

Work-related psychosocial factors associated with lower back pain among male handicraft workers in Jaipur, India

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Abstract

Handicraft occupation is a strenuous job, often performed in poor work settings. Working in such conditions for a long period of time may lead to musculoskeletal pain in different body regions. The study aimed to evaluate the prevalence of lower back pain and their associated work-related psychosocial risk factors among the male handicraft workers in India. A self-reported questionnaire study was conducted among 286 male handicraft workers, including gemstone cutters, metalcraft workers, and miniature painters. The lower back pain was found to be the most prevalent (75.18%) and severe work-related health problem in this occupational group. Work-related psychosocial factors such as high job demand and low job control showed a significant association with the development of lower back pain. The findings suggested that despite the substantial impact of the physical work with respect to the etiology of musculoskeletal pain, researchers should expand their focus to work-related psychosocial issues. Preventive intervention strategies ensuring ergonomic workload and flexibility at the workplace of handicraft workers are highly recommended.

Keywords

Handicraft workers, Lower back pain, Psychosocial factors, Ergonomics, Work-related factors

1. Introduction

Handicraft manufacturing is an artistic activity where useful and decorative items are made in a traditional way with the hands or by using simple tools, and India has a rich culture and heritage of great art and craftsmanship. In India, the tradition of this craftsmanship has been carried down through the generations to the present day. While in different countries craft is practiced more as a leisure activity, in India, it is a full-time job and a major source of income for the rural communities. Handicraft occupation is the second largest source of income to the rural and semi-urban people of India, after agriculture. The handicraft industry in India is highly fragmented, promotes the regional art and craftsmanship in the domestic and international market with more than seven million regional artisans and more than sixty-seven thousand exporters. The industry plays a significant role in economic growth of the country and employs

a substantial proportion of people of the country. However, the Indian handicraft industry belongs to the unorganized sector, where there is no fixed working hours and wages, and the workers are not covered by any insurance or social security system (Mukhopadhyay, 2006). Moreover, the occupational health and safety practices at the workplace are often ignored.

In India, Jaipur is one of the major centers for art and craft where most of the handicraft manufacturing workshops are micro-enterprises, consist of not more than fifteen workers, including one or two supervisors, and have sole proprietorships who operate such crafts at their own homes. In handicraft profession, a junior craftsman gains expertise through hands-on training under a master craftsperson, and as soon as the junior craftsman picks up the necessary skills and dexterity, the worker can start working independently without monitoring. However, in India, the occupation can be ascribed to low earnings job as a comparison to the other lucrative options (Mukhopadhyay and Srivastava, 2010), and therefore, the young generation is reluctant to take this craft as a full-time job or profession.

In the present era of globalization, the crafts are becoming more commoditized, and the global market demand for crafts is increasing gradually. To meet the increasing customer demands, handicraft workers are being forced to work for long hours and produce more in a short period of time. In this work setting, the workers often exposed to poor ergonomic working conditions, such as awkward working posture, characterized by sitting in crossed leg posture with forwarding trunk inclination, and repetitive and forceful movements. Furthermore, the nature of the job demands high visual and mental concentration and fine dexterity while working on small objects. The workers need to sustain static sitting posture for a long span of time. Prolonged static sitting in non-optimal trunk posture increases the load on the lumbar extensor muscles and often results in chronic back pain. In literature, it has already been recognized that working in non-optimal trunk posture for a long span of time increased the risk of lower back pain (Burdorf et al., 1991; Burdorf et al., 1993). It would, therefore, not be surprising if the handicraft workers experience lower back pain. In support of this hypothesis, there are several studies that reported lower back pain as the most prevalent work-related musculoskeletal disorder among handicraft workers (Gangopadhyay et al., 2014; Meena et al., 2014; Veisi et al., 2016). Work-related back pain is one of the most common and costly musculoskeletal disorder experienced in the workplace. As a consequence, this work-related health problem accounted for lost work days, compensation claims, and disability of workers, which is mounting as a burden not only on the worker, but also the employer, and the society at larger. According to Spengler et al. (1986) and Webster and Snook (1994), lower back disorders account for approx. 16-19% of all workers compensation claims, but around 33-41% of the total cost of all workers compensation costs. A study of handicraft workers engaged in hand sewing tasks reported that 24% of the participants had disruption of normal activities due to lower back pain (Dianat and Karimi, 2016). However, the disruption of normal activities due to lower back pain was found significantly more in male than female handicraft workers (Dianat and Salimi, 2014).

