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Prevalence of Low Back Ache and Functional Disability among Traffic Police in South Bangalore

S. B. Prasoon and Sudhakar Subramanian*

Department of Physiotherapy, Krupanidhi College of Physiotherapy, Bengaluru, Karnataka, India; physio.kric@krupanidhi.edu.in

Abstract

Background: Around 70% to 80% of world's population has experienced Low Back Ache (LBA) at some point in their lives. Traffic police officers are prone to number of risk factors related to LBA every day. Around 96 various tasks must be completed in a full working day by a police officer. Out of these, 46 tasks require heavy physical work. Other tasks which do not require heavy physical work can be made easier if the police officer is physically good and fit. The traffic police do not know that back pain is caused due to their poor posture. Helpless stance, long walking hours, tedious developments of the body and helpless work community configuration are principle hazard factors for these issues. **Objective:** The purpose of the study is to determine the prevalence of LBA and functional disability among traffic police in South Bangalore. **Material and Method:** Nordic musculoskeletal questionnaire is used to record sites of pain among traffic police officers. Modified ODI scale was administered to traffic police officers with Low Back Ache (LBA). Based on the ODI score, the functional disability was evaluated. VAS is used to measure pain in traffic police officers having LBA. Data was analyzed using descriptive statistics. **Result**: In a total of 246 traffic police personnel who took part in the study, 96 of them reported with LBA i.e, the prevalence percentage was 39.02%. The mean pain intensity according to VAS was 3.95 ± 1.59. Out of the 96 police personnel who reported LBA, 49 personnel (51%) had moderate disability. Minimal disability was observed in 35 personnel (36.5%) and severe disability was noted in 12 personnel (12.5%). **Conclusion:** The prevalence rate of Low Back Ache among traffic police in south Bangalore is found out to be 39.02%.

Keywords: Low Back Ache, Nordic Musculoskeletal Questionnaire, Oswestry Disability Questionnaire

1. Introduction

According to WHO, LBA is to blame for a large number of people who miss work and go to a doctor[1]. LBP has been a major public health issue in the United States exposing more than 34 billion adults having experienced it[2]. Throughout Canada, 84% of people are projected to suffer from LBP in their lives. In Great Britain, the average LBP prevalence percentage was 59%[3].

In Denmark, 70% population was prone to LBA. LBA is one of the most prevalent musculoskeletal disorders in the working community. A major health problem in our society is that of musculoskeletal disorders[4]. The life time incidence of LBA is up to 85-90%. Only a small number of all musculoskeletal disorders can be classified as independent psychiatric disorders. Many signs of Low Back Ache are identified as unspecific or undiagnosed[4]. Proper treatment is complicated because' evidentiary' treatments are still uncommon, but recommendations are now accessible in our nation on managing low back pain symptoms.

The National Institute for Occupational Safety and Health (NIOSH) reported that there is strong evidence of a variety of workplace risk factors associated to LBA[4]. The article provides a study of current workplace health and safety vulnerability issues that police personnel are experiencing either daily or during their training period[4].

*Author for correspondence

LBA has a significant impact on the working population under 45 years of age, with annual treatment costs ranging from 16 billion to 56 billion[5]. Work that require hefty or tedious lifting are important risk factors causing LBA[6]. Obesity and osteoporosis are examples of medical disorders that might lead to LBA. Similarly those with LBA are more likely to suffer with depression, anxiety, alcoholism and divorce[7].

There is high frequency of decreased functional capacity in traffic police due to back, knee or lower limb injuries[8]. Furthermore if a person makes a career out of police service, he or she might end up quitting the job if they suffer a back, knee or lower limb pain/discomfort. LBA is the most common medical condition among work related disorders. It is a significant reason for inability among working people in their environment[9].

The traffic police do not have awareness about the cause of back pain which is their poor posture. They are doing their activity with helpless stance, long walking hours, tedious developments of the body and helpless work community constitutes to the principle hazard factors for these issues[10].

2. Materials and Methods

The study design was survey based observational type of study. Sampling has been done by purposive sampling method. After obtaining the approval from the ethical committee (Ref: EC-MPT/20/PHY/014) study was conducted. A total sample size of 246 working traffic police personnel in and around South Bangalore was screened. The study period is 8 months. The inclusion criteria includes: 1. Age group between 30 to 40 years, 2. Both male and female, 3. Working hours not less than 6, 4. Prolonged standing during working hours and 5. Work experience not less than 8 years. The exclusion criteria includes: 1. History of traumatic injury, 2. Those engaged in desktop jobs, 3. Infections and 4. History of cardiovascular and respiratory problems.

