

## DEATHS DUE TO RAILWAY INJURIES - A FIVE YEAR STUDY

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## ABSTRACT

Deaths due to railway injuries are not uncommon. Mortalities due to railway injuries are bound to increase with the increase in the network of railroads, electrification of the railway tracks and with increase in number of the high speed trains. This five year study highlights the manner of death by railway injuries as alleged to be accidents (as per inquest report usually) alongwith the epidemiological aspects and pattern of injuries.

Key words. Railway injuries, railway mishaps, accident, suicide & homicide.

## INTRODUCTION

Accidents are the part of the price which the society has to pay for increased mechanization and advanced technologies. The W.H.O. defines accident as "An event independent of human will, caused by an outside force acting rapidly which results in bodily or mental injury"(1). Accidents form an epidemic leading to deaths. Their rank is third amongst the leading causes of death. They are responsible for 10% of all deaths in developed countries (2) Developing countries are also not lagging behind as far as deaths due to accidents are concerned and deaths due to railway injuries are no exception. Number of deaths were 7133 in 1967 which increased to 11, 117 in 1978 due to railway injuries (3) indicating the alarm for a need to study them and find out the solution.

Deaths due to railway injuries are mostly accidental, though suicides by jumping in front of moving trains or lying on the rail roads and being overrun by moving trains are not very uncommon (4,5). A few homicides already presented as railway accidents are also not unheard of. (5). Railway accidents in Britain are classified as train accidents, movement accidents, non movement accidents, where as in USA these are termed as train accidents, train service accidents and non-train accidents (4). In our country, these are broadly called as railway accidents including accidents due to collision and derailments, defective equipments, vagaries of weather, carelessness and human error, human wickedness (e.g. sabotage action by antisocial elements) and injuries to the trespassers. Suicides by using railway tract is also getting common because of vast net work of railway in this country. according to W.H.O. Committee (1968) suicidal act means "Self infliction of injury with varying degrees of lethal intent and awareness of motive" and suicide is a "Suicidal act with a fatal outcome"(7)

Pattern of injuries varies depending upon the type of accident whether head on collision (8) fire in trains (4) and being run-over by trains (5). There is also variation in distribution and pattern of injuries depending upon the manner of death. In suicides, decapitation and injuries due to touching of electrified conductors are seen in the majority of cases (4). In homicides, usually when the victim is rendered unconscious by other means (i.e. injuries or poisons) the body is kept on the railway track. In these type of cases on postmortem examination mutilation/crushing/amputation of different parts of the body is seen. sometimes there are postmortem railway injuries to conceal homicide (6). In accidents, no specific pattern of injuries is seen and it presents bizarre pattern of injuries caused by blunt trauma.

## MATERIAL &amp; METHODS

This study was carried out of the autopsy cases brought to the mortuary of Forensic Medicine department, Govt. Medical College, Amritsar during the first ten days of each month, allotted to this department i.e. w.e.f. February, 1985 to January, 1990. Careful history was taken from the relatives, friends, eyewitnesses and investigating agency. Detailed examination of the body and injuries were done to endorse/corroborate or rule out the alleged manner of death.

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OBSERVATIONS.

TABLE NO. 1

Incidence of Deaths due to Railway Injuries.

Total autopsy cases.	No. of deaths.	%
1459	79	5.41

TABLE NO. 2

MANNER OF DEATH BY RAILWAY INJURIES.

MANNER OF DEATH.

TYPE.	ALLEGED		OBSERVED.	
	No. of cases.	%	No. of cases.	%
Accident.	71	89.87	51	64.55
Suicide.	8	10.13	26	32.91
Homicide.	--	00.00	2	2.53
Total.	79	100.00	79	99.99

TABLE NO. 3  
AGE AND SEX WISE DISTRIBUTION.

Sr. No.	Age Group in years.	Sex		Total.	%
		Male.	Female.		
1.	0-10	-	-	-	00.00
2.	11-20	6	-	6	7.60
3.	21-30	33	4	37	46.83
4.	31-40	17	1	18	22.78
5.	41-50	5	-	5	6.33
6.	51-60	10	-	10	12.66
7.	More than 60.	3	-	3	3.80
Total:		79	5	79	100.00

MOST COMMON AGE GROUP IS 21-30 YEARS WHICH ALSO INCLUDES 17 CASES OF SUICIDE. NO CASE WAS DETECTED UNDER 14 YEAR OF AGE.

