Pattern of Poisoning Cases and Poisoning Deaths A Retrospective Studiy Conducted at Raichur Institute of Medical Sciences, Raichur

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Abstract

The present study is a retrospective study conducted in Raichur institute of Medical sciences, Raichur Karnataka. During the study period that is from January 2017 to March 2017, out of 547 medico-legal cases which came to casualty, 164 cases were poisoning. Among 164 poisoning cases, 13 cases died in hospital and postmortem examination is done in mortuary RIMS Raichur hospital. The most common type of poisoning case in and around the Raichur district was organo-phosphorus poisoning (58.53%) followed by kerosene poisoning (13.41%). Males (55.48%) were the more common victims of the poisoning. Age group between 11-20 years (32.92%) was most commonly affected. Majority of poisoning cases was suicidal (84.14%) in manner. In 26.56% the motive for suicidal poisoning was financial crisis leading to depression and consumption of poisonous substance.

Key Words: *Poisoning, Demographic profile, Manner of death*

Introduction

Poison is any substance which if introduced in the living body by any route could cause ill health or death. Poisoning both accidental and intentional is a significant contributor to morbidity and mortality throughout the world.[1] According to WHO data in 2012, an estimated 1,93,460 people died worldwide from unintentional poisoning. Of these deaths, 84% occurred in low- and middle-income countries.[2]

Poisoning forms a major problem in developing countries like India too, though the type of poison and the associated morbidity and mortality varies from one place to another and it may change over a period of time owing to availability and access of poison socio-economic status cultural and religious influences, life style, urbanisation, agricultural growth, industrialisation, geographical factors. The exact incidence of poisoning in India remains uncertain, but 1 to 1.5 million cases occurs every year, of which almost one third are fatal. It has been estimated that in India five to six persons per lakh of population die due to acute poisoning every year. Poisoning is the fourth most common cause of mortality in rural India.[3] The mortality rate due to poisoning in developed counties is only 1%-2% but in developing countries like India, it varies in between 15% -30%.[4]

Suicides by poisoning are increasing in the recent past in an exponential manner. Adaptation of modern life style and effects of globalization and urbanization might be the reason. Wide spread use of chemicals in the form of pesticides and herbicides in agricultural field, unrestricted use of wide variety of chemicals in industries and extended use chemicals for household work also reason for increased incidence of accidental poisoning.

Materials and Method

This is a retrospective cross sectional descriptive study of poisoning cases admitted in Raichur institute of medical sciences, Raichur. The study period is from

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January 2017 to March 2017. During the study period we gathered data from poisoning cases, which were admitted, treated and discharged from the hospital as well as from postmortem examination report where death occurred due to poisoning case. The required information was collected from outpatient department card, inpatient department sheet, police inquest report, postmortem examination report, RFSL report. The data collected in performa was later statistically analyzed with respect to age, sex, rural / urban, type of poison and manner of poisoning, expressed in number of cases and percentage. Snake bite and scorpion bite cases were excluded from the study group. Ethical clearance was taken from institutional ethical committee.

Observation and Results

During three months of study period i.e January 2017 to March 2017, we noticed that a total of 547 medico-legal cases were admitted in our RIMS Raichur tertiary care hospital, wherein 164 cases (29.98%) belong to poisoning cases. Among 164 poisoning cases, 13 cases (7.92%) died in hospital and postmortem examination is done in mortuary RIMS Raichur hospital.

TABLE NO.1: TYPES OF POISONING CASES

TYPE OF POISONING	NUMBERS	PERCENTAGE
Organo-Phosphorus compound	96	58.53
Kerosene	22	13.41
Unknown compound	14	8.53
Alprazolam	7	4.26
Aluminum/Zinc Phosphide	7	4.26
Vegetable oil+Alcohol	4	2.43
Turpentine oil	4	2.43
Paracetamol tablets	2	1.21
Permethrin	2	1.21
Formalin	1	0.6
Phenobarbitone	1	0.6
Datura	1	0.6
Phenol	1	0.6
Salbutamol tablets	1	0.6
Iron tablets	1	0.6
TOTAL	164 CASES	100

In our study period we observed wide variety of poisoning cases as shown in the table no.1. The most common type of poisoning case in and around the Raichur district was organo-phosphorus poisoning (58.53%) followed by kerosene poisoning (13.41%), unknown compound consumption poisoning (8.53%), Alprazolam and Aluminum/Zinc Phosphide poisoning cases (4.26% each).

