conclusion, the district Hospital which caters the Healthcare needs, Majorly of the population in a wide geographical area, the number of reported cases of poisoning was fairly low for a period of 6 months. In our study rural area people mostly effected with poisoning. The order of the cases reported to the hospital was pesticides, household agent, medication, plant toxins, cosmetics, unknown substances. Incidences due to household agents were significantly higher in young adult Females. Poisoning incidences were high in the age group 21-30 years compared to other age groups. Higher awareness is required to prevent poisoning among the population.

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