

Study of Demographic Pattern of Poisoning in Patients Presenting to Emergency Department of a Tertiary Care Centre, SIMS, Hapur

Gurdeep Singh¹, Barakha Gupta², Sumit Tellewar³, Vishwajeet Singh⁴, Abhishek Sharma¹

¹Post-Graduate, ²Professor, ³Associate Professor, ⁴Assistant Professor, Department of Forensic Medicine & Toxicology, Saraswathi Institute of Medical Sciences, Hapur, UP, India

Abstract

Poisoning is a common medical emergency and one of the important cause of mortality and morbidity in developing countries like India due to easy availability of poisonous substances and its low cost. This study was carried out on poisoning cases reported to casualty of Saraswathi Institute of Medical Sciences, Hapur, UP in eighteen-months duration from 1st January 2017 to 30th June 2018. In this study, incidence was more among men (58.70%) compared to women (41.30%) and maximum cases were of age group 21 – 30 years (48.91%). More cases from rural area (89.13%) were reported and highest number of poisoning cases were admitted in the month of June 2018 (10.87%) followed by May 2017 (8.70%). Maximum cases (60.87 %) reported to casualty between 8am to 4pm. Aluminium phosphide poisoning (44.26%) constituted the highest number of cases and in maximum cases manner of poisoning was of suicidal in nature (59.78%). Majority of cases 53.26% were discharged after improvement and 3.26% cases died.

Key Words: Poisoning, Mortality, Sociodemographic profile, Agrochemical poisons.

Introduction

The word poison has been evolved from Latin word potion i.e. to drink for health. Poison is defined as any substance (solid, liquid or gaseous) which if introduced in the living body or brought into contact with any part thereof will produce ill-health or death by its constitutional or local effects or both. [1]

National Poisons Information centre (NPIC), New Delhi, received a total of 2719 poison calls over a period of 3 years (April 1999-March 2002). The age of victims ranged from <1 to 70 years, with the highest incidence in the range of 14-40 years, with males (57%) outnumbering females (43%). The most common mode of poisoning was suicidal (53%), followed by accidental (47%). [2]

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. In the same year, unintentional poisoning caused the loss of over 10.7 million years of healthy life. [3]

Everyday around the world almost 700 people die from the poisoning and several thousands more are affected by poisoning, of this 90% of fatal poisoning occurs in developing countries like southeast Asia particularly among agriculture workers. [4]

Aims and Objective

1. To analyse pattern of poisoning cases in patients presenting to Emergency department of Tertiary health care center, Saraswathi Institute of Medical Sciences, Hapur.
2. To study demographic variables of poisoning cases.
3. To study the nature, pattern & magnitude of the morbidity and mortality due to poisoning.

Corresponding Author:

Dr. Barakha Gupta

Professor & HOD, Department of Forensic Medicine, Saraswathi Institute of Medical Sciences Hapur, Mob. - 9873090096
Email: Barkha_vp@yahoo.co.in

Material and Method

The study was conducted at Saraswathi Institute of Medical Sciences, Hapur, from 1st January 2017 to 30th June 2018. Total 92 patients of poisoning were reported to the department of emergency during the study period. A detailed history was taken from patient, patient relatives and relevant data of the individual poisoning cases were collected from medicolegal cases register of casualty and case papers from concerned department.

Observation and Results

In our study, out of total 92 poisoning cases 58.70% were males and 41.30% were females. Male female ratio was 1.42: 1. (Table 1)

Maximum incidence was seen in the age group of 21 – 30 years (48.91%). (Table2)

The rural population (89.13%) was affected more both in males and females. (Table 3)

Maximum cases (60.87 %) reported to casualty between 8am to 4pm. (Table 4)

In this study, it was observed that 66.30% of cases gave history of known poisoning while 33.70% gave history of unknown poisoning at the time of admission to casualty. Out of total 61 cases of known poisoning it was observed that Aluminium phosphide (44.26%) constituted the maximum number of cases followed by Rat Poison (14.75%) and Mosquito Poison (14.75%). (Table 5)

More number of suicidal and accidental poisoning was seen in male than female. Homicidal poisoning was only observed in females. (Table 6)

Maximum number of poisoning cases (53.26%) was discharged after improvement. (Table 7)

