ORIGINAL RESEARCH PAPER
Volume - 15 | Issue - 03 | March - 2026 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A CROSS-SECTIONAL STUDY ON FACTORS AFFECTING HEALTH AMONG WEAVERS IN URBAN KANCHIPURAM, TAMIL NADU

Community Medicine

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ABSTRACT

***Background*:** Traditional Of Weaving Is A Part Of Indian Cultural Heritage, There Were Few Studies Done On Weaving Related Problems Concerned In India. In This Research An Attempt Was Made To Study On Musculoskeletal Pain And Psychological Factors Like Depression, Anxiety And Stress Among Weavers In Urban Kanchipuram. ***Methods*:** A Cross Sectional Study Was Conducted Among Weavers In Urban Kanchipuram By Simple Random Sampling Method. A Pre-designed, Pre-tested And Structured Closed Ended Questionnaire For Assessing Socio-demographic Details. For Musculoskeletal Pain, Depression, Anxiety And Stress Among Weavers With Nordic Musculoskeletal Scale And Depression, Anxiety And Stress Scale (dass-21) Scale Respectively Was Used. ***Results*:** Among 250 Weavers, 12 Months Prevalence Of Musculoskeletal Pain Was Seen High In Shoulders And Lower Back As 36%.next High 12 Month Prevalence Was Seen In Knees I.e.30.4%. Prevalence Of Depression Was Found To Be Normal In 36.8%, Mild In 46.8%, Moderate In 12.8% And Severe In 3.6%. Prevalence Of Anxiety Was Found To Be Normal In 47%, Mild In 37% And Moderate In 16% Weavers. Prevalence Of Stress Was Normal In 73%, Mild In 15% And Moderate In 12% Weavers. ***Conclusions*:** Present Study Concluded That The 12 Months Prevalence Of Musculoskeletal Disorders Was High In Shoulders, Lower Back And Knees And 7 Days Prevalence Of Msds Was High In Shoulders, Knees And Upper Xiv Back Among Weavers. Health Providers Should Educate Weavers About Musculoskeletal Pain And Its Related Factors Among Weavers And By Giving Awareness Of Early Signs Of Msds Thus Reducing The Incidence.

KEYWORDS

Musculoskeletal disorders, Depression, Anxiety, Stress, Weavers

INTRODUCTION

World Health Organization (WHO) definition of Health is "A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity".[1] The factors affecting health are gender, culture, education and literacy, income and social status, employment, physical and social environment. India is a developing country where most of the people are living with agriculture and handlooms as their major source of employment.[2] Tradition of weaving is a part of Indian cultural heritage.[3] Handloom means "Any loom other than power loom, and includes any hybrid loom on which at least one process of weaving requires manual intervention or human energy for production." The handloom sector of India is known to all over the world for its uniqueness and intricate designs. In contribution to the nation's economy, it stands second only to agriculture.[4] India has been known for its splendid crafts. Indian handlooms have attracted people all over the world4. Health becomes a basic requirement for raising income of the household, productivity and development.[5]

Handloom involves various activities like raw material (yarn) collection, winding, denting and then continuously sitting in static posture to weave fabric.[5] The most of the handloom clusters belongs to rural areas and hence it plays a crucial role for eradicating poverty in rural India and bridging the gap between urban and rural along with facilitating gender equality. Despite the fact that Indian handloom industry has made a distinct place in the world, this sector has not attained proper importance.[3] As per the 4th All India Handloom Census (2019-20), there are 26,73,891 handloom weavers and 8,48,621 allied workers in the country.[6,7] In Tamil Nadu there were 1,97,818 weavers and 45,757 allied workers. In this industry about 77.9% of the work-force is women.[8] The process of weaving involves repetitive movements of upper and lower limbs with pedals and shuttles.[9] Due to this, weavers are having high risk to develop musculoskeletal disorder.[10] Work-related musculoskeletal disorders (WMSDs) are the painful disorders often caused by overuse of the muscles, joints, nerves, tendons and soft tissues of the body. WMSDs account for one of the costly occupational disorders because of its consequential impact on worker's health and productivity at work.[11] For weaving the weavers adopt different awkward positions along with high force and highly repetitive nature of tasks for several hours a day.[12,13] This sector has not attained proper importance as far as weaving related problems and effects are concerned.[14,15]

