

Profile Study of Railway Fatality Cases Brought for Postmortem Examination at SMS Medical College, Jaipur

Shantilal Pargi¹, Lovekumar Bhagora², Rohit Kumar Meena³

¹Associate Professor, Dept. of Forensic Medicine, Ananta Institute of Medical Science & Research center, Rajsamand, Rajasthan. ²Associate Professor, Dept. of Forensic Medicine, Nootan Medical College & Research Centre, Visnagar. ³Senior Specialist (Forensic Medicine), Dept. of Medical & Health, Rajasthan.

How to cite this article: Shantilal Pargi, Lovekumar Bhagora, Rohit Kumar Meena. Profile Study of Railway Fatality Cases Brought for Postmortem Examination at SMS Medical College, Jaipur, Medico Legal Update 2023;23(2).

Abstract

Background: A train accident is defined as a “collision, derailment, or any other event involving the operation of on-track equipment.” Train accidents can beget ruinous damages and particular injuries including the death of the person.

Methods: In the present study, the majority of victims were between 21- 40 years of age. There was a rural preponderance in our study population with 34.13% victims from urban regions and 48.41% victims from rural regions. Students comprised the largest section (33.33%) of railway related deaths followed by self employed people (30.17%). The maximum numbers of railway fatalities in this study were accidental (67.46%) followed by suicides (27.78%). The victims of fatal railway related deaths mainly succumbed to Hemorrhage & shock, injuries to vital organs and head injuries.

Conclusion: Public awareness about safety measures and existing laws will also alleviate some of the fatalities. The railway authorities must take steps to prevent the accident by acknowledging the safety engineering, training, awareness among staff and strict law enforcement.

Keywords: Railway injury, Jaipur

Introduction

Indian Railway provides the most important mode of public transport in India which is the most commonly used and cost effective long distance transport system in the country. Railways have also played a significant role in the development and growth of industries. India carries one of the world's largest railway networks and accidents from rail operations may not be unexpected¹.

A train accident is defined as a “collision,

derailment, or any other event involving the operation of on-track equipment.” Train accidents can beget ruinous damages and particular injuries including the death of the person. Apart from mass casualties due to the derailment of a train, individual incidents either accidental or suicidal also cause death. The bodies of the victims are often mutilated severely. Decapitation and dismemberment of the body is frequently².

Trains are also a common means of committing suicides owing to easy availability and higher

Corresponding Author: Lovekumar Bhagora, Associate Professor, Dept. of Forensic Medicine, Nootan Medical College & Research Centre, Sakalchand Patel University Visnagar, Dist. Mehsana- 384315.

E-mail: lovebhagora2000@yahoo.com

Contact: 9586502020

chances of mortality. Apart from this, train accidents can also be used as a means of masking homicidal deaths to mimic the event as an accidental or suicidal railway death. Thus, cases of deaths due to railway injuries are important with respect to medico-legal investigation to find out the underlying cause and manner of death.

Jaipur, being the capital of the state of Rajasthan is an important junction as regards train traffic; Like railway stations all over the country, and also in Jaipur, people are frequently found crossing the rail-tracks near the platforms to save time instead of using the over- bridges/ under-bridges at railway stations, which might have ended in a fatal accident. Moreover, in India, mostly trains are overcrowded and hence prone to meet with fatalities. The increasing use of mobile phones and headsets, especially by the younger generation is also responsible for incremental trends in railway fatalities.

Aims and Objectives

To assess the load and analysis of the cases of fatal railway injuries brought for medicolegal autopsy at the Department of Forensic Medicine, SMS Medical College & Hospital, Jaipur during the year 2014-15.

1. To study a load of railway fatalities during the study period.
2. To study the medico-legal profile of railway fatalities.
3. To study the socio-demographic profile of victims of railway fatalities.

Material and Methods

A descriptive observational study of all railway tract deaths brought for medicolegal autopsy at the Department of Forensic Medicine, SMS Medical College & Hospital, Jaipur during the period from May 2014 to November 2015.

All the cases of railway fatalities, irrespective of age, gender, socio-economic status, and precipitating event autopsied at the mortuary of SMS Hospital, Jaipur were included in the study. The cases were included in the study only after receiving informed consent from the attendants of the deceased for the same if they fulfilled the proposed inclusion and exclusion criteria. All details pertaining to the

socio-demographic profile of the deceased and the precipitating event were noted along with the detailed recording of the external and internal findings during the post mortem examination. All the observations were recorded in the pre-proposed Performa.

The recorded observations were then transferred to a Microsoft Excel data sheet to generate quantitative data which was statistically analyzed using statistical software. Further, the observations were subjected to statistical tests for correlation to deduce conclusions.

