



Poisoning trends in Moga district of Punjab: A 10 year Record based Observational Study

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ABSTRACT

In developing countries such as India, poisoning is one of the major causes of deaths. Study of patterns of poisoning help in ascertaining the prevalent problems associated with poisoning in India. In the present study, a retrospective study has been conducted to study the poisoning cases reported in Civil Hospital of Moga district of Punjab State of Northern India during the period of January 2007 to May 2016.

Keywords:

Poisoning cases;
retrospective study; moga;
Punjab; forensic medicine.

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INTRODUCTION

A poisoning episode may be defined as the exposure of an individual (either by ingestion, injection or inhalation) to a substance(s) associated with the significant potential to cause harm[1]. Poisoning is one of the major causes of deaths across the world and is a major epidemic of non-communicable disease in the present century. Acute poisoning is a global health problem.[2] Poisoning can either be acute or chronic depending on the time-period for which poisoning has occurred. Acute poisoning cases are most commonly encountered by the doctors. Chronic poisoning can result from various sources such as environment, food and water supplies, or the industrial release of waste products.[3].[4] Poisoning

can be accidental, homicidal or suicidal. Accidental poisonings may be occupational hazard as in cases of pesticide poisoning in farmers, etc. Homicidal poisonings are comparatively rare. The pattern of suicidal deaths can reflect the prevailing social set up and psychological mind-set of the inhabitants of a region[5]. Patterns of poisoning may vary with geographical location. Therefore, it is important to study the patterns of poisoning in various parts of world. In developing countries with rural economies, poisoning by pesticides and herbicides is common. However, the patterns of habitation and work can also expose the population in warmer countries to toxins from snakes or spiders. Patterns of poisoning also

reflect which type of poisons are readily available or are important for local traditions. In developed countries, the epidemiology of poisoning often reflects prescribing practice and availability[3]. Therefore, the study of patterns of poisoning can help in policy making by the governments of various countries. In this study, we have done a retrospective study of various poisoning cases encountered in a Civil hospital of Moga District of Punjab state of Northern region of India. From this study, we hope to uncover the patterns of poisoning prevalent in the respective region.

MATERIAL AND METHODS

The present study is a retrospective study which was conducted in the Civil Hospital of Moga District of Punjab state of Northern region of India from January 2007 to May 2016. Figure 1 illustrates the study area. This study comprised of the individuals who were admitted in the emergency division dedicated to poisoning cases of the hospital and were alleged to have been poisoned. The data was collected from the hospital records. Cases, which were referred from nearby districts to the central hospital of Moga district, were not considered. In total 646 case histories were studied to uncover various pattern of poisoning in the region.

RESULTS

A total 646 individuals were treated for poisoning in the emergency division of the Civil hospital of Moga District. 433 (67%) patients were males and 213 (33%) were females. From Fig 2 and Table 1, it is evident that the incidence of poisoning is maximum in the age group of 21-30 years (278 or 43%) followed by 11-20 years (141 or 21.8%) and 31-40 years (120 or 18.6%) whereas the minimum numbers of poisoning cases were reported in age group of less than 10 years (20 or 3.1%). Table 2 illustrates the month wise poisoning case distribution. Maximum numbers of patients were admitted in July (73 or 11.3%) and September (70 or 10.8%) followed by May (63 or 9.8%) and April (58 or 8.5%). Minimum numbers of patients were admitted in the month of February and December (36 or 5.6% patients each). The percentage of patients admitted was maximum in the years of 2014 and 2015 with 89 (13.8) poisoning cases each. This percentage was followed by 2011 (80 or 12.4%) and 2010 (76 or 11.8%). The minimum numbers of poisoning cases were observed in year 2007 (39 or 6%) (Table 3). Suicidal cases (273 or 42.3%) and accidental cases (222 or 34.4%) were major cause of poisonings followed by addiction cases (78 or 12.1%). Homicidal cases were 19 (2.9%) in

number. 281 patients belonged to poor financial status whereas 226 patients belong to good financial status (Table 4). Celphos which is the brand name for aluminium phosphide and is used as pesticide was responsible for maximum numbers of poisoning casualties in the study area. It resulted in 148 (22.9%) poisoning admissions followed by drug overdose (12.1%), insecticide poisoning (11.6%), pesticide poisoning (7.1%), and phenyl poisoning (5.3%) (Table 5). Out of total 646 admissions, 61 (9.4%) patients died, 368 (57.0%) were treated and discharged, and 217 (33.6%) were referred to other hospital for further treatment (Table 6).