WMSDs are the major cause of morbidity in many countries and they have emerged as the leading cause of occupational injury, illness and disability.[16,17] Moreover, a large number of weavers cannot afford their own handloom and they are working under weavers with own handlooms, in a very low salary. Handloom weavers work hard for their livelihood in a very small room with minimum ventilation and low illumination.[18] Due to industrialization, decreased work in handloom sector may lead to stress among them. Stress, occurred due to working conditions is contemplated as damaging when mixed with physical and emotional responses and are divided into physical and psychosocial hazards. Anxiety and stress together can hamper the physical health of an employee and have a negative impact on the productivity and progress of the organization concerned.[19] Work-related stress mostly impacts behavioral, mental, as well as physical outcomes, performance, job satisfaction, and organizational commitment.[20] The factors we intended to study among weavers were Socio-demographic characteristics like age, gender, education, marital status, socioeconomic status, and musculoskeletal disorders psychological factors like depression, anxiety and stress.

Methodology

Ethics Approval: Ethical committee approval was obtained from the Institutional Human Ethical Committee with the Ref. No.: IEC 44\Community medicine\IEC -2021 dated on 30.04.2021.

***Study Design*:** A community based cross-sectional study was conducted with weavers residing in urban areas of Pillayarpalayam zone, Kanchipuram, Tamil Nadu, India (Figure 1). Study was conducted for a period of 12 months. The sample size for the study was calculated around n=250 based on the prevalence study conducted by Siddiqui et al.[21]

Figure1. The map showing five weavers zones in urban Kanchipuram, Tamil Nadu, India where the study was conducted

***Selection Of Study Population*:**
Inclusion and exclusion criteria were used to select the population for the study. People who were willing to participate in the study and aged above 20 and below 70 were selected and the people who were ill were excluded from the study. Pillayarpalayam weaver's zone was selected as a study site among five shortlisted zones in urban Kanchipuram through random sampling method. List of handloom weavers from zone has been taken. Handloom weavers were selected using a simple random sampling method. The names of all the weavers who were eligible for the study were written on small pieces of papers. From these pieces, 250 weavers were randomly selected by lottery system. After explaining the aims of study to these weavers in local language and informed consent form which was also in local language i.e Tamil was signed by them and they were assured that their identity will be kept confidential.

***Data Collection Methods And Tools*:**
After developing the questionnaire, pilot study was conducted in one zone for 6 days. A total of 20 weavers were interviewed. Necessary modifications were made in the questionnaire after the pilot study. The study tool included the pretested and predesigned questionnaire for assessing socio-demographic details of weavers, Nordic musculoskeletal questionnaire for assessing the prevalence of pain in different regions of the body (An anatomical diagram with labels and arrows clearly indicating different body parts was used for assessing the results) and the Depression, Anxiety, and Stress Scale (DASS-21) for assessing depression, anxiety and stress among weavers.

The pretested structured questionnaire includes socio demographic details, occupational history, COVID 19 status, leisure activities and history of addictions. The Depression, Anxiety and Stress Scale-21 items (DASS-21) is a set of three self report scales designed to measure the emotional states of depression, anxiety and stress. It has Cronbach's alpha between 0.74 and 0.93 in both clinical and non-clinical samples. Each of the three DASS-21 scales contains 7 items, so totally 21 questions for assessing the level of depression, anxiety and stress. For each question 0-4 scoring was allotted.[22]

***Statistical Analysis*:**
The data was coded and entered in computer using Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) vs 25.0. For continuous variables, Descriptive statistics with mean, median and standard deviation were used. Categorical data was presented in the form of frequency and proportions and Chi Square test / Fisher's exact test was used to find the association between the variables. The *p*-value less than 0.05 are considered for statistical significance in all the tests.

