

## **An Autopsy Study of Victim Profile and Pattern of Injuries in Railway Deaths**

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### **Abstract**

This study carried out on 90 victims of railway deaths to determine the victim profile, specific pattern and distribution of wounds. Out of 90, 70 were males and 20 females, with majority falling in the age group of 21-30 years. Suicidal deaths accounted for 40/70 in males and 15/20 in females. 58/70 male and 18/20 female victims were married. Decapitation and hemi section of thorax were the common injuries noted.

**Key Words:** Railway, injuries, suicide, accident.

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### **Introduction:**

Railways being one of the most comfortable means of transportation have a long history and an unprecedented contribution to the human civilization. Originally developed for the transportation of goods from one place to the other, Railways have now entered human life, making day-to-day travel and vacations more comfortable. For the common man, Railways provide affordable, fast and reliable means of day to day transport and also a mode of travel for vacation and religious pilgrimage. Every setup has its own flaws which at times breakdown and railways are also no exception. Railway accidents do occur and for which both human error and mechanical failures have always been blamed. Moreover, Railway premises being the most suitable shelter for homeless and beggars, it also accounts for deaths due to natural causes in persons who are victims of poverty and trafficking.<sup>1</sup>

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### **Railway fatalities include:**

1. Those that occur within the train in which the passenger experiences impacts during a crash similar to those of any other unrestrained motor vehicle accident.
2. Those involving collisions between trains and other vehicles
3. Those that involve people on or near the railway track.

The last of these types of fatalities will produce pattern of injuries that depend upon the position of the victim and type of accident (impact, run over etc). The mass of train is such that even glancing blows can produce devastating injuries.<sup>2</sup>

In some cases trains are used to commit suicide, resulting in mutilating injuries (decapitation, transaction, dismemberment, amputation etc). They have also been used to mask a homicide as the injuries in railway accidents produce extensive damage to the body that reconstruction is difficult and differentiating the homicidal injuries from railway impact injuries is almost impossible. Railway wheel mark, dirt & grease contamination, pattern of injuries over the body deserve careful observation to rule out criminal violence.<sup>3</sup>

Accidental deaths on railway tracks are also a common occurrence. They are usually because of a person trying to cross the track/collision

between trains, automobile accident in unmanned crossings, passengers who hang out of doors & are hit by trees/poles or during outbreak of fire.<sup>4</sup>

### Materials and methods:

All cases of railway deaths brought to MIMS, Mandya, District hospital Mortuary, during the period of study (January 2013-January 2015) were subjected to thorough post mortem examination and the pattern of injuries were noted. Information regarding demographic details, manner of death collected and eighbou from FIR (First Information Report), panchanama (Inquest report), death notes if any, suicide notes, detailed circumstantial evidence and post mortem examination.

Manner of death was established as suicide with the help of suicide note/death note, classical decapitation, FIR, panchanama, history obtained from the family members of the deceased; and as homicide by the presence of external and internal injuries like chop wounds, stab injuries etc which don't concur with the railway incident, circumstantial evidence, panchanama, police investigation reports.

### Results:

During the 2 year period, among the 732 autopsies, 90 were victims of railway related deaths.

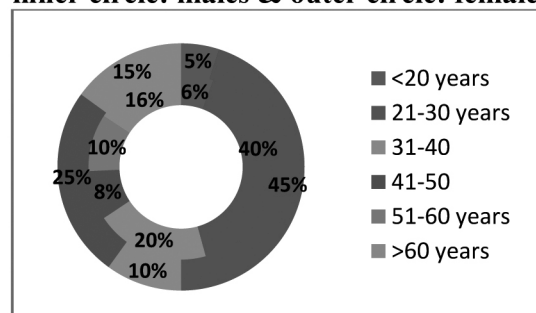
Majority of the victims were male 70/90(77.8%) and 20/90(22.2%) were female, with a male: female ratio of 3.5:1. 28/70(40%) males and 9/20(45%) females belonged to the age group of 21-30 years. Suicidal deaths were found to be more common among males, with figures of 41/70(58.6%) males and 9/20(45%) females. Suicidal deaths were found to be more common amongst the married individuals, 28/70(40%) males and 6/20 females (30%). In cases of suicide, decapitation was found to be the predominant fatal pattern of injury 19/50(38%) followed by hemi section at thorax and abdomen 14/50(28%). Accidental deaths were more common among females, 29/70(41.4%)

males and 11/20(55%) females. Amongst the accidental deaths mutilating injuries with a combination of head and facial injury, decapitation, transaction, crush and limb injuries were found in 12/40(30%) victims. None of the victims showed elevated blood alcohol levels.

