Low back pain and psychosocial factors in bus drivers

ABSTRACT: Objective: The objective of this study was to evaluate the prevalence of low back pain among bus drivers and to investigate the existence of a relationship between low back pain and psychosocial factors. Methods: We used an epidemiologic self-administered questionnaire, validated and adapted from the Quebec Back Pain Disability Scale. The sample included 78 male bus drivers, with mean age of 32.5 years. Results were analyzed through descriptive statistical methods (mean, median, standard deviation, standard error and coefficient of variation). Inferential analyses were performed with the Kolmogorov-Smirnov test, to analyze normality and with the Spearman correlation to determine the correlation among variables, with a confidence level of p<0.05. Results: Low back pain showed a prevalence of 33.4%, and a low average correlation was observed among the variables. Conclusion: Around 34% of urban bus drivers reported low back pain, and the variables analyzed showed medium low correlation.

Keywords: low back pain, psychosocial factor, bus driver.
The dysfunctions of the vertebral lumbar spine, that causes functional incapacities, are of high prevalence in the world. Of these dysfunctions, the low back pain constitutes a relevant health problem. It is one of the most common illnesses in the western world, allocating approximately 70 to 80% of the population, in some time of their life (ANDRADE et al., 2005). In functional terms, it is responsible for a significant financial cost, since the great number of job absence in the companies and public and privat institutions, besides the incapacity for the daily life that it provoked, attacks high percentage of the population (SANTOS et al., 2003). Gurgueira and Alexandre (2003) complement, still that many of these professionals return to the service, in spite of they continue presented the same symptoms.

The presence of psychological problems, as depression or other emotional disorders, relate with chronic and incapacities pain demonstrations (ORTIZ, 1992; WEINER et al., 2004). Several works revealed that the stress, the fear, the anxiety and the duration of the pain interfere in the activation mechanism of the painkiller system involved in the modulation of the analgesia. The endorphins and other neuromodulators of the nociception are liberated when the level of the pain is very intense and when there is stress associated. The depression and the anxiety also interact in the pain perception through inhibitory and facilitator mechanisms, not appropriately elucidated. Maybe, noradrenergic and serotonergic roads are involved in the anxiety and depression mechanisms, phenomena that are usually associated to the chronic pain (TEIXEIRA, 1999).

The pain related to the fear and to the avoidance seems to be an essential characteristic of chronic low back pain, resulting in a poor behavioural acting (BROX et al., 2003). Ostelo et al. (2003) affirms that, in some patients that suffer the symptoms for a period of several months, the psychosocial aspects, such as catastrophic pain or fear of the movement can be very important, should be considered in some intervention.

For Cailliet (2001), the patient’s psychological evaluation with lumbar pain became integral part of the evaluation, diagnosis and formulation of its treatment plan, since the pain is not just a descriptive term of the experienced nociception, but a multidimensional phenomenon. It understands not only psychological factor, but also emotional, social, cultural and even educational.

Before all these factors turn important the epidemic fact finding, in order to identify the duration of the low back pain in the bus drivers’ class, since the current backaches of the presence of psychosocial factors are assuming an every time larger importance and, regarding this theme, the specific literature is poor. Will be offered, like this, substrata that conduct to prevention programs, assuring the health and life quality of these workers.

This way, the study had as objective lifts the low back pain prevalence in bus drivers and to verify the relationship of this variable - the low back pain - with the psychosocial aspects.

**MATERIALS AND METHODS**

**Sample**

The sample was constituted by 78 adult individuals, male, volunteers, residents in the Region of the Steel valley, in the State of Minas Gerais, Brazil.

The size of the sampling was determined through the accomplishing of the pilot study (BARRETO and RIBEIRO, 2004), in which the following formula was used:
The established trust level was of 95%, the used standard deviation was what we found in the pilot study and the accepted error margin was of 5%.

All participants of the study agreed in subscribing the Consented Participation Term (contends objective and justification of the study, evaluation procedure and character of voluntarily of the subject’s participation). The secrecy of the information was guaranteed, as well as the absence of the employee’s identification, besides the boss’s non-permanence in the investment place of the questionnaires. This procedure has the purpose of assuring the maximum fidelity in the responses. Besides, it was also elaborated a Term of Information to the company that took place the research, with the same items of the term of consented participation.

Were excluded the individuals that were absence by some cause, that were not residents of Ipatinga, that did not exercise driver’s position inside of the company, that incompletely answered the questionnaires and also those that refused to answer the questionnaire for some cause.

**Procedures**

With the objective of applying the questionnaire to all of the drivers, the author of the study frequented the final bus stations of the Ipatinga, Timóteo and Coronel Fabriciano cities, neighboring cities, where also have employees of the Água Branca. The drivers were addressed by an interviewer, which inquired them if they could answer to some questions about backaches, and that their responses would be important to know how many drivers had these symptoms, with the intention of thinking in some alternatives for the problem.

