

Original Article

Profile of Medico - Legal Cases which are Brought for Autopsy in the year 2015 in The Institute of Forensic Medicine, Madras Medical College, Chennai, Tamil Nadu, India – A Retrospective Study

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Abstract

The autopsy based study on the profile of medico - legal cases in any hospital which includes both natural and unnatural deaths reflects not only the rate and pattern of crime and natural deaths prevailing in that area but also helps us to curb their incidence and handle the preventable casualties in a better way in future.

Aims and Objectives : To identify the manner and cause of death in natural and unnatural cases brought for autopsy.

Materials and Methods : We retrospectively studied the 2,612 cases which were brought for autopsy at the Mortuary, Rajiv Gandhi Government General Hospital and Madras Medical College, Chennai, Tamilnadu, India, in the year 2015.

Results : Of the total 2,612 cases, unnatural deaths constitute 82.23% and natural death constitute 17.77% of total cases (2148). Accidental deaths followed by natural deaths comprise most of the casualties, which lead to many deaths. Road Traffic Accident constitutes 71.26%(1210 cases) of unnatural deaths and death due to coronary events constitutes 55.82 % (259 cases) of natural deaths. Poisoning was the most common mode used for committing suicide (60.6%).

Conclusion : When compared with the previous studies, it was observed that the most common cause of death in our study too was road traffic accident, probably owing to higher frequency of transportation. Male population were predominantly involved in all varieties of cases owing to the exposure of the male population to the outside atmosphere due to work nature even in this modern era of social equality among both the sexes.

Key Words: Unnatural deaths, Road traffic accidents, Mechanical injury, Natural deaths, Poisoning

Introduction

The study of medico-legal case profile helps not only to assess the pattern of casualties and study the crime rate prevailing in the area but also to prevent the same in future. Even in younger age groups, vehicle related deaths and coronary events are in rising manner over the decades.¹⁻³ Nowadays, road traffic accidents (RTAs) and death due to coronary artery disease are the commonest cause for most of the casualties among unnatural deaths and natural deaths respectively, in many hospitals, which lead to many morbidities and mortalities.⁴ This study aims at analyzing the deaths due to natural or unnatural causes, so that we can put our effort to reduce its incidence and improve the survival rate. The number of medico-legal cases in industrial zone like Chennai is on the raise due to increase in various modifiable parameters such as population, unemployment, economic disparities, drug abuse, vehicular traffic and meagre infrastructure facilities.

Aim

This study is done to know the manner of death and cause of death in both natural and unnatural cases.

Materials and Methods

This one year retrospective study conducted in the institute of Forensic Medicine, Madras Medical College from January 1, 2015, to December 31, 2015 includes all dead bodies which are brought for autopsy to Rajiv Gandhi Government General Hospital. In this study, the following parameters are given importance: total number, age wise, month wise, sex wise and manner wise distribution, cause of death and causative agent. The collected data were tabulated and the frequency and proportion of these fatalities were determined and the results obtained were expressed in terms of percentages.

Results and Discussion

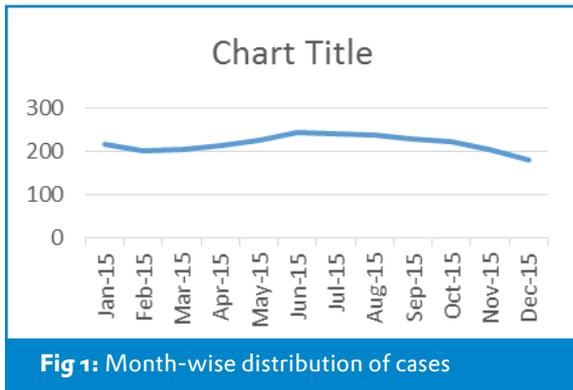


Fig 1: Month-wise distribution of cases

During the period of 1 year, a total of 2612 autopsies were done, among which maximum number of 243 cases (9.30% of Total cases) were done in the month of June.

