



<https://ijrps.com>

ISSN: 0975-7538

Research Article

## Prospective clinico-epidemiological study of poison cases in a teaching hospital

Mahesh Achari <sup>K1</sup>, Mohamed Saleem TS\*<sup>1</sup>, Gopinath C<sup>2</sup>, Madhan Mohan Rao M<sup>3</sup>

<sup>1,2</sup>Annamacharya College of Pharmacy, Rajampet-516126, Andhra Pradesh, India

<sup>3</sup>Rajiv Gandhi Institute of Medical Sciences, Kadapa, Andhra Pradesh, India

### ABSTRACT

Poisoning is one of the leading causes of morbidity and mortality in INDIA and also a major public health problem of worldwide. A thorough review of the risk factors helps to decrease the incidence and mortality. The study evaluates the cases admitted in R.I.M.S Hospital, KADAPA, Various parameters like age, sex, marital status, time of ingestion, agent responsible for incidence; type of poisoning, psychosocial problem, outcome and duration of treatment are analyzed. The objectives of this study are to determine the pattern and severity of poisoning cases admitted to R.I.M.S Hospital. A hospital based study was carried out in the patient admitted to R.I.M.S Hospital with the history of poisoning for the period of 6 months between May 2014 to October 2014. Various parameters were analyzed and compared with other study. There were 206 cases during the 6 months duration and maximum case belonged to second and third decade of life. Most common manner of poisoning was suicidal and Unintentional bites incidence was mainly during evening hours super vasmol33, was the most commonly abused substance. Most of the cases had arrived hospital after one hour of exposure and duration of hospital stay in many cases were less than four days. Based on these findings preventive measures like precaution taken at various levels, restriction in free sale of the poisons and promoting Poison Information Centres along with public awareness and proper psychosocial management to decrease the incidence and mortality in poisoning cases can be suggested.

**Keywords:** Epidemiological study; poison; suicide; toxicity.

### INTRODUCTION

The term poison was derived from the Latin word *poisonem* that is a deadly draught. Generally, a person may be defined as a substance which injury health or destroys life, when introduced into the system or applied externally (London and Bailie, 2001; Isbister *et al.*, 2008). Paracelsus, the herald of modern toxicology, supposed that everything is poison and there is nothing without poison. Only the dose makes a pivotal role and not a material. Any substance ingested in large quantities can be toxic (Buckley *et al.*, 2004; Maskey *et al.*, 2012).

Three main factors which reflect the causes, pattern and outcome of poisoning in a particular community are availability of a particular poison, pattern of stress and the standard of intensive care unit (Fedakar and Turkmen, 2008; Isbister *et al.*, 2008).

Life style and social behaviours of the people are getting changes day by day and thereby intentional poi-

soning is increasing across the world (Budhathoki *et al.*, 2009). Distress is the main reason for most of poisoning. The various factors for distress are chronic disease states, business loss, love failure or differences with the intimate partner, examination or emotional disturbances etc. (Glatstein *et al.*, 2010; Sarava *et al.*, 2007).

According to world health organization (WHO), approximately 0.3 million people die annually due to various types of poisoning (Rao *et al.*, 2005; Sharma *et al.*, 2007). Though the exact figure for the global incidence of poisoning is unknown, it may be gambled that up to half a million people die each year as a result of various kinds of poisoning (Roberts *et al.*, 2010).

Studies have reported that number of poisoning cases with organophosphate was 3 million per year and number of deaths was 3 lacks per year throughout the world (Bhattaraj *et al.*, 2006; Paudyal *et al.*, 2008).

It is essential to self-analysis the rate of poison cases admitted in hospital. In this study, the various poisoning cases admitted in emergency department were analyzed.