It was explained, in general, in what consisted the study, explaining its importance in benefit of the own searched. Besides, these subscribed a Consent of Participation Term, which also contained the objectives and procedures of the research. Was informed also the importance of the truthfulness of the responses to the questionnaire and that only the author of the research would become aware of the same ones. Being like this, some drivers accepted to participate, answering to the questions of the instrument.

**Instruments**

So that the proposed objectives were reached, a self-applicable epidemic questionnaire was applied, adapted of Quebec Back Pain Disability Scale and validated by the same instrument, with emphasis in the questions on lumbar pain and also on other data, as age, sex, civil status, practice frequency of the physical activity, working hours and psychosocial factors.

The testing of the measure instrument, as for the clarity and validity, was granted by five Doctors, being this validity type known as face validity or logic validity, from which validity these same doctor teachers made some suggestions. After this verification, having been accepted the instrument as valid, unanimously, two appraisers initiated the evaluation procedures.

The questionnaires were applied in self-application form, corresponding to the individual’s usual or habitual week. Were answered by the same subject in 4 visits: initial (visit 1 by the 1st appraiser and visit 2 for the 2nd appraiser) and final (visit 3 for the 1st appraiser and visit 4 for the 2nd appraiser), after an interval of one day between the visit 1 and 2 and the visit 3 and 4; in the other hand, between the visit 1 and 3 and between the visit 2 and 4 at least of 5 days and at the most 8 days of interval. The instrument obtained high correlation, presenting, like this, reliable indexes for its use.

**All of the queries were closed.**

The Quebec Back Pain Disability Scale questionnaire, properly validated, suffered little adjustments, mainly for the questions on lumbar pain; were excluded also data, as personal habits and individual factors (smoking, alcohol, sleep) and pain description in other parts of the body (neck, inferior limbs and superior limbs). Such modifications were executed as Thomas and Nelson (2002), those authors believe that shorter questionnaires are more effective than the long ones.

**Statistical analysis**

Initially was used the descriptive analysis, through which were estimated the localization measures (Average and Median), dispersion (Standard deviation, standard error and Variation Coefficient) and distribution (asymmetry and kurtosis). The median is the best estimate of central tendency, whenever the variation coefficient goes equal or superior to 25.00%; otherwise, it will be the average. The standard error determines the dispersion between “samples”, the estimate will be considered increase when it goes larger than 3.5% (THOMAS and NELSON, 2002). Kolmogorov-Smirnov was used for homogeneity analysis and, starting from the balance, was opted for the Spearman correlation to verify the correlation between the independent variable (index of the psychosocial factor) and dependent (Prevalence index), through the software “SPSS 10.0 for Windows.” The study admitted the level of p < 0.05 for the statistical significance.

The study was previously approved by the Committee of Ethics in Research of the Universidade Castelo Branco - RJ and assisted to the Norms for the accomplishing of Research in Human beings, resolution 196/96, of National Health Council of 10/10/1996 (Brazil, 1996).

**RESULTS**

Among the interviewed bus drivers, 26 (33.4%) related backache.

The descriptive results regarding the prevalence index and psychosocial index variables are presented, as followed, in the Table 1.

Being observed the Table 1 is verified that the IP variable presented high dispersion (cv > 25.00%), with the median as best measure of central tendency, in other words, the median is what best represents the studied group. Already for the psychosocial variable, the average is the best measure of central tendency, because the coefficient variation was shown below 25%. Seemingly, the
prevalence variable does not follow normal distribution, because the kurtosis and the asymmetry do not present values next of those waited for a normal distribution. In addition, the psychosocial variable follows approximately the normal distribution.

In the Table 2, with the purpose of testing the normality, the test of Kolmogorov-Smirnov was used for \( p < 0.05 \).

Verifying the Table 2 can be noticed that the IP variable did not present normal distribution, in other words, the sample is not homogeneous, being like this, out of the normality standard. In the psychosocial variable, the sample is homogeneous, being like this close to normal distribution, as already pointed in the comment of the Table 1.

For the inferential statistics was opted the Spearman correlation for the verification of the association level between the variables.

In the verification of the Table 3 it was observed that the found correlation between the IP and IPS variables is classified by the literature as low average.

**DISCUSSION**

The long duration and the incapacitating character due to the lumbar pain the prevalence found in this study important, 33.4%.

In spite of the advantages as speed and low cost, the traverse modelling presents an inherent limitation that is the possibility of reverse causality. In the specific case of this study, it is believed that this inclination can allocate the associations of the ending with the behavioural variables, in other words, the people with lumbar pain started to fell depressive and unsatisfied with their labour because of the pain.