Age Group	Male	Female	Total	
0-10	44	17	61	2.34%
011-020	127	38	165	6.32%
021-030	413	73	486	18.61%
031-040	394	65	459	17.57%
041-050	459	75	534	20.44%
051-060	403	85	488	18.68%
061-070	237	57	294	11.26%
>70	78	47	125	4.79%
Total	2155	457	2612	
	82.50%	17.50%		

75.3% of total post-mortem (1967 cases) was done in the age group of 21-60 years which is the most productive year in one’s life. It was also observed that in the same age group of 21- 60, males accounted for 84.85% of total cases. It was observed in this study, that the male sex were predominant (2155 cases) with age group of 41-50 years (534 cases, 20.44% of Total cases). Similar findings (71%) were observed in another study⁴. In a study conducted by Murthy et al⁵ in 150 cases, 123 (82%) were males and 27(18%) were females. Similarly, in a study conducted by Singh et al⁶ in 200 cases, 170 (85%) were males and 30 (15%) were females. In a study conducted by Padmavati ⁷ and Tandon⁸, male sex predominates with 66.5%. Similarly, male sex predominates with 74.8% in a study conducted by Bhargava et al⁹. The reason for male preponderance in majority of studies was due to the fact that males usually go out of house for earnings as they are bread earners and females usually does house hold domestic work, which makes the male population more vulnerable to increased stress, violence and road traffic and train traffic accidents (TTAs). Also males indulge more in smoking, alcoholism etc than female population which makes them prone to accidents and early natural deaths. Our findings were similar to a study conducted at PGIMER, Chandigarh where male sex predominates with 73.42% and female sex 26.58%¹⁰. Similarly, study conducted at Dhaka Medical College, Dhaka, Bangladesh showed male preponderance with 73.32% males and 26.68%

females¹¹. Similarly, 66% were males and 34% were females in a study conducted on the victims of vehicular accidents in Delhi¹². In study conducted at Kasturba Medical College, Manipal 75% were females and 25% were males, which was different from our study¹³.

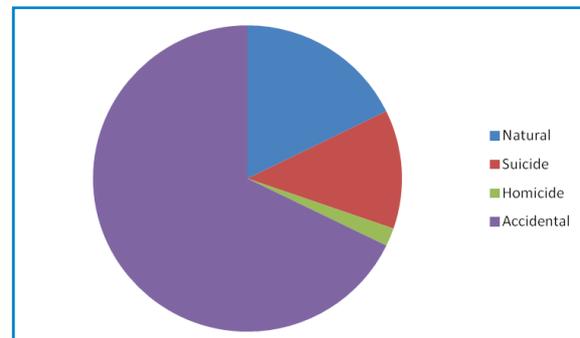


Fig 2: Manner wise distribution of cases

Injury-related death comprises 78.53% (1698 cases) of 2148 (82.23%) unnatural deaths, irrespective of the manner of death. The findings observed in our study were similar to that of study conducted at PGIMER, Chandigarh, with accidental deaths comprising 79.3%, suicidal deaths comprising 13.9%, and homicidal deaths constitute 6%¹⁴. But our findings differ from the findings observed in study conducted at Government Medical College and Hospital, Chandigarh where accidental deaths constitutes 49.56%, suicidal deaths constitutes 38.55% and homicide deaths constitute 4.44%¹⁵. Dr. KV Radhakrishna et al⁴ did his study based on post-mortems performed at the Medico-legal Centre of a tertiary healthcare centre in Pune from October 2008 to October 2013. In his study out of 1328 cases, Natural causes were 388 cases (29.21%) and unnatural were 816 cases (61.44%). In my study also unnatural deaths predominates natural death (2148 cases, 82.23%).

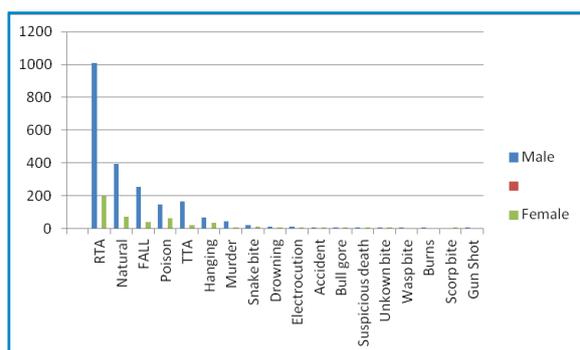


Fig 3: Manner and Sex wise distribution of cases

The predominance of RTAs (70.48%) in a Cross Sectional Study of Pattern of Unnatural Deaths in Autopsies at Mortuary of KLES'S Hospital and MRC, Belgaum done by Santhosh. C. S, et al¹ during the period from Oct. 2004 to Oct. 2005 was due to the close proximity of Belgaum city to the Golden Quadrilateral highway traversing the city. Even within the city, congested and overcrowded roads with an increase in the number of vehicles leads to increased number of vehicular accidents¹. In the study conducted at