TABLE NO. 4.  
CASTE AND AREAWISE DISTRIBUTION.

Caste.	Area.			Total.	%
	Rural.	Urban.	Unknown.		
Hindu.	1	8	1	10	12.66
Sikh.	8	6	7	21	26.58
Unknown.	-	1	47	48	60.76
Total.	9	15	55	79	100.00

TABLE NO. 5  
DISTRIBUTION OF DIFFERENT TYPES OF INJURIES IN RELATION TO  
MANNER OF DEATH.

Sr. No.	Types of injuries.	Manner of death.			Total.	%
		Accident.	Suicide.	Homicide.		
1.	Abrasion.	4	3	-	7	8.86
2.	Laceration.	4	4	-	8	10.13
3.	Lac. & firearm.	-	-	1	1	1.26
4.	Contusion.	1	-	-	1	1.26
5.	Incised wound.	-	-	1	1	1.26
6.	Abrasion & lacerated wound.	34	2	-	36	45.57
7.	Abrasion & contusion.	2	3	-	5	6.33
8.	Contusion & laceration.	1	-	-	1	1.26
9.	Abrasion, bruise & laceration.	4	2	1	7	8.86
10.	No above mentioned injury.	1	11	-	12	15.20
<b>TOTAL:</b>		<b>51</b>	<b>25</b>	<b>3</b>	<b>79</b>	<b>99.99</b>

TABLE NO. 6  
INCIDENCE OF DECAPITATION IN RELATION TO SUICIDE.

Sr. No.	Feature.	No. of cases.	%
1.	Decapitation.	7	8.86
2.	Decapitation & other mechanical injuries.	6	7.60
3.	Decapitation & amputation of different parts.	1	1.26
4.	Decapitation, amputation & mutilation of different parts.	3	3.79
Total.		17	20.51

TABLE NO. 7  
INCIDENCE OF MUTILATION/CRUSHING/AMPUTATION, OF DIFFERENT PARTS OF BODY.

Feature.	MANNER OF DEATH				
	Accident.	Suicide.	Homicide.	Total.	%
Mutilation/ Crushing/ Amputation.	46	9	2	57	72.15

TABLE NO. 8  
INCIDENCE OF BLACKISH MATERIAL/GREASE.

Features.	Total cases.	%
Blackish Material/Grease.	58	73.41

TABLE NO. 9  
INCIDENCE OF PROBABLE TIME THAT ELAPSED BETWEEN INJURY AND DEATH.

Sr. No. Probable Time.	Manner of Death.			Total.	%
	Accident.	Suicide.	Homicide.		
1. Instantaneous.	21	19	-	40	50.63
2. Immediate.	21	5	3	29	36.71
3. Within a few hours.	5	1	-	6	7.60
4. Twelve hours.	1	-	-	1	1.26
5. Twenty four hours.	1	-	-	1	1.26
6. Forty eight hours.	2	-	-	2	2.53
Total:	51	25	3	79	99.99

TABLE NO. 10  
DISTRIBUTION OF POISONS IN RELATION TO MANNER OF DEATH.

Manner of death.	No. of cases.	Poison detected.
Accident.	1	-Alcohol.
Suicide.	3	- Alcohol. -Alcohol and chlorocompound. -Alcohol and organophosphorous.

Criteria for differentiating suicide, homicide and accident was asunder:

Suicide: Included cases of decapitation and transverse severing of the trunk without any associated fatal injury/injuries (4.5.9).

Homicide Included cases of injuries caused by particular type of weapon on the body and fatal poisoning (excluding cases of suicide)

Accident: Included bizarre type of injuries.

#### DISCUSSION

Incidence of deaths due to railway injuries in this study is 5.41% which constitute a significant group of the autopsies. In this series there was no major accident and all the cases were as a result of individual mishap. All the other studies published so far includes, in majority head on collisions and derailments. (4,8). Table 2 clearly indicates that majority of the deaths (89.87%) are labelled as railway accidents by the investigating officers while actually it is not so where deaths due to accidents were observed in 64.55% cases. Careful history taking and autopsy revealed that 25.32% cases of alleged accidents were actually suicides and homicides otherwise which would have passed off as accidents. This has got similarity to that observed by Tedeschi et al (4).