**Table 1: showing the age and gender distribution of railway casualty**

Age	Male	female
< 20 years	4	1
21-30 years	28	9
31-40 years	14	2
41-50 years	6	5
51-60 years	7	0
>60 years	11	3

**Chart 1 showing the percentage of railway casualty according to age and gender, inner circle: males & outer circle: females**



**Table 2: showing marital status& gender distribution in suicides, accidents and homicides**

Manner of death	Married		Unmarried	
	male	female	male	female
Suicide	28	6	13	3
Accident	14	6	15	5
Homicide	0	0	0	0

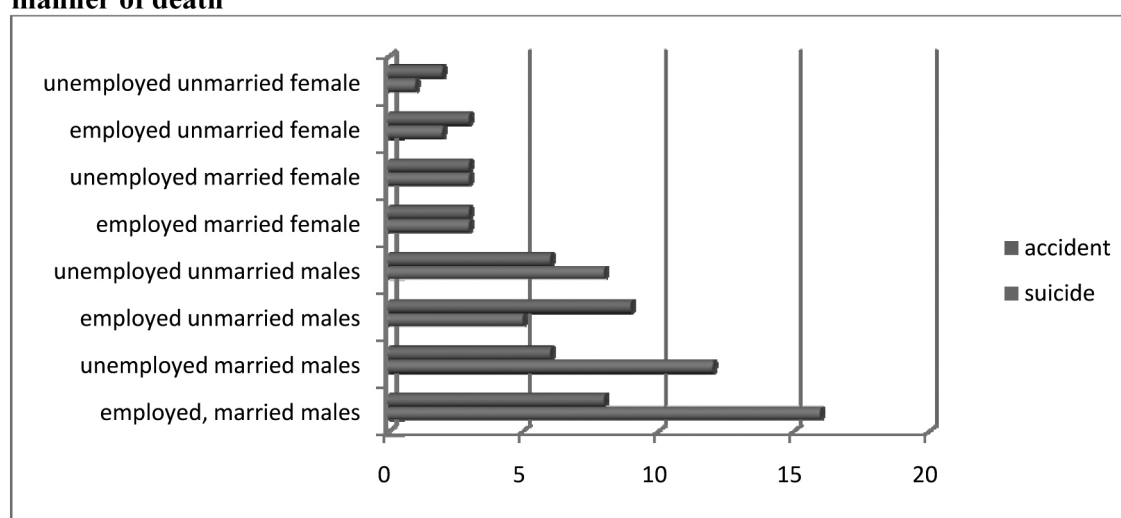
### Discussion

The present study showed a victim profile with male preponderance which is in accordance with various other studies conducted.<sup>1,4,5,6,7,8</sup> Railway network being extensive, offering consistent travel interval and affordability is the preferred mode of commuting by an employed individual. Males being the predominant working group in Indian society are therefore more vulnerable than females.

In the present study, age group between 21-30 years was the most vulnerable, which corresponds with various other studies.<sup>5, 9, 10</sup> Males victims accounted for the bulk of casualty in this age group. This could be explained by the above mentioned reason and also because of general disregard for rules in younger age group, oppositional defiant behaviour and risk taking behaviour amongst the youth, especially the males (Table 1, Chart 1).

Suicidal deaths were found to be highest in percentage in our study, with greater number of victims being male and married (Table 2). The greater number of suicidal deaths in married males can be explained by the increased stress of an individual family, marital discord, financial difficulties and employment related discrepancies. A person incapable of coping with these stressors is driven to suicidal thoughts and many a times a successful attempt at suicide (Chart 3).