In literature, it is well recognized that lower back pain and other musculoskeletal disorders are multifactorial in nature. Several researchers used epidemiological methods to evaluate occupation-related risk factors in the genesis of lower back pain among workers. An Iranian epidemiological study of handicraft workers reported that non-neutral working posture of the workers substantially increased the odds of developing lower back pain in the occupational group (Dianat and Salimi, 2014). Furthermore, there are several epidemiological evidence that established a positive relationship between lower back pain and physical loading (Bernard, 1997). In previous studies of handicraft occupation, working posture and individual factors have been acknowledged as potential risk factors to lower back pain among workers (Veisi et al., 2016; Dianat and Karimi, 2016), while none of the research investigated the association of work-related psychosocial factors and lower back pain in this occupational group. According to Ferguson and Marras (1997), individual factors are the most frequently investigated factor for lower back pain. However, in addition to physical loading and personal factors, there are several pieces of evidence that showed a significant influence of psychosocial work characteristics in developing musculoskeletal symptoms among workers particularly in the lower back region, in general (Bongers et al., 1993; Kuorinka et al., 1995). Several previous studies reported that poor psychosocial work environment increased the risk of lower back pain at work (Hoogendoorn et al., 2000; Kerr et al., 2001). A more recent study of public hospital nurses in Malaysia reported that psychosocial job demand independently increased this risk of musculoskeletal pain in the lower back region (Amin et al., 2014). However, there is a limited research evaluating the impact of psychosocial work characteristics in developing musculoskeletal pain in handicraft occupational group (Das et al., 2018; Chaman et al., 2015).

Despite the national importance of handicraft industry in India, there is a lack of epidemiological studies related to lower back pain and association of psychosocial work characteristics. To the best of the knowledge, there are very limited studies so far been conducted related to lower back pain and the contributing work-related psychosocial risk

factors among the male workers engaged in handicraft profession in India. The current study was, therefore, an attempt to measure the prevalence of lower back pain and evaluate the association of work-related psychosocial factors in developing this problem among male handicraft workers in India. The findings, thereby, will provide a valuable insight to alleviate the work-related psychosocial stress among the workers, and improve workers' productivity and quality of life.

2. Methodology

2.1 Study design and selection of participants

From May 2017 to October 2017, a cross-sectional study was conducted in three handicraft sectors including gemstone cutting, metalcraft, and miniature painting industries. All these craft clusters were located at outskirts of Jaipur province, the capital of Rajasthan state in India and provide the livelihood of a large working population of the province.

The sample size for this study was calculated using the random sampling formula with the confidence interval of 95% (Charan, 2013). Based on the previous data of 78.57% prevalence of musculoskeletal pain (Meena et al., 2014) among textile handicraft workers in Jaipur, and the precision as 5%, the estimated sample size was 259. After considering an 80% response rate, the study aimed to recruit a minimum of 324 handicraft workers.

For this cross-sectional study, the workers were selected as potential participants in line with the criteria: (1) the workers should be male full-time gemstone polishers, (2) the workers should be aged more than 18 years, and (3) the workers should have been working for at least one year in their current profession. Finally, a total of 330 male handicraft workers were selected as potential subjects of which 86.7% ($n = 286$) agreed to assist in the current study. Among the potential participants, 138 (48.25%) were gemstone cutters, 94 (32.87%) were metalcraft workers, and 54 (18.88%) were miniature painters.

2.2 Data collection

For this cross-sectional study, data was collected through measurement of various physical parameters of the participants, and a self-reported questionnaire survey. The self-reported questionnaire survey was conducted at the workplace of different handicraft workers during their regular working hours.

2.3 Measurement of physical parameters

The height and weight of the participants were measured by an anthropometer and a weighing machine respectively. The body mass index (BMI) of all the participants were also calculated.

2.4 Assessment of musculoskeletal pain

Prevalence of musculoskeletal pain during the last 12 months of data collection in different body regions was recorded using the standard Nordic Musculoskeletal Questionnaire (NMQ) (Kuorinka et al., 1987). Several researchers recommended this questionnaire as a musculoskeletal disorders measurement tool of high utility and substantial reliability (Barros and Alexandre, 2003; Dickinson et al., 1992). In NMQ, participants were asked to identify the body regions on a schematic of the human body where they experienced any kind of a pain in the last 12 months and to respond with "✓" (✓ = Yes) to the respective body regions, if they had experienced any kind of musculoskeletal pain. Furthermore, the workers were asked to indicate the level of musculoskeletal pain experienced in different body regions on a 10-point body part discomfort scale, ranging from '0' = no pain to '10' = severe pain (Reynolds et al., 1994). Rating of each body region on the scale of 1 to 10 indicated the level of pain.