21-30 years age group is affected maximum by the railway hazards in this study (46.83%). And the remarkable feature is that no child was involved with any mishap in this study, perhaps due to better care of children in this country by the parents. Where as in a study carried out in Great Britain considerable number of children were killed during 1969-71 (4).

Infrequent homicidal cases have also been reported by railway injuries (6, 10 ) and low incidence of homicide 2.53% is in consonance with above mentioned studies. In such cases person is usually rendered unconscious after administering some poison or killed by other means. (One case each of firearm and stab injuries ) and then thrown on the railway track to simulate suicide or accident. All the 26 cases of suicide except one were males suggesting that women rarely resort to this method of committing suicide. 17 cases amongst these were of age group of 21-30 years as emotions in this age group are highly volatile. Suicide is committed mainly by keeping the neck on railway line (60%) and sometimes trunk (12%).

Abrasions, bruises, and lacerations are the commonest injuries as are to be expected in blunt trauma and combination of abrasions and lacerations formed a single largest group (45.57%) which is highly suggestive of characteristics of accidents.

In this study, mutilation/crushing/amputation was observed in 72.15 cases and this single feature is rather diagnostic of railway injuries when taken in combination with the finding of grease/blackish material which was seen in 73.41% cases on the body and clothes.

Death was instantaneous to immediate in 87.34% cases and this is the reason why this mode is selected to commit suicide and also the reason why most of the cases (60.76%) remain unknown because victims do not survive to tell their tale.

We found poisoning in 4 cases. Alcohol was detected in one case of accident and in three cases of suicide. Perhaps in one case of suicide, after taking alcohol and chloro compound the victim went to railway line and laid supine there, when his abdomen was crushed. To prevent railway hazards strict enforcement of laws preventing the trespassing of the railway tracks could be implemented. Keeping in view that in this study maximum number of trespassers were involved in rail mishaps fencing along the rail road should be done particularly at vulnerable areas (Rail roads passing through the inhabitant areas). To prevent the suicides, problems of age group of 21-30 years it should particularly be evaluated and remedial measures taken to reduce the risk of suicide.

## BIBLIOGRAPHY

1. Govt. of India (1979) Swasth Hind, 23(12) 329; Quoted Text Book of Preventive and social Medicine, Eleventh Edition. M/S Banarsidas Bhanot 1167, Prem Nagar, Nagpur road, Jabalpur, India, 1986 pp.309-310.
2. WHO (1980). Sixth Report on the World Health Situation, WHO, Geneva: Quoted Text book of Preventive and Social Medicine, Eleventh Edition. M/S Banarsidas Bhanot, 1167, Prem Nagar, Nagpur Road, Jabalpur, India, 1986 pp.309-310.
3. Central Statistical Organization (1980). Statistical Pocket Book of India, Department of Statistics, Ministry of Planning, Govt. of India; Quoted Text book Preventive and Social Medicine, Eleventh Edition. M/S Banarsidas Bhanot, 1167, Prem Nagar, Nagpur Road, Jabalpur, India, 1986 pp.309-310.
4. Tedeschi, C.G., Eckert, W.G. and Tedeschi, L.G.; Forensic Medicine a study in trauma and environmental Hazards, 1st edition, Vol.III, W.B.Saunders Company, Philadelphia, 1977, pp. 1186-1191.
5. Franklin, C.A; Modi's Medical Jurisprudence and Toxicology, 21st Edition, N.M.Tripathy Private limited, Bombay 1988, pp 296-304.
6. Gargi, J, Gorea, R.K., Chanana, A.; Attempted concealing of Homicide by Railway injuries. Journal of Indian Academy of Forensic Medicine, 1989, Vol.11 No.2, pp 71-75.
7. Giertsen, J.C.; Questions Medicolegales, Med.Sci Law, Vol.30, No.3, 1990, pp 191.
8. Huq M.Muzaherul; Injury patterns in railway accident observations in Bangladesh; Congress handbook of Third Indopacific Congress on Legal Medicine & Forensic Sciences, 1989 pp 201.
9. Parikh, C.K.; Parikh's textbook of Forensic Medicine & Toxicology, 5th Edition, CBS Publishers. Bombay, 1990, pp 366-371.
10. Tedeschi, C.G., Eckert, W.G. and Tedeschi L.G.; Forensic Medicine a study in trauma and environmental Hazards, 1st Edition, Vol.1, W.B.Saunders Company, Philadelphia, 1977, pp.26.