### Materials and Methods

The study was carried out at department of intensive care unit (ICU), RIMS General hospital, kadapa, A.P for a period of six months. This study was approved by the

\* Corresponding Author

Email: saleemcology@gmail.com

Contact: +91-9701978543

Received on: 22-07-2015

Revised on: 27-07-2015

Accepted on: 29-07-2015

institutional review board of RIMS. This was a prospective observational study. This study conducted in various steps. Step 1: Identifying the type of poisoning; step 2: Design of the study; step 3: Define inclusion and exclusion criteria; step 4: Literature review; step 5: Data collection; step 6: Data collection and interpretation. The data collection form was prepared and data sheet had the details of patient's demographic like name, age and sex, I.P number, date of admission, address, occupation, education, and reason for poisoning and type of poisoning. The obtained data were subjected to descriptive statistical analysis.

## RESULTS

A total of 206 poisoning cases were identified during the study period of six months. The demographic details and chronological details of the collected cases were shown in table 1 and table 2 respectively. Based on age group below 20 years was 19 (9.2%), between 21-40 years was 107 (52%), greater than 41 years was 80 (38.8%) cases are reported. The majority of cases fall in the age group of 21-40 years. According to gender male population (58%) is more than compared to female (42%). Rural people were more 168 (81.5%) when compared with urban 38 (18.5) cases are reported.

According to occupation, the labour was 60 (29%), farmers was 52 (25%), students 24 (12%), house wife's 44 (21%), small scale business 12 (6%), employs 10 (5%), others 4 (2%).

Based on marital status, married cases was 145(70.4%), unmarried 46 (22.4%), widow 15 (7.2%). married persons are more exposed to poisoning than compared with others this because of more stressful situation exposure and weak minds.

The economic status of collected cases showed that low economic status observed in 150 (72.8%), remaining 46 (22.2%) had moderate, 10 (5%) had a high socio-economic status. Low economic group is more vulnerable for poisoning which may be due to they are under continuous financial stress or other stress (e.g.: unable to meet their basic demands) during their life.

The literacy status of the case showed 104 (50.4%) was literates, out of which 47 (23%) had secondary education, 57 (27%) with higher education and illiterates were 102 (49.6%). The literacy status exposes the nearly equal ratio between literates and illiterates.

Based on the category of poisoning, the 145 (70.4%) cases are intentionally (suicide), in which organophosphorus are 43 (20.9%), house hold products 79 (38.3%), medicine 16 (7.8%), miscellaneous 7 (3.4), remaining 61 (29.6%) cases are unintentional (accidental like bites, stings), Most of the victims are feel their problems are more complicated when compared with death. So, that they are decided to intentionally poisoning to harm their self.

Out of 206 cases, 85 (41%) cases are reported in evening time between 6pm-11.59pm, 51 (25%) cases are morning time between 6am-11.59am, 43 (21%) cases are 12pm-5.59pm, and 27 (13%) cases are between 12am-6am. The 45 (22%) cases are arrival to hospital within one hour; remaining 161 (78%) cases are take more than one hour to arrival to hospital due to may be long distance to hospital or insufficient transport facility or time wastage due to first aid treatment. Out of 206 cases, 25 (12%) victims are reported along with alcohol, remaining 181 (88%) are without alcohol.

In this study out of 206 cases, 101 (49%) cases are recovered, 61 (30%) cases are expired, 14 (7%) cases are referred to higher centre, and 30 (14%) cases are left against medical advice.

## OUTCOME

This observational study was carried in RIMS, Kadapa. The total 206 poison cases were observed in the duration of 6 months period. The death and recovered ratio was 1: 1.7 respectively. In 206 cases majority of cases were recovered (101) with the 1-7 days duration of hospital stay and 61 cases are expired due to more time consuming to arrival to hospital. The 14 cases were referred to higher centre and 30 cases were Left against medical advice.

