

Unintentional Deaths among Adolescents in the Age Group of 10 to 19 Years: An Autopsy Study

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Abstract

Introduction: Adolescence is commonly regarded as a healthy time of life, with a peak in strength, speed, fitness, and many cognitive abilities. However, major shifts in health take place around puberty as new health risks with potentially life-threatening consequences become prominent. Unnatural deaths are the leading killer of today's teenage and adolescent generation, as the patterns have changed from infections to social aetiologies during the last decades. The unnatural deaths may be due to unintentional or intentional injuries. Unintentional injuries are mainly accidents. Intentional injuries are mainly suicides and homicide.

Aims and Objectives: To know the type, incidence, and sex wise distribution of unintentional deaths of adolescents in the age group of 10 - 19 years.

Material Methods: Department of Forensic Medicine, BMC & RI (Victoria & Bowring and Lady Curzon Hospitals) is a postgraduate institute that conducts autopsies of all sudden, suspicious, unnatural deaths which occur in and around Bengaluru. The present study is a descriptive study of unintentional unnatural death cases of Adolescents (10 to 19 years) which were autopsied at BMC & RI, Bengaluru for a period of 18 months from Dec. 2014 to May 2016.

Results: Out of 148 cases of unintentional injury, 109 cases were males (73.64%) and 39 cases were females (26.36%). Among unintentional deaths majority were due to RTA 58 cases (39.19%), Accidental Scalds / Burn injuries 30 cases (20.27%), Accidental drowning 18 cases (12.16%), Electrocution 14 cases (9.45%), Accidental railway injury sustained 15 cases (10.13%), Accidental fall 11 cases (7.43%), Snakebite 1 case (0.67%), Blast explosion 1 case (0.67%).

Conclusion: Adolescent age is an important stage in development. Death in adolescence is a potential life loss to family and society to some extent and reflects socioeconomic and Medical Health Care status at the National and Regional levels. Accurate legal investigations are essential in increasing awareness among National policymakers and educators/caregivers, to prevent adolescent deaths. To conclude useful and informative determinants of adolescent death were identified in this study. Since there is very little information regarding adolescent death in developing countries like ours. This suggests that each and every center conducting autopsies should come up with such studies to reflect the magnitude of the occurrence of unnatural adolescent deaths.

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Introduction

The World health organization (WHO, 1998) defines Adolescence as the period of life between 10 to 19 years of age. Adolescents are an interesting group, as they enter the period as children dependent on their families and leave as self-sufficient young adults. Around 1 in 6 persons is an Adolescent: that is 1.2 billion people aged 10 to 19 years and make up about 20% of the World's population. Adolescence is commonly regarded as a healthy time of life, with a peak in strength, speed, fitness, and many cognitive abilities. However, major shifts in health take place around puberty as new health risks with potentially life threatening consequences become prominent.¹⁻² Unnatural deaths are the leading killer of today's teenage and adolescent generation³, as the patterns have changed from infections to social etiologies during the last decades. The unnatural deaths may be due to unintentional or intentional injuries. Unintentional injuries are mainly accidents. Intentional injuries are mainly suicides and homicide. During the last decade, unnatural deaths were more common than natural deaths (disease) among adolescents⁴. Unnatural deaths are known to claim a substantial number of lives all over the world, with vehicular accidents accounting for a lion's share. The vehicular accident rate per thousand vehicles is greater in developing countries than in developed. In India, one person dies in less than every five minutes due to vehicular accidents⁵ and the accident rate i.e. the number of accidents per hundred thousand population is 24.3. The increased pace of mechanization, increasing the number of fast-moving vehicles, unskilled or semi skilled drivers, drunken drivers, and the woefully inadequate road system have ushered in this man-made epidemic in India. Ignorance and intentional violation of traffic rules, and encroachment of the roads by shopkeepers, hawkers, and stray animals play an important role in contributing to the increase of vehicular accidents.⁶

Poisoning is a major problem all over the world, though the type of poison and the associated morbidity and mortality varies from place to place and changes over a period of time. The use of poisons for suicidal and homicidal purposes dates back to

the Vedic era in India. The exact incidence of this problem in India remains uncertain, but, it is reported that 1 to 1.5 million cases of poisoning occur every year, of which nearly 50,000 die.⁷ The last quarter of the century has seen tremendous advances in the fields of agriculture, industrial technologies, and medical pharmacology. These advances have been paralleled by remarkable changes in the trends of acute poisoning in developing countries, including India.⁸

