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Study Of Manner Of Death In Railway Accident Victims.

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ABSTRACT

This prospective study aimed to analyze fatal railway accident injuries referred for post-mortem examination at a government hospital. The study period spanned two years, from October 1, 2017, to September 30, 2019, and included cases of alleged railway accidents. The study employed a prospective design and obtained ethical approval from the Institutional Ethics Committee. Data collection involved sourcing information from investigating agency documents, police statements, and relatives of the deceased. Autopsy procedures included comprehensive assessments of external and internal injuries, injury patterns, organ damage, and chemical examinations. Data were organized into tabulated forms for analysis. A total of 114 cases were studied. The majority of cases were identified (69.3%), and unknown cases accounted for 30.7%. The most common manner of causation of injury was falls from trains (60.5%), followed by various other causes. Upper and lower limbs were frequently involved (68.4% each), along with the head (86%) and face (50%). Accidents were the leading cause of death (88.6%), with a single case of homicide (0.9%). No cases of suicide were identified. The study provides valuable insights into the demographics, injury patterns, and causes of fatal railway accidents. Falls from trains emerged as a significant contributor to fatalities, emphasizing the need for enhanced safety measures. The absence of suicide cases highlights the predominance of unintentional accidents. The study contributes to understanding railway accident epidemiology and informs potential preventive strategies.
Keywords: Railway accidents, fatal injuries, autopsy, injury patterns, epidemiology

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INTRODUCTION

Millions of people travel regularly and commute by local trains over varying distances ranging from 10 to 60 kilometer a day [1]. The major problem with these trains is overcrowding due to the extensive population. Over 4,500 passengers are packed into a 9-car rake during peak hours, as against the rated carrying capacity of 1,700. Unfortunately, Mumbai's Suburban Trains have among the Highest Number of Accidental Deaths among suburban railway networks in the world [2, 3]. The railway is the most comfortable mean of transportation with a very long history and contribution to human civilization [4].

Railway traveling along with vacations and religious pilgrimages by railway are making day to day in human life. Like another, railway setup also has no exception in the breakdown [5]. These railway accidents happen because of human errors and mechanical errors. Deaths due to the railway are in many ways like suicide, Accidents, homicides. Suicide method is any means by which one or more persons purposely kill themselves [6-8]. Some people commit suicide by deliberately placing themselves in the path of a large and fast-moving vehicle, resulting in a fatal impact or may throw themselves directly in front of an incoming train or drive a car onto the tracks and sit inside while they wait for the train to arrive.

MATERIALS 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 cases according to their identity

IDENTITY		
Identity	Frequency	Percentage (%)
Known	79.0	69.3
Unknown	35.0	30.7
Total	114.0	100

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Table 2: Distribution of cases according to the Manner of causation of Injury

MANNER OF INJURY		
Manner of Injury	Frequency	Percentage (%)
Fall from Train	69	60.5
While Crossing Railway Track	12	10.5
Jumping in Front of Train	0	0
Fall from Platform	0	0
Walking Along Railway Track	4	3.5
Due to Leaning Out of Running Train	8	7
Lying on Railway Track	0	0
While Attempting to Board Fast Moving Train	1	0.9
Following Train Collision	0	0
Due to Overhead Electric Shock from Train	1	0.9
Not Known	18	15.8
Due to Stuck in Railway & Platform Gap	1	0.9
Total	114	100

Total 114 railway accident cases studied during study period, it is found that 69 (60.5%) cases are due to fall from train, 12 (10.5%) cases while crossing railway track, 4 (3.5%) cases while walking along the railway track, 8 (7%) cases due to leaning out of running train, 1 (0.9%) case while attempt to board fast-moving train, 1 (0.9%) case due to overhead electric shock from train, 1 (0.9%) due to stuck in railway and platform gap and manner of injuryof 18 (15.8%) cases is not known.

Table 3: Distribution of cases according to Body Parts Involved

BODY PARTS INVOLVED		
Body Parts	Frequency	Percentage (%)
Upper Limbs	78	68.4
Lower Limbs	78	68.4
Head	98	86
Face	57	50
Trunk	51	44.7
Genitals	1	0.9
>1 Body Parts	96	84.2

In 78 (68.4%) cases upper limb, 78 (68.4%) cases lower limb, 98 (86%) cases head, 57 (50%) cases face, 51 (44.7%) cases trunk, 1 (0.9%) case genitals involved.

