Section: Forensic Medicine and Toxicology

Original Research Article

A CROSS SECTION STUDY OF DEMOGRAPHIC PROFILE OF RAILWAY INJURIES AMONG AUTOPSIES CONDUCTED AT MORTUARY, RIMS RAICHUR

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ABSTRACT

Background: The study was conducted to know the demographic profile of railway injuries. To study the distribution, determinants, pattern and manner of injuries in railway fatalities. To draw possible preventive strategies related to railway deaths. **Materials and Methods:** The present study has been carried out in the department of Forensic Medicine and Toxicology, Raichur Institute of Medical Sciences, Raichur during the period of December 2017 to November 2018. This is one year Cross sectional descriptive study. Autopsy findings of 46 railway cases subjected for medico legal autopsy were studied and relevant statics were drawn from the cases. Proforma was used to collect history and particulars of case, data tabulated to Excel sheet for analysis. **Results and Conclusion:** Totally 371 autopsies were conducted and the study group accounted 46 cases (12.40%). Males (91.3%) outnumbered females (8.7%). Age group between 31 – 40 years (21.7%) and 41-50 years (21.7%) showed maximum number of fatalities. Maximum cases were found in Hindu religion (47.8%). Most of the victims were employed i.e. 21 cases (45.7%).

INTRODUCTION

Indian Railways, which had a modest beginning in 1853, has since then been an integral part of the nation -- a network that has held together a population of one billion. It is one of the world's largest railway networks comprising over 1, 15,000 km of track over 7,100 stations. In 2013–14, Indian Railways carried 8.425 billion passengers which are over 23 million passengers every day.

In 1956, WHO advisory group defined accident as unpremeditated event resulting in recognisable damage occurrence in a sequence of events which usually produce unintended injury, death or property damage. Accidents are the ninth common cause of death in India. Though most of the fatalities in India are road traffic accidents, the railway accidents are not negligible particularly in urban and suburban railway zones.

A train accident is defined as a "collision, derailment, or any other event involving the operation of on-track equipment". Fortunately, train accidents (first category) do not happen very often, but when they do, they can be extremely catastrophic. Due to their weight, mass and force anything in a train path is in grave danger. The second category (movement accidents) has been taken up for the study as the number of fatalities cumulatively are far more than those from the other two categories combined and further challenges faced by forensic experts.

Most of the cases of railway deaths that were reported are either hit by the moving train or found in the surroundings of the railway track. The problem for investigating officer and medico legal expert starts with identification as most of the reported cases are unknown and are in mutilated and badly mauled condition.[1] And the challenge doubles up for the forensic expert if there are signs or suspicion of killing the person somewhere else and keeping the body on railway track so that the injuries may be concealed. But most of the railway fatalities are suicide or accidents. During autopsy, railway pattern of injuries should be differentiated from other injuries and ante-mortem from post-mortem.[2]

MATERIALS AND METHODS

Source of Data: The present study has been carried out in the department of Forensic Medicine and Toxicology, Raichur Institute of Medical Sciences, Raichur during the period of December 2017 to November 2018. This is one year Cross sectional descriptive study, based on autopsy reports analysis conducted in the Department of Forensic Medicine & Toxicology, RIMS, Raichur, during the same period. Autopsy findings of 46 railway cases subjected for medico legal autopsy were studied and relevant statics were drawn from the cases. The history related to the deceased was obtained from the close relatives and concerned police in each case. Thorough post-mortem examination was conducted, relevant photographs were taken, data entered in proforma separately for each case.

Ethical Clearance

Ethical clearance for this study was obtained from the Institutes Ethical Committee, Raichur Institute of Medical Sciences, Raichur. All the victims of Railway fatalities that were autopsied at RIMS, Raichur during the study period were included. Advanced putrefied bodies and mutilated bodies, where only fragments of body are subjected to autopsy were not included in the current study. All deaths in railway premises due to natural causes without any external injuries over body were excluded. Non-Train accidents on railway premises but not connected to the movement of railway were excluded.

Method of Collection of Data

The study material comprises of Victims of Railway accidents died in RIMS hospital or Victims of Railway accidents brought dead to the Mortuary. Information regarding the bio data of the deceased and various factors regarding the circumstances of accidents were gathered from all possible sources like,

1. Police records
2. Hospital records
3. Direct interrogation with the investigating officer
4. Eye witnesses
5. Relatives and friends of the deceased accompanying the dead body.