**Chart 3: graphical representation of employment status, marital status and gender vs. manner of death**



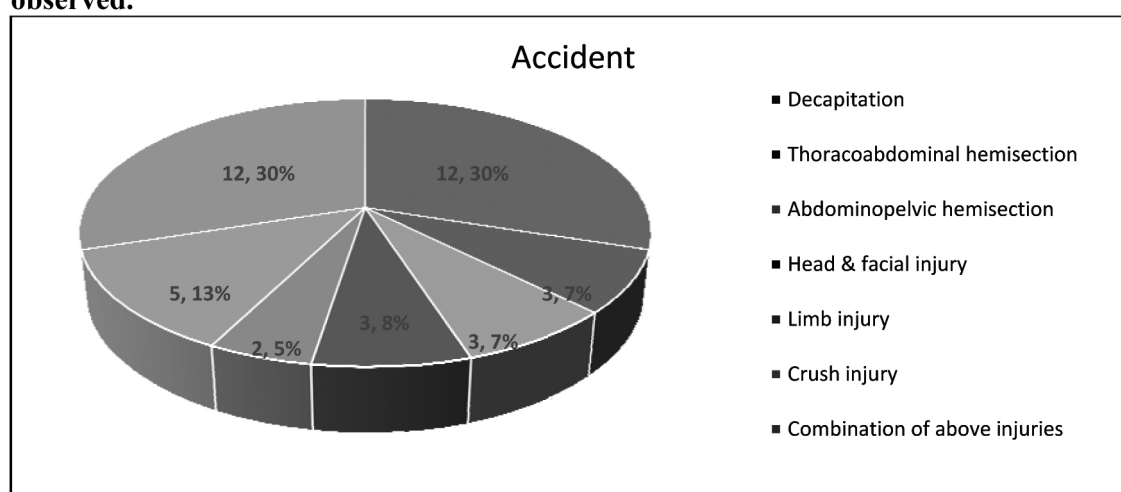
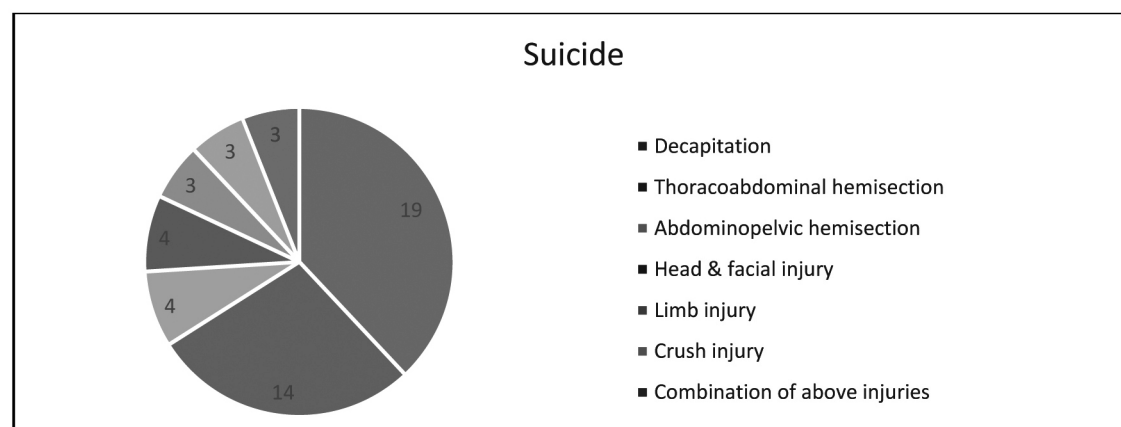
A person with strong intent and firm mind to end their life may lie down on the railway track, with the neck or trunk or abdomen over the track. Suicidal deaths due to train run over are common in males as they prefer one of the hard methods of suicide thus exhibiting aggressive and self-destructive behaviour.<sup>5</sup> In a person lying down on the train track and being run over by a train, extensive injuries are produced due to primary impact which include, decapitation, hemi section of the body at thorax or abdomen, crush injuries, dismemberment of the appendages, extrusions of organs.<sup>11</sup> Our study showed predominance of decapitation injuries, followed by hemi section between thorax and abdomen, followed by hemi section between abdomen and pelvis in both accidental and suicidal deaths. A combination of all injuries has

also been noted in a significant number of accidental deaths due to run over. No homicidal cases were recorded in our study (Table 4; Charts 4.1, 4.2).

