

ORIGINAL ARTICLE

An Autopsy Study of Pattern of Unnatural Deaths among Youth Conducted at a tertiary Care Teaching Hospital in South India

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Abstract :

Mortality among youth owing to unnatural causes is on the rise. Hence, the present study was undertaken to assess the number of such deaths, the manner of death and the commonest cause of death. A total of 255 cases of unnatural deaths among youth aged between 15 and 29 years, autopsied at a tertiary care teaching hospital in South India were studied for duration of 18 months from November 2015 to April 2017. Unnatural deaths among youth constituted 25.91%, 1/4th of all medico-legal autopsies. Males outnumbered females. Most of the victims were 24 to 26 years old males and 21 to 23 years old females. Most of the victims were Hindu. Socio-economically, most of the victims belonged to the middle class. Most of them were urban residents belonging to nuclear families. Majority of the victims were secondary school students. Most of the unnatural deaths were suicides; with victims aged 27 to 29 years. In conclusion, most of the unnatural deaths among youth were suicidal in nature followed by accidents and lastly homicides.

Keywords : Youth; Attempted suicide; Head injury; Traffic accidents; Homicides; Autopsies.

Introduction :

Unnatural deaths are tragic incidents whether they are suicidal, homicidal or accidental. If death occurs exclusively by injury or is hastened due to injury in a person suffering from natural disease, the manner of death is unnatural or violent. Violence may be suicidal, homicidal, accidental or of undetermined or unexplained origin.¹

Youth is defined as the time of life between childhood and maturity.² The United Nations defines 'youth' as persons between the ages of 15 and 24 years.³ According to the government of India, the youth age-group is defined as 15 to 29 years. Youth in this age group comprises 27.5% of the population and 34% of India's gross national income is contributed by them.⁴

Road traffic injuries are the leading cause of death among 10-24 year olds. Approximately, 1000 children and young adults under the age of 25 years are killed in road traffic crashes every day.⁵ Suicide rate in India is among the highest in the world. At ages 15-29 years, suicide is the second leading cause of death in both sexes.⁶ Worldwide, homicide is the fourth leading cause of death in people aged 10-29 years.⁷

According to a United Nations report, India has the largest youth population in the world, with 356 million 10-24 year-olds.⁸ Bangalore, the capital of Karnataka with a population of over

12.3 million, is a culturally diverse city with a dynamic youth population and has high suicide and crime rates. As per newspaper reports in 2014, it records the second highest suicide rate in the country and the city is a motorist's nightmare, as the city has seen the highest number of deaths due to dangerous and reckless driving in the country. The City Crime Records Bureau statistics reported a total of 187 murders in the city in the year 2015.

This study aims to understand the patterns of unnatural deaths among youth in the age group of 15 to 29 years, the socio-demographic characteristics of the study group and the underlying reasons.

Materials and Methods :

The present prospective study was conducted for a duration of 18 months, from 1st November 2015 to 30th April 2017. The data for the study was collected from autopsies of unnatural deaths among youth in the age group of 15 to 29 years. In cases of hospital admission, all possible relevant information was obtained from hospital medical records. In cases of poisoning or suspected alcohol consumption or drug overdose, the routine viscera and blood were subjected to chemical analysis to determine the cause of death. Postmortem examination was carried out as per the standard procedure mentioned in "Autopsy Diagnosis and Technique" by Otto Saphir.

Inclusion criteria: All cases of unnatural deaths among youth in the age group of 15 to 29 years which were autopsied in the hospital in which this study was conducted.

Exclusion criteria:

1. Decomposed, unknown or unclaimed bodies.
2. Cases with ambiguous history or incomplete data.

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3. Cases with alleged history of unnatural deaths but which later turned out to be natural deaths based on autopsy, laboratory investigations, circumstantial evidence and investigation by the police.

Ethical clearance: The study protocol was carried out after obtaining ethical clearance from the Institutional ethics committee.

