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Associations between Musculoskeletal Health, Pain, Degree of Stress, And Quality of Life among Small Scale Textile *Workers*

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ABSTRACT

Objective: This study was conducted to identify the prevalence and association between musculoskeletal health, pain, degree of stress, and health-related quality of life among small-scale textile workers.

Methodology: A cross-sectional study was conducted with a total of 200 textile workers (193 males and seven females) who completed the following questionnaires: demographic and personal data questionnaire, Cornell's musculoskeletal disorder questionnaire (CMDQ), perceived stress scale (PSS-10), health-related quality of life (HRQOL-14)

Results: Among the different locations of pain, the right knee was found to be most commonly affected (57.1%), followed by the left knee (51.2%), lower back (33.0%), right lower leg (27.1%), and left lower leg (25.6%). Musculoskeletal health was moderately associated with pain level, but it was having very weak association with stress level and HRQoL.

Conclusion: Musculoskeletal health is very weakly associated with stress and health-related Quality of Life. It is moderately associated with the level of pain perceived by the small-scale textile workers of Surat.

Key words: Musculoskeletal health, Health-related quality of life, small scale textile workers, CMDQ, PSS-10, HRQoL-14

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INTRODUCTION

Musculoskeletal injuries are characterized by discomfort, disability, or persistent pain in the joints, muscles, tendons, and other soft tissues, caused or aggravated by repeated movement and prolonged awkward or forced body posture [1]. The prevalence of work-related musculoskeletal injuries is significant in many professions, and this has had a marked impact on the professionals, businesses, governments, and society at large [2]. The history of the previous injury, the severity of the injury, and occupations that involve the maintenance of awkward postures and movements over a prolonged time are identified as risk factors in occupations that require repetitive and forceful tasks and high levels of activity [3-6]. Most textile workers are engaged in labor-intensive and physically demanding work activities such as repeated lifting, bending, twisting, reaching, and performing various tasks. Over a prolonged period, these awkward postures present increased loads not only on the lumbar spine but also on other body parts. Studies among workers in various occupational sectors in India have shown that the highest-burden is due to musculoskeletal morbidity. A study of health problems of female textile industry workers in Pondicherry showed that musculoskeletal morbidity is the most typical health problem [7]. In a study of musculoskeletal morbidity among textile workers in Ahmadabad, the prevalence was not very high. However, musculoskeletal pain was predominantly low back and lower limb, followed by upper limb pain [8]. A study

from Krishnamoorthy, et al. reported that cotton textile industry workers had predominant musculoskeletal morbidity and disability [9]. Ufuk Berberoğlu, et al. [10] stated that musculoskeletal disorders are a common problem among textile workers. Mohammad Didar Hossain, et al. [11] found that the lower back and neck were the most affected areas among readymade garment workers. Ravichandran, et al. [12] reported that 77.6% of the garment workers had musculoskeletal problems. The most common sites affected were the neck (32.1%), knee (28.7%), and low back (26.6%). So this study also aimed to find prevalence and the association between musculoskeletal injuries, degree of stress, pain, and HRQoL in textile workers from Surat, India.

METHODOLOGY

Participants

This study was ethically approved Research Ethics Committee of University of Hail with approved number H – 2022 -299.This study was a cross-sectional study with a non-probability sample collected from 200 small-scale textile industry workers, comprising 193 males and seven female workers as per inclusion and exclusion criteria. The study was conducted from November 2021 to March 2022.

Inclusion criteria

Age 20-60 years; Have some musculoskeletal pain for one month; Must be working on textile manufacturing machines; Have a minimum of 2 years of work experience in textile manufacturing units, and Currently on active duty for 12 weeks.

Exclusion criteria

Musculoskeletal degenerative conditions; and Spinal surgeries.

Outcome measures

Following data collection tools or questionnaires were used: (a) Demographic & Personal Data, (b) Cornell's musculoskeletal disorder questionnaire (CMDQ): is a well-designed data collection tool that addresses the 7-day frequency, severity, and working ability interference effects of MS discomfort across 20 body parts [13]. (c) Perceived stress scale (PSS): It measures the degree of stress a person feels about their life [14]. A 10-item self-report measure of global perceived stress, scores ranging from 0 to 40 shows adequate internal consistency, test-retest reliability, and validity across different populations [15], (d) Health-related quality of life (HRQoL-14) [16], and (e) Numerical pain rating scale(NPRS) [17].