The data thus obtained were recorded in predesigned & preformat which comprised relevant data that is concerned with objectives of the study to be analyzed. Statistical analysis of the data was done and presented in the tabular form. Descriptive statistics with proportion and percentage were used to describe the data.

RESULTS

Incidence of Railway Fatalities

A total of 371 postmortem has been carried out in the department of Forensic Medicine and Toxicology, Raichur Institute of Medical Sciences, Raichur, during the period of December 2017 to November 2018. During this study period 46 cases of railway fatalities (12.40%) were observed, which is depicted in Table no. 1

Table 1: Number of Autopsies and Percentage of Railway Fatalities. (Study Details)

Study period	Dec 2017 to Nov 2018
No. of Post – mortem Examination done	371
No. of Railway fatalities	46
Percentage	12.40%

Identification of the Victims (Dead)

Out of 46 railway fatalities, 27 (58.7%) cases were identified and 19 (41.3%) victims could not be identified. According to police manual 72 hours was the time limit to keep the unidentified bodies in the cold storage of the department, the investigating authorities after trying all the possible means of identification within their limits the unidentified bodies were disposed as per the protocol. The same is depicted in table no 2.

Table 2: Identification Among the Victims

Identify	Frequency	Percent
Identified	27	58.7
Unidentified	19	41.3
Total	46	100

Age Wise Distribution of Cases

According to our study the maximum number of fatalities observed was in the age group between 31 – 40 years and 41 – 50 years i.e. 21.7% each age group, followed by 51 – 60 years and above 60 years i.e. 19.6% each age group,
then after 21 – 30 years (13%) and 11 – 20 years i.e. 4.3% respectively. The same is shown in Table no 03

Table 3: Age Wise Distribution of the Victims

Age group	Frequency	Percent
11 – 20 yrs.	2	4.3
21 – 30 yrs.	6	13
31 – 40 yrs.	10	21.7
41 – 50 yrs.	10	21.7

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51 – 60 yrs.	9	19.6
≥ 61 yrs.	9	19.6
Total	46	100

Sex Wise Distribution of Cases

The largest number of victims were of male sex found to be extremely affected, 42 cases (91.3%) when compared to females 4 cases i.e. 8.7% among all the railway fatalities which is shown in Table no. 04

Table 4: Sex Wise Distribution of the Victims

Sex	Frequency	Percent
Female	4	8.7
Male	42	91.3
Total	46	100

Religion Wise Distribution of Case

Religion wise distribution was made in our study and as usual Hindu religion with a number of 22 (47.8%) cases were found, followed by Muslims 5 cases (10 .9%) and subsequently the religion was not known i. E. In 19 cases (41.3%) which concluded the maximum number of cases. The same has been depicted in Table No. 05.

Table 5: Religion Wise Distribution of the Victims

Religion	Frequency	Percent
Hindu	22	47.8
Muslim	5	10.9
Not known	19	41.3
Total	46	100

Area wise Distribution of Victim

Area wise distribution was also a part of our study which showed highest number cases were from unknown locality 19 cases (41.3%) and people from rural area were 16 victims (34.8%)
and followed by 11 cases (23.9%) from urban locality which is shown in Table No. 06

Table 6: Area Wise Distribution of the Victims

Locality	Frequency	Percent
Not known	19	41.3
Rural	16	34.8
Urban	11	23.9
Total	46	100

Educational Status Wise Distribution of Victims

The education backgrounds of unknown victims were not known in 19 cases (41.3%). The victims who have completed their primary schooling were 11 cases (23.9%). High school as well as illiterate dead bodies was 7 cases (15.2%) equally and degree collage victims/ professionals were only 2 cases (4.2%) as shown in Table No. 07

Table 7: Educational Status Wise Distribution of the Victims

Education	Frequency	Percent
Illiterate	7	15.2
Primary	11	23.9
High school	7	15.2
Degree	2	4.3
Not known	19	41.3
Total	46	100

Employment Status Wise Distribution of Victims

Most of the victims were employed i.e. 21 cases (45.7%), the employment status was unable to detect in 19 number of cases (41.3%) and the last 6 cases were unemployed i.e 13% which has been depicted in Table No. 08

Table 8: Employment Status Wise Distribution of the Victims

Employment status	Frequency	Percent
Employed	21	45.7
Not known	19	41.3
Unemployed	06	13
Total	46	100