2.1 Outcome Measures

- Nordic Musculoskeletal questionnaire[11]
- Oswestry Disability Index questionnaire (ODI)[12]
- Visual Analogue Scale (VAS)[13]

3. Procedure

The Institutional Ethical Board, Bangalore provided ethical clearance. The study sample comprised of 246 traffic police personnel from in and around south Bangalore. According to the research's inclusion and exclusion criteria, traffic police personnel were selected in the study.

Demographic data was obtained from the traffic police personnel along with informed consent. The investigation was conducted with the earlier consent of traffic police headquarters. After getting the consent, the study was conducted.

The aims, objectives and purpose of the study were explained to the traffic police personnel. The Nordic musculoskeletal questionnaire has been given to the traffic police personnel. Their sites of pain are noted on the questionnaire. In this questionnaire they marked the areas of body they are presently experiencing musculoskeletal symptoms or were experiencing them in the last week or last year.

After completion of the Nordic questionnaire, the traffic police personnel who recorded Low Back Ache were given modified ODI questionnaire and VAS.

The modified ODI has 10 multiple choice questions that provided the physiotherapist with information on how their back pain has impact on their functional capacity in their daily life. Questions on a vertical scale between 0 and 5 are recorded. Disability percentage is calculated by total score divided by 50 and multiplied by 100.

By Visual Analogue Scale (VAS), the intensity of the low back pain was noted ranging from 0 to 10. Data was collected and sent for further statistical analysis.

4. Statistical Analysis

Table 1. (I) Basic characters of the participants

Basic characters	Mean	S.D
Age	34.53	3.26

M: Mean, S.D: Standard deviation,

Gender	N	Percentage
Male	64.00	66.70
Female	32.00	33.30

N = Number, % = Percentage

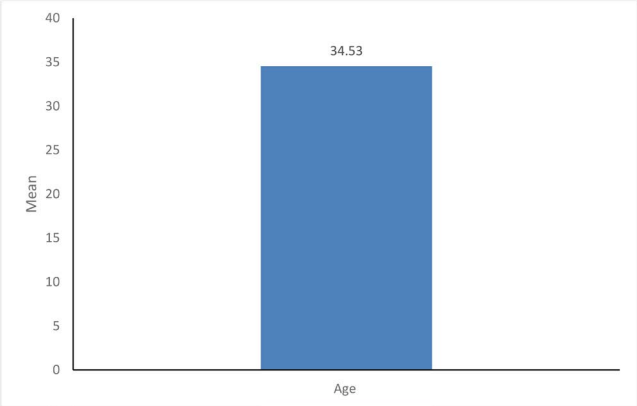

Figure 1. Mean of age distribution.

It is known from the Table 1 (1) that the mean age of the study participants was 34.53 ± 3.26 years. Male participants were 66.7% and female participants were 33.3%. Male participants were higher compared to female participants.

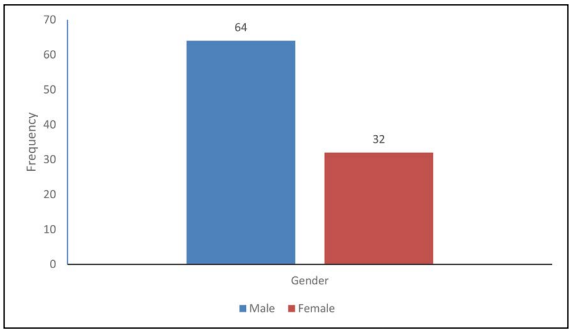

Figure 2. Frequency distribution of gender.