2.5 Assessment of lower back pain disability

Oswestry Lower Back Pain Disability Questionnaire study was conducted amongst the workers who reported lower back pain in the NMQ, and the lower back disability index was calculated (Fairbank and Pynsent, 2000). In literature, this tool has got the best properties to measure a subject's functional disability from lower back pain (Firth et al.,

2002). The questionnaire was designed to gather information about how the lower back pain affected the workers' ability to manage in everyday life. The questionnaire was consisting of nine broad sections including pain intensity, personal care (washing, dressing etc.), lifting, walking, sitting, standing, sleeping, social life, and traveling. In the questionnaire, participants were asked to answer by checking one box, out of six boxes, in each broad section of the statement which clearly described the problem experienced by the worker. The boxes were scored on a '0' (first box) to '5' (sixth box) scale. Hence, for each broad section the total possible score was 5, and for all nine sections, the maximum possible score was 45. After the sections were completed, the lower back disability index for each participant was calculated by taking the percentage of the ratio of total scores obtained and maximum possible score. Further, the lower back disability index was categorized into five levels i.e., 0-20%: minimal disability, 21-40%: moderate disability, 41-60%: severe disability, 61-80%: crippled, and 81-100%: patients are either bed-bound or exaggerating their symptoms.

2.6 Psychosocial risk factors

Information regarding various work-related psychosocial factors in handicraft profession was collected using the Job Content Questionnaire (JCQ) (Karasek, 1985). A total of 16 items, consisting of four subscales, including job demand (8 items: time pressure, job overlapping, excessive work, responsibility, insufficient rest break, workload, work-home interface, and multiple functioning), job control (4 items: creative work, decision making authority, skill utilization, and control over job), social support (2 items: coworkers support, and supervisors support), and job insecurity (2 items: uncertainty, and negative impact on one's job) were selected from the full recommended format of JCQ. Several researchers translated JCQ into different languages and recommended it as a reliable and valid instrument for evaluating psychosocial work situation and job strain among various occupations (Karasek et al., 1998; Kawakami and Fujigaki, 1996; Nehzat et al., 2014).

In JCQ, all of the above-mentioned items were rated on a 4-point Likert scale ranging from '1' (strongly disagree) to '4' (strongly agree), and the score of each item was calculated using Karasek's recommended formulae (Karasek, 1985). The higher scores of job demand and job insecurity indicated that the respondent perceived the job to be psychologically stressful and less secure respectively. Low scores of job control and social support indicated that the worker was less likely to manipulate his own work and more likely to have interpersonal conflict respectively.

The validity of the score of each work-related psychosocial factor was verified by measuring the Cronbach α , and satisfactory results (0.875 for job demand, 0.798 for inadequate job control, 0.685 for poor social support, and 0.824 for job insecurity) were obtained. Further, the median value of the score of each work-related psychosocial factor was used to dichotomize the scale into two categories i.e., "high" group and "low" group.

2.7 Statistical analysis

Demographic data of the participants were calculated using mean \pm SD and percentages. The prevalence and the level of musculoskeletal pain in different body regions were disclosed as frequencies/rates. The difference in the demographic variables among handicraft occupational groups was examined using one-way analysis of variance (ANOVA) with the Scheffe test for post hoc analysis, and chi-square (χ^2) test. The lower back pain disability among handicraft workers was computed in percentage. Logistic regression is a well-recognized statistical modeling methodology for understanding the association between a risk factor and probability of disease occurrence. Hence, univariate and multivariate logistic regressions were performed to investigate the association between lower back pain and work-related psychosocial factors. The odds ratio (OR) and 95% confidence interval (CI) were calculated for each factor. In multiple logistic regression, general characteristics of the participants (age, work experience, marital status, and educational level) were adjusted to minimize the confounding effect. Further, the multivariate logistic regression model was checked for the presence of outliers and collinearity by the Hosmer-Lemeshow goodness-of-fit test, and a satisfactory result was obtained. All the statistical analyses were performed using SPSS version 22.0 (Chicago, LA, USA) at a significance level of $p \leq 0.05$.