Results :

In the present study, male preponderance of 1.85:1:0.01 was observed wherein males accounted for 165 (64.70%) cases, whereas females accounted for 89 (34.90%) cases and transgender accounted for 1 (0.40%) case. These findings are consistent with those of Sharma BR et al.,⁹ who reported a male predominance, the male : female ratio being 2.2:1. Similar findings were reported by Vaghela P et al.¹⁰ and Wasnik RN.¹¹ In this study, most cases were in the age group 21 to 29 years (n=179, 70.2%). Sharma BR et al.,⁹ Vaghela P et al.,¹⁰ Wasnik RN,¹¹ Vaghela P,¹² Kumar A,¹³ Bansude ME et al.¹⁴ and Meena PR et al.,¹⁶ reported similar findings in their studies. However, contradictory findings were reported by Dake MD et al.,¹⁹ wherein the maximum number of unnatural deaths was observed in the age group of 31 to 40 years. In the present study, maximum number of victims were living in urban area (n=195, 76.47%) followed by rural area (n=60, 23.53%). The findings of the present study are similar to those of Wasnik RN,¹¹ wherein incidence was higher in urban population (61.50%) as compared to rural population (38.50%). Similar findings were reported by Rathod SN et al.¹⁷ and Malik R et al.²⁰ The findings of the present

study are in contrast with those of Vaghela P et al.,¹⁰ Kumar A,¹³ Kaul A et al.¹⁵ and others.^{16,18,19,22} In the present study, the majority of the victims of unnatural deaths among youth were unmarried (n=164, 64.31%), followed by married victims (n=86, 33.73%). The findings of the present study contradict those of Kumar A,¹³ Bansude ME et al.,¹⁴ Kaul A et al.,¹⁵ Dake MD et al.¹⁹ and Sharma BR et al.²⁶ In the present study, majority of unnatural deaths were suicides (n=171, 67.06%), followed by accidents (n=70, 27.45%) and lastly homicides (n=14, 5.49%). The findings of the present study differ from those of various studies,^{9,11,16,17,19,20} all of which reported the majority of unnatural deaths in their respective studies as accidents, followed by suicides and homicides. Khalil ZN et al.,²¹ observed in their study that the commonest manner of unnatural death was homicide (n=2856, 87.5%), followed by accidents (n=317, 9.7%) and least common was suicide (n=66, 2.02%). In the present study, the most preferred method for committing suicide was Hanging (n=151, 88.31%), followed by Poisoning (n=16, 9.36%). Similar findings were observed by Lalwani S et al.²⁶ and others.^{29,39} The present study differs in its findings from various studies^{6,27,28} all of which observed that the commonest method was poisoning, followed by hanging, burns and drowning. In the present study it was observed that most of the suicides among youth occurred in the age group of 27 to 29 years (n=43, 25.15%). The findings in the present study differ from those of Sharma BR et al.,²⁶ in which maximum number of cases belonged to the age group of 21-25 years 442 (31%). In the present study, it was observed that the commonest reason for committing suicide among youth, irrespective of gender, was Ill-health which included physical ailments such as Dysmenorrhea, Chronic abdominal pain, Chronic chest pain, Chronic renal Failure, Epilepsy and Psychiatric illnesses such as Depression (n=34, 19.89%) followed by Financial trouble (n=29, 16.96%), Trivial quarrels with family member, friend or relative (n=19, 11.11%), marital discord (n=18, 10.54%). The reason for committing suicide was unknown in 14 cases (8.19%) whereas 13 suicides (7.60%) were due to alleged abuse by husband and/ or in-laws demanding dowry. Stress or anxiety regarding academics claimed 11 lives (6.43%), Love failure (n=10, 5.85%), Failure in examination (n=9, 5.26%), Death of family member (n=6, 3.50%), Harassment/ Eve-teasing (n=5, 2.92%) and least number of suicides were due to Separation / Divorce (n=3, 1.76%). The findings of the present study differ from those of Sharma BR et al.,²⁶ wherein social difficulties accounted for 35%, followed by the reasons like guilt and shame in 27%, recent loss due to death of loved person in 14%, fear in 7%, Pain in 5%, Altruism in 2%, Hereditary factors in 1% and Psychosocial factors in 2% while substance abuse was found in 7% of the cases. In this study, among cases of Poisoning, the most common poison that was consumed to commit suicide was Aluminium Phosphide (n=9, 5.28%) followed by Organophosphorus compounds (n=3, 1.77%). Similarly, Lalwani S et al.,²⁵ in their study, reported that Poisoning with Aluminium Phosphide (celphos) was the commonest (n=91, 30.1%) followed by Organophosphorus compounds (n=34, 11.2%). Sharma BR et al.,²⁶ also observed similar findings in their study. In the present study, it was observed that majority of the accidental deaths occurred due to road traffic accidents (n=43, 61.43%) followed by fall from height

Table 1: Distribution of victims of unnatural deaths among youth based on their educational qualification

Educational Qualification	Number of cases	Percentage
Illiterate	21	8.24
Primary School	43	16.86
Secondary School	67	26.27
Pre-University College	54	21.18
Diploma	11	4.30
Degree	58	22.75
Post-graduation	1	0.40
Total	255	100