Result

Table 1: Age-Wise Distribution of Victims of Railway Fatalities.

Age Group (in years)	No. of cases	Percentage
11 to 20	20	15.87
21 to 30	38	30.16
31 to 40	31	24.60
41 to 50	18	14.29
51 to 60	09	07.14
61 to 70	06	04.76
>70	04	03.17
Total	126	100.00

The majority of victims were between 21- 40 years of age. These were followed in numbers by the second and the fifth decades of life. The least affected age groups were more than fifty years of age. The eldest victim was 80 years of age and the youngest was 16 years.[Table 1]

Table 2: Distribution of the Victims of Railway Fatalities According to Domiciliary Status.

Domicile	No. of cases	Percentage
Rural	61	48.41
Urban	43	34.13
Unknown	22	17.46
Total	126	100

There was a rural preponderance in the study population with 34.13% victims from urban regions and 48.41% victims from rural regions. The domiciliary status was unknown for the rest of the 22 victims (17.46%); although there were 23 unknown victims the domiciliary status was apparent as rural in one of them. [Table 2]

Table 3: Distribution of Victims of Railway Fatalities according to Occupational Status.

Occupation	No. of cases	Percentage
Students	42	33.33
Self employed	38	30.17
Agriculture	10	7.93
Housewife	06	4.77
Retired	04	3.17
Govt sector	01	0.79
Unemployed	01	0.79
Unknown	24	19.05
Total	126	100.00

Students comprised the largest section (33.33%) of railway related deaths followed by selfemployed people (30.17%). Surprisingly only one victim was unemployed. The occupational status remained unknown in 24 (19.05%) victims of railway fatalities amongst which 23 were unidentified victims. Six females were housewives and among the rest one was selfemployed and the remaining four of them were students. 10 victims (7.93%) were agricultural workers. Retired personnel comprised 3.17% of cases and only one victim was in a job in the government sector probably owing to their belief in job security. [Table 3]

Table 4: Distribution of the Railway Fatalities According to the Manner of Incidence.

Manner	No. of cases	Percentage
Accidental	85	67.46
Suicidal	35	27.78
Unknown	06	4.76
Total	126	100

The maximum numbers of railway fatalities in this study were accidental (67.46%) followed by suicides (27.78%). In six cases (4.76%), the manner of the incidence remained undetermined. No case of homicide in a railway related event was established in this study. [Table 4]

Table 5: Distribution of the Railway Fatalities According to the Cause of Death.

Cause of Death	No. of Cases	Percentage
Coma	34	26.98
Hemorrhage & Shock	46	36.50
Injury to Vital Organs	42	33.34
Septicemic Shock	04	3.18
Total	126	100

The victims of fatal railway related deaths mainly succumbed to Hemorrhage & shock, injuries to vital organs and head injuries. Only a few late survivors succumbed to the development of septicemia. [Table 5]

Discussion

The cases of railway fatalities autopsied during the study period ranged from **16-80 years** of age with a mean age of **33.27 years**. The maximum number of victims was in **21-40 years** of age (**54.76%**); the peak occurred in the age group of **21-30 years (30.16%)**. The least affected age group was more than 60 years of age (08.93%). No railway fatality was seen in children less than 16 years of age. Similar results have been reported by other authors with slight variations viz. Peak incidence in **21-30 years** of age [Kumar A et al³, Puttaswamy et al⁴, Tyagi Set al⁵]. The peak has been reported in **31-40 years** by other authors [Wasnik RN et al⁶ and Das G et al⁷]. These trends are due to the fact that young people belong to the active sections of society with more mobile lives as compared to other age groups. Moreover, the young population, being more active may also try to take more risks like boarding running trains, hanging on doors or bars and traveling on roofs of overcrowded trains.

In our study, 48.41% of victims of railway fatalities belonged to rural regions and 34.13% were from urban regions. The majority of the deaths are brought dead cases from Jaipur city and adjoining nearby regions but they came from different areas of the country at times traveling from one place to another or settling in this metropolitan city in search of livelihood. Our results are quite variable for rural populations as compared to Wasnik RN et al⁶ probably due to variations in the cities of study and the population catered to by the tertiary care centers in both studies. But our results are quite similar and comparable to

those of **Kumar A et al**³. The variation in the urban population in this study is again explainable by the regional and geographical variations in the areas of study and the study populations.