TABLE NO.2: AGE WISE DISTRIBUTION OF POISONING CASES

AGE	NUMBERS	PERCENTAGE
Up to 10 years	16	9.75
11-20 years	54	32.92
21-30 years	48	29.26
31-40 years	28	17.07
41-50 years	10	6.09
51-60 years	5	3.04
More than 61 years	3	1.82
TOTAL	164	100

In our study, age group between 11-20 years (32.92%) were common sufferer of poisoning, followed by age group 21-30 years (29.26%), 31-40 years (17.07%), children age less than 10 years (9.75%).

In our study, we observed that, people from rural background (76.22%) were more troubled by poisoning cases compared to urban people with 23.78% cases of poisoning and married (53.05%) persons were more affected than unmarried (46.95%) persons.

In our study, males (55.48%) were the more common victims of the poisoning cases and females accounted for 44.52% of cases and suicidal manner was common (84.14%) followed by accidental (15.86%) poisoning cases. There were no homicidal poisoning cases.

TABLE NO.3: REASON FOR SUICIDAL POISONING

MOTIVE/REASON	NUMBERS	PERCENTAGE
Financial Crisis	34	26.56
Psychiatric illness	29	22.91
Chronic ill health	23	18.17
Chronic-alcoholism	19	15.01
Family problems	7	5.53
Failed in exams	6	4.74
Love failure	5	3.95
Pre-menstrual syndrome	3	2.37
TOTAL	126	100

In our study, we noted that, in 34 cases (26.56%) the reason for suicidal poisoning was financial crisis leading to depression and consumption of poisonous substance. We also observed that farmers were the major group of people who faced major hurdle of financial crisis. In 29 cases (22.91%) chronic psychiatric illness was the reason behind the poisoning. In 23 cases (18.17%) a chronic ill health which neither improving nor the person able to bear the expenses of the treatment was reason. In 19 cases (15.01%), chronic alcoholism leading to various hampered interpersonal relationship, financial burden on family, frequent quarrels leading to depression was

the issue. In 7 cases (5.53%), interpersonal problems among the family members with respect to dowry, land, expenses, habits etc lead to arguments and conflicts was the reason. In most of these cases females were the victims. In 6 cases (4.74%), students who were not doing well in school or failed in annual exams took a self destructive extreme step. In 3 cases (2.37%), mentally disturbed pre-menstrual syndrome sufferer took an extreme step of poisoning themselves.

TABLE NO.4: LEVEL OF EDUCATION

Education	Numbers	Percentage
Child less than 6 years	14	8.53
1st -5th class	2	1.21
6th-10th class	17	10.36
PUC	19	11.58
Degree	17	10.36
Master Degree	3	1.83
Uneducated	92	56.1
Total	164	100

In our study, 92 cases of poisoning were seen in uneducated (56.1%) peoples. In 19 cases (11.58%) the level of education was PUC followed by 17 cases (10.36%) in degree and 6^{th}-10^{th} class level education. In 14 cases (8.53%) child was less than 6 years of age and all were accidental in manner.

Discussion

Among the medico-legal cases admitted in our hospital, 29.98% cases belong to poisoning cases which was far higher than study done by Guntheti BK et al (11.65%)[4] and Mugadlimath A et al (6.67%).[5] Contrary to above observations, study conducted by Panda BB et al observed that, 40% of all medico-legal cases admitted in their hospital were poisoning cases.[6]

Table No.1

Study done by Shetty VB et al observed that Organophosphorus compound poisoning (73.14%) followed by diazepam poisoning (9.4%).[7] Study done by Pate RS et al noticed that highest cases (47.48%) were of insecticides poisoning followed by rodenticide (15.41%) and ethyl alcohol (25 cases).[8] In study conducted by Mugadlimath A et al observed that, most common type of poisoning was due to organo-phosphorus insecticides (51.63%) followed by alcohol poisoning cases (10.31%).[5] Study conducted by Panda BB et al observed that, most common poisoning was insecticidal poisoning (26.92%) followed by alcohol (11.53%), rat poisoning cases (11.53%) and sedatives (11.53%).[6] Study done by Guntheti BK et al observed that, organophosphorus compound poisoning (74%) is most common followed by zinc phosphide poisoning (5.8%), benzodiazepines (3.18%) and medicinal drugs (3.18%) were equally abused.[4]

In all the studies including ours, most common type of poisoning is insecticides/organophosphorus and next common poisoning varied from place to place. In our region second most common type of poisoning was kerosene poisoning (13.41%) whereas it was between 2-3% in other studies.