RESULTS

Background Of The Study Population
Among the 250 participants, 156 (62.4%) weavers belonged to the age group of 41 to 60 years, most of the weavers were males 188 (75.2%) and 205 (82%) were married. Majority (66%) of the weavers belonged to nuclear family. Around 33.6% weavers were completed primary education, 18.4% completed secondary education, only 2.4% of weavers have been completed their higher secondary and remaining were (45.6%) illiterate. According to the modified BG Prasad SES Classification 2021, 56.8% participants belonged to Class 3, 20.8% belonged to Class 2 and 20.4% were belonged to Class 4. 158 (63.2%) weavers were having more than 20 years of work experience and 45 (18%) were having 16-20 years of work experience. In the study population, 48 (19%) families had death in their families and 33 (13%) families had birth in their families over the last 1year. Most of the weavers 192 (76.8%) were vaccinated for COVID-19 with both the doses, 34(13.6%) were vaccinated with single dose, whereas 24(9.6%) were unvaccinated. Most of the weavers 210(84%) were vaccinated with Covishield and 16 (6.4%) were with Covaxin. The frequency of habit of listening to music/radio was increased in 106 (42.4%) weavers and decreased in 5 (2%) weavers in the last one year. The frequency of sleeping (26.8%) and intake of food (16%) was decreased in the weavers and intake of tea/coffee was increased (42.4%) in the last one year. Smoking habit (8%) and Alcohol intake (2.4%) were also seen in the weavers in last one year.

Prevalence Of Musculoskeletal Disorders
In the 12 months prevalence, the highest musculoskeletal pain was recorded from shoulders (33.2%) and lower back (32.4) followed by Knees (28 %). Whereas in 7 days prevalence, the highest musculoskeletal pain was recorded from Shoulders (58 %) followed by knees (50.8 %) and lower back (48.4 %). There was significant relation between age of weavers (41-60 years) and MSDs in Upper back, lower back and knee in last 7 days (Table1). There was significant relation between age of weavers (41-60 years) and MSDs in Upper back, wrist/ hands, lower back, hips/thighs and knee in last 12 months (Table 2). Prevalence of MSDs at 7 days duration was high in knees in weavers was significantly associated with working hours per day (Table 3). Prevalence of MSDs at 12 months was high in lower back, hips/thighs and knees in weavers were significantly associated with working hours per day (Table 4). Prevalence of MSDs for 7 days was high in shoulders among weavers with working experience for more than 20 years and was statistically significant ($p \leq 0.05$) (Table 5). Prevalence of MSDs at 12 months duration was in high in weavers of more than working experience and was statistically significant association seen in elbows and ankle/feet ($p \leq 0.05$) (Table 6).

Table 1. Association Between The Prevalence Of MSDs In Last 7 Days And Age (n=250)

Body parts	Age			*P* value
	21-40 years n (%)	41-60 years n (%)	>60 years n (%)	
Neck	2(0.8)	3(1.2)	1(0.4)	1.00
Shoulders	31(12.4)	98(39.2)	16(6.4)	0.73
Upper back	24(9.6)	68(27.2)	18(7.2)	0.02
Elbows	10(4)	22(8.8)	7(2.8)	0.30
Wrists/ Hands	6(2.4)	11(4.4)	3(1.2)	0.78
Lower back	22(8.8)	82(32.8)	17(6.8)	0.01
Hips Thighs	19(7.6)	60(24)	13(5.2)	0.15
Knees	19(7.6)	88(35.2)	20(8)	0.01
Ankles Feet	1(0.4)	11(4.4)	2(0.8)	0.21

Table 2. Association Between The Prevalence Of MSDs In Last 12 Months And Age (n=250)