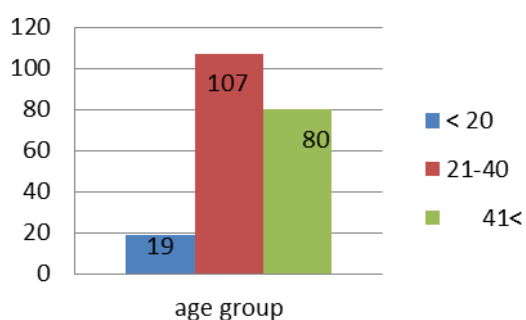
## DISCUSSION

The occurrence of 206 cases of poisoning in a single hospital over a period of six months emphasizes the seriousness of the problem of poisoning in this region. Consuming poison in male gender is more than female population in this study. This opinion is in accordance with other studies who also observed a male predominance (Lall *et al.*, 2003; Kanchan and Menezes, 2008; Al-Barraq and Farat, 2011). This could be due to the reason that men were more often exposed to the strain and stress in day to day life, as well as to the occupational threats than the females. The third decade of a person's life was found to be most attempted number of poisoning in many of the poison studies conducted in India and other countries (Ayoglu *et al.*, 2009; Sam *et al.*, 2009). The study revealed that maximum number of cases was in the age group of 21 -40 years, this could be due to the reasons that this age group peoples are prone to work pressure, love failure, marriage problem, quarrel with family and other life settlement factors.

In the present study the commonest poisoning agent was super vasmol (Hair dye) compound. Married women's are more exposed to this compound than men's. Most of cases were in the age group of 21-40 years due to family problems, health problems and economical problems due to easily availability in the market. Acute intentional poisoning cases are commonly seen among labors, farmers, house wives and students. More cases were reported in evening time and more cases are arrived to hospital take more than one hour due to long

**Table 1: Patient demographic detail**

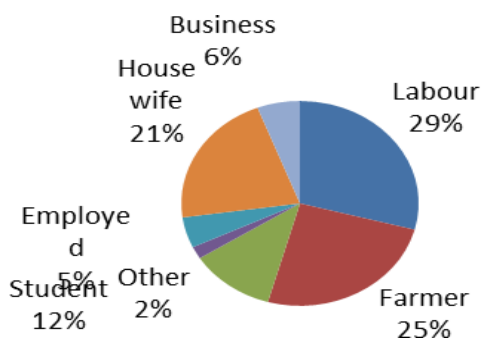
Demographic details	No of patients	Percentage (%)
1 Age group		
Below 20 years	19	9.2%
21-40 years	107	52%
Greater than 41years	80	38.8%
2 Gender		
Males	120	58%
Females	86	42%
3 Occupation		
Labour	60	29%
Farmer	52	25%
House wife's	44	21%
Students	24	12%
Business	12	06%
Employs	10	05%
Others	04	02%
4 Marital status		
Married	145	70.4%
Unmarried	46	22.4%
Widow	15	07.2%
Divorce	00	00.0%
5 Socioeconomic status		
Low Economic	150	72.8%
Moderate	046	22.2%
High	010	05.0%
6 Domicile		
Rural	168	81.5%
Urban	038	18.5%
7 Literacy		
Literates	104	50.4%
Illiterates	102	49.6%



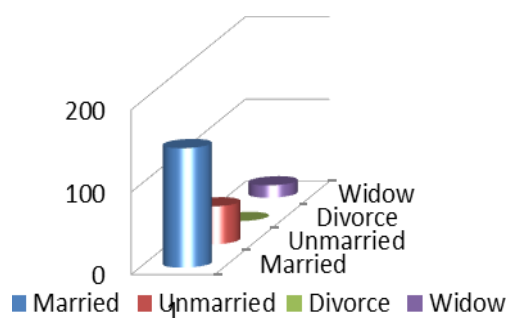
**Figure 1: Percentage distribution of age group**