In the present study, Considering the study population according to their occupational status, surprisingly there were 33.33% students and 30.17% self employed people among railway deaths. The factors which are responsible for higher incidences of railway fatalities in these sections of society are that these people are more in need of leading an active life and have to commute from one place to another for their profession and as the train is the cheapest mode of transportation in our country, it is most widely used by frequent travelers who adopt it to make to and fro to their outstation studying and working places. The rest of the victims were agricultural workers from rural regions, housewives, retired and employed (job) people. 06 out of 11 females were housewives, quite prone to stressful environments and exaggerated reactions to them.

This study revealed that accidental railway fatality was the commonest manner (67.46%) followed by 27.78% suicidal deaths due to railway fatalities. None of the railway related death was found to be homicidal in the present study, although the manner of incidence remained unknown in 4.76% of cases. Our results are similar to **Wasnik RN et al**⁶, **Kumar A et al**³ and **Tyagi S et al**⁵ (90% accidental & 2% suicidal). None of the three studies have reported a single homicidal death as the present study. The results of this study are slight variations from those of **Das G et al**⁷ which can be attributed to variations in regions and populations under study and may also be attributed to the unrevealing of the truth of incidences in unknown deaths where in spite of police investigation, the manner remains undetermined. Sometimes, the expression of heroism in youngsters compounded by the use of psychoactive substances also potentiates the incidences of occurrence of accidental as well as suicidal deaths in them. Accidental deaths are also commoner in males due to the higher spurt of activity for livelihood in their lives. Suicidal deaths were also commoner in victims of 21-40 years age groups. The proportion of suicidal cases is quite higher in the present study as compared to the others. Regional population variation is the

probable cause. Apart from this, these sections of society are also the most vulnerable to stressful episodes in life, thus more prone to suicidal episodes for which railways are a preferred mode due to the high fatality.

The most common cause of death in the present study was shock and hemorrhage (36.5%) either alone along with injuries to internal organs (33.34%) followed by cranio-cerebral injury (26.98%) due to blunt trauma from primary and secondary impacts. There were very few cases (3.18%) of death due to septicemia. Our results are in accordance with those of **Das G et al**⁷ and **Wasnik RN et al**⁶ but they are slightly variable to those of **Tyagi S et al**⁵ who reported head injury to be the commonest cause of death followed by shock and hemorrhage, and, injuries to internal organs.

Conclusion

The increasing population, overcrowding of trains, careless behavior of passengers, pedestrians & train drivers towards safety norms; along with increasing use of mobile and earphones are the constant causes of railway fatalities. This necessitates the need for attention to accidental control measures. Public awareness about safety measures and existing laws will also alleviate some of the fatalities. These can be prioritized towards vulnerable sections of society by the administration, social activists and non-governmental organizations. The railway authorities must take the following steps to prevent accidents by railway injuries.

- A boundary wall on both sides of the track wherever possible would be erected and the existing wall be repaired.
- Fencing should be done around the rail track and between the two railway tracks, especially within city limits to prevent suicides from having easy access to it.
- The railways must build sufficiently broad and strong footbridges/subways for crossing the tracks and also close the crossing points, frequented by the pedestrians for crossing the tracks with fencing, etc.
- By means of posters and advertisements in

the media, people should be encouraged to use over-bridges/under bridges at railway stations instead of using shortcuts of crossing rail tracks.

- The slum areas around the rail tracks should be shifted to the appropriate place.

Source of Funding- Self

Conflict of Interest- Nil

Acknowledgement- Nil

Ethical Clearance- It is taken from the Ethical committee of SMS Medical College, Jaipur before starting of study.

Reference

1. Krishan Vij, Textbook of Forensic Medicine and Toxicology, Principles and Practice; Sixth edition. Page no-292.
2. Modi, A Textbook of Medical jurisprudence and toxicology, 25th edition; Page-691
3. Kumar A. An epidemiological and medicolegal study of deaths on railway track: 5 years: a retrospective study in Varanasi, India. *International Journal of Current Research*. 2014 Jun; 6(6):7177-9.
4. Puttaswamy. A Five year review of railway related deaths in Mandya town of Karnataka: a retrospective study. *Journal of Evidence based Medicine and Healthcare*[online]. 2015 Sep; 2(37):5871-5.
5. Tyagi S, Sukhadeve RB, Parchake MB, Pathak HM. Mumbai local: Life line or life stealing. *J Indian Acad Forensic Med*. 2015;37(3):246-9.
6. Wasnik RN. Analysis of Railway Fatalities in Central India. *J Indian Acad Forensic Med*. 2010; 32(4):311-4.
7. Das G, Choudhury NM, Phukon S, Talukdar J. Railway fatalities- A Five-year retrospective study of the cases at medicolegal autopsy in Silchar Medical College, Silchar, Assam. *Medpulse- International Medical Journal*. 2014 Aug; 1(8):377-80.