

# Study on Prevalence of Musculoskeletal Discomforts and Quality of Life in Among Indian Shopkeepers Due to Chronic Osteoarthritic Pain

Meena Gupta\*, Rashmi Jain

Amity Institute of Physiotherapy, Amity University, Noida, sector-125, Uttar Pradesh, India

## \*Corresponding author:

Meena Gupta

✉ mgupta9amity.edu & meenaguptaphysio@gmail.com

Amity Institute of Physiotherapy, Amity University, Noida, sector-125, Uttar Pradesh, India

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## Abstract

A survey using Nordic Musculoskeletal Questionnaire is conducted among shopkeepers of India about the existence or non-existence of musculoskeletal discomfort. The individuals were asked about all the aspects that were being included in the questionnaire involving presence of pain, discomfort, ache in the last 12 months, or whether it affected their daily routines and whether they seek any medical help etc. Some other questions were also asked such as demographic details, risk factors at work and work duration. The prevalence was found to be most in low back area with 57.33% followed by knee with 30%. The most common risk factor was reported to be prolonged static posture followed by bending movements.

**Keywords:** Shopkeepers; India; Musculoskeletal; Discomforts; Pain

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## Introduction

Shopkeepers are the individuals whom have to run a shop for their daily living. They experience various stresses at their workplace such as carrying heavy; bending, performing overhead activities [1] remain in static postures for long period of time. In this profession there is no limitation of age group or gender. But it is often seen that males are more involved than females. Shopkeepers are exposed to various risk factors [2] in the workplace and most of them follow a sedentary lifestyle therefore making them more prone to musculoskeletal discomfort. Musculoskeletal discomfort is here considered in terms of musculoskeletal pain. Musculoskeletal pain may occur due to prolonged static positions, [3] exposure to vibration, carrying heavy loads, bending activities, etc. It can also occur due to any trauma to the musculoskeletal structures such as bones, tendons, and ligaments. It also affects one's daily life and can have a negative effect in terms of deteriorating quality of life [4] and increasing dependency on others for their work. In a study among shopkeepers it has been shown that the most common risk factor reported to be in the static postures for long period of time. It was also reported in the same study about the hip being most affected area in the shopkeepers of Bangladesh [5, 6]. In the other studies the most common affected area is reported to be the low back region followed by neck region. Low back region is in general a very prone region for musculoskeletal pain or discomfort as sitting for longer periods causes abnormal

stresses on the lower spine thus provoking pain in the low back region [7]. The prevalence was found among shopkeepers of Bangladesh therefore felt a requirement to find the prevalence of musculoskeletal discomforts among Indian shopkeepers as it has not been done before [8].

## Subjects and Method

The study was conducted in different markets of Delhi as well as in Noida. 85 participants were approached and were explained about the study and its need and those who were willing to participate were made to sign the consent form after reading the details given in the form. The questionnaire used in the study was Nordic Musculoskeletal Questionnaire and an assessment form and screening form was also used for other details including demographic details, Work related risk factors, duration of work, etc. The Nordic Musculoskeletal questionnaire included a body chart indicating 9 areas of the body and included questions such as occurrence of pain, discomfort, and ache in any of the 9 areas of the body during last 12 months, Effect of musculoskeletal pain on the daily activities, seeking any medical help from a physician, experiencing any trouble in the last week. The assessment form included various aspects such as risk factors including prolonged static posture carry heavy load, bending activities, exposure to vibration, etc. and it also included the work duration, intensity of pain, type of pain. Data analysis is done using Microsoft Excel 2010 for finding the mean, standard deviation, etc. as well as for making graphs.

## Results

Out of 85 participants 79 participants were male and 6 participants were female. Out of 70 participants, 25 participants reported no pain and all the female participants reported pain in various areas of the body. 85 participants were included with age group of 20-60 years old and with average age of 39.31 years. Most of the participants belonged to the age > 40 years who participated as well as reported musculoskeletal pain [9,10]. The weight and height of all the participants were also included. The average weight is reported to be 73.564 kg with the minimum weight of 50 and maximum weight of 113kg and standard deviation to be 11.516. The average height is reported to be 167.97 cm with minimum height of 152cm and maximum of 183 cm and standard deviation of 7.022 (Table 1).

85 samples were taken and out of those 60 individuals reported musculoskeletal pain and 25 individuals reported no musculoskeletal pain. Individuals who reported low back pain over last 12 months were 34 and 18 participants reported knee pin and no pain was reported in the elbow region. In the individuals who reported musculoskeletal pain the most commonly affected area is found to be the low back region (57.33%) followed by knee region (30%) and ankles (20%). There was no pain reported in the elbows and 1.33% pain reported in the wrists/ hands (Table 2) (Figure 1).

Out of participants who reported pain, 35 participants reported Prolonged Static Sitting, 27 participants reported prolonged static standing, 12 participants reported carrying heavy load and 12 participants reported bending, 12 participants reported prolonged bent neck posture, 8 participants reported overhead activities and 3 participants reported exposure to vibration.