Study conducted by Mugadlimath A et al observed that, during the study period 21 (5.55%) of the patients had mortality due to poisoning.[5] Study conducted by Ali I et al observed that, 83.91% poisoning cases improved while 16.09% expired. Mortality was higher with use of aluminium phosphide poisoning (57.38%) and organophosphate consumption (9.84%).[9] Study done by

Guntheti BK et al observed that, 17.33% deaths were due to insecticide, maximum with organo-phosphorus compounds (82.75%) followed by zinc Phosphide (13.79%), organochlorines (6.89%) and carbamates (6.89%).[4]

In our study, males (55.48%) were the more common victims of the poisoning cases and females accounted for 44.52% of cases. Male to female ratio was 1.2:1, the same observation was made by various authors.[4,5,6,7,9]

A high incidence of poisoning among men may be attributed to high degree of stress in academic, love affairs, financial crisis and emotional disturbances, inability to achieve targets and also due to easy accessibility to poisons. However, some studies show that incidence of poisoning was more in women than men.[10,11,12]

In our study, age group between 11-20 years (32.92%) were common sufferer of poisoning, followed by age group 21-30 years (29.26%), 31-40 years (17.07%), children age less than 10 years (9.75%). Contrary to our observation, majority of studies observed that age group 21-30 years were the major victims.[4,5,6,7,9]

In our study majority of cases (32.92%) were from age group 11-20 years. This can be explained by the fact that the persons of this age suffer from stress of the modern lifestyles, failure in love, failure in education, impulsive behaviour. Second most common age group 21-30 years (29.26%) the reason may be unemployment, marital problems, failure in love, family problems etc. Few studies showed the same results.[5,9,10,11] Among children the commonest culprits include kerosene, household chemicals, drugs, pesticides and garden plants.[13,14]

In our study, we observed that, people from rural background (76.22%) were more troubled by poisoning cases compared to urban people with 23.78% cases of poisoning. The same observations were made by various authors with varying percentage of rural background from 75% to 85%.[4,5,7,9]

More prevalence of poisoning cases in rural area in our study may be due to widespread use of pesticide in agriculture sector. Poverty, failure of crops, family problems and easy availability of the poison in their household, made people of rural area more prone for poisoning. However, some studies from state of Karnataka, the incidence was more in those who were from urban background.[15,16,17]

In our study, married (53.05%) persons were more affected than unmarried (46.95%) persons. Similar observations were made by Ali I et al[9], Guntheti BK et al[4], Mugadlimath A et al[5]. Contrary to above studies, in Panda BB et al study most of the victims found were unmarried (53.86%).[6]

Ali I et al observed that, 68.34% were suicidal in nature and in 31.66% cases poison was consumed accidentally.[9] Study conducted by Panda BB et al observed that, Suicide was the most common manner of poisoning (65.39%), followed by accidental pattern (34.61%).[6] Study done by Shetty VB[7] et al observed that, commonest manner of poisoning was suicide (78%) followed by accidental poisoning accounting for 22.67%. Acute poisoning in children is almost entirely accidental; while in adults it is mainly suicidal.[1] Not a single case of homicidal poisoning was observed in any of the above studies.

Table No.3

Similar observation was made by Subhash Chandra Joshi et al study, where financial crisis was the reason for suicidal poisoning in 53.22% cases. [18]

Contrary to our observation, Ali I et al observed that, marital discord (33.20%), love affairs (4.25%), family problems like problems/altercations with family members other than spouse (46.33%), financial difficulties (1.16%), addiction/friend dispute/depression (5.79%) and unknown (9.27%) were the various reasons for consuming poison.[9]

Table No.4

Ali I et al observed that, one third of the patients (33.77%) were illiterate. Educational status of 36.68% patients was up to high school, 13.72% intermediate and rest 15.83% were graduates/postgraduates.[9]

Contrary to our observation study done by Guntheti BK et al observed that, most of the victims was either literate (71.91%) or educated up to high school level and 28.08% illiterate.[4] Authors like Guptha BD[19] et al, Eddleston M[20] et al and Joshi SC[21] et al also observed in their studies that poisoning was more common in literate people.

Conclusion

A complete and accurate knowledge about the nature and depth of the problem in a particular area is essential for early diagnosis and treatment which in turn help in making new policy by government for prevention of poisoning cases because nature, profile and burden of poisoning varies significantly in the different parts of India.

We suggest the policy making bodies should regulate the import, manufacture, sale, transport, distribution and use of insecticides and pesticides meticulously. Upgrading the peripheral health centres to manage cases of poisoning in emergency including training of staff to give first aid treatment of poisoning including timely intubation and respiratory support on AMBU bag and make sure the availability of antidote in sufficient quantity. Further we need to establish a poison information centre in this region and manage a Clinical Toxicology Unit for the better management and prevention of poisoning cases. Simultaneously increase the public awareness about the seriousness of problem through health education. Proper and correct implementation of various social and economic projects aimed for upliftment of the rural poor population will definitely decreases the burden indirectly.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Instititutional Ethical Clearance Taken

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