Original Article

A STUDY ON POISONING CASES ADMITTED IN LLR HOSPITAL, KANPUR

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ABSTRACT

Background: Poisoning is a significant global public health problem. 91% of poisoning cases occur in low and middle income countries. The rate of suicidal poisoning is increasing globally. Objectives: To study the biosocial correlates, nature of poisoning and type of poison consumed by cases admitted in LLR Hospital, Kanpur.

Material and Methods: The study was conducted among poisoning cases admitted in Medicine Department of Lala Lajpat Rai Hospital, Kanpur, Uttar Pradesh during the period of March-September, 2015. Data was recorded in a pre-designed and pre-tested questionnaire and analyzed using percentages and chi-square test.

Results: Out of 70 poisoning cases included in the study, most (55.71%) of the cases were males. Maximum number of cases among both males (74.36%) and females (58.06%) were in 20-40 years age group. In urban areas, most of the cases were males (66.67%) whereas in rural areas, females (58.06%) outnumbered males. Majority (94.29%) of the cases were suicidal in nature. Pesticides (45.71%) followed by household products (42.86%) were commonly used as poisons. Among household products, hair dye (80%) was consumed by majority of the cases.

Conclusion: Young adults in the economically productive age group were the commonest victims with suicidal intention. Pesticides and household products were commonly used as poisons.

KEYWORDS: Poisoning; Pesticide; Household product; Hair dye

INTRODUCTION

Any substance that is capable of producing deleterious effect on a living organism is a "Poison". Poisoning occurs when people drink, eat, breathe, inject or touch enough of a hazardous substance leading to illness or death. Poisoning occupies an important place among the unnatural causes of death.[1]

Poisoning is a significant global public health problem. Globally 3 million cases of poisoning occur every year.[2] 91% of poisoning cases occur in low and middle income countries. Poisoning may be accidental or suicidal. The rate of suicidal poisoning is increasing globally because of easy availability and accessibility of pesticides which are most commonly used as poisons. Data from National crime bureau of India shows suicide by consumption of pesticides account for 19.4% and 19.7% of all cases of suicidal poisoning in the year 2006 and 2007 respectively.[3]

Kanpur is one of the greatest industrial giant of Northern India and is the main centre of commercial, trading, educational & industrial activities in Uttar Pradesh. Studies regarding poisoning are rare in Kanpur.

Hence, the present study was conducted in LLR Hospital, Kanpur to know the biosocial correlates of poisoning cases, nature of poisoning and type of poison consumed.

MATERIALS AND METHODS

The hospital based cross-sectional study was conducted among poisoning cases admitted in the Medicine Department of Lala Lajpat Rai Hospital which is an associated hospital of G.S.V.M Medical College, Kanpur, Uttar Pradesh. Ethical clearance was obtained from the Institutional Ethical Committee before conducting the study. The study was conducted during the period of March-September, 2015. Only those poisoning cases who gave consent were included in the study.

The final sample size consisted of 70 cases of poisoning. Epidemiological information and other related data was entered in a pre-designed and pre-tested questionnaire. A general health examination of cases was done using standard methods. Severity of injury of cases was assessed using Revised Trauma Score (RTS).[4] A brief description of the RTS used is as follows:-

Revised Trauma Score (RTS)

The Revised Trauma Score (RTS) is a physiological scoring system, with high inter-rater reliability and demonstrated accuracy in predicting death. It is scored from the first set of data obtained on the patient, and consists of Glasgow Coma Scale, Blood Pressure and Respiratory Rate.

Table 1

GCS		Systolic BP		Respiratory Rate	
13-15	4	>89	4	>29	4
9-12	3	76-89	3	10-29	3
6-8	2	50-75	2	6-9	2
4-5	1	1-49	1	1-5	1
3	0	0	0	0	0

RTS=0.9368 GCS + 0.7326 SBP + 0.2908 RR

Values for RTS are in the range 0 to 7.8408. A threshold of RTS<4 has been proposed to identify those patients who should be treated in a trauma center, although this value may be somewhat low. The RTS correlates well with the probability of survival.

Statistical Analysis: The Master chart was prepared using MS Excel and analyzed using SPSS software version 16.0. The collected data was analyzed using standard statistical tools (percentages, chi-square test for independence of attributes) and conclusions were drawn accordingly.