3. Results

3.1 General characteristics

Demographic variables of the participants are summarized in Table 1. The participants had a mean age of 32.53 years, and the mean work experience was 12.65 years, thus the study population can be considered as experienced handicraft workers. All the workers had been working for six days a week, and the mean daily working hours was 9.1 hours. Majority of the participants were married (75.17%) and had primary education level (74.13%).

One way ANOVA and post hoc analysis showed that there was no significant difference in mean daily working hours between the handicraft occupational groups. However, the mean age of gemstone cutters was significantly more than the same of metalcraft workers. The mean job duration of gemstone cutters was significantly more than the same of other two working populations, while the miniature painters had significantly more work experience than the metalcraft workers.

Table 1. Demographic characteristics of participants

Variables	Handicraft occupational groups			Mean ± SD/ n (%)	F value/ χ ² value	p-value
	Gemstone cutters (n = 138)	Metalcraft workers (n = 94)	Miniature painters (n = 54)			
Age (year)	34.43 ± 7.97	29.97 ± 5.71	32.13 ± 5.53	32.53 ± 7.13	11.9	< 0.01
BMI (kg/m ²)	22.44 ± 3.06	22.15 ± 2.84	21.95 ± 2.78	22.25 ± 2.94	0.62	0.541
Job duration (year)	13.86 ± 5.23	10.7 ± 5.55	12.94 ± 4.7	12.65 ± 5.41	10.20	< 0.01
Daily working hours	9.05 ± 0.91	9.18 ± 0.89	9.07 ± 0.91	9.1 ± 0.9	0.65	0.547
Marital status						
Married	108 (78.26)	65 (69.15)	42 (77.78)	215 (75.17)	2.73	0.26
Unmarried	30 (21.74)	29 (30.85)	12 (22.22)	71 (24.83)		
Educational level						
Illiterate	24 (17.39)	13 (13.83)	10 (18.52)	47 (16.43)	3.23	0.52
Primary school	103 (74.64)	73 (77.66)	36 (66.67)	212 (74.13)		
Secondary or higher	11 (7.97)	8 (8.51)	8 (14.82)	27 (9.44)		
Weekly working days	6 ± 0.0	6 ± 0.0	6 ± 0.0	6 ± 0.0	-	-

3.2 Prevalence of musculoskeletal pain

A total of 80.07% (n = 229) of the participants reported musculoskeletal pain at some time during the preceding year of data collection, and 37% (n = 106) of them took days off due to musculoskeletal pain during this period. The annual prevalence of musculoskeletal symptoms in different body regions among handicraft workers is illustrated in Fig. 1. Musculoskeletal pain in the lower back region (75.18%) was found to be the most prevalent health problem among handicraft workers. 51.75% reported neck pain, 51.75% reported pain in shoulders, 29.72% reported pain in elbows, 41.61% reported pain in wrists, 37.41% reported pain in the upper back region, 28.67% reported pain in thighs, 55.94% reported pain in knees, and 32.87% experienced pain in feet.