Government Medical College and Hospital, Chandigarh, RTA accounted for 36.26% which was less when compared to our study. The findings observed in the study conducted during 1994-2001 at Government Medical College and Hospital, Chandigarh were similar with respect to RTAs (65.72%) and burns (14.09%) but differ in case of poisoning (9.87%)¹⁶. During the year 1994-2003, another study was conducted at the same centre (Government Medical College and Hospital, Chandigarh) by an author, in which RTAs accounts for 73.17%, which was similar to the findings observed in our study¹⁵. As similar to the observations made in the city of Belgaum, the proximity to National Highway and increases number of vehicles may be the reason for increases incidence of accidents.

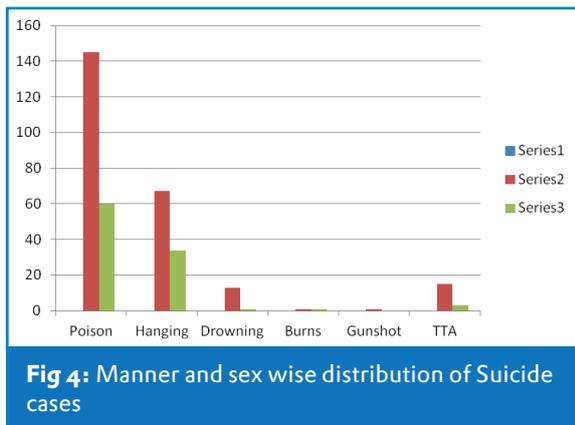


Fig 4: Manner and sex wise distribution of Suicide cases

The suicide rates reported by various reports which are published in India over a period of time are 43 per 100,000¹⁷, 28.57 per 100,000¹⁸, 38 per 100,000¹⁹, 29 per 100,000²⁰ & 22.83 per 100,000. In our study, suicidal deaths comprise 13.2 % of total deaths. Among that, suicide by poisoning (60.6%) is more common, followed by hanging (29.28%). Among which, Male sex predominates. Our findings in suicidal deaths were similar to the study conducted at Government Medical College and Hospital, Chandigarh in which suicidal deaths due to poisoning was 48.49% and due to hanging was 9.88%, but differ in case of burns (39.79%) as a manner of suicide¹⁵. Suicide by Hanging as the most common method followed by either poisoning or drowning in water and burns was observed in the study at Ireland²¹, Epirus in North West Greece²², Manipur²³ and Behrampur²⁴ which was different from our study.

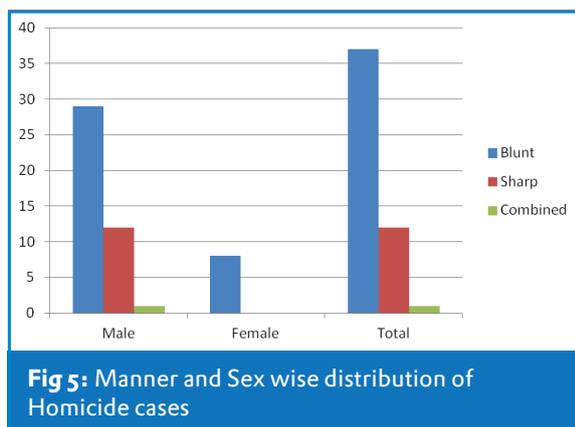


Fig 5: Manner and Sex wise distribution of Homicide cases

In our study, Homicidal deaths comprise 1.9% of total deaths. Among that, Homicide by blunt weapon comprises 74% of total cases. Among that, Male sex predominates. This was in contrast to the study conducted in Belgaum, where Homicide by sharp weapon predominates (66.33%), followed by combined (Blunt and Sharp) (33.33%)¹.