The most common risk factor was found to prolonged Static Sitting (58.33%) followed by prolonged Static Standing (45%) in the individuals who reported musculoskeletal pain. The least

common affecting risk factor is to be Exposure to vibration (5%) in the shopkeepers who reported musculoskeletal pain (Figure 2).

## Discussion

Shopkeepers had to remain in sitting position for longer periods throughout the day if there are no customers or there are workers who are handling the customers. The shopkeepers have to be in their place if there is not a condition in bigger shops [11, 12]. In small shops, shopkeeper might be in sitting position when there is no customer and would be standing for longer time if there are customers to attend, this situation is possible in small shops in which there would be a very few or no worker working

Percentage(%) of occurrence of pain/discomfort in various areas over 12 months

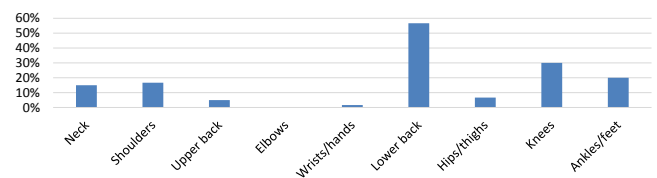


Figure 1 Percentage of pain/discomfort area wise.

Number of individuals

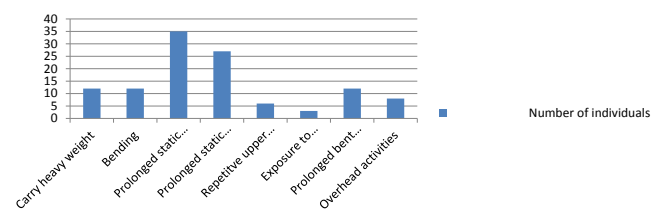


Figure 2 Pain/discomfort movement wise.

Table 1: Age, weight and height of participants.

Items	Age (years)	Weight (kg)	Height (cm)
Average	39.31	73.564	167.97
Minimum	20	50	152
Maximum	60	113	183
Standard deviation	11.516	14.277	7.022

Table 2: Nordic Musculoskeletal questionnaire.

Areas	Have you at any time during last 12 months had trouble such as pain, ache, discomfort, numbness) in	During the last 12 months have you prevented from carrying out normal activities(erg job, housework, hobbies) because of this trouble in	During the last 12 months have you seen a physician for this condition	During the last 7 days have you had any trouble in
Neck	9	5	4	5
Shoulders	10	5	3	3
Upper back	3	2	2	1
Elbows	0	0	0	0
Wrists/ hands	1	0	0	0
Lower back	34	16	13	11
Hips/ thighs	4	3	0	3
Knees	18	9	6	6
Ankles/feet	12	4	2	3

under the shopkeepers [13]. In bigger shops shopkeepers are also seen involved in writing or computer work about the retail or wholesale data, in which often they are seen in bent neck postures for a particular period of time. In this study, most pain is reported in the low back region, which could be explained due to prolonged static sitting with improper postures. As per the observation in most of the shopkeepers, they were sitting on the stools or on the chairs with no proper back support which could be the potential reason of low back pain. Some shopkeepers also have to undergo carrying heavy weight and bending activities as per the requirements of work. Standing for longer periods is often seen when handling customers which could possibly explain for ankle and knee pain [14].

In some of the shops, it has been seen that shopkeepers have to perform overhead activities such as taking out things from higher heights. This risk factor was mostly observed in shopkeepers of confectionaries or grocery shops [15,16] etc. In this study most of the samples were collected from males than females as males are often involved in this profession. But all the females who were included reported musculoskeletal pain but 25 males in the study do reported no musculoskeletal pain. The most of the working hours reported in the study was found to be 9-12 hours. And the intensity of pain is mild felt by majority of shopkeepers at intermittent intervals [17]. Most of the pain was reported in

the age group 50-60 years followed by the age group 40-50 years. The mean age was found to be 39.31 years of all the participants. No pain was mostly reported in the age groups less than 40 years and was least reported in the age group 50-60 years followed by the age group 40-50 years. It shows that as the age increases the occurrence of musculoskeletal pain [18] increases and with lesser ages there is less prevalence of musculoskeletal pain.

In the individuals who reported musculoskeletal pain the most commonly affected area is found to be the low back region (57.33%), knee region (30%), ankles/feet (20%), shoulders (16.66%), neck (15%), hips/thighs (6.66%). There was no pain reported in the elbows and 1.33% pain reported in the wrists/hands. Most of the individuals encountered prolonged static sitting (58.33%), prolonged static standing (45%), carry heavy load (20%), bending, overhead activities (13.3).

### Limitations of study

The main limitation of the study is less number of samples included in the study which could not define for all the shopkeepers and no specific questionnaire was used for defining the risk factors. So this study can further be performed with more number of samples. Another limitation could be the workplace design was not evaluated in terms of shop as in order to provide ergonomic interventions for the same.

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