**Figure 2: Percentage distribution of gender**



**Figure 3: Based on occupation**



**Figure 4: Based on Marital Status**

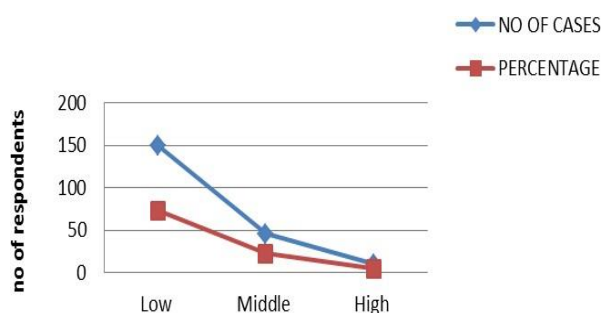


Figure 5: Based on socio- economic status

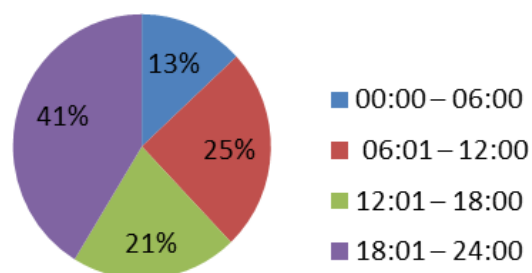


Figure 6: Based on Time of incident

Table 2: Details of distribution of chronological details

1	Time of incidence		
	6pm-11.59pm	85	41%
	6am-11.59am	51	25%
	12pm-5.59pm	43	21ss%
	12am-6am	27	13%
2	Time of hospital arrival		
	Within One Hour	45	22%
	More Than One Hour	161	78%
3	Manner of poisoning		
	Intentionally (Suicide)	145	70.4%
	Unintentional (Accidental)	61	29.6%
4	Consumed with alcohol		
	Along with Alcohol	25	12%
	Without Alcohol	181	88%
5	Type of poison		
	House Hold Products	79	38.3%
	Organophosporous	43	20.9%
	Medicine	16	7.8%
	Miscellaneous	07	3.4%
	Unintentional	61	29.6%

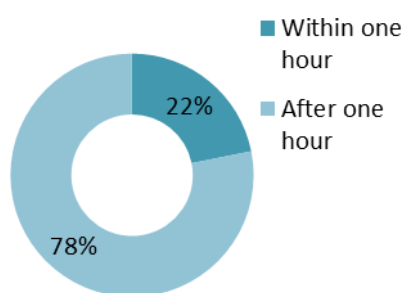


Figure 7: Based on Time of Hospital arrival

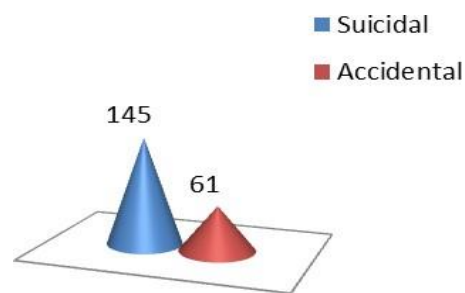


Figure 8: Based on manner

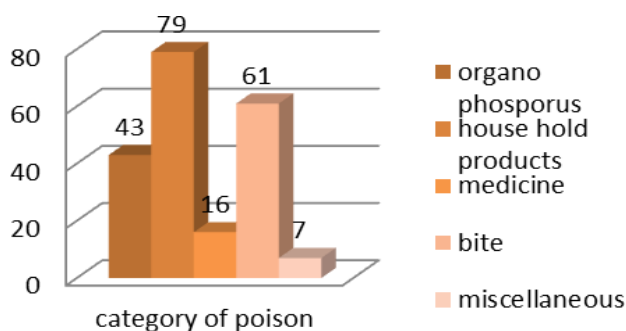


Figure 9: Based on category of poison

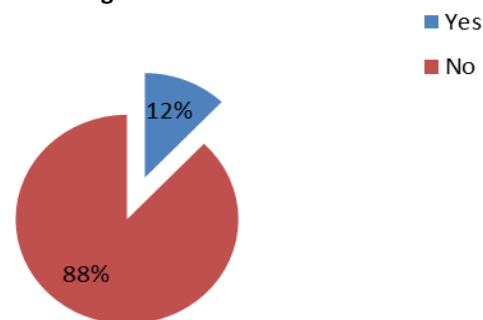


Figure 10: Based on Consumed with alcohol

**Table 3: Males and females details of pesticide of poisoning**

Category of pesticide	Males (29 cases)	females (14 cases)
	No of cases	No of cases
OP poisoning	26	11
Entryne	1	0
Urea	0	2
Unknown pesticide	2	1