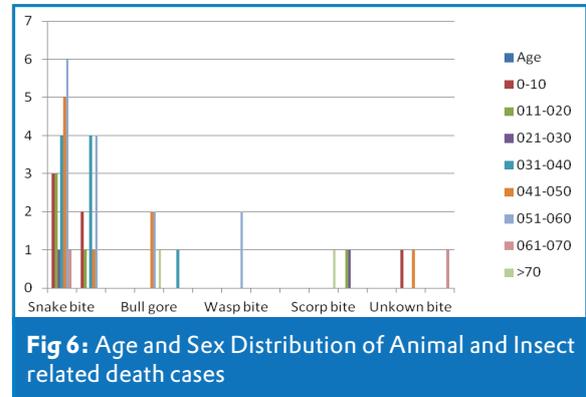


Fig 6: Age and Sex Distribution of Animal and Insect related death cases

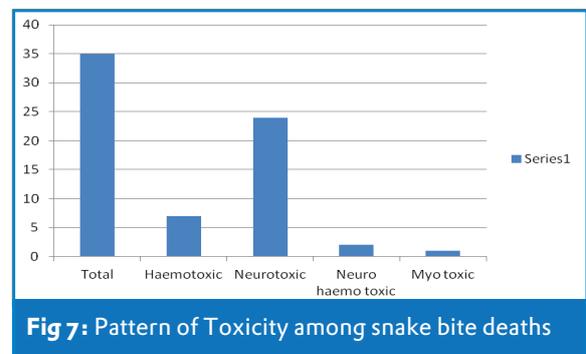


Fig 7: Pattern of Toxicity among snake bite deaths

Among the insect and animal related 49 deaths (1.88%), Snake bite deaths was predominant (71.43%) and male sex was predominant except in wasp and scorpion bite deaths. Our findings were similar to that observed in a study in Belgaum (3.3%) which snake bite predominates with 2 cases (1.67%) followed by scorpion bite 1 case (0.83%) and death due to bull gore injury 1 case (0.83%) out of 120 cases¹. Neurotoxic snake envenomation predominates in our study. The high predominance of male sex when compared to female sex in death due to animals and insect bites may be due to the fact that males are exposed to the outside environment for the purpose of earning for their families due to the socioeconomic structure of community in which he is living, while women population usually stays inside the house.

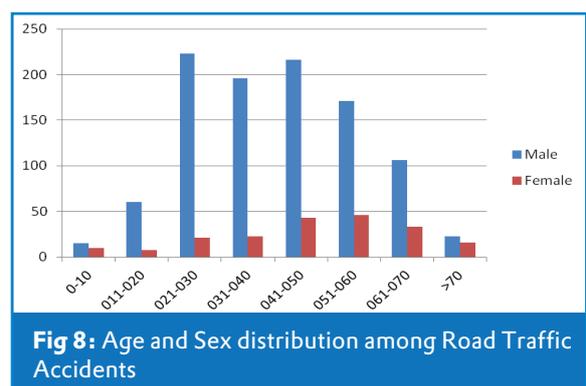


Fig 8: Age and Sex distribution among Road Traffic Accidents

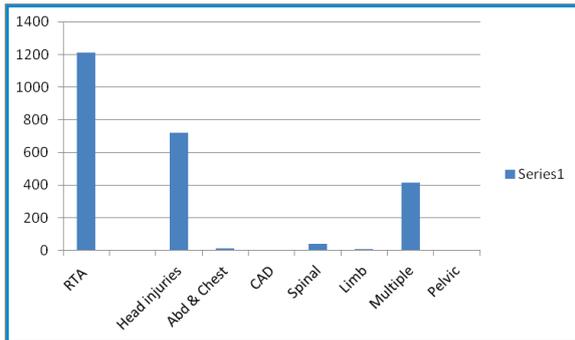


Fig 9: Cause of Death among Road Traffic Accidents

Our institution being a referral centre and tertiary care hospital, most cases of head injuries were referred here. So, that may be one of the reasons for high percentage of Head injuries followed by multiple injuries in Road traffic accidents in our study which was similar to the study conducted by Chaudhary B L, et al in Maharashtra² and study conducted in Fiji²⁵. In this study, head injuries constitutes 67 cases (65.7%), followed by multiple injuries which constitutes 57 cases (55.6%), thoracic injuries which constitutes 56 cases (54.9%), abdominal injuries which constitutes 31 cases (30.3%), vertebral injuries which constitutes 21 cases (20.5%) and vessel injuries which constitutes 12 cases (11.7%). Limb injuries predominate with 31.08% of the total injuries in a study conducted in Jammu, followed by injuries involving head, thorax, abdomen, pelvis and spine which was different from the findings we observed in our study²⁶. RTA's outnumber other causes in all the months of that year which constitutes 71.26% (1210 cases) with male predominance. The faster, the mode of transportation more will be the rate of traffic accidents.