Body parts	Age			*P* value
	21-40 years n (%)	41-60 years n (%)	>60 years n (%)	
Neck	3(1.2)	6(2.4)	1(0.4)	1.00
Shoulders	17(6.8)	53(21.2)	13(5.2)	0.10
Upper back	9(3.6)	37(14.8)	15(6)	0.01
Elbows	4(1.6)	14(5.6)	5(2)	0.16
Wrists/ Hands	1(0.4)	8(3.2)	5(2)	0.01
Lower back	9(3.6)	55(22)	17(6.8)	0.01
Hips Thighs	5(2)	32(12.8)	11(4.4)	0.01
Knees	9(3.6)	48(19.2)	13(5.2)	0.01
Ankles Feet	1(0.4)	6(2.4)	2(0.8)	0.35

Table 3. Association Between The Prevalence Of MSDs In Last 7 Days And Working Hours Per Day (n=250)

Body parts	Working hours per day			*P* value
	< 8 hours n (%)	8-12 hours n (%)	>12 hours n (%)	
Neck	2(0.8)	4(1.6)	-	1.00
Shoulders	61(24.4)	80(32)	4(1.6)	0.30
Upper back	46(18.4)	62(24.8)	2(0.8)	0.80
Elbows	19(7.6)	20(8)	-	0.29
Wrists/ Hands	8(3.2)	12(4.8)	-	1.00
Lower back	50(20)	68(27.2)	3(1.2)	0.66
Hips Thighs	40(16)	49(19.6)	3(1.2)	0.31
Knees	64(25.6)	61(24.4)	2(0.8)	0.01
Ankles Feet	8(3.2)	5(2)	1(0.4)	0.07

Table 4. Association Between The Prevalence Of MSDs In Last 12 Months And Working Hours Per Day (n=250)

Body parts	Working hours per day			*P* value
	< 8 hours n (%)	8-12 hours n (%)	>12 hours n (%)	
Neck	4(1.6)	6(2.4)	-	1.00
Shoulders	36(14.4)	44(17.6)	3(1.2)	0.24
Upper back	28(11.2)	31(12.4)	2(0.8)	0.28
Elbows	12(4.8)	10(4)	1(0.4)	0.19
Wrists/ Hands	8(3.2)	5(2)	1(0.4)	1.00
Lower back	41(16.4)	37(14.8)	3(1.2)	0.01
Hips Thighs	27(10.8)	18(7.2)	3(1.2)	0.01
Knees	39(15.6)	30(12)	1(0.4)	0.01
Ankles Feet	5(2)	3(1.2)	1(0.4)	0.07

Table 5. Association Between The Prevalence Of MSDs In Last 7 Days And Working Experience In Years (n=250)

Body parts	Working experience					*P* value
	< 5 years n (%)	5-10 years n (%)	11-15 years n (%)	16-20 years n (%)	>20 years n (%)	
Neck	-	-	-	6(2.4)	-	0.59
Shoulders	2(0.8)	6(2.4)	13(5.2)	23(9.2)	101(40.4)	0.03
Upper back	1(0.4)	3(1.2)	12(4.8)	19(7.6)	75(30)	0.12
Elbows	-	3(1.2)	6(2.4)	7(2.8)	23(9.2)	0.80
Wrists/ Hands	-	1(0.4)	2(0.8)	3(1.2)	14(5.6)	0.98
Lower back	2(0.8)	8(3.2)	8(3.2)	19(7.6)	84(33.6)	0.07
Hips Thighs	-	6(2.4)	9(3.6)	19(7.6)	58(23.2)	0.84
Knees	1(0.4)	8(3.2)	15(6)	20(8)	83(33)	0.84
Ankles Feet	-	3(1.2)	3(1.2)	1(0.4)	7(2.8)	0.10

Table 6. Association Between The Prevalence Of MSDs In Last 12 Months And Working Experience In Years (n=250)

