ABSTRACT

Study of epidemiology of railway accidents in Kamrup district

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Railway accidents are a leading cause of accidental deaths in India. Hence a study to find the epidemiological data in such deaths can lead to predicting and mitigating such deaths. In our study it is found that males are the most affected with the age group between 21-30 the most involved. Businessmen were the most involved group and most of the accidents occurred between 6-12 am. Pedestrians who are knocked down are the people who are most involved in such accidents. Self-vigilance on the part of the passengers and adherence to the rules & regulations safe practices will help prevent railway accidents.

Aims and objectives
1. To analyze the socio-demographic profile of the victims in terms of:
   - Age, sex, religion
   - Occupation, educational background
   - Marital status, socio-economic background
   - Personal habits like intake of alcohol, tobacco etc.
2. To figure out the type of train involved in the incident

Materials and Methods
A cross sectional study has been carried out on the victims of the autopsies that are carried out in the mortuary of the department of Forensic medicine, Gauhati Medical College. The study period extended from 1st July, 2014 to the 30th June, 2015. During this period a total number of 2964 autopsies were carried out in the department.

The criteria for selection of cases in this study are as follows:
1. All autopsies where death occurred unnaturally by railway tract injuries are taken as case for the study.
2. Autopsies where death occurred due to natural causes in or near the railway station were excluded from the study.
3. The cases included both known and unknown victims of railway tract injury deaths as well as decomposed bodies.

Table: Age distribution of cases

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>1</td>
<td>1.17</td>
</tr>
<tr>
<td>11-20</td>
<td>15</td>
<td>17.64</td>
</tr>
<tr>
<td>21-30</td>
<td>23</td>
<td>27.05</td>
</tr>
<tr>
<td>31-40</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>41-50</td>
<td>19</td>
<td>22.35</td>
</tr>
<tr>
<td>51-60</td>
<td>7</td>
<td>8.23</td>
</tr>
<tr>
<td>&gt;60</td>
<td>3</td>
<td>3.52</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>100</td>
</tr>
</tbody>
</table>

The peak incidence is seen in the age group of 21-30 years with 23 cases (27.05%) followed by age group 41-50 years with 19 cases (22.35%).

Among the 85 cases with railway injuries 72 cases were male comprising 84.7% and 13 were female comprising 15.3% of the total cases.

SEX DISTRIBUTION OF THE CASES
The following table shows the sex distribution of the victims.

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>72</td>
<td>84.7</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>15.3</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>100</td>
</tr>
</tbody>
</table>

It is observed from above table that among the 85 cases with railway injuries 72 cases were male comprising 84.7% and 13 were female comprising 15.3% of the total cases.

OCCUPATION
Details of occupation-wise break-up of victims are given in the table below.

Table: Occupation of the victims

<table>
<thead>
<tr>
<th>Occupation</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Service</td>
<td>6</td>
<td>7.05</td>
</tr>
<tr>
<td>Student</td>
<td>15</td>
<td>17.6</td>
</tr>
<tr>
<td>Labourer</td>
<td>11</td>
<td>12.9</td>
</tr>
<tr>
<td>Housewife</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>Maid</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>Not Known</td>
<td>28</td>
<td>32.9</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>100</td>
</tr>
</tbody>
</table>

It was found that 17 victims were businessmen followed by students and service holders. The occupation of 28 cases could not be determined at the time of autopsy as these were reported as unidentified cases.

KEY WORDS: accidents, males, pedestrians, vigilance
The type of train involved in causing the railway tract incidents is given in the table below.

<table>
<thead>
<tr>
<th>TYPE OF TRAIN INVOLVED</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail</td>
<td>2</td>
</tr>
<tr>
<td>Engine</td>
<td>1</td>
</tr>
<tr>
<td>Express</td>
<td>38</td>
</tr>
<tr>
<td>Passenger</td>
<td>18</td>
</tr>
</tbody>
</table>

In 19 cases the type of train could not be traced out. Among the known cases express train was found to be most commonly involved with 38 cases.

**Discussion**

The findings of present study are quite similar to Basu R, Sabale PR, Sheikh MI et al., Wasnik NR. The preponderance of this age group is due to requirement of more travelling for earning and lead a stable life.

The findings of the present study are similar to that of Roychowdhury UB et al., Sabale PR., Sheikh MI et al. and Wasnik NR. This can be explained by the fact that in the modern world males remain the major earning members of the family, so they are exposed to risks and accidents in every step of life. Also the rush to get to work has led to increased number of cases in the early hours of the day.

Due to lack of proper treatment most of the victims are not able to reach a hospital setup leading to increased casualties. Express trains with greater speed are the most involved in casualties as people get less time to react and save themselves. The preponderance of people who died while crossing the tracks brings to light the fact that people are negligent of railway rules and avoid safety precautions. Also it brings to light that in India the number of unmanned crossovers are very high leading to casualties.

**CONCLUSION**

A set norm of railway safety, high quality of maintenance and vigilant supervision by the railway authorities along with required awareness among the people can make rail-travel much safer. Implementation of newer technology like anti-collision device, modern signaling devices like panel inter-locking, route relay inter-locking, centralised traffic control, automatic signalling and multi-aspect colour light signalling, are the need of the hour. Regular repair and maintenance of the tracks, the train machineries and existing communication devices will automatically reduce some avoidable railway accidents.

There is lack of first aid to the injured at the stations; and also lack of definitive shifting facilities. Hence there is a considerable time lag between accident and admission to the hospital. The deaths that occurred due to extensive blood loss and hypovolemic shock could possibly have been prevented. Therefore, ambulances with para-medics should be present in every stations. Public awareness regarding railway safety should be spread by involving various social groups, media etc. Self-vigilance on the part of the passengers and adherence to the rules & regulations safe practices will help prevent railway accidents. This effectively includes avoiding crossing of rail-tracks, no hanging outside trains, no sitting on train roof-tops and no jostling while boarding or alighting from the trains, especially moving trains.

Railway related deaths are taking place day by day leading to increased autospies and this study makes an effort to emphasize the need to understand the injuries in a better way and in turn help to decipher the weaknesses of the railway mechanism which led to such tragic mishaps.

**References**

3. Sabale PR. Study of Trends in Railway Accident Deaths at a Postmortem Center Attached to a University Teaching Hospital. MD Thesis, Topiwala National Medical College & BYI, Nair Ch Hosp 2009, Mumbai, Maharashatra, India.