Research Article

Profile of autopsy cases at New Civil Hospital, Surat: a retrospective study

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Received April 6, 2015. Accepted June 10, 2015

Abstract

Background: The profiling of medicolegal cases is necessary in order to prevent the preventable casualties in future and to study the genuine crime rate in the area. Nowadays, road traffic accidents cause most of the casualties, which lead to many deaths.

Objective: To set up a profile of deaths owing to natural or unnatural causes, so that we can direct rigorous efforts to curb their incidence.

Materials and Methods: We retrospectively studied the death cases brought for medicolegal postmortem examination at the Mortuary, Government Medical College, Surat, Gujarat, India, in the year 2012. During this period, a total of 2,166 autopsy cases were conducted.

Result: Of the total 2,166 cases, maximum numbers of autopsy cases [213 (9.83%)] were conducted in October. Male cases predominated over the female cases, which were 1,663 (76.77%). The maximum numbers of cases [615 (28.39%)] were in the age group of 21–30 years. Injury-related deaths were more in number [989 (45.66%)] of the total cases. Natural deaths accounted for 469 (21.65%) cases, violent asphyxial deaths were 239 (11.03%) cases, and thermal injury accounted for 272 (12.56%) cases, followed by the poisoning [183 (8.45%)] cases.

Conclusion: It is observed that the most common cause of death is road traffic accident, probably owing to higher frequency of transportation. The most common cause of death was vehicular accidents involving head injury.

KEY WORDS: Unnatural deaths, violent asphyxial death, mechanical injury, burns, poisoning

Introduction

The profiling of medicolegal cases is necessary in order to prevent the preventable casualties in future and to study the genuine crime rate in the area. Nowadays, road traffic accidents (RTAs) cause most of the casualties, which lead to many deaths. We come across various types of problems in our day-to-day life. While some are able to take up the pressures of life, others are not able to face it; hence, they end up their lives, making lives miserable for the family members. This study aims to set up a profile of deaths owing to natural or unnatural causes, so that we can direct rigorous efforts to curb their incidence. India is a developing country with increasing industrialization and urbanization. Surat is regarded as having a large industrial zone. The Surat city is a major silk and cotton textile production center. With the outbursting population, increased levels of unemployment, high income disparities, substance abuse, increased vehicular traffic density, meager infrastructure facilities, and various types of morbidities, the number of medicolegal cases is on the increase in number. This is allegedly important for the people following the law and order; those who attend them; and those who are concerned with the etiology, nature of cause, and their documentation.

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2016.060420153	

Materials and Methods

This retrospective study included all cases of deaths brought for autopsy at mortuary of Government Medical College, Surat, from January 1, 2012, to December 31, 2012. In this study, the emphasis has been put on to find the total number of death cases, the sex of the individuals, and the month-wise distribution. The cause of death variables analyzed include age, sex, day and month of incidence, causative agent, and cause of death at autopsy. The data were collected and tabulated to determine the frequency and proportion of these fatalities, and the results were expressed in percentages.

Result

A total of 2,166 autopsies were done during the period of 1 year. During this period, in the month of October and September, maximum numbers of cases were found, whereas, March and February showed the lowest number. Male subjects constituted 76.77% with a male to female ratio of 3.31:1. It was observed in the study that the maximum number [615 (28.39%)] of autopsy cases in both sexes were of the age group of 21–30 years, followed by the age group of 31–40 years, and the least number of case [1 (0.05%)] was in the age group of 91–100 years [Table 1 and 2].

Table 3 shows that the maximum number of cases were of mechanical injury-related death (RTA), followed by natural death, violent asphyxial death, burns, and poisoning. In the month of October, 91 cases were owing to mechanical injury-related deaths, followed by natural deaths, violent asphyxial deaths, and burns cases. Maximum number was contributed by blunt trauma in RTA, and 14 cases were under investigation; their cause of death are yet to be ascertained [Table 2].

Table 4 shows the various type of mechanical injury found in this study. Among them, head injury and multiple bodily injuries were of the maximum number, followed by spinal cord injury, stab injury, cut throat injury, and fire arm injury.

Natural type of death occurred in 469 (21.65%) of cases, from which respiratory system-related death occurred in the maximum number of cases, followed by cardiovascular cause, septicemia, gastrointestinal tract (GIT) cause, and so on [Table 5].