Body parts	Working Experience					*P* value
	< 5 years n (%)	5-10 years n (%)	11-15 years n (%)	16-20 years n (%)	>20 years n (%)	
Neck	-	-	1(0.4)	1(0.4)	8(3.2)	0.94
Shoulders	1(0.4)	5(2)	6(2.4)	11(4.4)	60(24)	0.24
Upper back	1(0.4)	3(1.2)	3(1.2)	9(3.6)	45(18)	0.18
Elbows	-	4(1.6)	6(2.4)	3(1.2)	10(4)	0.02
Wrists/ Hands	-	1(0.4)	3(1.2)	2(0.8)	8(3.2)	0.59
Lower back	1(0.4)	7(2.8)	8(3.2)	9(3.6)	56(22.4)	0.26
Hips Thighs	-	4(1.6)	3(1.2)	8(3.2)	33(13.2)	0.78
Knees	1(0.4)	8(3.2)	6(2.4)	10(4)	45(18)	0.34
Ankles Feet	-	2(0.8)	3(1.2)	1(0.4)	3(1.2)	0.04

Prevalence of Depression, Anxiety and Stress

In the present study, among 250 weavers prevalence of mild depression is 46.8%, moderate depression is 12.8% and severe depression is 3.6%. In the present study, among 250 weavers prevalence of mild anxiety in 93 (37%) and moderate anxiety in 41(16%). In the present study, among 250 weavers prevalence of mild stress in 38 (15%) and moderate stress in 29 (12%). This study shows positive correlation in between depression, anxiety and stress among weavers in Kanchipuram (Table 7 & 8)

Table 7. Percentage Of Depression, Anxiety And Stress Among The Study Population

	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Mean ± SD
Depression	36.8	46.8	12.8	3.6	9.39 ±3.65
Anxiety	47.0	37.0	16.0	0.0	6.53 ±3.18
Stress	73.0	15.0	12.0	0.0	8.77 ±6.37

Table 8. Correlation Between Depression With Anxiety, Depression With Stress And Anxiety With Stress Among The Study Population.

	Depression	Anxiety	Stress
Depression	1	r = 0.846** p <0.005	r = 0.711** p < 0.005
Anxiety	r = 0.846** p < 0.005	1	r = 0.715** p <0.005
Stress	r = 0.711** p < 0.005	r = 0.715** p < 0.005	1

Prevalence of Mild depression is 79(50.6%) in weavers of age group 41-60 years and 16(59.3%) in weavers of 61-70 years. Prevalence of Moderate depression is 24(15.4%) in 41-60 years and 6(22.2%) in 61-70 years. So therefore, Age when compared to depression is statistically significant ($\chi2$= 40.41; *P*=< 0.01). Prevalence of mild and moderate depression is 86(45.8%) and 28(14.9%) respectively in male weavers and is not statistically significant ($\chi2$= 3.08; *P*=< 0.39). Prevalence of moderate depression 28 (13.7%) is high in weavers who were married and is statistically significant ($\chi2$= 27.53; *P*=< 0.03). Prevalence of moderate depression 18(15.8%) is high in weavers who were illiterate when compared to educate and is not statistically significant ($\chi2$= 8.15; *P*=< 0.77). Prevalence of depression i.e. mild 29(55.8%) and moderate 8(15.4%) was high in weavers belonging to Class 2 Socioeconomic status according to modified BG Prasad classification and was not statistically significant (*P*=< 0. 38). No significant ($\chi2$= 4.80; *P*=< 0.56) association between the prevalence of depression in weavers and working hours per day. Prevalence of mild depression was high in weavers working for more than 20 years and was not statistically significant ($\chi2$= 15.17; *P*=< 0.17). Among 250 weavers, 52 (50.5%) of the weavers with the presence of vital events in last 1year are with mild depression and was highly statistically significant ($\chi2$= 24.06; *P*=< 0.01).