Decapitation and combination pattern of injuries account for the most number of victims of accidental railway deaths. In many cases fatal injuries mutilated the body and involved more than one body part which is in accordance with a study conducted by Cina et al for a period of one decade involving 25 cases of train pedestrian fatalities, where cause of death was explained by massive blunt trauma at impact. This is due to the fact that the enormous mass of the train provides for very high potential energy in a slow moving train and in a fast moving train the mass and speed contribute to high kinetic energy which gets transferred to the human body upon impact leading to destructive injuries.

**Table 4 showing pattern of injury vs. manner of death**

Pattern of injury	Suicide	Accident	Homicide
Decapitation	19	12	0
Thoracoabdominalhemisection	14	3	0
Abdominopelvic hemisection	4	3	0
Head & facial injury	4	3	0
Limb injury	3	2	0
Crush injury	3	5	0
Combination of above injuries	3	12	0

**Chart 4.1: showing pattern of injuries in railway accidents and the percentage of cases observed.**

**Chart 4.2: showing pattern of injuries in suicide railway deaths and the percentage of cases observed**


Accidental run over injuries are seen commonly in pedestrians crossing the track, at both manned and unmanned railway crossings without due attention to the movement of trains. Another significant cause is foot board travelling and

entraining or detraining a running train, which are very common among the younger males, for the thrill of the experience and due to reasons of overcrowding. Cattle grazing and attending calls of nature are quite common in the rural areas,

where railway tracks are common places for such activities. Accidental run over injuries occur both in the person herding the livestock as well as the domestic animals in such situations.

### Conclusion:

It can be concluded from the current study that, although suicidal deaths cannot be entirely prevented, addressing the stressor, timely psychiatric eighboure and familial support can definitely bring down the number of suicidal deaths. As opposed to accidental deaths, which are entirely preventable by enhanced surveillance activities and strict implementation of punishment for crossing tracks, foot board travelling, boarding or alighting from a running train. The anganwadi workers and social workers in rural areas can educate the rural population about the hazards of being on and around a railway track while herding the animals or to attend calls of nature. Building toilets at each and every house in villages should be encouraged. This practice not only prevents accidental runover deaths, but also improve the sanitation in villages (Nirmal Bharat Abhiyan).

### References:

1. Gunajit Das, Nayan Mani Choudhury, SwarajPhukon, JayantaTalukdar. Railway fatalities – a five year retrospective study of the cases at medicolegal autopsy in silchar medical college, Silchar, Assam. Medplus – International Medical Journal August 2014; 1(8): 377-380. <http://www.medpulse.in> accessed on 01 August 2014
2. Vicki L. Wedel, Alison Galloway. Broken Bones: Anthropological Analysis of Blunt Force Trauma. 2<sup>nd</sup> Ed. Charles C Thomas Publisher Ltd, Illinois: 121
3. ApurbaNandy: Principles of forensic medicine including toxicology. 3<sup>rd</sup>ed. New Central Book agency, Howrah. 2010; 473-474.
4. Tandon Sarvesh, Aggarwal Ajay, Sharma KL, Dasgupta PS. Suicide Simulating homicide – A Railway track mystery, a case report Journal of Karnataka Medicolegal Society. 2001; 10(3): 60-63.
5. BasavarajaPatil, Raghavendra.K.M, Syed Uzair, Deepak. A study on pattern of injuries in railway deaths. Indian Journal of Forensic Medicine Toxicology. 2011; 5(1): 20-22.
6. Ramesh NW. Analysis of Railway Fatalities in Central India. Journal of Indian Academy of Forensic Medicine 2010; 32(4):311-314
7. Strauch H, Wirth I, Geserick G. Fatal accidents due to train surfing in Berlin. Forensic Sci. Int. 1998; 94: 119-127
8. Davis GG, Alexander B, Brissie R.M. A 15 year review of railway related deaths in Jefferson County, Alabama. Am. J. Forensic Med. Pathol. 1997; 18: 363-368.
9. Lerer L.B, Matzopoulos R.G. Fatal railway injuries in Cape Town, South Africa. Am. J. Forensic Med. Pathol. 1997; 18: 144-147.
10. Pelletier A. Death among railroad trespassers. The role of alcohol in fatal injuries. JAMA 1997; 277: 1064-1066.
11. K.S. Narayana Reddy, O.P.Murty: Essentials of Forensic Medicine and Toxicology. 33<sup>rd</sup>ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd. 2014;258.