Table 2: Distribution of suicides among youth depending upon the reason for committing suicide

Reason for committing suicide	Total	Percentage
Ill-health	34	19.89
Financial trouble	29	16.96
Trivial quarrel with family member, friend or relative	19	11.11
Marital discord	18	10.54
Unknown	14	8.19
Physical and/ or mental abuse by husband and/ or In-laws demanding dowry	13	7.60
Stress/ Anxiety regarding academics	11	6.43
Love failure	10	5.85
Failure in Examination	9	5.26
Death of family member	6	3.50
Harassment/ Eve-teasing	5	2.92
Separation/ Divorce	3	1.76
Total	171	100

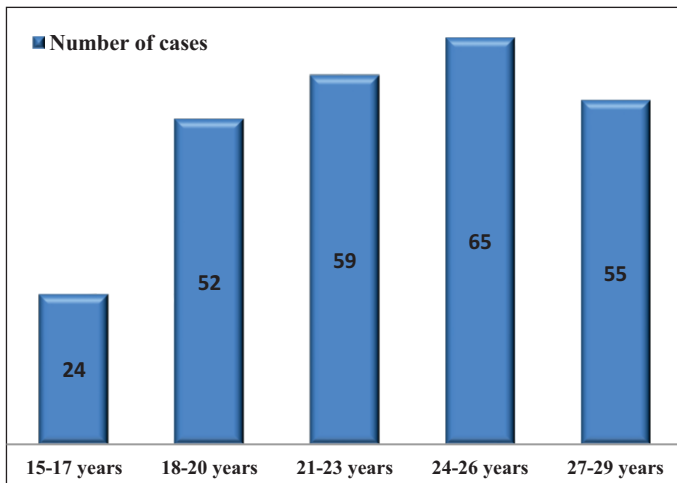


Fig. 1 : Age-wise distribution of victims of unnatural deaths among youth.

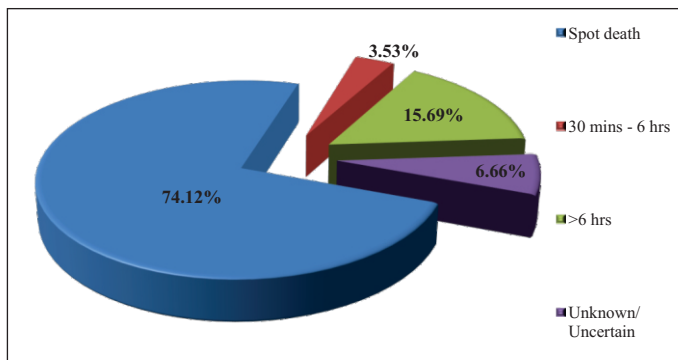


Fig. 2 : Distribution of victims of unnatural deaths among youth based on survival period.

(n=9, 12.85%), drowning and electrocution (n=5, 7.14%) each and burns (n=3, 4.29%). Similar results were observed in various studies,^{14, 16, 18, 20, 21} all of which reported the maximum number of cases of accidental deaths due to RTA. In the present study, Head Injury was the leading cause of death among victims of fatal accidents (n=36, 51.43%) followed by multiple Injuries (n=16, 22.86%), Drowning (n=5, 7.14%), electrocution (n=5, 7.14%), burns (n=3, 4.29%) and blunt Injury sustained to chest (n=3, 4.29%). Similar findings were observed in studies conducted by Vaghela P et al.¹⁰ and Patel JB et al.²³ Several studies on road traffic accidents^{31,33,43} also reported similar findings wherein head injury was the commonest cause of death. The findings of this study differ from those of study conducted by Vaghela P¹² in which majority of deaths were due to burns followed by head injury and regional injuries. In this study, the largest number of victims of fatal road traffic accidents were in the age group of 21 to 29 years (n=33, 76.74%). These findings are in concordance with those of Singh YN et al.³¹ and Shruthi P. et al.³³ but dissimilar to those of Surender J,⁴¹ who reported that the largest magnitude of deaths in the study population was in 31 to 40 years age group 88 (29.6%). In the present study, majority of homicide victims succumbed to injuries caused due to Sharp force trauma (n=8, 57.14%) followed by Blunt force trauma (n=4, 28.58%) and 1 victim (7.14%) was killed by Ligature Strangulation. The findings of the present study are similar to those of two