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Marital Status Wise Distribution of Victims

In the present study it was observed that railway fatalities were more common among the married people 23 cases i.e. (50%). Marital status was untraceable in 19 number of cases (41.3%) followed by unmarried of 4 cases (8.7%) as shown in Table No. 09

Table 9: Marital Status Wise Distribution of the Victims

Marital status	Frequency	Percent
Married	23	50
Not known	19	41.3
Unmarried	4	8.7
Total	46	100

Manner of Death Among the Victims

Among the 46 railway fatalities 34 cases (73.9%) were accidental in nature and 12 cases (26.1%) were suicidal as depicted in Table No 10.

Table 10: Manner of Death Among the Victims

Manner of Death	Frequency	Percent
Accidental	34	73.9
Suicidal	12	26.1
Total	46	100

Type of Victims Among the Fatalities

It was observed that 20 (43.5%) victims were passengers who were either travellers or passengers came to platform to board the train. 18 cases (39.1%) were pedestrians, 8 cases (17.4) were trespassers who succumbed to death in railway fatalities. The same has been observed in Table no. 11

Table 11: Type of Victim AMONF the Fatalities

Type of victim	Frequency	Percent
Passengers	20	43.5
Pedestrian	18	39.1
Trespasser	08	17.4
Total	46	100

Place of Incidence.

Highest number of cases was from station area outside platform which included 24 cases (52.2%) followed by victims found between stations i.e. 19 cases (41.3%), and lastly only 3 cases were the platform victims (6.5%). Table no 12 depicting the same.

Table 12: Place of Accident Among the Victims

Place of accident	Frequency	Percent
Platform	3	6.5
Station area outside platform	24	52.2
Between stations	19	41.3
Total	46	100

Precrash Behaviour of the Victims

The precrash behavior was also noted which gave us some information regarding railway fatalities. Victims knocked down while walking along the track were 19 cases (41.3%), and victims fall from running train were 19 cases (41.3%) and lastly 8 victims were found lying on the track i.e. 17.4%, as observed in table no 13.

Table 13: Pre – Crash Behaviour of the Victims

Victim pre – crash behaviour	Frequency	Percent
Knocked down while walking along the track	19	41.3
Fall from running train	19	41.3
Lying on track	08	17.4
Total	46	100

DISCUSSION

India is a developing country, area wise 7" place in the world and population wise 2nd in the world. As we know we have a good railway network with over burdening over rail. Trains are connected with the progress of the nation and have become part of the daily life of the people. The increasing use of train has been prevailing globally due to its cheapness and expanding population. Extensive railway network has been laid down to connect cities, villages and even the countries throughout the world to make the railroad transportation effective.

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The present study was carried out in the department of Forensic Medicine and Toxicology, Raichur Institute of Medical Sciences, Raichur, during the period of December 2017 to November 2018, included 46 cases of railway fatalities. Our findings are discussed with respect to the findings of other studies related to railway fatalities regarding matters like incidence of railway fatalities, identification of the victims, age wise distribution of cases, sex wise distribution of cases, religion wise distribution of case, area wise distribution of victims, educational status wise of victims, employment status wise distribution of victims, marital status wise distribution of victims, manner of death among the victims, type of victims among the fatalities, place of incidence, precrash behaviour of the victims.

Incidence of Railway Fatalities

In our study out of 371 autopsies conducted during one year 46 cases were of railway fatalities amounting to 12.40%. In the study conducted by Puttaswamy out of 1864 post mortem cases there were 95 victims of railway related deaths amounts to 5.09% which is on lower side compared to our study3. In the study conducted by Tyagi S et al out of 1444 medico-legal autopsies conducted, 51 cases (3.53%) were due to train accidents which are on lower side compared to our study.[4] In the study conducted by Ashwini K et al out of 732 autopsies, 90 (12.29%) were victims of railway related deaths which is almost similar to our study.[5] In the study conducted by Tirmizi SZA et al out of 9,039 medico legal autopsies conducted 121 (1.33%) were reported which is on lower side compared to our study.[6] In the study conducted by Mohanty MK et al in 960 autopsies 88 cases (9.1%) were railway related deaths which is on lower side compared to our study.[7] In the study conducted by Malick S et al, 138 cases of fatal railway injuries comprising 4.99% out of 2764 autopsies which is on lower side compared to our study.[8] In the study conducted by Patil A et al,[9] 3 observed 10.5% of railway fatalities, While Satish NT et al,[10] 34 study reveals 9.82% which is on lower side compared to our study. In the study conducted by Dalal JS et al,[11] reported 35 (15.53%) cases, Sabale PR et al,[12] reported 36 cases (19%) of railway fatalities which is on higher side compared to our study. In our study such increased incidence of railway accidents is because Raichur railway station is the 4" busiest railway station in Karnataka operated by south central railway and is classified as A-category station in Guntakal railway division.[13]

