

ORIGINAL ARTICLE

Retrospective Analysis of Pattern of Poisoning Cases Admitted in Tertiary Care Hospital

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Abstract:

Road traffic accidents, poisoning and animal bites are important part of medico legal cases coming to a health care centre. This paper presents the poisoning cases brought to Kamineni hospital L.B Nagar, Hyderabad during the span of 2 years (2020 & 2021). The cases were analysed for various epidemiological parameters. The large numbers of people involved are between 21-30 years. Most cases are of agricultural poisons, followed by drug overdose. Most of the cases are seen in the month of February and May.

Keywords: Poisoning; Drug overdose; Kamineni hospital; Hyderabad.

Introduction:

Poison is a substance (solid, liquid, gas) 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. The definition of poison is vague and unsatisfactory for a substance which is less harmful if consumed in small quantities and can be poisonous if consumed in large quantities. According to WHO health statistics 2020,¹ poisoning mortality rate is highest in India among the south East Asian countries. The causes of poisoning are mainly civilian, accidental and deliberate. The problem is getting worse with time as newer drugs and chemicals are being in vast numbers.

India after agricultural revolution has become a growing economy in agricultural sector. We started using pesticides abundantly and irresponsibly, mainly due to their easy availability. In most of the rural areas there is no proper usage of protective gear and pesticides are kept in the vicinity of reach. In India the second most common method of suicide is by poisoning after hanging according to NCRB report.² This is mainly because of easy availability of poisons like pesticides and insecticides in rural areas. Drug overdose in urban areas is mainly due to sale of drugs without proper prescription.

The study aims to analyse the pattern of poisoning cases brought to Kamineni hospital, part of Kamineni academy of Medical sciences and research centre L.B Nagar Hyderabad. It also focuses on different aspects of poisoning along with the demographic pattern, socio economic relation, education and other related parameters.

Materials and methods:

Study design: Record based retrospective study.

Study participants: All patients diagnosed with inhalational,

ingestion, drug overdose poisoning admitted in Kamineni hospital from 1st January 2020 to 31st December 2021.

Inclusion criteria: Patients exposed to drug overdose, inhalational and ingestion poisoning.

Exclusion criteria: Patients diagnosed with poisoning, drug overdose who are brought dead. Patients with diagnosed poisoning and drug over dose discharged from casualty.

Sample size: A total number of patients admitted with poisoning and drug over dose from 1st January 2020 to 31st December 2021.

Observation and results:

In the present study it is observed that females are more prone to poisoning and drug overdose, but the margin is low compared to male sex. Around 76 people are males and 51 are females. The age group which is more susceptible for poisoning is younger generation followed by middle age if we consider average life expectancy in India from recent census as 70 years. The people who are in age group 21-30 are highest and the number decreases at extremes of age as being after 60 years and less than 20 years.

More than 50 percent of study population who are affected by poisoning and drug overdose are married. Majority of the cases are suicidal in nature and can be attributed to financial and other socioeconomic reasons. In this study maximum cases which are reported are seen between evening 4pm to 12am i.e. 58 cases, followed by morning 8am to 4pm i.e. 42 cases, least number of cases after mid night 12am to 8am i.e. 27 cases. Among the total 127 cases a vast majority of cases are due to agro chemicals accounting to 57 cases followed by drug overdose i.e. 41 cases, house hold disinfectants' stands at 3rd with 10 cases. Over 97% of the cases are due to ingestion, very small number of cases, i.e. 3 are by inhalation, one by Organophosphorus inhalation, one is by methanol and another by cyanide inhalation.

More number of cases are seen in months of February and least no of cases are seen in August. This doesn't coincide with any harvest season. In our study most of the people who are affected by poisoning and drug overdose are married, this along with the age at which they have done can be attributed mainly to socioeconomic factors. Only a few cases are accounted for

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accidental poisoning i.e 10. In most of the cases, the manner is suicidal in nature i.e 117. Most of the people discharged within 5 days i.e 103 cases, very small number of cases have stayed beyond 10 days. The mortality rate is less than 10 percent (9.7).

Discussion:

In the present study a total of 127 cases have been analysed, most of the cases involved in poisoning are female, young population and married. The study by Amaranth Misra³ poisoning trends in Nepal shows similar increase in female cases in poisoning, whereas study by V Saxena et al.⁴ in Uttarakhand showed males outnumbered females.

Most of the population involved in poisoning are young adults of age group 21-30 years. Similar cases have been observed by

Table.1 Age and sex wise distribution.

S.No.	Age	Sex		Total	Percentage
		Male	Female		
1	up to 10	2	0	2	1.57
2	11-20	6	10	16	12.5
3	21-30	18	37	55	43.3
4	31-40	10	11	21	16.5
5	41-50	9	8	17	13.3
6	51-60	3	6	9	7.0
7	61-70	1	3	4	3.14
8	71-80	2	1	3	2.3

Table.2 Distribution of cases in a year.

S.No.	Month in the year	No of cases
1	January	11
2	February	18
3	March	7
4	April	11
5	May	15
6	June	11
7	July	11
8	August	5
9	September	8
10	October	6
11	November	11
12	December	13

Table 3. Distribution of outcome of cases.