Procedure

All the data collection sheets were distributed to the workers, and instructions were given to fill out the questionnaire. A written consent was taken to participate in the study.

Statistical analyses

Data were analyzed using SPSS version 20.0 (IBM, Armonk, NY, USA) for Windows at a 95% confidence interval.

RESULTS

The mean age of textile workers in this study was 33.31(8.9) years, their average job.

Physical factors

For physical factors at work, (a) most workers (99.5%) believed that physical activities at work are not dangerous. (b) most of the workers (96%) did not believe that inadequate rest intervals at work may cause body part pain. (c) Shortage of staff was not considered as contributing to body part pain by all the workers (100%). Most of the workers (88.5%) reported being involved in sustained standing.

Psychosocial factors

Only 11.5% of textile workers had complaints of too much work for psychosocial factors at work. Only 17.5% of textile workers complained that they had to work very hard. Most of the workers (87.5%) stated that they enjoy their work.

Most textile workers (86.5%) stated that they have enough time to get the work done. Only 24.5% of workers thought that they were given unrealistic targets. Only 13.0 % of workers believed that they do a lot of monotonous jobs. Most workers think that their job does not allow creativity in their work. In our sample, 82.9% of workers believed that their job does not allow them to learn new things. 84.5% of workers believed that their

Table 1: Demographic characteristics of textile workers.

Subject Characteristics		Frequency	Percentage
Gender	Male	193	96.50%
	Female	7	3.50%
Marital status	Single	57	28.50%
	Married	143	71.50%
Level of Education	None	20	10
	Primary School	94	47
	Middle School	55	27.5
	High School or More	31	15.5
Income (Rs./Month)	21000-30000	4	2.50%
	10000-20000	192	96%
	<10000	3	1.50%

job does not give lots of freedom to decide how to do it. Only 14% of workers feared the loss of their job.

Eighty-three per cent of workers reported that their colleagues are helpful to them, and 77% believed that their supervisors are also helpful. Ninety-three per cent of workers believed that their job lacks opportunities for promotion. Only 1% of workers thought that they were over-skilled for the job. Only 13% of workers reported having a feeling of lack of job satisfaction.

Table 1 describes the demographic characteristics of Gender, Marital status, Level of Education, and Income (Rs./Month).

General Health

Sixty-eight per cent of workers reported their as good to very good. Only 9% of this sample admitted that they smoke. Only 20.5% of workers reported that they consume alcohol. Ninety-six per cent of workers said that they do not exercise. Only 23% of workers reported that they have moderate to severe pain throughout the day. The median pain level was four on the NPRS scale for the last week for most workers. Forty-three per cent of workers reported that body part pain disturbs their sleep.

CMDQ

On CMDQ, 57.1% of workers reported right knee pain, and 51.2% reported left knee pain. Low back pain was reported by 33% of workers. Right leg pain (27.1%) and left leg pain (25.6%) were reported by workers.

Perceived stress scale-10

These workers reported their average stress level was between 1 to 2 (mild) on a Likert scale of 0-4.

HRQoL-14

Only 30% of workers reported poor to fair general health. The mean of healthy days was 2.57 days for these workers.

CMDQ Total had very weak correlation ($r=0.187$, $p<0.008$) with PSS Total. CMDQ Total had a moderate correlation ($r=0.442$, $p<0.001$) with Average Pain Level throughout the Day. CMDQ Total had a moderate correlation ($r=0.430$, $p<0.001$) with Average Pain Levels throughout the past week. CMDQ Total had weak correlation ($r=0.271$, $p<0.001$) with unhealthy days. CMDQ Total had negative weak correlation ($r=0.316$, $p<0.001$) with healthy days (Figure 1 and Table 2) [18,19].