The usage of the self-administered questionnaire, which requests certain education level, it should be taken into account, since the participants’ proportion with low education is very high: 69% of the drivers.

The women possess larger risk and larger severity for many clinical conditions of pain. The same ones possess low tolerance to pain and larger pain proportion than men, in laboratory research (Fillingim, 2003). Besides, the feminine sex presents some anatomic-functional characteristics (smaller stature, less muscular mass, less bone mass, more fragile joints and fewer adapted to the heavy effort, larger physical fat weight) that can collaborate for the appearance of the lumbar pains (Silva, et al., 2004). This explains why the prevalence of low back pain of the current study was of 33.4%, significant, but lesser than the consulted bibliography, as, for instance, the studies of Santos et al. (2004); Nyland (2003); Santos and Silva (2003); Moraes et al. (2003); Fortes et al. (2002); Polito et al. (2003), in the which the prevalence varied from 36% to 69%. In the present study, only men compose the sample.

Several studies have been showing association between psychosocial factor and low back pain: Borges et al. (1993) and Toomingos et al. (1997) apud Morken et al. (2003); Thorbjornsson et al. (1998); Ortiz (1992).

Psychological (tendency to depression, sadness, anxiety) and social (low education, dissatisfaction in the work) factors are involved in the progression for the chronicity of the low back pain mechanism. Valat (2004) could end in his study that the strongest factor associate to the high rate of low back pain report is the poor quality of the relationships with the bosses, limited cooperation between the friends and absence of superiors support.

Granata and Manas (1999) apud Alencar and Leila (2002) suggest that psychosocial factor predict with more efficacies the causes of the occupational low back pain than the biomechanical factors. In their study, 69.3% of the appraised group complain about the absence of praises and motivation as: “more company support and recognition”, 41% have complaints about their superiors, indicating that 50% do not satisfactorily interact with the supervisor.

According to Thorbjornsson et al. (1998), psychosocial factors, as monotonous work, social relationship, mental exhaustion, work dissatisfaction, double-shift, work at night or in shifts; and physical, as heavy work and previous problems in the back, related to the work, have been associated to the low back pain in many longitudinal studies and traverse cuts. In his study, the author arrived to the result that, among men with high physical load, severe vibrations, additional load or little domestic satisfaction in the social contacts outside of the work, in 1969, the risk of relating low back pain during the period of 1970-92 was 1.5 times larger than those that did not relate these same circumstances.

These results diverge of the current study. There was low average association between the ending variable (low back pain) and psychosocial factors, but it is significant.

**CONCLUSION**

**Table 1 - Descriptive results regarding the variables: prevalence index (IP) and psychosocial index**

<table>
<thead>
<tr>
<th></th>
<th>IP</th>
<th>IPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>8.07</td>
<td>2.14</td>
</tr>
<tr>
<td>Standard error</td>
<td>0.42</td>
<td>0.04</td>
</tr>
<tr>
<td>Median</td>
<td>6.00</td>
<td>2.11</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>3.69</td>
<td>0.32</td>
</tr>
<tr>
<td>Sample variation</td>
<td>13.63</td>
<td>0.10</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.65</td>
<td>0.28</td>
</tr>
<tr>
<td>Asymmetry</td>
<td>1.38</td>
<td>0.08</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.18</td>
<td>1.44</td>
</tr>
<tr>
<td>Maximum</td>
<td>18.59</td>
<td>3.00</td>
</tr>
<tr>
<td>CV%</td>
<td>45.73</td>
<td>14.87</td>
</tr>
<tr>
<td>N</td>
<td>78</td>
<td>78</td>
</tr>
</tbody>
</table>

**Table 2 - Analysis of the normal distribution of the prevalence index (PI) and psychosocial index (IPS) through the Kolmogorov-Smirnov (KS) test; \( p < 0.05 \) were considered statistically significant**

<table>
<thead>
<tr>
<th></th>
<th>IP</th>
<th>IPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z(KS)</td>
<td>3.577</td>
<td>0.956</td>
</tr>
<tr>
<td>p-value</td>
<td>0.000</td>
<td>0.321</td>
</tr>
</tbody>
</table>

**Table 3 - Correlation analysis between the parameters, with the correlation of Spearman**

<table>
<thead>
<tr>
<th></th>
<th>IPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP</td>
<td>-0.385(***)</td>
</tr>
<tr>
<td>p-value</td>
<td>0.001</td>
</tr>
</tbody>
</table>
The low back pain prevalence, in the present study, reached 33.4% of the searched urban bus drivers.

The correlation between the variables was low average and the sample did not come close to normal distribution for the prevalence variable.

The development of studies is recommended with female drivers.

REFERENCES