Table 1: - Sex-wise distribution

Sex	Number of cases (N = 92)	Percentage %
Male	54	58.70
Female	38	41.30
Total	92	100

Table 2: - Age-wise Incidence of poisoning cases

Age Group	Male	Female	Total (N)	Percentage
0 – 10	0	0	0	0
11 – 20	16	14	30	32.61
21 – 30	25	20	45	48.91
31 – 40	12	2	14	15.22
41 – 50	0	1	1	1.09
51 – 60	1	0	1	1.09
>61	0	1	1	1.09
Total	54	38	92	100

Table 3: - Distribution of area according to sex

Residence	Male (%)	Female (%)	Total (%)
Urban	7(12.96)	3(7.89)	10(10.87)
Rural	47(87.03)	35(92.10)	82(89.13)
Total	54(100)	38(100)	92(100)

Table 4: -Time of Incident

Time of Incident	Number of cases (N = 92)	Percentage
8AM-4PM	56	60.87
4PM-12AM	28	30.43
12AM-8AM	8	8.70
Total	92	100

Table 5: - Type of known poison

Poison	Number of cases (N = 61)	Percentage
Organophosphorus	3	4.92
Rat Poison	9	14.75
Mosquito Poison	9	14.75
Aluminium phosphide	27	44.26
Zalim Lotion	1	1.64
Corrosive	1	1.64
Alcohol	4	6.56
Laxman-rekha	1	1.64
Cockroach killer	1	1.64
Bhang Ingestion	1	1.64
Lysol	2	3.28
Benzene Hexachloride	1	1.64
Formalin	1	1.64
Total	61	100.00

Table 6: - Distribution of manner according to sex

Manner	Male (%)	Female (%)	Total
Suicidal	32(59.25)	23(60.52)	55(59.78%)
Accidental	22(40.74)	13(34.21)	35(38.04%)
Homicidal	0(0)	2(5.26)	2(2.17%)
Total	54(100)	38(100)	92(100)

Table 7: - Outcome of Patient

Outcome	Number of cases (N = 92)	Percentage
Discharged	49	53.26
Referred	14	15.22
Leave against medical advice	26	28.26
Death	3	3.26
Total	92	100

Discussion

Pesticide poisoning is a major health problem in India. Aluminium Phosphide is an effective fumigant and rodenticide and used extensively in India. Acute poisoning from these poisonous substances is one of the commonest causes of emergency hospital admissions.

During the study period 92 poisoning cases were admitted in the Emergency of SIMS, out of which 58.70% were males and 41.30% were females. This finding in the study is in agreement with the study of Md Ziya Ahmad et al^[5] in which more cases were of males as compared to females. The reason for more number of male cases is more exposure to harmful poisonous substance in occupation, more stress and strain due to financial burden of the family.

In present study majority of cases were seen in the age group of 21 – 30 years (48.91%) followed by 11 – 20 years (32.61%). This finding is agreement with the finding of Hareesh. S. Gouda et al^[6], in which, incidence was highest in age group 21 – 30 years (38.60%) followed by 11 – 20 years (35.08%). Higher incidence of poisoning in the younger age group of 21 – 30 years is reflective of the social causes like failure in love,

failure in examinations, stress of the modern life style and scolding from parents or teachers.

The current study shows that rural population (89.13%) was more affected than urban (10.87%). In female incidence of cases in rural area was more as compared to male. These results are in agreement with study of Md Ziya Ahmad et al^[5], Hareesh. S. Gouda et al^[6] and Barkha Gupta et al^[7] who also show rural population to be more affected than urban population. It can be concluded that the rural areas, having increased farming activities, agricultural and domestic use of insecticidal compounds

In the present study, maximum number of cases 56 (60.87 %) reported to casualty between 8am to 4pm. These results are consistent with study of Vivek Gopinathan et al^[8], as time of poisoning in majority of cases (39%) was observed during day.

In the present study, history of known poisoning was noted in 66.30% cases and unknown poisoning in 33.70% cases. Out of total poisoning cases Aluminium phosphide was the leading cause of poisoning. Aluminium phosphide poisoning (44.26%) constituted the highest number of cases followed by Rat poison (14.75%) and Mosquito poison (14.75%). The results of present study are consistent with study of R K Mathur et al^[9] as Aluminium phosphide was the most common poison (19.71%), leading to maximum fatalities.