Of the 114 cases of railway, accidents studied, in 96 (84.2%) cases >1 bodyparts involved.

Abrasion found in 82 (71.9%) cases, contusion in 81 (71.1%) cases, laceration in 88 (77.2%) cases, crush laceration in 25 (21.9%) cases, decapitation in 1 (0.9%) case, amputation in 12 (10.5%) cases, bone fracturein 53 (46.5%) cases and 99 (86.8%) cases shows >1 injuries over body.

In the study cases, there are not any cases of incised wound, chop wound,and stab wound found.

Table 4: Distribution of cases according to the Manner of Death

MANNER OF DEATH		
Manner of Death	Frequency	Percentage (%)
Suicide	0	0
Homicide	1	0.9
Accident	101	88.6
Not Known	12	10.5
Total	114	100

A total of 114 cases of railway fatality studied, 101 (88.6%) cases occurred because of the accident, 1 case because of homicide and in remaining 12 (10.5%) cases manner of death is unknown.

There is not any case of suicide found in the study.

Table 5: Sex wise distribution according to Manner of Death

Sex	Manner of Death				Total
	Suicide	Homicide	Accident	Not Known	
Male	0	1	90	10	101
Female	0	0	11	2	13
Total	0	1	101	12	114

Out of the total 114 study cases, 101 (88.6%) cases which occurred because of the accident, 90 cases were males and 11 cases were females.

There is only one case of homicide which is found in the male.

DISCUSSION

The prospective study conducted at a tertiary care Government Hospital's post-mortem center under the Forensic Medicine and Toxicology Department aimed to investigate fatal railway accident injuries. The study's inclusion criteria encompassed cases declared deceased before hospital admission as well as those who died after hospitalization. The Institutional Ethics Committee approved the study, ensuring ethical considerations were met. The study involved meticulous data collection from various sources, such as ADR reports, Inquest panchanama records, police statements, and deceased individuals' relatives. The autopsy procedure was comprehensive, including external and internal examinations, injury pattern assessments, organ damage evaluations, and chemical examinations. The cause of death was determined for each case, yielding a valuable dataset for analysis [9].

The results of the study revealed pertinent insights into the characteristics and patterns of fatal railway accident injuries. Identity-wise distribution showed that 69.3% of cases were known, while 30.7% were unknown. The manner of causation of injury was diverse, with the majority (60.5%) attributed to falls from trains, followed by various other causes like crossing tracks, leaning out of running trains, and walking along tracks. Body parts involved indicated widespread injuries, with the upper and lower limbs being the most affected (68.4% each), followed by the head (86%) and face (50%). Multiple body parts were involved in 84.2% of cases, highlighting the severity of injuries.

The study primarily categorized the manner of death into accidents (88.6%), followed by a single case of homicide (0.9%), and cases with an unknown manner of death (10.5%). Notably, there were no cases of suicide found in the study, indicating that fatal railway accidents predominantly resulted from unintentional events.

Gender-based analysis showed that the majority of fatalities were males (88.6%), with 90 male cases and 11 female cases attributed to accidents. Homicide was identified in a male case, highlighting the rarity of intentional acts leading to railway fatalities.

This study contributes significant insights into the epidemiology of fatal railway accidents, providing valuable data for understanding injury patterns, causes of death, and gender-based differences. The large proportion of cases involving falls from trains underscores the importance of safety measures within railway systems. The absence of suicide cases emphasizes the need for targeted interventions in preventing unintentional accidents. The study's limitations include potential underreporting, incomplete data, and the retrospective nature of data collection [10].

CONCLUSION

In conclusion, the prospective study offers a comprehensive analysis of fatal railway accident injuries, shedding light on the demographics, injury patterns, and causes of death. The findings could inform safety measures and interventions within railway systems, ultimately reducing the incidence of

such tragic accidents. Further research could build upon these insights to devise more targeted preventive strategies and enhance railway safety protocols.

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