

A Study on Prevalence of Low Back Pain among Traffic Policemen

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Abstract: Background: Low Back pain [LBP] is an extremely common human phenomenon. It is a significant source of long-term disability and work absence and accounts for approximately 80% for the total costs of back pain care. Work related musculoskeletal disorders and in particular low back pain, pose a major health and socioeconomic problem in modern society. Prolonged standing has become a major contributing factor for low back pain and traffic duty of police officers is one of the most common occupations for exposure to a prolonged standing for about four hours a day. **Objective:** To determine the prevalence of low back pain and its association with standing among traffic policemen. **Methodology:** The six months study was conducted on 180 subjects after obtaining the permission from the Assistant Commissioner of Police, Traffic, Bhubaneswar. These subjects were divided in to two groups of 90 each. The Group-A consisted of traffic policemen those were involved in standing for at least four hours a day and Group-B consisted of professionals from the same department other than traffic policemen those were not involved in standing activities most of the time during their duty hours. **Results:** There is an approximately perfect positive correlation between the levels of pain and disability index in Group-A and Group-B with r-value of 0.9926 and 0.9785 respectively. There is a significant difference between the levels of pain in Group-A and Group-B with t-value of 6.72 ($p \leq 0.001$). There is a significant difference between the levels of disability index in Group-A and Group-B with t-value of 6.33 ($p \leq 0.001$). Standing is associated with pain and disability index in Group-A more than Group-B with chi-square value of 14.4 ($p \leq 0.001$). The prevalence of pain and disability index in Group-A was 47% and in group-B, it was 20%. **Conclusion:** The study showed that low back pain is highly prevalent among traffic policemen and standing is significantly associated with low back pain.

Keywords: Traffic Policemen, Low Back Pain, Prevalence, Standing.

INTRODUCTION

Low back pain is the commonest cause of occupational disability in industrial societies and, with headache, is the most frequent variety of pain with which general practitioners have to contend. From an extensive study, it appears that significant low back pain begins at the age of about thirty-five. The same study reveals that of the total number of people examined 35% would get sciatica and 90% would become recurrent. *Campo M et al., (2008)*

Work related musculoskeletal disorders and in particular low back pain, pose a major health and socioeconomic problem in modern society. It is shown that 60-80% of general population suffers from back pain during their lives. Low back pain is a common disorder

among cooks working in school lunch services in Japan. Several studies have reported that the prevalence of back disorders during a specific period of employment ranged from 26.4% and 55.3%. The 1-month prevalence of low back pain was 74.3% among the cooks. *Holder NL et al., (1999)*.

Among nurses, the prevalence of low back pain was found to be 73-76%. Several authors report lower annual prevalence of low back pain in nurses varying between 45% to 58% which may be due to the heterogeneity of different nursing populations. *Smedley J et al., (1995)* Handling patients is also provocative among physical therapists. A one-year incidence rate of work related musculoskeletal disorders among physical therapists was found to be 20.7%. The factors that increased the risk of low back pain included patient

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transfers, patient repositioning, bent or twisted postures, joint mobilization, soft tissue work and job strain. *Molumphy M et al.*, (1985).

In India, prevalence of low back pain is nearly 60 per cent of the population who have significant back pain at some time in their lives. It has been studied that, prolonged standing has become a major contributing factor for many occupational hazards like low back pain. *Koley S et al.*, (2008).

Among those occupations, traffic duty of police officers is one of the most common occupations for exposure to a prolonged standing for about 4 hours a day. A number of studies have been conducted previously for musculoskeletal problems in police officers as a result of driving. It was found to be a major risk factor for musculoskeletal trouble.

The overall objective of our study was to find out the prevalence of low back pain among traffic policemen. The subjects taken for the study were divided into group-A and group-B, represented as traffic group and non-traffic group respectively. Low back pain and disability were measured through categorical scales as outcome measures.

MATERIALS AND METHODOLOGY

Source of Data: The subjects were selected from the Department of traffic police Bhubaneswar in the state of Odisha, India.

Sample Size: One hundred and eighty subjects were selected for the study.

Sample Design:

Convenient sampling method was adopted for the study and then the subjects were allocated to one of the study groups (Group-A: traffic group. Group-B: non-traffic group).

Research Design: Epidemiological study

Inclusion Criteria:

Both male and female subjects aged between 30 & 55 years with involvement in standing for at least 4 hours a day (for traffic group) were selected for the study.

Exclusion Criteria

Subjects were excluded if they had symptoms of nerve root compromise with decreased tendon reflexes, sensory loss & motor deficit or had serious spinal pathology or had undergone spinal surgery within the preceding 6 months duration or had severe cardiovascular or metabolic diseases.

Instrumentation and Tools Used

- **Visual Analog Scale**
- **Modified Oswestry Low Back Pain Disability Questionnaire.**

Study Protocol: The subjects were divided into two groups with 90 subjects in each group.

Group-A:

This group (N=90) contained traffic policemen from the respective departments mentioned earlier, those were involved in standing for at least 4 hours a day.

Group-B:

This group (N=90) contained professionals from the same department other than traffic policemen, those were not involved in standing activities most of the time during their duty hours.

The study was of six months duration. After taking the prior permission from the Assistant Commissioner of Police, Traffic, Bhubaneswar and obtaining the consent of the subjects to participate in the study, the data were collected.

METHOD OF DATA COLLECTION

To find out the difference in outcomes visual analog scale and Modified Oswestry low back pain disability questionnaire were employed.

Selection of Tool

VAS, Modified Oswestry low back pain disability questionnaire are internationally standardized and highly reliable tool for quantifying pain and disability respectively.

