Comparative study of prevalence of hypertension in long route heavy vehicle commercial driver and other employees

Parth Nayak1, P.G. Chakravarty2, Ankit Vyas3

1Tutor, department of physiology, Medical college baroda
2Professor and Head, Department of physiology, GMERS medical college, sola ahmedabad
3ESIC medical officer, Ahmedabad.

INTRODUCTION
Cardiovascular diseases have been proved to be the leading cause of morbidity and mortality in developed countries, and are gradually emerging as an important health problem in developing countries as well. Hypertension (HTN) is one of the most common cardiovascular disease with a prevalence ranging from 10 to 20% among adult population.1 Subjects with hypertension possess two fold higher risk of developing coronary artery disease (CAD), four times higher risk of congestive heart failure and seven times higher risk of cerebrovascular diseases (CVD), compared to normotensive subjects.2,3 The current definition of hypertension by WHO13 is therefore a level of systolic blood pressure of 140 mm Hg or above, or a level of diastolic blood pressure of 90 mm Hg or above. Similar definition has been adapted by Joint National Committee and European Working Group on Hypertension as well.

The present study was undertaken in this direction, to estimate the prevalence of hypertension and examine its risk factors in an Drivers and other employees of Gujarat state.

Aims and Objectives
1. To know the prevalence of hypertension in long duration drivers and other employees.
2. To determine the associated risk factors.
3. To suggest remedial measures for the prevention of hypertension.

ABSTRACT
BACKGROUND: Hypertension, a public health problem, is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. OBJECTIVES: 1. To know the prevalence of hypertension in drivers. 2. To determine the associated risk factors. 3. To suggest remedial measures for the prevention of hypertension. METHODS: A cross-sectional comparative study was carried, comprising 100 adults (20 to 50 yrs) with 50 drivers and 50 other employees respectively. Diagnostic criteria - a. SBP ≥ 140mmHg and/or DBP ≥90mmHg orb. persons already on anti - hypertensive treatment. RESULTS: The hypertension prevalence was 46% in drivers and 18% in non driver workers. The prevalence increased with age in both the population. Conclusion: Significant predominance of hypertension was found over drivers compared to non driver workers.

KEYWORDS: Hypertension, Drives,
Prevalence of hypertension in long route heavy vehicle commercial driver

Classification of blood pressure according to JNC VII report

<table>
<thead>
<tr>
<th>BP classification</th>
<th>SBP(mmHg)</th>
<th>DBP(mmHg)</th>
<th>Lifestyle modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>&lt;80</td>
<td>Encourage</td>
</tr>
<tr>
<td>Pre-Hypertension</td>
<td>120-139</td>
<td>80-89</td>
<td>Yes</td>
</tr>
<tr>
<td>Stage 1 HTN</td>
<td>140-159</td>
<td>90-99</td>
<td>Yes</td>
</tr>
<tr>
<td>Stage 2 HTN</td>
<td>≥160 or ≥100</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

MATERIAL AND METHODS

Subjects under Study:
For the study drivers between age of 20 to 50 who has daily driving of heavy vehicles for more than 4 hours and for other employees, workers with age of 20 to 50 selected.

Study design:
A cross-sectional, comparative study.

Diagnostic criteria:
Based on JNC VII\(^1\) & WHO\(^10\) criteria, a person was considered hypertensive if; SBP ≥140 and/or DBP ≥90 mmHg and persons already on anti-hypertensive treatment.

Inclusion criteria:
For drivers- Age between 20 to 50, Daily driving more than 4 hours, Minimum 4 years of driving. For other employees, Age between 20 to 50

Exclusion criteria:
Persons less than 20 years

Sample size:
Heavy vehicle Driver: From the heavy vehicle drivers, drivers who satisfy the inclusion criteria, 50 drivers were taken randomly for the observation.

Other employee: Other employees who work with the similar industry, and satisfy inclusion criteria. 50 such employees were selected for the observation.

BP was measured using a mercury sphygmomanometer with patient in sitting position on the right arm. Subject was made to sit comfortably for few minutes before the measurement was taken. The forearm was supported with the cubital fossa at heart level (fourth intercostal space). The subject was asked to avoid wearing anything with tight sleeves. A standard adult size cuff was applied evenly to the exposed right arm and was rapidly inflated till the manometer reading was 30 mmHg above the level at which the pulse disappeared and then slowly deflated at approximately 2mmHg/sec. During this time, korotkoff sounds were monitored using a stethoscope placed over the brachial artery. The first perception of korotkoff sound was taken as "Systolic BP", and the disappearance of sounds (Phase V) was taken as "Diastolic BP". Two such readings were recorded at an interval of atleast 3mins and the mean was calculated.