Among fall from any causes whether due to fall on road or from height, Death due to injuries is the most common cause (92.8%). Among that, Head injuries predominate followed by multiple injuries as similar to findings observed in Road Traffic accidents. As mentioned earlier being a referral and tertiary care centre may be one of the reasons for this dominance of Head injuries.

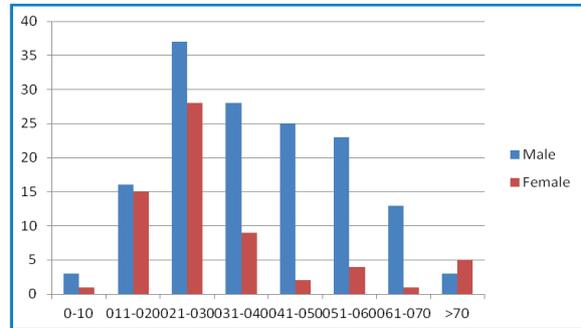


Fig 12: Age and Sex distribution among Poison cases

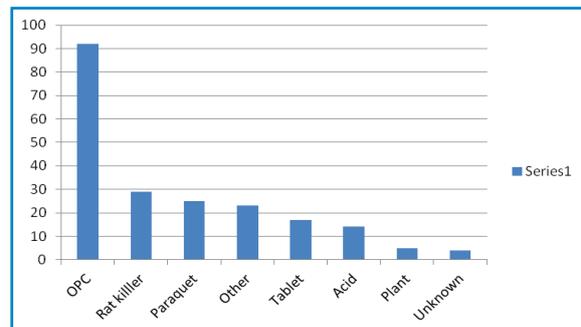


Fig 13: Poisoning profile based on inquest report

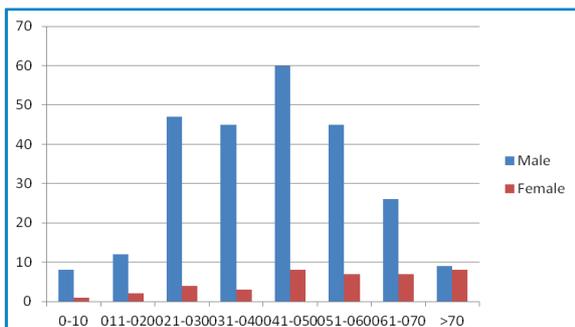


Fig 10: Age and Sex distribution among Accidental Fall

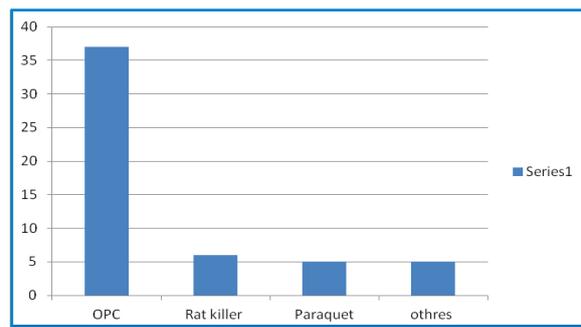


Fig 14: Poisoning profile based on Viscera report

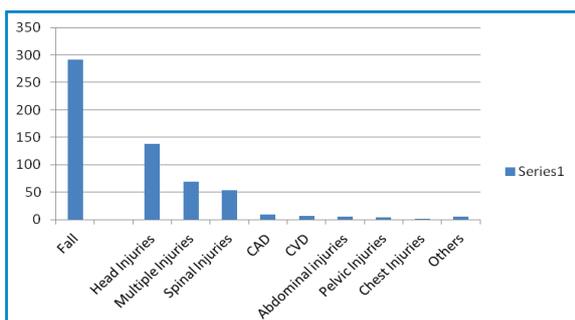


Fig 11: Cause of Death among Accidental Fall

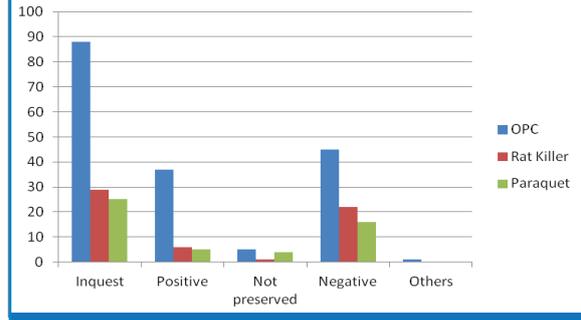


Fig 15: Viscera positivity among poisoning deaths

The female sex predominance (males - 9.8% cases and females - 12.4% cases) and involvement of age group of 16 – 25 years (48.31%) in poisoning deaths which was observed in the study conducted at PIGMER, Chandigarh differs from our study¹⁴