**Table 4: Males and females details of house hold products poisoning**

Category of house hold product	Males (35 cases)	Females (44 cases)
	Cases	Cases
Super Vasmol	30	38
kerosene	0	1
phenol	2	0
rat killers	1	2
godrez	2	0
black henna	0	1
nail polish	0	2

**Table 5: Males and females details of medicines**

Category of medicine	Males (9 cases)	Females (7 cases)
	Cases	Cases
Tablet poisoning	7	4
Alprazolam	2	1
Glycide	0	1
Drug colouring agent	0	1

**Table 6: Males and females details of accidental**

Category of bites	Males (38 cases)	Females (23 cases)
	Cases	Cases
Snake bite	13	8
Scorpion bite	19	13
Unknown bite	6	2

distance to reach hospital or insufficient transport facility or time wastage due to first aid treatment. Pesticide compounds are also second leading poisoning agents in this study; Male population is more exposed than compared with females due to majority of victims are labours and farmers they can use pesticides in the field of their occupation.

Among 206 cases, only 61 are unintentional poisoning cases, out of which scorpion bites are more than to snake bites. Males are more exposed to bite cases due to their field work. In this present study rural populations are more exposed, so that they occupy the more chances to accidental bite poisoning than compared with urban population. Unknown bite cases are also reported.

Actually medicines are used to reduce the illness, but nowadays the medicinal compounds are used to suicide. In this study 7.8% cases are reported in which both genders are occupy the nearly equal ratio.

Treatment modalities for any poisoning during the study period were found to be similar. It may preventing the further, increasing the elimination of poison, administering specific substances that eliminate, inac-

tivate or counteract the effects of the poison i.e., antidotes, if available. Providing supportive care for the patient was mainstay of management in the majority of poisoning. The main aim of supportive care is treats the symptoms rather than the poison itself especially when unknown.

Studies have shown that the age of above 21 years, many people were in the intention to kill them-self and few people committed suicide attempt (Bhoopendra and Unnikrishnan, 2006; Howlader *et al.*, 2008). The same results were observed in the present study. Such patients should be given mental support and care which can be done only through counselling for reduce chance of repeat.

## CONCLUSION

Poisoning is common cause of hospital admission either unintentional or intentionally. The most common intentional poisoning agents was house hold products specifically 'super vasmol' and agriculture product of 'organophospharos' in this region due to easily availability in market. The reasons for majority of poisoning cases were family problems, economical problems, love failure and mental stress. In the present study,

most of the victims were, married rural agricultural and labour workers belonging to low socio-economic status and family problems which cannot be treated medically, only the counselling is the better medicine to reduce the intentional poisonings. Housewives belonging to rural areas had higher incident rates of poisoning due to intentionally family problems, poor mental stability, failure to reach their need, health problems and unintentional accidental cases are commonly recorded in evening time in both genders due to they are accidentally exposed to snake and scorpion bites in the field work, near in houses.

To reduce intentional poisoning cases, government should establish the strict rules and policies against the sale and availability of pesticides, household products which are harmful to humans.

Establishing the 24-hour working poison information centre (PIC) in tertiary care hospital may help to identify and management of poison cases in a proper manner. Patient with intentional poisoning must undergo psychiatry consultation during their stay in the hospital which will minimize the risk of next attempt of self-harm.