Table 2. (II) Prevalence of LBA

Number of persons screened	Presence of Low Back Ache	Prevalence (%)
246	96	39.02

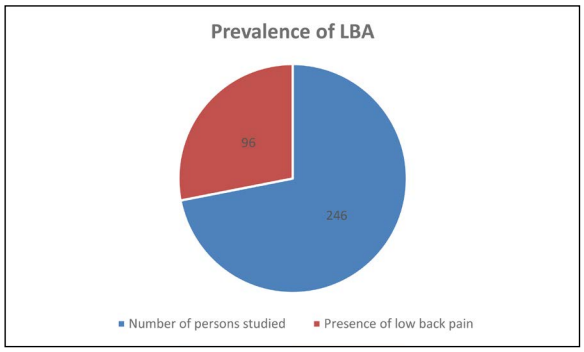

Figure 3. Prevalence of LBA.

It is known from the above Table 1(II) that the prevalence of LBA is 39.02% in the police personnel.

Table 3. Analysis of VAS

Pain	M	SD
VAS	3.95	1.59

M - Mean, SD - Standard Deviations

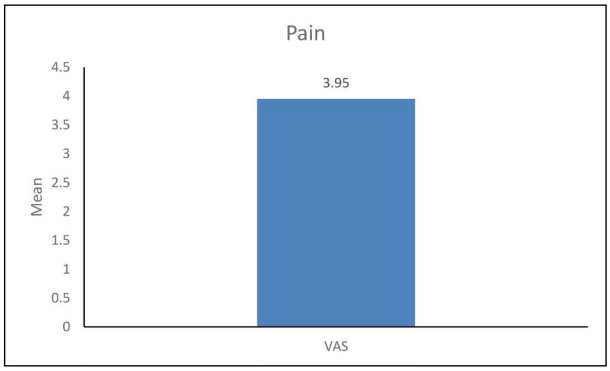

Figure 4. Mean of VAS score.

It is inferred from Table 2 that the mean VAS score was 3.95 ± 1.59 among the police personnel who have reported low back pain.

Table 4. Analysis of VAS in terms of severity

VAS score	N	%
Minimal	34	35.4
Moderate	51	53.1
Severe	11	11.5
Total	96	100

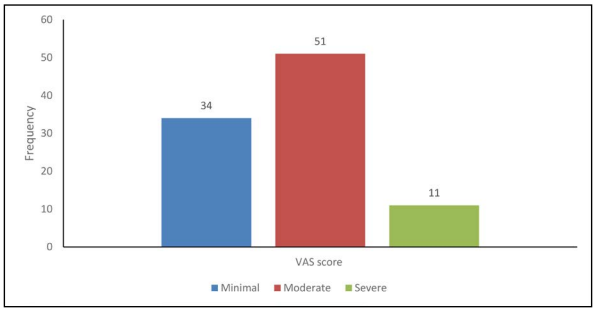

Figure 5. Frequency distribution of VAS score.

It is inferred from Table 3 that the majority 53.1% of police personnel have reported moderate level of pain severity. Minimal pain was reported in 35.4% and severe pain was noted in 11.5%.

Table 5. Analysis of back pain with ODI

ODI	M	SD
ODI Score	13.89	5.21
ODI disability percentage	27.66	10.60

M - Mean, S.D. - Standard deviation

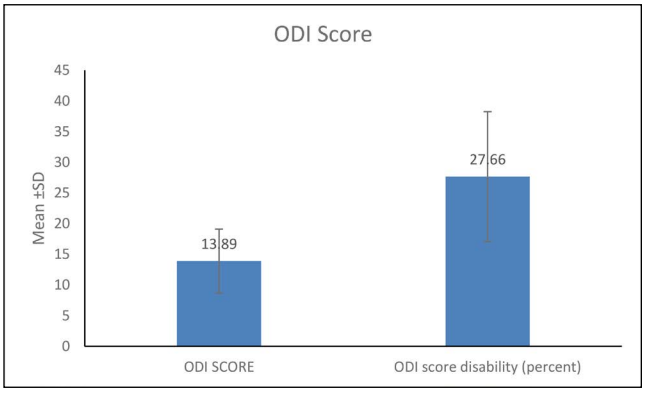

Figure 6. Mean of ODI score.

It is inferred from Table 4 that the mean ODI score was 13.89 ± 5.21. The mean ODI disability percentage was 27.66 ± 10.60.