Fire and its searing/cleansing powers have been held in great reverence and fear in the Indian psyche. This extended to the cleansing and blessing of human bonds and relationship soverit. Even Shushruta's ancient medical treatise gave it the final sterilizing/cleaning authority. From this background, setting on e-self on fire may have been arrived at, as an Indian means of Honorable Suicide.⁹ The burn fatalities in India go beyond the meaning implied in the term "accident and the impact they cause, no longer remains confined to the family but spreads far wide to be aptly termed as a Social Calamity."¹⁰ The prevailing system of Dowry, which is mainly responsible for all such deaths, is a product of emerging capitalist ethos -the offshoot of an unequal society, a result of rampant consumerism, aided and abetted by the black market economy. Its increasing incidence is symbolic of continuing erosion and devaluation of women's status in independent India.¹¹

Aims and Objectives: To know the type, incidence, and sex-wise distribution of unintentional deaths of adolescents in the age group of 10 to 19 years.

Materials and Methods

Source of data:

Department of Forensic Medicine, BMC & RI (Victoria & Bowring and Lady Curzon Hospitals) is a postgraduate institute that conducts autopsies of all sudden, suspicious, unnatural deaths which occur in and around Bengaluru. The present study is a descriptive study of unintentional unnatural death cases of Adolescents (10 to 19 years) which were autopsied at BMC & RI, Bengaluru for a period of 18 months from Dec 2015 to May 2016.

Ethical clearance: Ethical clearance for the present study was obtained from the institution's ethical committee, Bangalore Medical College & Research Institute, Bengaluru.

Method Of Collection Of Data

Department of Forensic Medicine, BMC & RI (Victoria & Bowring and Lady Curzon Hospitals) is a postgraduate institute that conducts autopsies of all sudden, suspicious, unnatural deaths which occur in and around Bengaluru. The present study is a descriptive study of unintentional unnatural death cases of Adolescents (10 to 19 years) who were autopsied at BMC & RI, Bengaluru for a period of 18 months from Dec.2014 to May 2016.

All unintentional unnatural death cases of the age group 10 to 19 years autopsied at Bangalore Medical College and Research Institute, Bengaluru were included in the study. Relevant autopsy findings related to each of these cases were taken for analysis. Further, the details of clinical data of the victim including the investigations and procedure, survival period, time, and cause of death were ascertained from hospital records. Information pertaining to the time and manner of death was sought from the police personnel investigating the case. Some of the particulars like reasons for the death were also obtained from direct interrogation with relatives, friends, and others along with the police. The various epidemiological factors involved such as age sex, socio economic status, and others were noted down. These were then correlated with the post-mortem findings to conclude the analysis of each case. All the findings thus obtained were noted down in a separate Performa for each.

Inclusion Criteria

1. All cases of unintentional unnatural deaths in the age group of 10 to 19 years
2. Both males and females

Table 2. Age Incidence Of Victims.

Age(Yrs)	Male	Percent	Female	Percent	Total	Percent
10 to 14 years (Early Adolescence)	36	18.5	37	18	73	18.3
15 to 19 years (Late Adolescence)	158	81.5	168	82	326	81.7

Exclusion Criteria:

1. Decomposed dead bodies of the age group 10 to 19 years.
2. Unknown dead bodies where the exact age is not clearly established
3. Mass disasters.

Results

Department of Forensic Medicine, Bangalore Medical College and Research Institute, Bengaluru is a postgraduate Institute that conducts autopsies of sudden, suspicious, unnatural deaths which occur in and around Bengaluru. The present study is a descriptive study of unintentional unnatural death cases which was autopsied at Victoria and Bowring & Lady Curzon hospitals, Bengaluru for a period of 18 months from December 2014 to May 2016 which form the material of the study.

During this period 7219 cases were brought for post-mortem examination out of which 5522 deaths (76.5%) were due to unnatural causes. Out of 5522 cases of unnatural deaths 399 deaths (7.22%) were of adolescents of the age group 10 to 19 years.