The increasing use of train has been prevailing globally due to its cheapness, and expanding population leading to overcrowded passengers which can also be the cause for increased incidence of railway fatalities.

Identification of The Victims

In our study out of 46 railway fatalities, 27 (58.7%) cases were identified and 19 (41.3%) victims could not be identified. In the study conducted by Das G et al,[14] 38 found 52.24% of unidentified bodies which is much higher than our study. In the study conducted by Valsala K et al,[15] 31 Out of 104 cases studied identity of 13 (12.5%) victims included in the study was unknown. The reason for unidentification of 41.3% victims in our study may be because Raichur city has much floating population from Border States like Telangana, Seemandhra and Maharashtra states. Majority of the poor passengers' travel in train without tickets which may have led to difficulty in identifying the victims by police.

Age Wise Distribution of Cases

In our study the maximum number of fatalities observed was in the age group between 31- 40 years and 41-50 years i.e. 21.7% followed by 51-60 years and above 60 years i.e. 19.6%, then after 21-30 years (13%) and 11-20 years i.e. 4.3% respectively. In the study conducted by Puttaswamy,[3] 23 Majority were in the age group of 21-30 yrs. In the study conducted by Tyagi S et al,[4] 2 Most of the deaths belonging to younger age group 21 to 30 yrs (28%). In the study conducted by Ashwini NK et al,[5] 628/70 (40%) males and 9/20 (45%) females belong to the age group of 21-30 years. In the study conducted by Tirmizi SZA et al,[6] 27 Young age group ranging from 21 to 40 year was predominantly involved. In the study conducted by Valsala K,[15] the age group most commonly involved was 6th decade (17.6%) closely followed by 3rd and 7th decade.

In the study conducted by Mohanty MK et al,[7] Most of the victims were in the age group 21-40 years. In the study conducted by Malick S et al,[8] highest numbers of victims were in the age group of 41-50yrs and contained a total of 44 cases, comprising 31.9% of total numbers of cases studied. In the study conducted by Das G et al,[14] 38 reported 36.57% deaths in age group of 31-40 yrs which is similar to our study.

In this competitive era struggle for settlement, failures in life, marital & financial problems compelled victims to take extreme decision for ending the life. This might be due to fact that young people in age group of 20-40 yrs are more active and they more risk as compared to others. They will try to board in running train, hanging on doors or bars, travelling on the roof in overcrowded trains.

Sex Wise Distribution of Cases

In our study the largest number of victims were of male sex found to be extremely affected, 42 cases (91.3%) when compared to females 4 cases i.e. 8.7% among all the railway fatalities. In the study conducted by Puttaswamy,[3] 23 Out of 95 cases, 90 (94.73%) were males & 5 cases (5.26%) were females. In the study conducted by Tyagi S et al,[4] 25 Males (96.07%) preponderance was observed in the study. In the study conducted by Ashwini NK et al5 26 Majority of the victims were male 70/90(77.8%) and 20/90(22.2%) were female, with a male: female ratio of 3.5:1. In the study conducted by Tirmizi SZA et al,[6] 2 Males were 108 (89.25%) and only 13 (10.74%) were females with a male to female ratio of 8.3:1. In the study conducted by Valsala K,[15] Out of 104 cases studied 83 (79.8%) victims were male and 21 (20.2%) victims were female. In the study

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conducted by Sheikh MI et al,[16] it is observed 225 victims (85.88 %) under this study were male and 37 (14.12 %) were female. In the study conducted by Mohanty MK et al,[7] majority of victims were male (70) and 18 were female, giving a male to female ratio of 3.9:1. In the study conducted by Malick S et al,[8] 32 it is observed that out of 138 cases, 104 victims (75.36%) under this study were male and 34 (24.63 %) were female. This might be due to fact that males carry most of the responsibilities of their families like earning and care taking of their family. In city like Raichur where a common man cannot take house or rent in proper Raichur, he/she has to reside in sub urban region hence he has to travel a lot. Female also travel through local but they are more careful than males while travelling.