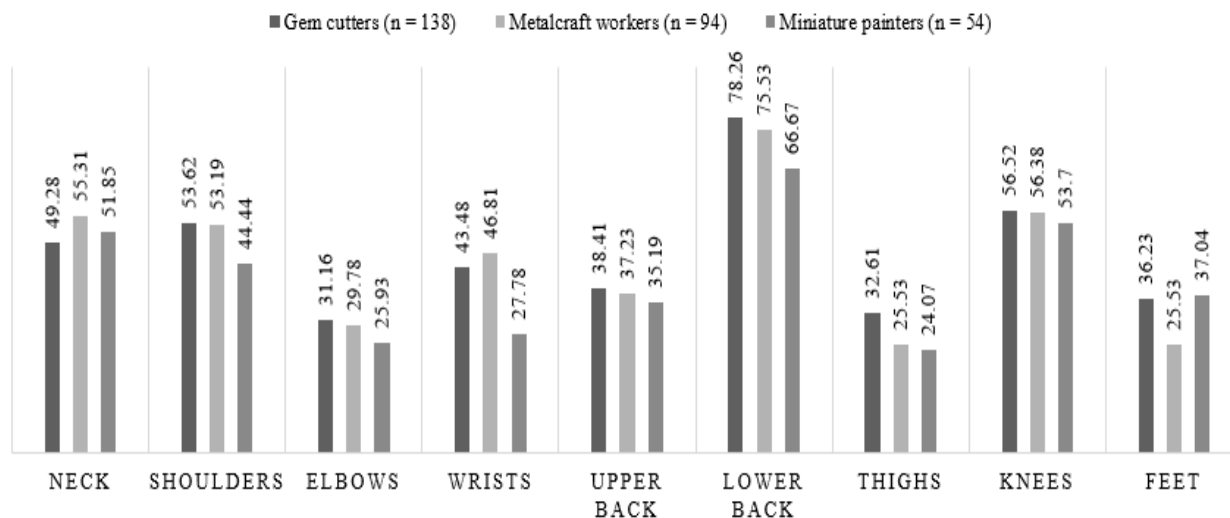


Figure 1. Prevalence of musculoskeletal pain in different body regions among handicraft workers

The level of musculoskeletal pain in each body region was categorized as mild (body part discomfort score: 1-3), moderate (body part discomfort score: 4-7), and severe (body part discomfort score: 8-10). The result showed that majority of handicraft workers had experienced severe lower back pain (73.49%) in the last 12 months (see Fig. 2). 79.05% workers experienced neck pain in the range of moderate to severe, 77.03% and 73.13% workers experienced pain in shoulders and knees respectively in the same range of low to moderate. 89.41% workers experienced pain in elbows, 81.51% workers experienced pain in wrists, 77.57% workers experienced pain in the upper back region, 90.24% workers experienced pain in thighs, and 81.91% workers experienced pain in feet in the range of low to moderate.

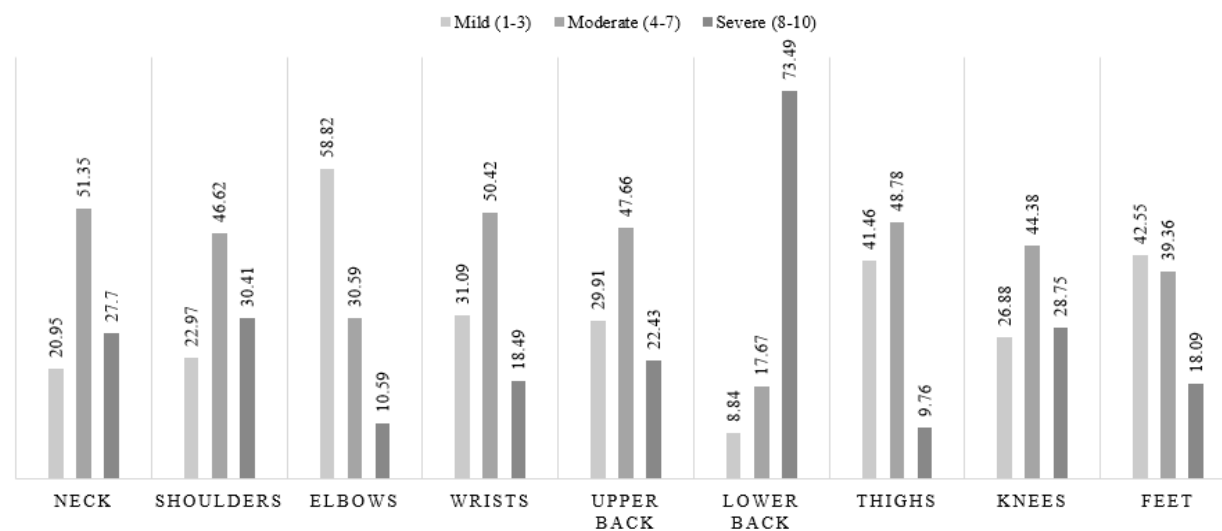


Figure 2. Level of musculoskeletal pain in different body regions among handicraft workers

3.3 Lower back pain disability

With reference to the findings of NMQ, the Oswestry lower back pain disability questionnaire study was conducted among 214 participants of which 108 were gemstone cutters, 71 were metal craft workers, and 35 were miniature painters. The results of Oswestry lower back pain disability questionnaire study showed that 4.19% of participants

had severe disabilities, 62.79% had moderate disabilities, and 33.02% had minimal disabilities during the preceding year of data collection (see Fig. 3). None of the workers was crippled or bed-bound or exaggerated their symptoms.