Table 1: Age- and sex-wise distribution of cases

Age group (years)	Male subjects	Female subjects	Total	%
0–11 months	6	4	10	0.46
1–10	39	30	69	3.19
11–20	147	81	228	10.53
21–30	464	151	615	28.39
31–40	387	108	495	22.85
41–50	297	48	345	15.93
51–60	202	33	235	10.85
61–70	93	32	125	5.77
71–80	24	9	33	1.52
81–90	3	7	10	0.46
91–100	1	0	1	0.05
Total, *n* (%)	1,663 (76.77)	503 (23.23)	2,166	100

Table 3: Distribution of cases according to cause of death

Cause of death	No. of cases	%
Injury	989	45.66
Natural	469	21.65
Asphyxia deaths	239	11.03
Burns	229	10.57
Poisoning	183	8.45
Electrocution	43	1.99
Unknown	14	0.65
Total	2,166	100

Table 2: Month-wise distribution of cases

Month	Mechanical injury	Natural	Violent Asphyxia	Burns	Poison	Electrocution	Unknown	Total	%
January	73	38	11	24	19	1	1	167	7.71
February	73	32	26	19	7	3	1	161	7.43
March	72	30	10	24	13	5	2	156	7.20
April	92	26	16	22	13	5	2	176	8.13
May	95	30	26	16	12	4	3	186	8.59
June	94	24	20	18	18	4	2	180	8.31
July	73	59	18	22	17	9	1	199	9.19
August	73	52	27	12	22	1	0	187	8.63
September	93	46	29	21	14	3	1	207	9.56
October	96	53	24	21	16	3	0	213	9.83
November	71	43	17	19	16	1	0	167	7.71
December	84	36	15	11	16	4	1	167	7.71
Total	989	469	239	229	183	43	14	2,166	100

Table 4: Distribution of cases according to various types of injury

Type of mechanical injury	No. of cases	(%)
Head injury	649	65.62
Multiple injury	310	31.34
Spinal cord injury	18	1.82
Stab injury	8	0.81
Cut throat	3	0.30
Firearm injury	1	0.10
Total	989	100

Table 5: Distribution of cases according to natural cause of deaths

Disease type (natural)	No. of cases	%
Respiratory system	192	40.94
Cardiovascular system	159	33.90
Septicemia(multiorgan failure)	79	16.84
GIT system	27	5.76
Blood system	6	1.28
Cerebral	3	0.64
Nonviable	2	0.43
Stillborn	1	0.21
Total	469	100

Table 6: Distribution of cases according to violent asphyxial deaths

Violent asphyxial death	No. of cases	%
Hanging	129	53.97
Drowning	92	38.49
Strangulation	15	6.28
Choking	3	1.26
Total	239	100

The total number of violent asphyxial deaths was 239 (11.03%) of the total 2,166 autopsies done during the whole year. Table 6 shows that, among the violent asphyxial deaths, the maximum number of case were of hanging (53.29%), followed by drowning (34.49%) and ligature strangulation, throttling, and choking [Table 6].

Discussion

Of the total 2,166 autopsy cases, male cases were 1,663 (76.77%) and female cases were 503 (23.23%). In this study, male outnumbered females with the ratio of 3.31:1, in the total number of cases. In the studies by Radhakrishna et al.,[1] Sharma et al.,[2] Wasnik,[3] Shrivastava et al.,[4] Zine et al.,[5] Qasim et al.,[6] and Afandi,[7]this result matched concurrently. The male case predominance may be explained by the fact that male subjects experience more exposure to the outside environment, as the socioeconomic structure of our community is where the man is the only partner who earns and has freedom out-of-doors, while women usually stay indoors.

The most common age group involved in all types of cases was 21–30 years and of both sex group. This finding is also consistent with the studies by Radhakrishna et al.,[1] Wasnik,[3] Zine et al.,[5] Qasim et al.,[6]and Afandi[7]. In the studies by Sharma et al.,[2] it was in the age group of 21–25 years, followed by 26–30 years. The maximum numbers of victims were young adults.

The maximum number of cases 96 (9.83%) were recorded in the month of October and 93 (9.56%) cases during September. In the study by Zine et al.,[5] 12.34% deaths occurred in the month of October and, particularly, on Fridays.

Maximum number of cases were of injury-related deaths (45.66%), followed by natural cause of deaths (21.65%), violent asphyxial deaths (11.03%), death owing to burns (10.57%), poisoning (8.45%), and electrocution (1.99%), and undetermined cause of deaths (0.65%).

Among the injury-related deaths, the major cause of death was of head injury in 65.62% of cases, followed by multiple body injury (31.34%), spinal cord injury (1.82%), stab injury (0.81%), cut throat (0.30%), and firearm (0.1%). In the study by Vij,[8] head injury cases comprised 69.5% of all the fatal RTA cases. The reason for their dominance was the head being the target of injury in the majority of assaults. These findings were almost similar to most of the studies done by other authors except the study by Afandi,[7] who observed that the leading cause of death was that blunt and sharp forces rather than RTAs, because in his country, RTAs cases do not require a medicolegal autopsy.