DISCUSSION

In the present study, the percentage of males among total poisoning cases was 67% and 33% were females. These findings are strongly supported by and are in convergence with the national and global findings. A possible explanation to these findings can be the frequent exposure of males to poisoning agents due to their occupation. Males are more prone to the stress which may lead to the suicidal use of poisoning agents[6]. Similar findings were observed by Zia et al[7] (71.4% males), Issa et al[8] (90.9% males), Singh et al [6] (72.72% males), Prajapati et al[9] (65.4% males). Kumar and Reddy[10] (65.10% males), Maskey et al[11] (56.6% males), Aatika et al[2] (69.3% males). Only minor increments were reported by Jalali et al[12] (51% males) and Hameed et al [13] (50.9% males), Jailkhani et al[14] (52% males). Dogan et al [15], Zohre et al[16] (28.7% males) has reported more number of poisoning cases in females as compared to the males. In this study males constituted only 35.3% of total poisoning cases. In the present study, the age group having maximum casualties due to poisoning was the 21-30 years age group followed by 11-20 years age group and 31-40 years age group whereas the least number of patients belonged to less than 10 year age group and more than 51 year age group. The age groups of 21-30 years and 31-40 years are the most active periods of an individual's life and result in maximum stress as well. Various studies (Singh et al[6], Liu et al[17], Escoffrey and Shirley[18], Meel[19], Sandhu and Dalal[20], Batra et al[21], Dash et al[22] duration of hospitalization and time lapse before arrival at hospital. All OP poisoning cases admitted to the Emergency Department of MKCG Medical College Hospital and other fatal cases received at the mortuary between September 1999 and August 2001 were prospectively studied. Males outnumbered females and most OP poisoning occurred in the 21-30 year age group. In 68 (97.1%, Nigam et al[23], Garg and Verma[24])

show the victims are frequently affected in the most active periods of their lives i.e. adult age. The victims in their extremes of ages were far less affected due to limited exposure to poisonous substances. Exception to this finding was observed by Ahmed et al[25] who reports that maximum poisoning cases fell within the age group of 10-20 year age group. In the present study, maximum numbers of poisoning cases were admitted in the months of July and September followed by the months of May and April. In the summer months, the agricultural and farming activities are on peak which may result in easy availability of poisonous substances such as organophosphates. This increase in farming activity will in return result in the increase of poisoning cases in summer season. Similar trends have been proposed by Dash et al[22] duration of hospitalization and time lapse before arrival at hospital. All OP poisoning cases admitted to the Emergency Department of MKCG Medical College Hospital and other fatal cases received at the mortuary between September 1999 and August 2001 were prospectively studied. Males outnumbered females and most OP poisoning occurred in the 21-30 year age group. In 68 (97.1%, Singh et al[26], and Jalali et al[12]. In the present study, maximum numbers of poisoning cases admitted were suicidal cases followed by accidental cases. The number of homicidal poisoning is very less as compared to suicidal cases. Similar results have been reported by Vougiouklakis and Mitselou et al[1], Aatika et al[2], Liu et al[17], Escoffery and Shirley[18], Batra et al[21], Nigam et al[23], Ahmad

et al[25], Singh et al[26], Soltaninejad et al[27], Zhou et al[28], and Lee et al[29], Flaganan et al[30], Spiller et al[31], Gupta and Vaghela[32]. Kiran et al[33], Kar et al[34]. Homicidal poisoning cases as the major cause of deaths have been reported by McDowell et al[35] and Hempstead[36]. Accidental poisoning cases as largest contributor to poisoning casualties were reported by Malangu[37]. In the present study, maximum of poisoning cases reported were of organophosphate poisoning. This may be because, India is an agriculture based country and in farming oriented states such as Punjab, there is an easy availability of organophosphates. Organophosphates are used as pesticides to be sprayed on the crops. Similar patterns have been reported by Aatika et al.[2], Ahmad et al.[25], Nigam et al.[23].