DISCUSSION

In this cross-sectional survey, self-report questionnaires were used to collect the data. As this study is not longitudinal, causal inferences cannot be drawn from the results [20]. In this study, the musculoskeletal health findings on CMDQ showed that 57.1 % of workers reported right knee pain, and 51.2% reported left knee pain. Right leg pain (27.1%) and left leg pain (25.6%) were reported by workers. Musculoskeletal pain in other body areas was found in a single-digit of percentage. Chauhan, et al. [8] also reported similar musculoskeletal disorders among textile mill workers of Ahmedabad city. They reported that the Prevalence of MSDs was 17.9%. Out of which, 15 (1.7%) had MSDs related to the upper limb, 25 (2.8%) had MSDs related to the lower limb, 64 (7.2%) had back pain, and 55 (6.2%) had body aches. Shazzad, et al. [21] also reported that in a sample of 350 garment workers in Bangladesh, the most affected body

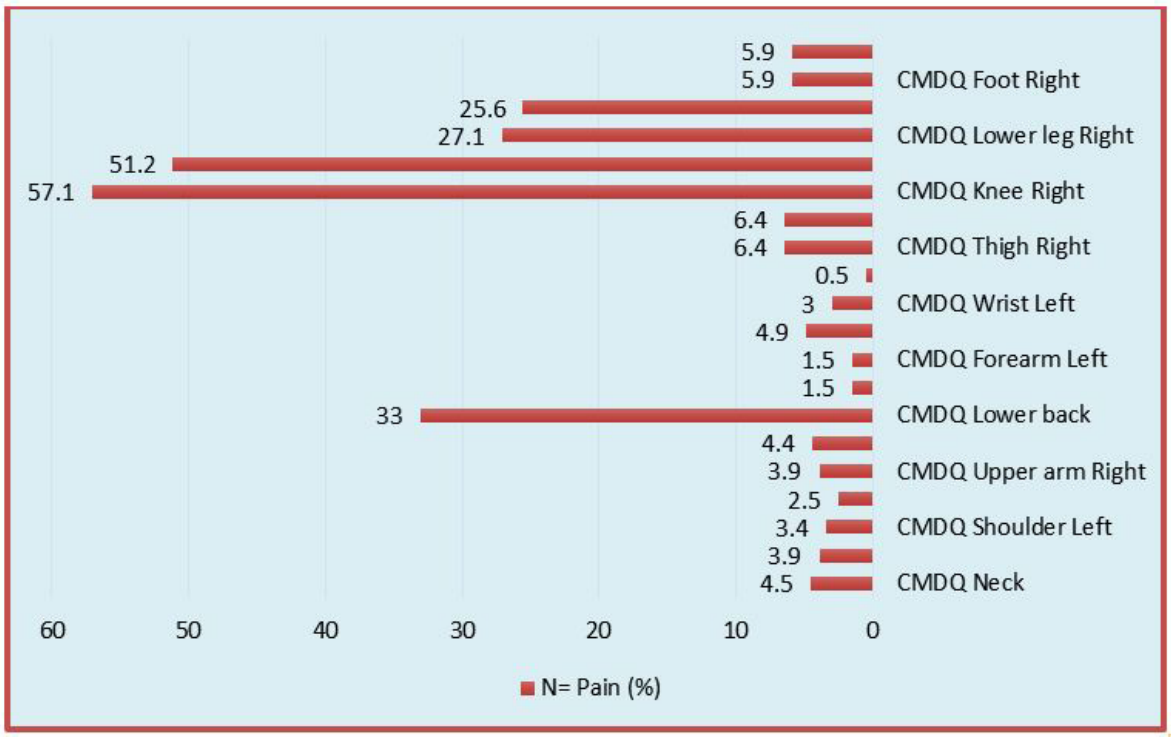

Figure 1: Percentage of musculoskeletal pain in different body parts.

Table 2: Outcome measures.

Outcome Measures	PSS Total	Unhealthy Days	Healthy Days	CMDQ Total	Average pain Level throughout the Day	Average pain level throughout Past week
PSS Total	1	0.174	-0.174	0.187	0.186	0.24
		0.013	0.013	0.008	0.008	0.001
Unhealthy Days		1	-1	0.271	0.316	0.293
			0	0	0	0
Healthy Days			1	-0.271	-0.316	-0.293
				0	0	0
CMDQ Total				1	0.442	0.43
					0	0
Average pain level throughout the day					1	0.929
						0
Average pain level throughout the past week						1

PSS= Perceived Stress Scale, CMDQ= Cornell's Musculoskeletal Disorders Questionnaire

sites were: the shoulder (17.9%), lower back (15.2%), and neck (13.8%) and knee (10.8%).