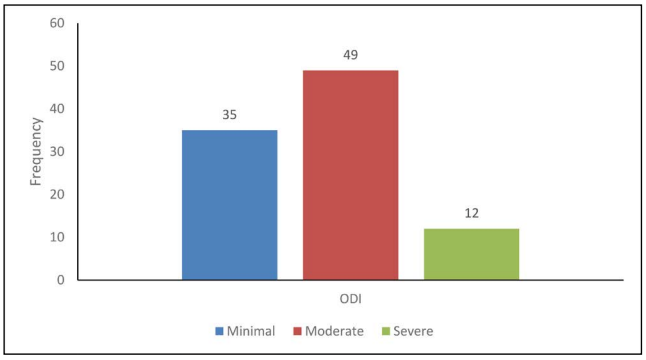

Figure 7. Frequency distribution of ODI score.

Table 6. Analysis of disability severity categorization

ODI	N	%
Minimal	35	36.5
Moderate	49	51.0
Severe	12	12.5
Total	96	100

It is inferred from Table 5 that 51% of the police personnel with low back pain had a moderate level of disability. Minimal disability was observed in 36.5% and severe disability was noted in 12.5%.

5. Result

It is inferred from the study that out of the 246 traffic police personnel who took part in the study, 96 reported Low Back Ache. So the prevalence of LBA among traffic police in south Bangalore is 39.02%.

The mean VAS score was 3.95 ± 1.59 among the traffic police personnel who have reported Low Back Ache. The majority 53.1% of traffic police personnel who have reported Low Back Ache had a moderate level of pain severit. Minimal pain was reported in 35.4% and severe pain was noted in 11.5%.

From the study it is clear that 51% (49N) of the traffic police personnel with low back pain had a moderate level of disability. Minimal disability was observed in 36.5% (35N) and severe disability was noted in 12.5% (12N).

6. Discussion

LBA has been observed to be a significant medical issue for working traffic police officers. In a study that was conducted by (Tissot *et al.,* 2009) a significantly major proportion of traffic police officers usually stand at work. The prevalence of Low Back Ache was higher among those who spent more working hours in standing posture[14].

In a study conducted by (Mohammad Nazmul Hazzan *et al.,* 2006), 86% of traffic police officers were found to have LBA which is quite high. The LBA among traffic police was due to poor posture[10].

In traffic police officers the lifetime prevalence of LBA is 66% (Gyi, *et al.,* 1998). Majority of traffic police officers who were suffering from Low Back Ache worked in poor posture and worked for long standing hours[15-22].

In this study most of the traffic police officers experienced pain in their low back area (96 nos.) followed by knee (85) and foot (40). Hips (7), neck (7), shoulder (5), upperback (4) and elbows (1) were least affected.

The mean age of the participants who took part in this study is 34.53 ± 3.26 years. Out of the 96 traffic police officers who reported Low Back Ache, 64 were male and 32 were female (Table 1). The prevalence of LBA in this study is found out to be 39.02%.

The mean VAS score was 3.95 ± 1.59 among the traffic police personnel who reported low back pain (Table 2). The analysis of visual analogue scale in terms of severity as shown in Table 3 was 34 participants reported minimal pain, 51 reported moderate pain and 11 reported severe pain.

It is known from Table 4 that the mean ODI score was 13.89 ± 5.21. The mean ODI disability percentage was 27.66 ± 10.60. According to Oswestry disability index, out of the 96 working traffic police officers, 35 officers (36.5%) had minimal disability and 49 officers (51%) had moderate disability and 12 officers (12.5%) had severe disability.

While standing, the centre of gravity falls in the waist and hip area. So while standing hip carries most of the body weight. Standing for a long period of time causes fatigue of muscle around hip, which further results in low back pain and leg pain. Furthermore, excessive driving of two-wheeler causes increase in dural pressure which also results in low back ache[10].

7. Limitations

- Short duration of the study.
- A small sample size.
- As participation in the study is voluntary chances for response biased.
- Confidentiality concern was an issue.

8. Conclusion

The prevalence of Low Back Ache among traffic police in south Bangalore is found out to be 39.02%, 35 officers (36.5%) has minimal disability and 49 officers (51%) had moderate disability and 12 officers (12.5%) had severe disability. Maximum pain was observed in low back and minimum pain in waists. Health education about correction of posture among working traffic police personnel may reduce the prevalence of Low Back Ache.

9. Abbreviations

LBA – Low Back Ache
ODI – Oswestry Disability Index
VAS – Visual Analogue Scale
WHO – World Health Organization

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