In this study among 399 of Unnatural deaths among adolescents in the age group of 10 to 19 years. 251(62.90%) cases were intentional deaths and 148 (37.10%) cases were unintentional deaths

Table 1. Type Of Unnatural Death

Type of unnatural deaths	No of cases	Percent
Intentional Death	251	62.9
Unintentional Death	148	37.1
Total	399	100

Out of 399 cases of Unnatural deaths among adolescents in the age group of 10-19 years 73 cases(18.3%) were in the early adolescent age group (10 to 14 years)[M; Fratio was 36:37] and 326 cases were of late adolescent (15 to 19 years) age group [M: F ratiowas158:168].

Out of 148 cases of unintentional deaths 58 cases (39.19%) were due to road traffic accidents, 30 cases (20.27%) were due to accidental burn/scald injury, 18 cases (12.16%) were accidental drowning, 15 cases (10.13%) were due to accidental railway injuries, 14 cases (9.45%) due to electrocution, 11 cases (7.43%) due to fall/wall collapse. 1 case (0.67%) due to snake bite and 1 case (0.67%) of blast explosion.

Table 3. Type Of Unintentional Deaths

Unintentional Death	No of cases	Percent
Road Traffic Accidents	58	39.2
Accidental burn/Scald	30	20.3
Accidental Drowning	18	12.2
Accidental Railway Injuries	15	10.1
Electrocution	14	9.4
Accidental fall from height	11	7.4
Snake Bite	1	0.7
Blast Explosion	1	0.7
Total	148	100

Out of 148 cases of unintentional injuries 109 cases were males and 39 cases were females.

Table 4. Type and Sex Wise Distribution of Unintentional Death

Unintentional Death	Male	Female	Total
Road Traffic Accidents	49	9	58
Accidental Burn/scalds	13	17	30
Accidental Drowning	16	2	18
Accidental Railway Injuries	11	4	15
Electrocution	10	4	14
Accidental Fall from Height	9	2	11
Snake Bite	0	1	1
Blast Explosion	1	0	1
Total	109	39	148

Discussion

Death is unnatural when caused prematurely against the order of nature by injury, position, or other means of violence. Unnatural deaths claim a substantial number of lives in developing countries like India. Many cultural and socio economic factors in a country are usually related to the

causation of unnatural deaths. The aim of this study is to investigate teen age and adolescent deaths due to unintentional unnatural causes in the city of Bangalore. This particular section of society is very much needed for building the nation in the future. There is limited data on teen age and adolescent mortality, particularly from developing countries with unreliable death registration systems. This calls for the use of other sources of data to ascertain the cause of teen age and adolescent mortality.

Adolescence is an important stage in development, death among the mis the important reason for potential life loss to the family and society, and to some extent, it reflects a national, regional, social, and economic situation and medical health care level. Especially, the juvenile victims of those homicide cases directly reflect the area's social order and stability situation.

Out of 5522 cases of unnatural deaths, 399 cases (7.22%) were of adolescents belonging to the age group 10 to 19 years, the incidence correlates with most of the previous studies.¹²

In this study among 399 deaths 251 (62.90%) cases were intentional and 148 (37.10%) cases were unintentional.

Out of 148 cases of unintentional deaths 58 cases (39.19%) were due to road traffic accidents, 30 cases (20.27%) were due to accidental burn/scald injury, 18 cases (12.16%) were accidental drowning, 15 cases (10.13%) were due to accidental railway injuries, 14 cases (9.45%) due to electrocution, 11 cases (7.43%) due to fall/wall collapse. 1 case (0.67%) due to snake bite and 1 case (0.67%) of blast explosion. Out of 148 cases of unintentional deaths 109 (73.64%) were males and 39 (26.36%) were females. Previous reports show that among unintentional injuries, fatalities from road traffic accidents (RTA) are quite prevalent.¹²

Other causes of injuries leading to death among adolescents cited in the literature are drowning, hanging, firearms, and stabwounds and burns. Among adolescents, traffic injuries and burns are responsible for maximum injury-related mortalities in males and females, respectively. More injury reducing measures are required for effective reduction in traumatic deaths.

Conclusion

Teenage and adolescence are important stages in development. Death among them is the important reason for potential life loss to the family and society and to some extent it reflects the socio-economic and medical health care status at national and regional levels. It is essential to establish a protective system and enhance the education level among teenagers and adolescents to prevent them from unnatural deaths. Infact, the public health burden of all unnatural deaths needs to be estimated to provide a rational basis for policy decisions to implement necessary interventions.

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