In the present study, prevalence of Anxiety increases with age. As the levels of anxiety are high beyond the age of 40 years and was statistically significant ($\chi2$= 24.06; *P*=< 0.01). No significant difference in gender of weavers for prevalence of anxiety ($\chi2$= 4.22; *P*=< 0.12). Prevalence of Anxiety was mild among weavers who were illiterate 46 (40.4%) than educated and was not statistically significant ($\chi2$= 10.73; *P*=< 0.16). Prevalence of mild and moderate anxiety was high in weavers belonging to class 2 according to Modified BG Prasad's classification and was not statistically significant ($\chi2$= 7.73; *P*=< 0.40). There was no relationship between prevalence of anxiety among weavers and working hours per day ($\chi2$= 4.67; *P*=< 0.31). Prevalence of moderate anxiety was high in weavers with working experience for more than 20 years and was not statistically significant ($\chi2$= 4.67; *P*=< 0.18). Prevalence of mild and moderate anxiety was high in weavers with history of vital events in last 1 year and was statistically significant ($\chi2$= 32.68; *P*=< 0.01).

As the age increased, the prevalence of stress level increased. Prevalence of moderate stress was high in weavers more than 60 years ($\chi2$= 23.46; *P*=< 0.01). No significant relation between gender and prevalence of stress among weavers ($\chi2$= 3.89; *P*=< 0.13). Prevalence of mild and moderate stress was high in weavers who were illiterate i.e. 24(21%) and 18(15.8%) and was statistically significant ($\chi2$= 14.96; *P*=< 0.04). Prevalence of moderate stress was high in weavers belonging to class 2 according to Modified BG Prasad's classification and was not statistically significant ($\chi2$= 5.09; *P*=< 0.71). Prevalence of mild and moderate stress were high in weavers working for <8 hours and was not statistically significant ($\chi2$= 6.38; *P*=< 0.15). Prevalence of mild and moderate stress was high in weavers with working experience for more than 20 years and was not statistically significant ($\chi2$= 11.01; *P*=< 0.16). Prevalence of mild and moderate stress was high in weavers with history of vital events in past 1 year and was statistically significant ($\chi2$= 38.98; *P*=< 0.01).

DISCUSSION

In the present study, the prevalence of musculoskeletal disorders among 250 weavers at 12 months was identified as 36% in shoulders and lower back, 30.4% in knees, 25.6% in upper back, 21.8% in Hips/Thighs and 10% in Elbows. Prevalence of MSDs for 7 days is 58% in Shoulders, 50% in knees and 48% in Lower back. Durlov et al.[23] was also reported musculoskeletal disorders in lower back (68%), followed by arm (49.7%), upper back (44%), shoulder (39.4%), knee (38%) and wrist (35.4%) among 175 weavers in West Bengal. Similarly Siddiqui et al.[21] reported 12 months prevalence of musculoskeletal disorders were high in handloom weavers compared to power loom weavers particularly in upper back (84%), lower back (82%), shoulders (76%) and knees (60%), which supported the current study with respect to shoulders and knee pain. Socioeconomic status was also contributing along with the working hours and the long time work experience to increase the prevalence of MSDs in weavers. Among 175 weavers and 129 controls, 68% of weavers were reported musculoskeletal pain in the previous year and 56% in the last week. 73% of control group were reported musculoskeletal pain in last year and 42% in the last week[24], the prevalence of MSDs was found higher when compared to the present study. Study conducted on 450 handloom weavers in Bangladesh reported musculoskeletal disorders was highest in neck (69.7%) and shoulder (69.1%) and lowest in ankle (23.8%) in last 7 days[25] and it was similar to the present study. Around 64 weavers in Uttarakhand reported that 12 month prevalence of musculoskeletal disorders was high in right hand in both elbows and in last 7 days 56.3% of weavers suffered from lower back pain.[26] The highest annual prevalence of MSDs have seen in knees (54%), lower back (34.3%) and shoulder (23.1%) and weekly prevalence seen in knees 76 (44.6%), lower back (26.9%) and ankles (15.9%). They also found significant relationship between MSDs with job experience, marital status and physical exercises.[27] The prevalence of MSDs was high in hip, thighs, knees followed by shoulders and neck.[28] Choobineh A et al.[29] (2004) conducted a study on 174 weavers in Iran and found 12 month prevalence of MSDs in shoulders (47.8%), lower back (45.2%), wrists (38.2%), upper back (37.7%), neck (35.2%) and knees (34.6%) were most common affected regions which was similar to the present study.