Religion Wise Distribution of Case

Religion wise distribution was made in our study and Hindu religion with a number of 22 (47.8%) cases were found, followed by Muslims 5 cases (10.9%) and subsequently the religion was not known i.e. in 19 cases (41.3%) which concluded the maximum number of cases. Similarly in study conducted by Puttaswamy3 23 showed Hindu victims were 85 (89.47%) & Muslims 10 cases (10.52%). In the study conducted by Sabale PR et al,[12] 36 found 77% victims of Hindu religion. In the study conducted by Das G al14 could not find the religion in 52.24% cases in his study, similarly 41.3% was not found in our study. More number of Hindu victims may be explained by the fact that majority of the population belongs to Hindu religion in our study area.

Area Wise Distribution of Victims

Area wise distribution was also a part of our study which showed highest number cases were from unknown locality 19 cases (41.3%) and people from rural area were 16 victims (34.8%) and followed by 11 cases (23.9) from urban locality. In the study conducted by Valsala K,[15] Victims belong to the urban areas constituted 66.3% and rest was from rural areas. This result of our study could be due to people from rural area travel and use the train facility as it is a cheap and commonest and more comfortable mode of transport to reach their destiny and fulfill their daily needs.

a) Peoples residing in slum area usually goes nearby the railway tracks to attend their nature calls.
b) Walks along the railway track as the short cut to reach the destination early, disregarding the railway safety rules.
c) Encroachment of the platforms by the people for business and other purposes.

Educational Status Wise Distribution of Victims

In our study the education backgrounds of unknown victims were not known in 19 cases (41.3%). The victims who have completed their primary schooling were 11 cases (23,9%). High school as well as illiterate dead bodies was 7 cases (15.2 %) equally and degree college victims / professionals were only 2 cases (4.2%). In the study conducted by Valsala K15 Most of the victims showed an educational status of high school level (47.3%), which coincides with our study. In the study conducted by Mohanty MK et al,[7] there was 65% preponderance of illiterate victims. This could be due to the illiterate as well as primary schooling victims' do not have much more awareness regarding the safety rules and regulations of railways. In the study conducted by Sabale PR et al,[12] could not ascertained the educational status in 47% of cases which is common with our study which shows 41.3%.

Employment Status Wise Distribution of Victims

In our study most of the victims were employed i.e. 21 cases (45.7%), the employment status was unable to detect in 19 number of cases (41.3%) and the last 6 cases were unemployed i.e. 13 %. In the study conducted by Valsala K,[15] out of the 104 victims 25.9% were manual labourers, 15.3% were unemployed, 10.5% were dependent persons, 6.7% were students, and 1.8% was professionals like doctors and engineers. This is explained in a way that, upper and middle upper-class people (Doctors and Engineers) travel in sleeper class and AC compartments who are very less vulnerable to accidents but when it comes to lower and lower middle-class people (Manual Labourers) travel in ordinary class & General compartments where fare is cheap and more over crowded.

Manner of Death Among the Victims

In our study among the 46 railway fatalities 34 cases (73.9%) were accidental in nature and 12 cases (26.1%) were suicidal. In the study conducted by Puttaswamy3 most victims died as a result of suicide (73.68%) & (26.31%) accident i.e. 70 cases of suicide & 25 cases of accident. In the study conducted by Wasnik RN,[17] Maximum number of railway fatalities were accidental (91.32 %) followed by the suicidal (8.68 %) in nature, whereas none of the homicidal railway fatalities noted. In the study conducted by Tyagi S et al,[4] 25 Greatest number of deaths were accidental (98%) in nature. There were less suicidal cases (02%) and no case of homicidal death noted. In the study conducted by Mohanty MK et al,[7] There were no cases of homicide, and most of the deaths were accidental (80.7%). In the study conducted by Basu R et al,[18] observed 86.29% of Accidental cases. In the study conducted by Sahoo PC et al,[19] observed 55% of accident cases.