## REFERENCES

- Abahussain, E.A. and D.E. Ball, 2010. Pharmaceutical and chemical pediatric poisoning in Kuwait: retrospective survey. *Pharm. Pract.*, 8:43-49.
- Al-Barraq, A. and F. Farahat, 2011. Pattern and determinants of poisoning in a teaching hospital in Riyadh, Saudi Arabia. *Saudi Pharma. J.*, 19: 57-63.
- Ayoglu, F.N., H. Ayoglu, Y.M. Kaptan and I.O. Turan, 2009. A retrospective analysis of cases with acute poisoning in Zonguldak, Turkey. *Turk. Anest Der Dergisi*, 37: 240-248.
- Bhattarai, M.D., D.L. Singh, B.S. Chalise and P. Koiraal, 2006. A case report and overview of organophosphate (OP) poisoning. *Kathmandu Univ. Med. J.*, 4: 100-104.
- Bhoopendra, S. and B. Unnikrishnan, 2006. A profile of acute poisoning at Mangalore (South India). *J. Clin. Forensic Med.*, 13: 112-116.
- Buckley, N.A., L. Karaliedde, A. Dawson, N. Senanayake and M. Eddleston, 2004. Where is the evidence for the management of pesticide poisoning—is clinical toxicology fiddling while the developing world burns? *J. Toxicol. Clin. Toxicol.*, 42: 113-116.
- Budhathoki, S., P. Poudel, D. N.K. Bhatta and G.S. Shah *et al.*, 2009. Clinical profile and outcome of children presenting with poisoning or intoxication: A hospital based study. *Nepal Med. Coll. J.* 11: 170-175.
- Fedakar, R. and N. Turkmen, 2008. Fatal poisonings in the South Marmara region of Turkey, 1996-2003. *Eur. J. Gen. Med.*, 5: 1-8.
- Glatstein, M., F. Garcia-Bournissen, D. Scolnik and G. Koren, 2010. Sulfonylurea intoxication at a tertiary care pediatric hospital. *Can. J. Clin. Pharmacol.* 17: e51-e56.
- Harish, D., K.H. Chawali, A. Singh and A. Kumar, 2011. Recent advances in the management of poisoning cases. *J. Indian Acad. Forensic Med.*, 33: 74-79.
- Howlader, M.A.R., M.H. Sardar, M.R. Amin, M.G. Morshed, M.S. Islam, M.Z. Uddin and M.A. Azhar, 2008. Clinico-epidemiological pattern of poisoning in a tertiary level hospital. *J. Dhaka Med. Coll.*, 17: 111-115.
- Inamdar, I.F., N.R. Aswar, M. Ubaidulla and S.D. Delvi, 2010. Snakebite: Admissions at a tertiary health care centre in Maharashtra, India. *South Afr. Med. J.*, 100: 456-458.
- Isbister, G.K., S.G. Brown, E. MacDonald, J. Vilhite and B.J. Currie, 2008. Current use of Australian snake anti-venoms and frequency of immediate-type hypersensitivity reactions and anaphylaxis. *Med. J. Aust.*, 188: 473-476.
- Kanchan, T. and R.G. Menezes, 2008. Suicidal poisoning mortalities in Southern India: gender differences. *J. Forensic, Leg. Med.*, 15: 7-14.
- Lall, S.B., S.S. Al-Wahaibi, M.M. Al-Riyami and K. Al-Kharusi, 2003. Profile of acute poisoning cases presenting to health centres and hospitals in Oman. *Eastern Mediterranean Health J.*, 9: 944-954.
- London, L. and R. Bailie, 2001. Challenges for improving surveillance for pesticide poisoning: Policy implications for developing countries. *Int. J. Epidemiol.*, 30: 564-570.
- Maskey, A., M. Parajuli, S.C. Kohli, S. Baral, S. Basnet and N. Poudel, 2012. Scenario of poisoning cases in adults admitted in Manipal Teaching Hospital, Pokhara, Nepal. *Nepal J. Med. Sci.*, 1: 23-26.
- Roberts, D.M., N.A. Buckley, F. Mohamed, M. Eddleston and D.A. Goldstein *et al.*, 2010. A prospective observational study of the clinical toxicology of glyphosate-containing herbicides in adults with acute self-poisoning. *Clin. Toxicol.* 48: 129-136.
- Sarava, K., J. Jose, M.N. Bhat and B.A. Shastri, 2007. Acute ingestion of copper sulphate: A review on its clinical manifestations and management. *Ind. J. Crit. Care Med.*, 11: 74-80. Sharma, B.R., N. Relhan, N. Gupta and H. Singh, 2007. Trends of fatal poisoning in Northern India: A ten-year autopsy analysis. *J. Pharmacol. Toxicol.* 2: 350-358.