S.no	Outcome	No of cases	Percentage
1	Discharged	103	81.1
2	Lama	12	9.4
3	Dead	12	9.4

Barakha Gupta et al.⁵ in study of poisoning cases in Uttar Pradesh. In 92% of the cases studied, the manner is suicidal in nature which is similar to the study conducted by Prakash M Mohiteet al.⁶ Accidental poisoning can be seen in lower age group, similar pattern was been seen by Suparna Chatterjee et al.⁷ in West Bengal.

The study conducted by Saxena A et al.⁸ in trends of poisoning in north west Uttar Pradesh shows most of the cases involved are Organophosphorus poisoning, similar results are found in our study. Most cases are due to drug overdose, this can be attributed to change in recent trends of ease of access to a lot of medicines at home and in most of the cases of drug over dose Benzodiazepines are the main contributing factors. Similar trend can be seen in

Table 4. Distribution of outcome of cases.

S.No.	No of days in hospital	No of cases	Percentage
1	Less than 1 day	9	7.0
2	1-5 days	102	80.3
3	6-10 days	13	10.2
4	10-15 days	3	2.3

Table 5. Time of arrival at hospital.

Sno	Arrival time to hospital	2020	2021	Total
1	00-01	2	4	6
2	01-02	0	6	6
3	02-03	2	1	3
4	03-04	1	0	1
5	04-05	0	2	2
6	05-06	2	3	5
7	06-07	0	2	2
8	07-08	2	0	2
9	08-09	1	2	3
10	09-10	1	0	1
11	10-11	1	4	5
12	11-12	3	4	7
13	12-13	5	3	8
14	13-14	5	2	7
15	14-15	5	2	7
16	15-16	1	3	4
17	16-17	2	6	8
18	17-18	0	4	4
19	18-19	4	2	6
20	19-20	6	5	11
21	20-21	4	2	6
22	21-22	2	4	6
23	22-23	4	5	9
24	23-00	3	5	8

study conducted by Leena Anthony et al.⁹ in pattern of poisoning and drug overdose in tertiary care hospital. The study conducted by Jesslin J et al.¹⁰ in South India shows drug overdose as second most common cause of poisoning, similar results are seen in our study.

In our study most of the cases are seen in night, similar trend can be seen by Deepak Pokhrel et al.¹¹ retrospective cases of poisoning cases in Kathmandu university as many cases are suicidal, or an attempt for suicide and then many cases are in married, this can be attributed to socio economic factors.

The route of entry is almost always oral, this can also be attributed as most cases are suicidal in nature and only 3 cases are of inhalational poisoning, similar findings can be seen in Barakha Gupta et al.⁵ study in western Uttar Pradesh. The study conducted by Subhash Chandra Joshi et al.¹² in Uttarakhand shows survival rate as 85% of all admitted cases, similar outcome can be seen in our study, over 81% is the survival rate.

In our study most cases are seen in Winter season. Similar findings can be seen in study conducted by Sudhir Ninave et al.¹³ in Central India. Most of the poisoning cases are due to agrochemicals, which can be attributed to availability of pesticides and insecticides in houses.

Conclusion:

Due to better availability of medical care there is increased number of cases being treated and discharged. Proper education to use agro chemicals, first aid measures and preventive measures, along with strict rules to decrease the sale of over the

Table 6. Table showing type of poison.

S.No		No of cases	Percentage
	Agro chemicals	57	44.8
1	Rat poison	3	2.3
2	Op poisoning	18	14.1
3	Herbicide	24	18.8
4	Insecticides	4	3.14
5	Mosquito repellent (all out)	5	3.9
6	Fungicide	1	0.7
7	Plant growth promoter	1	0.7
8	Anti tick	1	0.7
	Drugs	41	32.2
9	Benzodiazepams	11	8.6
10	Thyroxine	3	2.3
11	Nsaids	4	3.14
12	Unknown drugs	7	5.5
13	Multiple known drugs	9	7.0
14	Antidepressants	4	3.14
15	Anti epileptics	3	2.3
	House hold disinfectants	10	7.18
16	Sanitizer	5	3.9
17	Chlorine	1	0.7
18	Harpic	1	0.7
19	Dettol	1	0.7
20	Phenol	1	0.7
21	Lyzol	1	0.7
	Hydro carbons	6	4.7
22	Turpentine	1	0.7
23	Nail polish	2	1.5
24	Pvc pipe solvent	1	0.7
25	Godrej	1	0.7
26	Methanol	1	0.7
27	Mercury	1	0.7
28	Cyanide	2	1.5
29	Food	3	2.3
30	Corrosives	6	4.7
31	Cuso4	1	0.7

counter drugs. Proper financial education will help in overcoming many socioeconomic factors in young and middle age population. Government has to do much more work on suicide prevention programmes and also encourage Non-Governmental Organisations in creating and spreading awareness.

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Conflict of interest: None to declare.

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References:

1. World health organisation. Global health observatory. World directory of poison centres. [Internet]. [Cited 2022 Mar 5]; Available from: <https://www.who.int/data/gho/data/>

themes/topics/indicator-groups/poison-control-and-unintentional-poisoning.