In this study, 469 (21.65%) cases were of natural cause of death. In our study, among the natural cause of death, respiratory system-related deaths (40.90%) were higher than cardiovascular system-related deaths (33.91%), which was almost similar to the study by Shrivastava et al.,[4] whereas in the study by Radhakrishna et al.,[1] cardiovascular system-related deaths were more in number than the respiratory system-related deaths. These two causes of death were followed by multiorgan failure (16.84%), GIT system (5.76%), and hematological disease (1.28%). Nonviable and stillborn fetus accounted as natural type of death in this study.

Violent asphyxial deaths comprised 11.03% of total cases; among them, 129 (53.97%) cases were of hanging, 92 (38.49%) cases of drowning, 15 (6.28%) cases of strangulation, and three choking cases (1.26%). These findings were almost similar to the studies by Wasnik[3]and Shrivastava et al.[4]

Among the 1,697 (78.35%) unnatural deaths, irrespective of the manner of death, the maximum cases were composed of injury-related deaths, which were (45.66%), from which a major portion was covered by RTAs and rail accidents in which a majority of death occurred owing to head injury and multiple injuries, followed by deaths caused by asphyxial (11.03%), burns (10.57%), poisoning (8.45%), and electrocution (2.53%) [Table 7]. This distribution is almost similar to the studies by Radhakrishna et al.,[1] Sharma et al.,[2] Wasnik,[3] Shrivastava et al.,[4] and Zine et al.[5] The reason is owing to the availability

Table 7: Types of unnatural death irrespective of the manner of death

Unnatural death	Number of cases	%
Head injury	649	38.24
Multiple injury	310	18.27
Asphyxial	239	14.08
Burns	229	13.49
Poisoning	183	10.78
Electrocution	43	2.53
Spinal cord injury	18	1.06
Unknown	14	0.82
Stab injury	8	0.47
Cut throat	3	0.18
Firearm injury	1	0.06
Total	1,697	100

of faster mode of transportation leading to traffic accidents, more traveling, and the chances of being more exposed to industrial and occupational hazards.

From the total 2,166 of autopsy cases, 183 (8.45%) cases of poisoning were found. Among them, 71 cases were of some unknown poison; in rest of the cases, the maximum number of cases was of acid ingestion, followed by organophosphate (OP) poisoning, aluminium phosphide (ALP) poisoning, snake bite, and so on. This finding was almost similar to the studies by Radhakrishna et al.,[1] Sharma et al.,[2] and Wasnik.[3] This is because a major part of the district consisted of rural population with agriculture as the main employment; hence, agrochemical poisoning was more prevalent.

In thermal type of injuries, burns comprised 10.57% and electrocution comprised 1.99% of the total number of cases. In this study, the cause of deaths owing to burns was at fourth number after injury related-deaths, natural deaths, and violent asphyxial deaths. In the study by Zine et al.,[5] it was the second leading cause of death, after injury related-deaths. In the studies carried out by Wasnik[3] and Qasim et al.,[6] the results were consistent with our study.

During this period, only one case of firearm was recorded, whereas in the study of Qasim et al.,[6] it was predominantly higher in number, and they quoted that it was higher in number, because of firearms being the weapon of choice for homicide purpose in Pakistan.

RTA is a preventable feature, and it is in fact sad to see that maximum number of deaths occur owing to this reason. The traffic rules and traffic sense needs to be taught right from the junior level, and laws should be strictly implemented. Natural deaths are the next cause of death, in which coronary insufficiency has been found out to be the main reason. Violent asphyxial deaths were the third commonest cause of deaths, and burn cases occupied the fourth place in this study; then, poisoning cases were found with, predominantly, OP poisoning. The majority of the state population is dependent on agriculture as the main source of income, and, therefore, there is a possibility of easy availability and individual accessibility of agricultural poisons. Such cases can be prevented by counseling them personally. Online counseling should be started along with online help for poison treatment provided for, at least, the commonly used poisons.

Conclusion

This study helps to interpret the types of medicolegal autopsy cases presenting at the mortuary of the Government Hospital. This will provide an insight to the policy makers, law custodians, and the community to look into the specific aspects of the cases and, then, take measures, accordingly, for the benefit of the community and people at large of this place. Health awareness about stress regulation and control and education creating awareness of the traffic rules and motor vehicle driving legislations must have to be strengthened and reinforced on time and again to bring down the numbers at the casualty. Improvement of road surface infrastructure, strict compliance with road safety rules by drivers and pedestrians, rapid emergency services, and the establishment of trauma care centers are the major factors that can reduce this hazard. Population explosion is a catalyzing factor for the increased number of accidents.

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How to cite this article: Patel JB, Chandegara PV, Patel UP, Parkhe SN, Govekar G. Profile of autopsy cases at New Civil Hospital, Surat: a retrospective study. Int J Med Sci Public Health 2016;5:10-13

Source of Support: Nil, **Conflict of Interest:** None declared.