Poisoning constitutes 213 cases (8.15%) which include both accidental (04) and suicidal cases (209). No homicidal poisoning was noted in our study. Based on the history, inquest report and treatment details, OPC was the most common substance used for poisoning, which was followed by rat killer and Paraquet. Among 213 poison cases, viscera were preserved in 196 cases. 37 cases were positive for OPC, 6 cases for Rat killer and 5 cases for Paraquet. The higher value of negativity in viscera report may be due to the increased survival period in many of the poison cases, so that the toxic component was not detected in the chemical analysis of viscera.

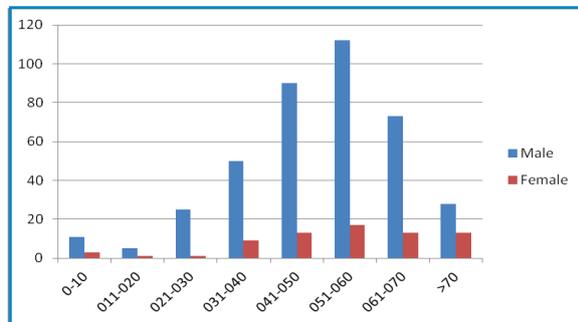


Fig 16: Age and Sex distribution among Natural causes

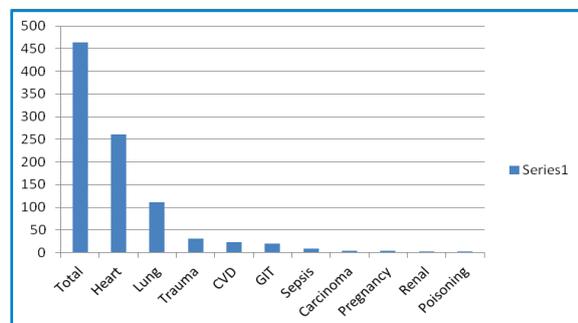


Fig 17: Cause of death among natural causes

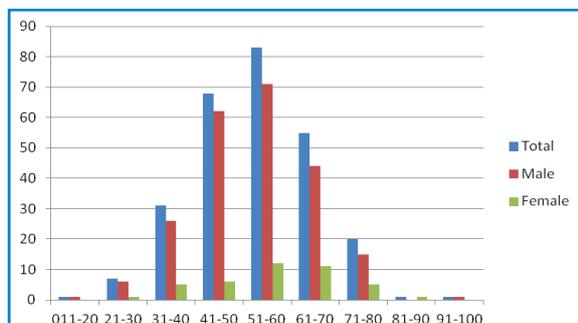


Fig 18: Incidence of CAD in various age groups

In our study, Coronary artery disease was the most common cause of death among natural causes (56.03%) which was followed by lung pathology (111 cases) in which 65 cases was Pulmonary tuberculosis. Majority of deaths due to natural causes were noted in age group of 30-80 with male predominance (83.78%). It is similar to study conducted in Maharashtra in which cardiac pathology were predominant (51.80%) with 78% of male sex.⁴