- National crime records Bureau of India. Accidental Deaths & Suicides in India 2020. Chapter: 2 Suicides in India. [Internet]. Table 2.13 [Cited 2022 Mar 5]; Available from: <https://www.scribd.com/document/553623928/Adsi-2020-NCRB-Full-Report-Accidental-Deaths-and-Suicides-Report-India>.
- Mishra A. An epidemiological study of poisoning trends in eastern region of Nepal. [Internet]. J Indian Acad Forensic Med: 2019 Jan-mar 41(1) [Cited 2022 Mar 5]; Page 50-52. Available from: [http://iafmonline.in/data/publications/2019/JIAFM41\(1\).pdf](http://iafmonline.in/data/publications/2019/JIAFM41(1).pdf)
- V Saxena, DK Atal, S Das. Retrospective Analysis of Pattern of Poisoning in Uttarakhand. J Indian Acad Forensic Med. [Internet]. 2014 July-September, Vol. 36, No. 3, [Cited 2022 Mar 5]; page no 230-233. Available from: [http://iafmonline.in/data/publications/2014/jiafm-36\(3\).pdf](http://iafmonline.in/data/publications/2014/jiafm-36(3).pdf)
- Gupta B, Kishore K, Rastogi P, Singh S. Retrospective Study of Poisoning Cases at Tertiary Care Hospital in Western Uttar Pradesh. [Internet]. J Indian acad forensic med 2016 January – march vol [Cited 2022 Mar 5]; 38 page no 11-14. Available from: <https://www.jiafm.in/index.php/jiafm/issue/view/27>
- Prakash M. Mohite, Anjankar AJ, Patnod S. Organophosphorus Poisoning: Prognostic Value of GCS Score & Other Clinical Indicators in Assessing the Final Outcome. [Internet]. J Indian acad forensic med 2018 April – June 2018 vol 40 [Cited 2022 Mar 5]; page 197-205. Available from: [http://iafmonline.in/data/publications/2018/JIAFM40\(2\).pdf](http://iafmonline.in/data/publications/2018/JIAFM40(2).pdf)
- Chatterjee S, Verma VK, Hazra A, Pal J. An observational study on acute poisoning in a tertiary care hospital in West Bengal, India. Perspect Clin Res. [Internet]. 2020 Apr-Jun;11(2):75-80. Epub 2020 May 6. [Cited 2022 Mar 5]; Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7342341/>
- Saxena A, Kumar V, Chaudhary SR, Singh J, Awasthi S. Pattern of Medico-legal Cases in the Casualty Department of a teaching Hospital, Bareilly, Uttar-Pradesh. [Internet]. J Indian acad forensic med 2015 October – December vol 37 no 4. [Cited 2022 Mar 5]; Pages 338-340. Available from: [http://iafmonline.in/data/publications/2015/JIAFM-37\(4\).pdf](http://iafmonline.in/data/publications/2015/JIAFM-37(4).pdf)
- Anthony L, Kulkarni C. Patterns of poisoning and drug overdose and their outcome among in-patients admitted to the emergency medicine department of a tertiary care hospital. [Internet]. Indian J Crit Care Med 2012 July - Sep; vol 16 (issue 3) [Cited 2022 Mar 5]; page no 130-135. Available from: <https://www.ijccm.org/toc/IJCCM/16/3>
- Jesslin J, Adepu R, Churi S. Assessment of prevalence and mortality incidences due to poisoning in a South Indian tertiary care teaching hospital. [Internet]. Indian J Pharm Sci. 2010 Sep;72(5):587-91. [Cited 2022 Mar 5]; Available from: doi: 10.4103/0250-474X.78525. PMID: 21694990; PMCID: PMC3116303.

11. Pokhrel D, Pant S, Pradhan A, Mansoor S. A Comparative Retrospective Study of Poisoning Cases in Central, Zonal and District Hospitals. Kathmandu University J of Sci, Engineering & Technol [Internet]. 2010 Mar. 10 [cited 2022 Mar. 5]; 4(1):40-8. Available from: <https://nepjol.info/index.php/KUSET/article/view/2882>.
12. Joshi SC, Prakash C, Joshi A, Joshi G. Profile of Organophosphorus Poisoning. At a Tertiary Care Hospital in Uttarakhand. [Internet]. J Indian Acad Forensic Med. October-December 2013, Vol. 35, No. 4. [Cited 2022 Mar 5]; Page 346-348. Available from: [http://iafmonline.in/data/publications/2013/JIAFM-35\(4\).pdf](http://iafmonline.in/data/publications/2013/JIAFM-35(4).pdf)
13. Ninave S, Patond S, Verma S, Ninave S. Profile of Deaths Due to Poisoning at Tertiary Care hospital of Central India. [Internet]. J Indian Acad Forensic Med. 2020 Oct-Dec; 42(4): [Cited 2022 Mar 5]; page no 288-291. Available from: [http://iafmonline.in/data/publications/2020/JIAFM%202042\(4\).pdf](http://iafmonline.in/data/publications/2020/JIAFM%202042(4).pdf)