CONCLUSION

In the present study patterns of poisoning at the Civil Hospital of Moga District of Punjab state of Northern region of India from January 2007 to May 2016 were studied. It was observed that maximum number of poisoning cases were reported in male population of 21-30 years age group. Moreover, accidental poisoning was most common cause of poisoning. It was also observed that poor economic condition was the major cause of poisoning. Celphos, which is a brand name of aluminium phosphide was the most frequent substance used for the poisoning.

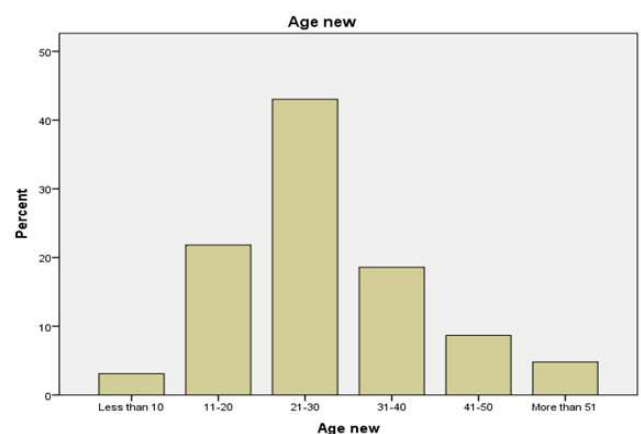
Fig 1 : Illustration of Study Area



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Fig 2: Distribution of poisoning cases based on age groups Distribution of poisoning cases based on the type of poison ingested



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Table 1: Distribution of poisoning cases based on age groups

Age group	Frequency	Percent	Cumulative Percentage
Less than 10	20	3.1	3.1
11-20	141	21.8	24.9
21-30	278	43.0	68.0
31-40	120	18.6	86.5
41-50	56	8.7	95.2
More than 51	31	4.8	100.0
Total	646	100.0	

Table 3: Distribution of poisoning cases based on year

Year	Frequency	Percentage	Cumulative Percentage
2016	35	5.4	5.4
2015	89	13.8	19.2
2014	89	13.8	33.0
2013	75	11.6	44.6
2012	72	11.1	55.7
2011	80	12.4	68.1
2010	76	11.8	79.9
2009	47	7.3	87.2
2008	44	6.8	94.0
2007	39	6.0	100.0
Total	646	100.0	

Table 5: Distribution of poisoning cases based on the type of poison ingested

Type of poison	Frequency	Percent	Cumulative Percentage
Alcohol	54	8.2	8.2
Alprax overdose	33	5.1	13.3
Canabis Poisoning	3	.5	13.8
Celphos Poisoning	148	22.9	36.7
Copper Sulphate	4	.6	37.3
Drug Overdose	78	12.1	49.4
Gas Poisoning	3	.5	49.9
Insecticide Poisoning	75	11.6	61.5
Miscellaneous	67	10.4	71.9
Opioid Poisoning	4	.6	72.5
Pesticide Poisoning	46	7.1	79.6
Phenyl Poisoning	31	5.3	84.9
Rodenticide Poisoning	30	4.6	89.5
Unknown	68	10.5	100.0
Total	646	100.0	

Table 2: Distribution of poisoning cases based on months

Months	Frequency	Percent	Cumulative percentage
January	49	7.6	7.6
February	36	5.6	13.2
March	55	8.5	21.7
April	58	9.0	30.7
May	63	9.8	40.4
June	49	7.6	48.0
July	73	11.3	59.3
August	55	8.5	67.8
September	70	10.8	78.6
October	49	7.6	86.2
November	53	8.2	94.4
December	68	5.6	100.0
Total	646	100.0	

Table 4: Distribution of poisoning cases based on the economic conditions of patients

Economic condition	Frequency	Percentage	Cumulative Percentage
Good	226	35.0	35.0
Poor	281	43.5	78.5
Average	21	3.3	81.7
Not Reported	118	18.3	100.0
Total	646	100.0	

Table 6: Distribution of poisoning cases based on the result of poisoning

Mortality	Frequency	Percent	Cumulative Percentage
Dead	61	9.4	9.4
Alive	368	57.0	66.4
Referred	217	33.6	100.0
Total	646	100.0	