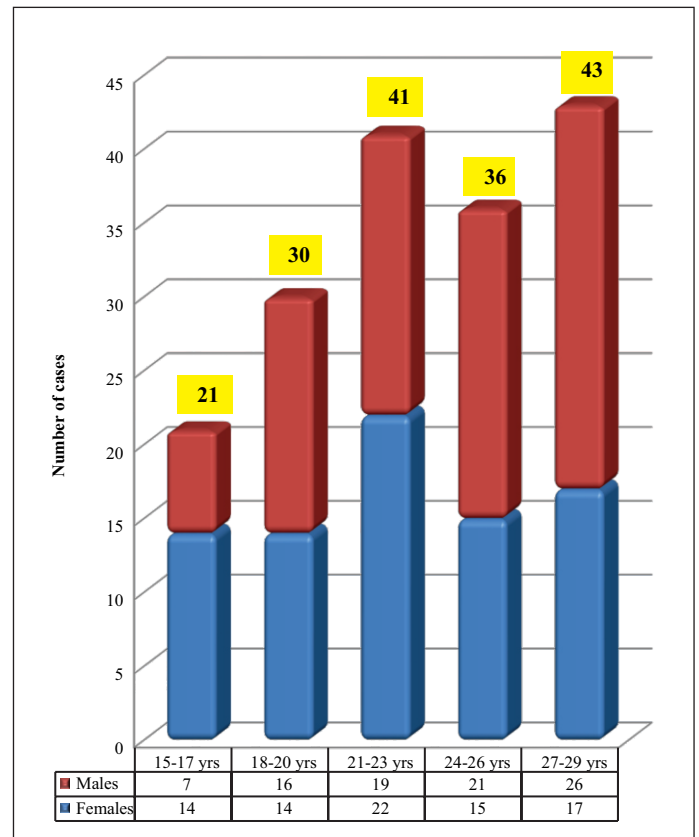


Fig. 3: Co-relation of age and sex in suicides among youth.

studies,^{38, 42} both of which reported that sharp cutting weapons were used to kill majority of the victims in their respective study populations. In both the studies, least number of victims were killed due to ligature strangulation. However, different findings were observed by Rathod SN³⁶ and Rastogi AK,³⁷ where hard & blunt object was used in majority of homicides followed by sharp cutting weapons. In the present study, majority of the homicide victims were in the age group of 21 to 29 years (n=9, 71.42%). The findings of the present study are unanimous with various other studies on homicidal deaths,^{19,34,35,38,42} all of which observed 21 to 30 years as the commonest age group among victims of homicides.

Conclusion :

Unnatural deaths among youth aged 15 to 29 years constituted 25.91%, that is, 1/4th of all medico-legal autopsies conducted at our hospital in the time span of 18 months. Males outnumbered females. Most of the victims belonged to the age group of 21 to 29 years, more specifically in the age group of 24 to 26 years, which accounted for 1/4th of all unnatural deaths among youth (25.50%). Majority of the victims were Hindus. Maximum number of unnatural deaths occurred in the student population out of which most of the victims were secondary school students.

Majority of the victims were urban residents. Most of the male victims were unmarried whereas most of the female victims were married. Socio-economically, middle class accounted for the maximum number of victims. Suicide emerged as the leading

cause of unnatural deaths among youth (67.06%) followed by fatal accidents (27.45%).

Maximum number of youth committed suicide between 12 noon and 6 in the evening, whereas maximum fatal accidents among youth occurred between 6 in the evening and midnight. Most of the victims of homicides were killed between 6 in the early morning and 12 noon. Maximum number of victims, in all manners of death, were either found dead or died on the spot with least number of victims surviving for less than 6 hours.

The most preferred method of committing suicide among youth was Hanging (88.31%) followed by poisoning (9.36%) in which, more than half the victims (56.25%) consumed Aluminium Phosphide. Majority of suicide victims were aged between 27 and 29 years. Most of the victims (83.63%) had never attempted suicide previously and a minority of victims (4.10%) left behind farewell notes.

Majority of the male victims of accidental deaths among youth died as a result of road traffic accidents (61.43%). Female victims of fatal accidents among youth were equally prone to road traffic accidents and burns. The leading cause of death among all accidental deaths was head injury followed by multiple injuries. The single transgender victim in this study died as a result of accidental burns.

Majority of the homicide victims were males and they were aged between 27 and 29 years. More than half of the victims of homicides (57.14%) in this study were killed using sharp weapons. Consequently, majority of the homicide victims died of shock and haemorrhage resulting from a combination of stab, chop and incised wounds.

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