A Visual Analogue Scale (VAS) is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured.

Oswestry low back pain disability questionnaire is designed to give examiner information as to how the back pain has affected patient's ability to manage in everyday life. Ten sections or items assess pain, personal care, lifting, walking, sitting, standing, sleeping, social life, travelling and employment.

RESULT

The data was analyzed by using unpaired t-test and chi square test for intergroup analysis and to determine the association factor respectively.

Statistical analyses were performed by using the SPSS Version 21.0. Results were calculated by using 0.05 levels of significance.

Intergroup Analysis:

Table 1: mean and standard deviation of age for the subjects of Group-A and Group-B

Demographic Data	Group-A		Group-B	
Age	Mean	S.D	Mean	S.D
	36.75	4.2	38.2	3.4

It describes the mean and standard deviation of age for the subjects of group-A and group-b, which comes out to be 36.75±4.2 and 38.2±3.4 respectively.

Table 2: Mean and standard deviation of pain for the subjects of Group-A and Group-B

	Group-A		Group-B	
Pain	Mean	S.D	Mean	S.D
	3.1	3.4	0.6	1.2

It describes the mean and standard deviation of pain for the subjects of group A and group b. for group a it comes out to be 3.1±3.4 and for group B it comes out to be 06.±1.2 respectively.

Table 3: Mean and standard deviation of disability for subjects of Group-A and Group-B

	Group-A		Group-B	
Disability	Mean	S.D	Mean	S.D
	18.6	20.33	4.02	8.27

It describes the mean and standard deviation of disability for the subject as of group-A and group-B. For group-A it comes out to be 18.6±20.33 and for group-B it comes out to be 4.02.±8.27 respectively.

Table 4: Correlation of the mean values of pain and disability between Group-A and group-B

	Group-A	Group-B
Correction	r-value	r-Value
	0.9926	0.9785

It describes the correlation between the mean values of pain and disability of group-A and group-B. For group-A it comes out to be 0.9926 and for group-B it comes out to be 0.9785 respectively.

Table 5: Comparison of the mean values for pain between Group-A and Group-B

Pain	t-Value	p-value
Group-A vs.Group-B	6.72	p≤0.001

It describes unpaired t-test done for the mean values of difference in pain between group-A and Group-B. The t-value is 6.72 (p≤0.001)

Table 6: Comparison of mean values for disability between Group-A and Group-B

Disability	t-Value	p-value
Group-A vs.Group-B	6.33	p≤0.001

It describes unpaired t-test done for the mean values of differences in disability for group-A &group-B. The t-value is 6.33(p≤0.001)

Table 7: Association of pain and standing between Group-A and Group-B

Association	Chi square value	Degree of freedom	p-value
Between Group-A & Group-B	14.4	1	p≤0.001

It describes the association of pain and standing between Group-A and Group-B. The Chi square value is 14.4 with 1 degree of freedom (p≤0.001).

DISCUSSION

Test for correlation between pain and disability index was performed in group-A and group-B which

implies that there is an approximately perfect positive correlation between the levels of pain and disability index in group-A and group-B with r-value of 0.9926 and 0.9785 respectively. The intergroup analysis was performed with unpaired t-test for comparing the values of pain and disability index for all groups which implied that, there is a significant difference between the levels

of pain in group-A and group-B with t-value of 6.72 ($p \leq 0.001$). There is a significant difference between the levels of disability index in group-A and group-B with t-value of 6.33 ($p \leq 0.001$).

Test for association of standing with pain and disability index was performed with chi-square test between group-A and group-B which implies that, standing is absolutely associated with pain and disability index in group-A more than group-B with chi-square value of 14.4 ($p \leq 0.001$).

The prevalence of pain and disability index in group-A came out to be 47% and in group-B, it came out to be 20%. This may be due to standing for prolonged periods leads to fatigue and low back disorders in group-A. According to Karakolis T et al., (2014), standing appears to be of concern via fatigue mechanisms given the prolonged loading caused by exposure to these tasks. The human body requires movement both to nourish structures, for example the nucleus pulposus and the intervertebral disc, and to provide periodic rest of muscles to prevent fatigue and occasional migration of loads between various tissues achieved from posture change. However due to regular change of posture of the subjects in group-B, the prevalence rate is lower than that of group-A.

According to a study by Descarreaux M et al., (2008), during prolonged standing chronic low back pain subjects swayed less than healthy subjects in both the antero-posterior and medial-lateral directions. According to this rationale, the decreased number of postural changes observed in chronic low back pain subjects compared to healthy subjects during prolonged standing might be caused by diminished proprioceptive information from the low back or altered sensory-motor integration in chronic low back pain. As a consequence, the presence of a frozen postural strategy can be viewed as a symptom of an altered postural control system. Loney PL & Stratford PW (1999).

D.E Gye et al., (1998), conducted a survey regarding the musculoskeletal problems and driving in police officer and found a significant and positive relationship between the police officer exposure to car driving and self-reported low back trouble.

J.E. Agolla et al., (2008) studied about the occupational stress among police officers and the perceived police stress symptoms identified were feeling restlessness, trouble in concentrating, worries and thinking of concerns at night and weekend, feeling tensed and anxiety, feeling of depressed and feeling of lack of energy.

CONCLUSION

Conclusion of the study showed that prevalence of low back pain is 47% in the traffic group and 20% in

the non-traffic group, which implies that low back pain is highly prevalent among traffic policemen. In addition, it was found that standing is significantly associated with low back pain in the traffic group.

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Conflict of Interest: The authors declare no conflict of interest.

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