MATERIALS AND METHODS

Chi-square and Fisher exact test have been used to test the significance of prevalence of hypertensive in association with the age, driving hours, years of driving. The Odds ratio (OR) has been used to find the strength of relationship between prevalence of hypertensive with the various study parameters.

The Statistical software namely Graphpad prism used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

RESULTS

Table 1: Prevalence of hypertension among drivers and other employees.

<table>
<thead>
<tr>
<th>Employee</th>
<th>htn</th>
<th>non htn</th>
</tr>
</thead>
<tbody>
<tr>
<td>driver</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>other employee</td>
<td>9</td>
<td>41</td>
</tr>
</tbody>
</table>

\(\chi^2 = 9.007\) \(p=0.0027 < .05\)

statistically significant = yes

The hypertension prevalence was 46% in drivers and 18% in non driver workers.

As observed from the above table, the proportion of hypertension was found to steadily increase with years of driving. In the <9 yr prevalence was 25% which
Prevalence of hypertension in long route heavy vehicle commercial driver

gradually increased to 100% with 20 - 24 yrs.

Tebal 2: Prevalence of hypertension with years of driving.

<table>
<thead>
<tr>
<th>years of driving</th>
<th>&lt;9 yr</th>
<th>9-14 yr</th>
<th>15-19 yr</th>
<th>20-24 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>hyper tense</td>
<td>5</td>
<td>9</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>total</td>
<td>20</td>
<td>18</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>percentage</td>
<td>25%</td>
<td>50%</td>
<td>70%</td>
<td>100%</td>
</tr>
</tbody>
</table>

As observed from the above table, the proportion of hypertension was found to increase with increase in daily duration of driving.

Tebal 3: Prevalence of hypertension with daily duration of driving

<table>
<thead>
<tr>
<th>daily driving duration</th>
<th>4 hr</th>
<th>5 hr</th>
<th>6 hr</th>
<th>7 hr</th>
<th>8 hr</th>
<th>9 hr</th>
<th>10 hr</th>
<th>11 hr</th>
<th>12 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>hyper tense</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>total</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>percentage</td>
<td>20%</td>
<td>20%</td>
<td>40%</td>
<td>50%</td>
<td>100%</td>
<td>60%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The lifestyle of the bus driver at home and at work is inextricably linked to his/her physical and psychological health. A predisposition to ill health as a result of the job is clear from the research. Growing threats to well-being such as increased road traffic, violent passengers, and increasingly tight running schedules from commercial pressure will no doubt add to the burden felt by drivers. Such observations may add to the notion that poor well-being in drivers is part and parcel of the job for drivers, though this perspective is not helpful or ethically appropriate. What the studies reviewed indicate, is a necessity for bus operators to improve workplace practices to reduce job stressors and ameliorate the work environment of drivers. Operators need to work with researchers, trade unions, policy makers and drivers themselves, to formulate initiatives that safeguard drivers against work stress.

The present study was undertaken by selecting 100 subjects to assess the prevalence of hypertension. Driver - other employee difference in

DISCUSSION

The prevalence of hypertension was 46% among drivers and 18% among other employee adults. This difference was found to be significant.
Prevalence of hypertension in long route heavy vehicle commercial driver

hypothesis prevalence and risk factor distribution, were also assessed during the course of the study.

Prevalence of hypertension with occupation:
In our study, the prevalence of hypertension was found to be more among drivers than other employee. This may be due to accumulated risk factors over the years.

1. Stressors
   a. Physical environment
      i. Cabin ergonomics
      ii. Violence
      iii. Traffic congestion
   b. Job design
      i. time pressure
      ii. shift patterns
      iii. rest breaks
      iv. social isolation
   c. Organizational issues
      i. reduced driver
      ii. decision making authority

2. Mediators moderators
   a. Demographics
      i. gender
   b. personality
      i. type A/B
      ii. locus of control
      iii. negative affectivity
      iv. hardiness
   c. other
      i. social support

REFERENCES