In this study, Low back pain was reported by 33% of small-scale textile workers. Similarly, Santu Durlov, et al. [22] also reported that 68% of participants suffered from low back pain in a sample of handloom weavers. Also, Goswami, et al. [23], in a cross-sectional study of Jute mill workers in India, found that 55% (n=392) had current chronic low back pain among all participants. Ajeet Jaiswal, et al. [24] also reported that 48.5% of participants had musculoskeletal disorders in a sample of 215 workers from the textile industry of Bhadohi district, Uttar Pradesh, and the commonly affected sites were low back and shoulder. Nabi, et al. et al. [25] also reported that the prevalence of lower back pain was highest (41%), followed by pain in the knees (33%) in a cross-sectional study of 410 randomly selected female readymade garments workers of Bangladesh. Khan, et al. [26] reported that in a sample of 180 textile industry workers, 98 (54.4%) were experiencing neck pain, and 118 (65.5%) were experiencing low back pain. The findings of these studies support our findings on the musculoskeletal health of small-scale textile workers of Surat.

In this study, CMDQ Total had a moderate correlation ($r=0.442$, $p<0.001$) with Average Pain Levels throughout the Day. CMDQ Total had a moderate correlation ($r=0.430$, $p<0.001$) with Average Pain Levels throughout the past week. Santos, et al. [27] found No association between the self-report of pain and musculoskeletal discomfort and the working sector of these professionals.

In this study, Musculoskeletal health (CMDQ Total) had a very weak correlation ($r=0.187$, $p<0.008$) with the Degree of Stress (PSS Total). In our study, participants reported minimal levels of stress. Smith, et al. [28] showed that higher levels of work-related stress increase the prevalence of musculoskeletal problems, and the type of stressor can be associated with a particular musculoskeletal disorder. Abdullah, Nor Hazana, et al. [29] reported that Production operators experienced musculoskeletal discomforts in the neck, lower back, and lower legs. The majority of them experienced moderate stress levels, with 6.5% experiencing a high level of stress. A significant but very weak association between stress and MSDs when gender and age were controlled.

In this study, CMDQ Total had a weak correlation ($r=0.271$, $p<0.001$) with unhealthy days. CMDQ Total had negative weak correlation ($r=0.316$, $p<0.001$) with healthy days. Maria, et al. [30] stated that musculoskeletal disorders were associated with a poor quality of life. Jin Wook Bahk, et al. [31] concluded that WMSDs negatively affect health-related QoL. Garnaes, et al. [32] reported that several psychosocial factors were highly associated with reduced HRQoL in chronic musculoskeletal pain (CMP) patients, whereas pain characteristics were not. Patients with CMP reported statistically lower HRQoL than patients without CMP. Bid, et al. [33] stated that musculoskeletal pain is prevalent among physiotherapy students. These pain issues influence their physical and mental health (QoL) and affect their life satisfaction.

The limitations of this study are its cross-sectional nature, potential recall bias, the reliance on self-report of MSDs. This present study was a pilot study, and so its representativeness and generalization are restricted given the sample studied. Further studies are required on a larger sample of small-scale textile workers.

It is recommended that this study should be repeated with a larger population and should be done simultaneously in multiple textile industry-related cities to generalize the findings.

CONCLUSION

This study concludes that musculoskeletal pain is more commonly observed in the lower back, knees, and lower legs in small-scale textile workers of Surat. Musculoskeletal health is very weakly associated with stress and health-related Quality of Life. It is moderately associated with the level of pain perceived by the small-scale textile workers of Surat.

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Table 3: Within-group comparison test between root canal areas for each file system.

Groups	Apical Mean Rank	Middle Mean Rank	Coronal Mean Rank	Friedman Test (P-value)	Wilcoxon Signed Ranks Test
TRN	2.45	2	1.55	6.750 (0.034)	(A-C)*
PTN	2.35	1.85	1.8	5.692 (0.058)	
Dia-X	2.2	1.9	1.9	4.000 (0135)	

* Statistically significant with<0.05

CONFLICTS OF INTEREST

There are no conflicts of interest.

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