In the present study incidence of suicidal cases (59.78%) were highest followed by accidental (38.04%). The present figure is in agreement with Md Ziya Ahmad et al^[5] where majority of patients 79.23% consumed poison with suicidal intent as compared with 20.76% of the patient exposed accidentally. Reasons are inability to face adverse situations in life like unemployment in spite of being graduates, failure in love and examinations, failure of crops, family disputes, poverty, mental instability etc.

The present study reveals that most of patient had a shorter stay in the hospital. 53.26% were discharged after improvement while 15.22% cases were referred to higher centres. In present study mortality rate was 3.26% and all these cases were of Aluminium Phosphide poisoning. This observation is in the agreement with the study of Prashant Gupta et al^[10] in which 78.4% cases were discharged after improvement.

Conclusion

The present study includes 92 cases of alleged poisoning during the study period from January 2017 to June 2018, conducted at Emergency department of Saraswathi Institute of Medical Sciences.

- The present study indicates that younger age and males are at higher risk for suicidal poisoning. Poisoning is an important preventable public health problem especially in the developing countries.

- To decrease the incidence, mortality and morbidity of the poisoning cases following precautions and measures should be taken -

- The farmers should be educated regarding the appropriate measures which needs to be taken in cases of accidental exposure.

- The face and hands should be thoroughly washed with soap and water after handling toxic agrochemicals.

- Strict rules and regulations over the sale of insecticides, rodenticides and pesticides should be formulated.

Conflict of Interest: We declare that there is no conflict of interest.

Source of Funding: None

Ethical Clearance: Taken from Saraswathi Institute of Medical Sciences.

References

1. Biswas Gautam "Review of Forensic Medicine and Toxicology" Fourth Edition, Jaypee brother's medical publishers: P467.
2. Aggrawal Anil "Textbook of Forensic Medicine and Toxicology" First edition, Avichal Publishing Company: P544 – 554, 604, 620.
3. Asawari Raut, Atmaram Pawar, Bhagwan Kakane, Priti Dave, Kavya Shaj, Jabeen Gulam Ali "Toxicological Pattern of Poisoning in Urban Hospitals of Western India" Journal of Young Pharmacists 2017, Vol 9, Issue 3, P315-319.
4. Kumar Sanjeev, Pathak Akhilesh, Mangal H. M. "Trends of Fatal Poisoning in Saurashtra Region of Gujarat" J Indian Acad Forensic Med. 2011, Vol. 33, No. 3 P 197,198.
5. Ahmad Md Ziya, Hussain Tina, Kumar Manoj "Pattern of Poisoning Reported at BC Roy Hospital, Haldia Purba Midnapur, West Bengal" Medico-Legal Update 2012, Vol.12, No.2 P228-230.
6. Gouda Hareesh. S., Rohith Kodali, Prasad D.R. Mahadeshwara, Sasanka P. "A Study of Acute Organophosphate Poisoning at a Tertiary Hospital, Belgaum, Karnataka" Medico-Legal Update 2012, Vol. 12, No.2 P75-78.
7. Gupta Barkha, Kishore Kaushal, Rastogi Pooja, Singh Ranjana "Retrospective Study of Poisoning Cases at Tertiary Care Hospital in Western Uttar Pradesh" J Indian Acad Forensic Med. 2016, Vol.38, No. 1 P11-13.
8. Gopinathan Vivek, Padmakumar K. "Profile and pattern of Poisoning cases reported in a Tertiary care teaching Hospital in Kerala" Indian Journal of Forensic and Community Medicine 2017;4(3), P185-188.
9. Mathur R K, Singh Sumer, Srivastava Ashutosh, Meena K K "Medico-legal Study on the Poisoning Cases of Ajmer Region" Indian Journal of Forensic Medicine & Toxicology 2017, Vol. 11, No. 1 P 27-32.
10. Gupta Prashant, Kumar Anil, Singh Somendra Pal, Prakash Manas, Gupta Mohit, Kumar Praveen "Pattern of Cases of Acute Poisoning in a Rural Tertiary Care Center in Northern India" National Journal of Community Medicine 2016, Vol. 7, issue 4, P307-309.