Research Journal of Pharmaceutical, Biological and Chemical Sciences

Study Of Demographic Pattern Of Railway Accident Victims.

Anil J Pundge[1]*, Shailendra H Anande[2] , and Bhalchandra G Chikhalkar[3].

[1]Assistant Professor, Dept of FMT, Dr. SCGMC, Nanded, Maharashtra, India.
[2]Assistant Professor, Dept of FMT, GGMC, Mumbai, Maharashtra, India.
[3]Professor and Head, Dept of FMT, GGMC, Mumbai, Maharashtra, India.

ABSTRACT

This prospective study aimed to investigate fatal railway accident injuries through medicolegal post-mortem examinations, focusing on cases referred to a tertiary care Government Hospital post-mortem center. The study period spanned from October 1, 2017, to September 30, 2019. Cases meeting inclusion criteria, encompassing victims of railway accidents declared deceased before or after hospitalization, were analyzed. Data were sourced from investigating agency documents, supplemented by information from relatives. Autopsy procedures included comprehensive external and internal examinations, injury pattern assessment, and chemical analyses. Demographic, hospitalization, occupation, and socio-economic data were analyzed using descriptive statistics. Among the 2652 total autopsy cases, railway fatality cases constituted 4.29%. The age distribution revealed a high percentage (36.8%) in the 21-30 years age group. Males comprised 88.60% of the victims, with 61.4% adhering to the Hindu religion. Geographically, the Central railway line region accounted for the most cases (52.6%), while lower socio-economic status predominated (36%). This study provides crucial insights into fatal railway accident injuries, highlighting the youth's vulnerability and socio-economic disparities. The findings emphasize the importance of targeted preventive strategies and safety measures to mitigate such accidents.

Keywords: Railway accidents, medicolegal post-mortem, demographic patterns, socio-economic status, preventive strategies.

*Corresponding author

INTRODUCTION

According to the World Health Organization (WHO), an accident is an unpremeditated event resulting in recognizable damage.(1)The rail transport system first appeared in England in the year 1820s. The railway was first introduced to India in 1853 from Bombay to Thane. The United States has the world's no. 1 largest railway network and India is in the 4th position after Russia and China. In Indian railways, more than 22.2 million passengers traveled per day or 8.107 billion passengers annually from 2015–2016. (2,3,4) Indian railway ran on average 13,313 passenger trains daily in 2015–16. Mail or express trains are the most common type1. Since the introduction of the railway in India, it has spread its reach and network throughout the country connecting all major cities, states, ports and neighboring countries. It has become the largest public transport system in the world.(5).

MATERIAL AND METHODS

A prospective study design was employed to investigate cases of fatal railway accident injuries referred for medicolegal post-mortem examination at a tertiary care Government Hospital post-mortem center under the Forensic Medicine and Toxicology Department. The reference population consisted of cases with alleged histories of railway accidents referred for post-mortem examination over a two-year period, from October 1, 2017, to September 30, 2019. The Institutional Ethics Committee approved the study.

Inclusion criteria encompassed all cases of railway accident deaths declared deceased before hospital admission, as well as cases where victims were hospitalized, subsequently died, and were referred to the post-mortem center for Medicolegal Postmortems. Excluded were cases of natural death, deaths unrelated to alleged railway accidents, bodies within railway premises lacking suspected railway accident correlation, and skeletonized bodies found in railway premises without railway accident histories.

Data collection involved sourcing information from documents provided by the investigating agency, including ADR reports, Inquest panchanama records, and statements from relatives recorded by the police. Additional information was gathered from deceased individuals' relatives. The autopsy procedure included comprehensive steps such as external and internal body examination, assessment of injury patterns, evaluation of organ damage, examination of bodily systems including the Gastro Intestinal Tract, and, where necessary, photography and radiological examination. Stomach content and the possibility of alcohol intake were assessed, and chemical examinations were conducted on samples such as viscera, blood, and skin swabs if needed. For hospitalized cases, detailed indoor case records and investigations were studied prior to autopsy. The cause of death was evaluated for each case, with recorded information organized in a tabulated form on a proforma sheet.

RESULTS

Table 1: Distribution of railway fatality cases in total autopsy cases came for medicolegal post-mortem during study period.