RESULTS

Most (55.71%) of the poisoning cases were males. Maximum number of poisoning cases were in 20-40 years age group among both males (74.36%) and females (58.06%). However below 20 years of age, the number of females (32.26%) was more than males (7.69%). Among males, most (66.67%) of the cases were from urban areas whereas most (58.06%) of the females were from rural areas. Majority of the cases were literate among both males (94.87%) and females (83.87%). Most (66.67%) of the males were earning members of the family while all the females (100%) were non-earning members. Most of the cases were married among both males (51.28%) and females (67.74%) **[Table 1]**.

Most (54.29%) of the cases reached hospital after a period of 2 hours and were less severely injured. There was statistically significant association between severity of injury and time elapsed following poisoning (*P*=0.03) **[Table 2]**.

Majority (94.29%) of the poisoning cases were suicidal in nature while only 5.71% were accidental **[Figure 1]**.

Pesticides (45.71%) followed by household products (42.86%) were the commonly used substances for poisoning **[Figure 2]**.

Among medicines, sedative (50%) was most commonly used as poison. Organophosphate (53.13%) followed by rat poison (43.75%) were the most common pesticides used for poisoning. Among household products, hair dye (80%) was used for poisoning by majority of the cases **[Table 3]**.

DISCUSSIONS

The findings of the present study revealed a higher incidence of poisoning in males (55.71%) than in females. Most of the males (66.67%) were from urban areas. Similar trend was observed in the studies conducted by Shivakumar S *et al* in Chennai and Ramesha KN *et al* in Karnataka where males (74%, 75.4%) outnumbered females (26%, 24.3%).[5],[6] Most of the cases were in 20-40 years age group (74.36% males and 58.06% females). Ramesha KN *et al* also reported that most cases of acute poisoning presented in the age group between 20 and 29 years (31.2%).[6] Similarly, poisoning was common in the younger age groups between 21 and 30 years (54.9%) in a study conducted by Anthony L *et al.*[7] The high incidence may be because of more involvement of this age group in all types of strain - domestic, educational, and employment related. Majority of the cases were literate (94.87% males and 83.87% females). Most (66.67%) of the males were earning members of the family and were married (51.28%). In a study conducted by Indu H *et al* higher incidence of poisoning was seen among married people.[8] This might be attributed to family disharmony and stress.

Most (54.29%) of the cases reported after a period of 2 hours. Similar trend was observed by Anthory L *et al* where 69.6% of the patients presented to hospital within 12 hours of the event, while 23.7% presented within 3 hours of the event.[7] There was statistically significant association between injury severity and time elapsed. This might be due to the fact that those who reported late, received first-aid and were referred and hence were less severely injured. In the present study, majority (94.29%) of the cases were suicidal in nature. Similar trend was observed in a study conducted by Banerjee I *et al* in West Bengal where poisoning with suicidal intent was more common (82.02%) than the accidental one (17.98%).[9] In a study conducted by Kumar SV *et al* in Andhra Pradesh also, self poisoning (suicidal 52%) was the most common form of acute poisoning.[10] In the present study, pesticides (45.71%) followed by household products (42.86%) were the commonly used substances for poisoning. Organophosphate (53.13%) followed by rat poison (43.75%) were the most common pesticides used for poisoning. Reports available from many parts of the country also denote pesticides are the most commonly abused and of the pesticides, organophosphate compounds are more commonly encountered agents.[11],[12],[13] Among household products, hair dye (80%) was used by majority of cases. This might be due to easy availability and accessibility of pesticides and hair dyes.

CONCLUSIONS

Young adults in the economically productive age group were the commonest victims with suicidal intention. The incidence of poisoning was higher among males from urban areas. Pesticides (especially organophosphate compounds) and household products were commonly used as poisons.

RECOMMENDATIONS

Sale of pesticides should be controlled with stringent legislation and enforcement. There should be a specialized agency to provide a fixed quota of pesticides as needed per individual. Health education should be given to shopkeepers (selling pesticides) and general public. Steps should be taken by the agricultural ministry to keep limitations on the pesticide use. Psychiatric counseling must be done in patients who had done suicidal attempt and anticipatory guidance should be provided to their family members. Regulations, educational awareness and poison information centers will help to reduce the growth of this public health problem.