In the present study, among 250 weavers prevalence of mild depression was 46.8%, moderate depression was 12.8% and severe depression was 3.6%. The prevalence of mild anxiety in 93 (37%) and moderate anxiety in 41(16%) and the prevalence of mild stress in 38 (15%) and moderate stress in 29 (12%). A study conducted in Kerala, the effect of Covid19 lockdown on the lifestyle and dietary diversity among women handloom workers found the depression among 100 women weavers was high in age group belonging to 41-50 years[30] and which is similar to the present study. Work stressors and musculoskeletal disorders among 516 power loom and handloom weavers due to the more than 10 years of work, manual material handling and poor machinery safety contributed to occurrence of MSDs among power loom weavers. Among handloom weavers, age above 25 years, poor machinery design, mental overload, skill requirement to perform jobs were the reason for stress. [31]

In the present study highest prevalence of MSDs was seen in weavers of age 41-60 years which is similar to the study conducted by Siddiqui et al.[21], prevalence and predictors of musculoskeletal disorders among weavers in Varanasi was reported among the weavers of 41- 60 years. Similarly, the assessment of risk factors and pattern of musculoskeletal pain among handloom weavers found MSDs was high in weavers belonging to age more than 30 years (Hossain et al 2018). This study revealed that high prevalence of MSDs was reported among weavers working for 8-12 hours per day, which is similar to the study done by Hossain et al.[32] In the current finding, 33% of the study population has completed the primary education and 66% belonged to nuclear families. These findings were contrasted when compared to the study done by LA Siddiqui et al[21] in which 48% completed primary education and 74% belong to nuclear family. They also found that increase years of working leads to increase prevalence of MSDs among weavers. In the present study there was association between musculoskeletal pain and working experience for more than 20 years which is similar to the result found in the study by Durlov et al.[23] Similar results were reported by Benarjee and Gangopadhyay, on prevalence of upper extremity repetitive strain injuries among weavers who employed for longer periods reported more pain. We could find significant relationship between MSDs and demographic factors like age, working experience etc.[25,31]

CONCLUSIONS

The present study concluded that the 12 months prevalence of musculoskeletal disorders was high in Shoulders, Lower back and Knees respectively and 7 days prevalence of MSDs was high in Shoulders, Knees and Upper Back among weavers. Weavers belonging to the age of 41-60 years, working more than 10 hours per day and worked for more than 20 years, were identified as major factors which are responsible for MSDs. Health providers should educate weavers about musculoskeletal pain and its related factors among weavers and by giving awareness about the early signs of MSDs thus reduce the incidence. Measures should be taken to promote physical exercise as well as the use of protective equipment to reduce work-related disorders.

Declarations

Authors' contributions: Conceptualization: Pushpa Kumari, Rajkumar; Methodology: Pushpa Kumari, Rajkumar; Formal analysis: Pushpa Kumari; Investigation: Pushpa Kumari; Data Curation: Pushpa Kumari; Writing - original draft preparation: Pushpa Kumari; Writing - review and editing: Pushpa Kumari, Rajkumar; Supervision: Rajkumar.

***Acknowledgements*:** The authors are thankful to Dr. KV Rajasekhar, Dean, MMCH & RI for his constant support for the study. We acknowledge Dr. KV Vaishnavi**,** Assistant professor, Department community Medicine for valuable suggestions, advice and constant encouragement during the study.

***Competing Interests*:** The author(s) declare no competing interests.

***Data Availability*:** The data presented in this study are available on request from the corresponding author.

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