Cases	Frequency	Percentage %
Railway Fatality cases	114	4.29
Cases without railway fatality	2538	95.70
Total	2652	100

The most of the cases are referred from police station of Central railway line as this center is within the region of Central railway line. The fatal railway accident cases also distributed to other post-mortem center attached to different railway line police station. Hence ratio of total number of autopsies and death due to railway injuries does not significantly indicative of actual ratio of total railway injury fatality.

Out of total 114 cases of railway fatality studied, it is found that in the age group of 11-20 years there are 18 (15%) cases, in age group 21-30 years 42 (36.8%) cases, in 31-40 years age group 19 (16.7%) cases, 41-50 years age group 12 (10.5%) cases and 51-60 years age group 16 (14%) cases.

In the age group of 0-10 years, 71-80 years and > 80 years age group no railway accident victim found in this study.

Among the 114 study cases of railway accident victims, 101 (88.60%) cases are of males and 13 (11.40%) cases are of females.

From the above data of railway accident victims, it is seen that cases in Hindu religion are 70 (61.4%), in Muslim religion 42 (36.8) and in 2 (1.75%) cases religion is not known.

Table 2: Distribution of cases according to hospitalisation

HOSPITALISATION		
Hospitalisation	Frequency	Percentage (%)
Hospitalised	80	70.2
Non Hospitalised	34	29.8
Total	114.0	100

Graph 1: Distribution of cases according to hospitalization
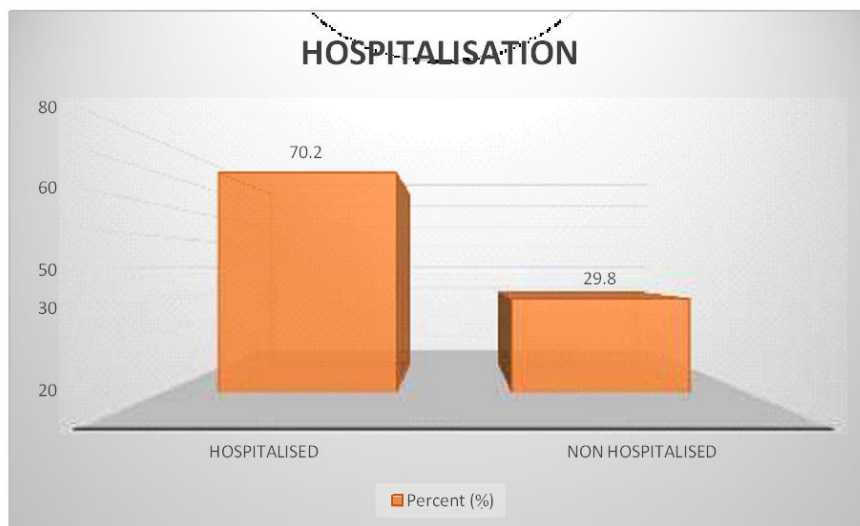
On the basis of hospitalisation parameter, it is found that 80 (70.2%) cases are hospitalised for different time period and 34 (29.8%) cases are not hospitalised out of 114 cases of the study.

Table 3: Distribution of cases according to the demographic pattern of railway region

DEMOGRAPHIC PATTERN		
Demographic Pattern	Frequency	Percentage (%)
Central	60	52.6
Western	13	11.4
Harbour	41	36
Total	114	100

Out of 114 cases 60 (52.6%) cases are found in the region of Central railwayline, 13 (11.4%) cases found in the Western railway Line region, 41 (36%) cases found in Harbour railway Line region of the railway.

Table 4: Distribution of cases according to Occupation

OCCUPATION		
Occupation	Frequency	Percentage (%)
Labourer	29	25.4
Unemployed	14	12.3
Maid	5	4.4
Housewife	8	7.0
Student	13	11.4
Clerical	2	1.8
Professional	2	1.8
Other	5	4.4
Not Known	36	31.6
Total	114	100.0

According to the occupation, most of the victim of railway accident victims was labourer 29 (25.4%) followed by unemployed 14 (12.3%) and Students 13 (11.4%).

Minimum cases were having the occupation of clerical 2 (1.8%) andprofessional (1.8%).

Table 5: Distribution of cases according to Socio-Economic Status According to the B.G. Prasad scale of Socio-Economic Status.

SOCIO-ECONOMIC STATUS		
Socio Economic Status	Frequency	Percentage (%)
Upper	0	0
Upper Middle	0	0
Middle	0	0
Lower Middle	38	33.3
Lower	41	36
Not Known	35	30.7
Total	114	100

Out of 114 cases of railway accident victims studied, 41 (36%) cases are of the lower class of socio economic status, 38 (33.3%) cases are of the lowermiddle class and socio-economic status of 35 (30.7%) cases is not known.