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APPENDICES

Tables

Table 1: Biosocial Correlates of Poisoning Cases (N=70)

Biosocial Correlates	Gender	
	Male (n=39) 55.71%	Female (n=31) 44.29%
Age group (in years)		
<20	3 (7.69%)	10 (32.26%)
20-40	29 (74.36%)	18 (58.06%)
40-60	7 (17.95%)	2 (6.45%)
≥60	-	1 (3.23%)
Residence		
Rural	13 (33.33%)	18 (58.06%)
Urban	26 (66.67%)	13 (41.94%)
Educational status		
Literate	37 (94.87%)	26 (83.87%)
Illiterate	2 (5.13%)	5 (16.13%)
Occupational status		
Earning	26 (66.67%)	-
Non-earning	13 (33.33%)	31 (100%)
Marital status		
Married	20 (51.28%)	21 (67.74%)
Unmarried	19 (48.72%)	10 (32.26%)

Table 2: Severity of Injury and Time Elapsed Following Poisoning (N=70)

Time Elapsed (in Hours)	Injury Severity*		Total (%)	Test of Significance χ^2 C.I.=95%, df=1
	<6 (%)	≥6 (%)		
<2	20 (60.61)	12 (32.43)	32 (45.71)	χ^2= 4.502, P=0.03
≥2	13 (39.39)	25 (67.57)	38 (54.29)	
Total	33 (100)	37 (100)	70 (100)	

*According to Revised Trauma Score

Table 3: Type of Poison Consumed (N=70)

Type of poison	Cases (N=70)	%
Medicine	**4**	**5.71**
i.Sedative	2	50
ii.Paracetamol	1	25
iii.Anti-depressant	1	25

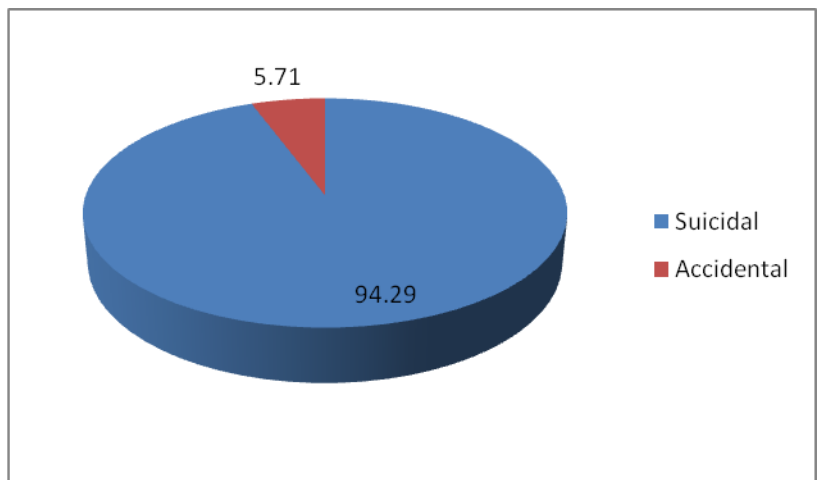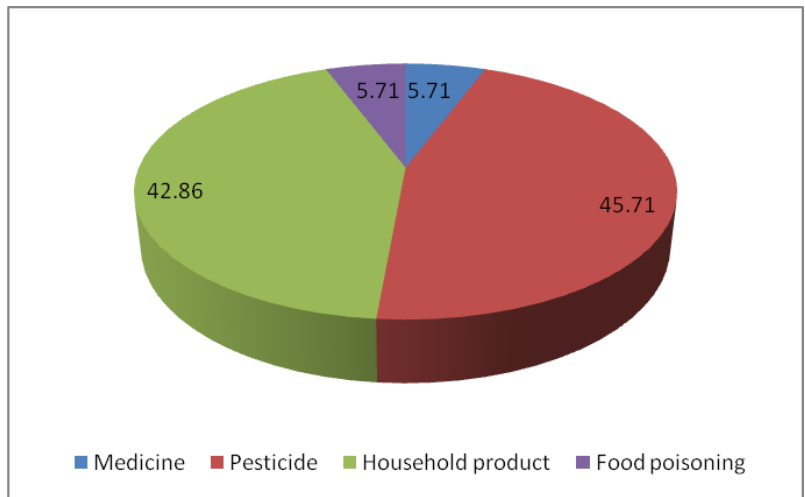| Table 3: Contd.,		
Pesticide	**32**	**45.71**
i.Organophosphate	17	53.13
ii.Rat poison	14	43.75
iii.Pyrethroid	1	3.13
Household product	**30**	**42.86**
i.Kerosene	2	6.67
ii.Phenyl	2	6.67
iii.Caustic soda	2	6.67
iv.Hair dye	24	80
Food poisoning	**4**	**5.71**

Figures

Figure 1: Nature of Poisoning (N=70)

Figure 2: Nature of Poison Consumed (N=70)