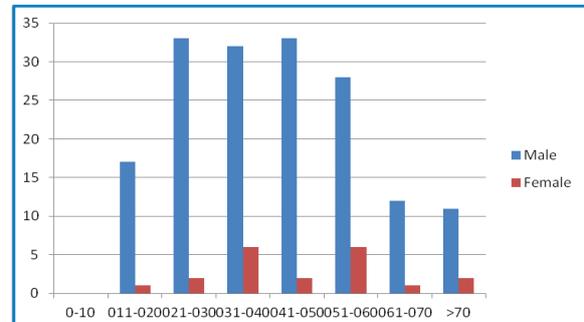


Fig 19: Age and Sex distribution among Train Traffic accidents

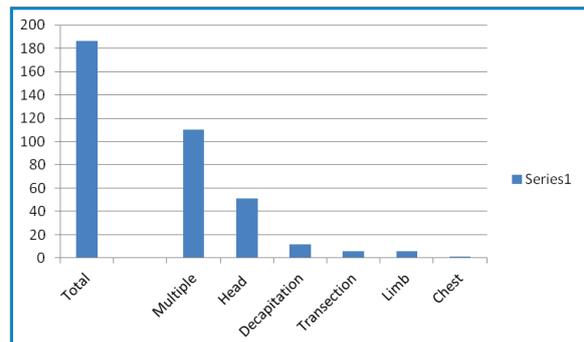


Fig 20: Cause of Death among Train Traffic Accidents

In our study, death due to multiple injuries was the most common cause of deaths in Train traffic accidents (59.13%) which was followed by Head injuries. Among total 186 cases, 168 cases were accidental (90.32%) and 18 cases were suicidal (9.7%) with male predominance and age group of 21-50. Our findings were similar to study conducted in Department of Forensic Medicine & Toxicology, Indra Gandhi Government Medical College, Nagpur.²⁷ The predominance of Male sex in deaths due to railway accidents was observed by others also.²⁸⁻³¹ Similar findings of age group between 21 to 50 years were observed by the others.²⁸⁻³¹ Similar findings of majority of cases as accidental followed by suicidal were observed in various other studies.^{28, 30-32}

Conclusion

This study helps in interpretation of all deaths whether it was natural or unnatural which was brought for medico legal autopsy at our mortuary. Unnatural deaths are more when compared to natural deaths especially in developing country like India. Unnatural deaths which is considered to be one of the indicators of social and mental health was analyzed to get an idea about the manner of death, which in turn reflects the socio-economic status of the society in which the study was conducted.

RTA, a preventable one forms a major cause of fatalities in our study. Public health and other human service agencies and law- enforcement personnel have their responsibility in preventing such mishap in our society.⁴ Though population explosion, increase in pace of mechanization and fast moving vehicles, bad road condition, semi skilled and drunken drivers increase the number of road traffic accidents, we can bring down the casualties by creating awareness about stress regulation and control, strengthening and reinforcing the traffic rules and motor vehicle driving legislations on time and again, road surface infrastructure improvement, following road safety rules, establishment of trauma care centres and emergency care services. RTA produces not only disabilities and fatalities but also absenteeism from work which not only increases the cost due to loss of productivity but increases the need for financial borrowing and debt and thus decreases the food consumption.

destruction by poisoning is commonly adopted by farmers and those handling such chemicals. Online counselling and treatment should be started for at least, the commonly used poisons. Suicide by hanging which stands next to TTA can be reduced by Counselling.

This study helps policy makers, law custodians, and the community to take measures for the benefit of the community and people. The crime rate and homicidal case rate can be minimised by improving the literacy rate and decreasing the unemployment of the youth. All unnatural deaths should be avoided wherever possible by adopting preventive measures promptly. Even if it is not preventable, the life of the victim should be saved by prompt and immediate care.

The above study radically evaluates data pertaining to medico legal cases brought for autopsy at a Medico legal Centre at a tertiary healthcare centre. Medico legal Autopsies form an integral and indispensable part of an investigation of a sudden suspicious death. The skills and experience of an Autopsy surgeon facilitate the law enforcement agencies in administration of justice and bring the guilty to the gallows. The data generated would facilitate the medico-legalist in having a greater insight in the baffling occurrence of a sudden suspicious death in their area of jurisdiction.

Acknowledgements

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Not Smile But Surprise Is The Key To Younger Look!

The conventional wisdom is that smile makes one's face look younger. Smile is an expression usually associated with happiness. Smile generally implies that the person who flashed it is apparently happy, probably healthy and at peace with himself and the world. A new study published in the latest issue of Psychonomic Bulletin and Review, challenges this conventional wisdom. In a carefully designed and executed study, the researchers from Canada and Israel, prepared a set of three photographs from each face expressing smile, neutral and surprise respectively. They arranged these images in such a way that only one expression from each face was shown to each participant who was then asked to guess the age of the person with that face. When the results were analysed it was found that participants rated smiling face one year older than the neutral one and faces expressing surprise or shock were rated 2 years younger. When the participants were later asked what in their belief makes an individual look younger, almost all replied that it was smile. Apparently, what one believes is not a guide to how one decides. So, if you want to look younger, don't smile; feign surprise!

(Ganel, T. & Goodale, M.A. Psychon Bull Rev (2017). doi: 10.3758/s13423-017-1306-8)

- Dr. K. Ramesh Rao