In the study conducted by Dalal JS et al,[11] revealed 73.1% of accidental cases. In the study conducted by Sabale PR et al,[12] revealed 90.04% of accidental cases. The accidental railway fatalities are due to the fall from the running train, while boarding a running train, while going hanging on the doors ete mostly done by the males; dashed by a passing train while walking or crossing along the railway tracks, shunting accidents, collisions or derailment etc. high population of the city, overcrowding of locals at peak hour, narrow foot over bridge, hanging on doors, hit by train while crossing the track in hurry and travelling on the roof. While a very low suicidal deaths, might be due to the fact that this is a very violent method of commuting suicide.

Type of Victims Among the Fatalities

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In our study it was observed that 20 (43.5%) victims were passengers who were either travelers or passengers came to platform to board the train. 18 cases (39.1%) were pedestrians, 8 cases (17.4) were trespassers who succumbed to death in railway fatalities. In the study conducted by Valsala K,[15] majority of the victims were trespassers 87 (83.7%), 8 (7.6%) victims were passengers, 4 (3.8%) were pedestrians, 2 (1.9%) were railway staffs and 3 (2.8%) were occupants of motor vehicles. In the study conducted by Malick S et al,[8] it has been observed that that most number of victim status during the incidence was on vehicles 39 (28.3%), followed by level crossing of pedestrians 25 (18.1%) and crossing of railway track while talking on mobile 22 (15.9%). In the study conducted by Mohanty MK et al,[7] observed 64.8% were pedestrians over trespassing. In the study conducted by Ruatji R et al,[20] observed 57.48% pedestrian, Sabale PR et al,[12] 36 observed 77.12% pedestrians, which are not correlating with our study. We can explain this fact in our study by the fact victims were passengers who were either travelers or passengers who came to platform to board the train can be due to overcrowding of passengers inside the compartment make them to hang near doors which is more vulnerable for accidents similarly due to overcrowding of the passengers at the platform leads to accidental fatalities while rushing to board on moving train.

Place Of Incidence

In our study it was observed that highest numbers of cases were from station area outside platform which included 24 cases (52.2%), followed by victims found between stations i.e. 19 cases (41.3%), and lastly only 3 cases were the platform victims (6.5%). In the study conducted by Rodbo H et al,[21] among the suicides, 16 cases were hit adjacent to platforms, while in 9 cases collision occurred at places some distance from the platform, but probably accessed from the platforms as well. One case was hit close to a level crossing and the remaining 4 cases lack detailed information in this respect. With regards to the accidents, 8 cases occurred adjacent to platforms. We can explain this as, most common reason behind the incidence could be due to hit by train while crossing the track, followed by falling from running trains or hit by pole, fall through gap between platform and train and in electric shock due to overhead wire. This might be due to the fact that Raichur is moderately to thickly populated city, fast lifestyle; peoples are in hurry to reach their offices and homes, insufficiency of foot over bridge, narrow foot over bridge, hence compelling them to cross the track to reach their destination on time.

Precrash Behaviour of the Victims

In our study it was observed that Victims were knocked down while walking along the track were 19 cases (41.3%), and victims fall from running train were 19 cases (41.3%) and lastly 8 victims were found lying on the track i.e. 17.4%. In the study conducted by Tyagi S et al,[4] most common reasons behind railway deaths was hit by train while crossing railway track 48% and 30% had fallen from running train due to overcrowding. In the study conducted by Valsala K,[15] the highest frequency of incidence of railway deaths occurred while crossing the Railway track (32.7%), followed by jumping in front of the train (19.2%) and walking along the side or through track (16.3%). In the study conducted by Mohanty MK et al,[7] observed 64,4% pedestrian who were trespassing. In the study conducted by Ruatji R et al,[20] observed 57.48% pedestrian who were hit by train while crossing the track, followed by 31.50% fell from moving train. In the study conducted by Das G et al,[14] observed majority of cases due to hit by train while walking along the track. In the study conducted by Sabale PR et al,[12] observed 57.93% victims got impact while crossing railway track followed by 14.94% fall from running train. This clearly reflects the aggressive and risk taking behaviour of passengers and their responsibilities in outdoor activities, travelling for the domestic and official works routinely.

CONCLUSION

The Indian Railway Network must enhance safety by constructing boundary walls, fencing tracks, building proper crossings, removing obstacles, modernizing signals, preventing encroachments, controlling platform crowding, automating train doors, spreading public awareness, and strictly enforcing safety laws to prevent accidents, suicides, and unauthorized access to tracks.

Conflict of Interest: Nil

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