There are not any cases of the middle, upper-middle, and upper class ofsocioeconomic status.

DISCUSSION

The present study employed a prospective design to explore fatal railway accident injuries, with a focus on cases referred for medicolegal post-mortem examination at a government hospital's forensic medicine center. The study period spanned two years, from October 1, 2017, to September 30, 2019. The Institutional Ethics Committee granted approval for the study, ensuring ethical considerations were met. The study's inclusion criteria encompassed victims of railway accidents who were declared deceased prior to hospital admission, as well as those who succumbed to their injuries after hospitalization and were subsequently referred for medicolegal post-mortems. Cases of natural death, deaths unrelated to alleged railway accidents, and bodies lacking a suspected correlation to railway accidents were excluded.

Data collection involved a comprehensive approach, drawing information from investigating agency documents, including Accident Data Recording (ADR) reports, Inquest panchanama records, and statements from relatives provided to the police. Additional details were sourced from relatives of the deceased. The autopsy process was thorough, involving external and internal body examinations, injury pattern assessment, organ damage evaluation, examination of bodily systems including the Gastro Intestinal Tract, and when necessary, photography and radiological examination. Chemical examinations were conducted on samples such as viscera, blood, and skin swabs, with a focus on assessing stomach content and the possibility of alcohol intake. Hospitalized cases were subject to detailed indoor case

record review and investigations prior to autopsy. The cause of death was meticulously evaluated for each case and documented in a tabulated form on a proforma sheet.(6,7,8)

The results of the study provide valuable insights. A total of 114 railway fatality cases were studied, representing 4.29% of the total autopsy cases during the study period. Among the victims, the distribution by age group was notable, with the highest percentage in the 21-30 years age group (36.8%), followed by the 31-40 years age group (16.7%). Males constituted a significant majority (88.60%) of the cases, and a majority of the cases (61.4%) were from the Hindu religion.

The study also highlighted the hospitalization status of the victims, revealing that 70.2% of cases were hospitalized for varying periods, emphasizing the severity of the injuries. Geographically, the Central railway line region accounted for the highest number of cases (52.6%), followed by the Harbour railway Line region (36%).

The victims' occupations revealed a diverse profile, with laborers (25.4%) and unemployed individuals (12.3%) forming the majority. Socio-economic status analysis using the B.G. Prasad scale indicated that a significant proportion (36%) belonged to the lower class, while 33.3% fell under the lower middle class category. Interestingly, there were no cases from the middle, upper-middle, or upper class of socio-economic status.(9)

CONCLUSION

In conclusion, this prospective study sheds light on the demographic, socio-economic, and hospitalization characteristics of fatal railway accident victims. The findings underscore the need for targeted safety measures, especially among the youth and economically disadvantaged populations. The study's comprehensive approach and ethical considerations enhance its reliability and contribute to the existing literature on railway accident fatalities. Further research could delve deeper into specific risk factors and contribute to the formulation of effective preventive strategies.

REFERENCES

[1]   Indian Railways Statistical Publications 2015–16. Statistical Summary. Ministry of Railway. Retrieved 26th Feb 2017.
[2]   On track: Indian Railway's safety record in 2017-2018 best in 57 years, shows official data. The Economic Times. 2018 April 14th.
[3]   Indian Railways Facts and Figures 2016-2017. Bharat Sarkar Government of India Rail Mantralaya Ministry of Railways (Railway Board). 2016-2017; p.46- 55
[4]   Ministry of Railways (Railway Board) Government of India. Manual for Standards and Specifications for Railway Stations. 2009 June;1: p.35-39
[5]   Dubbudu R. Accidents in Indian Railways- Review of the last 6 years. Factly. 2016 Nov 21st.
[6]   Decrease in Death Rate. Maharashtra Times. 24 Jan 2019.
[7]   Number of Persons Killed and Injured According to Nature of Accidents. INDIAN RAILWAYS - Statistical Year Book India 2017. P.117-119.
[8]   3,014 commuters killed on Mumbai railway tracks in 2017. New Indian Express 2018 Jan 26. P.10
[9]   Reddy KSN. The essentials of Forensic Medicine and Toxicology. 33rd ed. 2014; p.287-288.