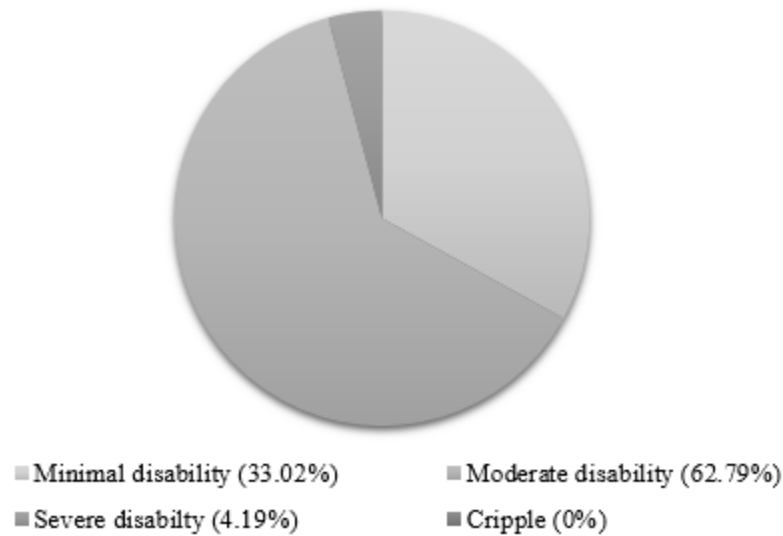


Figure 3. Distribution of lower back pain disability among handicraft workers ($n = 214$)

3.4 Association of work-related psychosocial factors

The presence of lower back pain by each work-related psychosocial factors is presented in Table 2. Univariate analysis revealed that there was significant association between job demand (OR = 1.97; 95% CI = 1.15-3.38; $p \leq 0.01$), job control (OR = 1.79; 95% CI = 1.05-3.07; $p \leq 0.05$), and lower back pain. Job insecurity and poor social support did not show any statistically significant relationship with the occurrence of lower back pain among male handicraft workers in India.

Table 2. Association of work-related psychosocial factors and lower back pain

Variables	Univariate analysis				Multivariate analysis			
	OR	95% CI		<i>p</i> -value	OR	95% CI		<i>p</i> -value
		Lower	Upper			Lower	Upper	
Job demand								
Low	Reference group				Reference group			
High	1.97	1.15	3.38	< 0.01	2.04	1.17	3.54	< 0.05
Job control								
High	Reference group				Reference group			
Low	1.79	1.05	3.07	< 0.05	1.75	1.01	3.03	< 0.05
Social support								
High	Reference group				Reference group			
Low	1.63	0.93	2.84	0.089	1.62	0.91	2.88	0.102
Job insecurity								
Low	Reference group				Reference group			
High	1.27	0.74	2.17	0.387	1.31	0.75	2.29	0.336

Note. OR: odds ratio

CI: confidence interval

In multivariate analysis, while adjusted for age, BMI, job tenure, marital status and educational level, high job demand showed strongest significant association with lower back pain (OR = 2.04, 95% CI = 1.17-3.54; $p \leq 0.05$). Low job control was found to be at risk of developing lower back pain (OR = 1.75, 95% CI = 1.01-3.03; $p \leq 0.05$).

4. Discussion

The present study was aimed to investigate the prevalence of lower back pain and its' relationship with work-related psychosocial factors among the handicraft workers. The notable finding was that the lower back pain was the most prevalent musculoskeletal disorder in this occupational group and the level of lower back pain experienced by the majority of the workers was severe. Our findings of prevalence of musculoskeletal pain among Indian handicraft workers do not differ from those of engaged in other handicraft occupations in other countries, such as carpet, textile, and leather handicraft workers in Iran (Dianat and Karimi, 2016), hand-woven shoe-sole workers in Iran (Veisi et al., 2016), and diamond polishers in Indonesia (Zubaidah et al., 2015). Most of the studies reported high prevalence and severity of the musculoskeletal disorder in the lower back region among handicraft workers. In the present study, when the risk was calculated adjusting for age, BMI, job tenure, marital status and educational level, the workers working under high job demand and low job control were found to be at 2.04 and 1.75 times higher risk of developing lower back pain respectively, as compared to those working under low job demand and high job control. In literature, numerous epidemiological studies have shown positive relationship between psychosocial risk factors at work and back musculoskeletal disorders in different working population (Baek et al., 2017; Amin et al., 2014; Gangopadhyay et al., 2014; Zakerian and Subramaniam, 2009). So, there must be a pathway of interaction between the work-related psychosocial risk factors and lower back musculoskeletal disorders. According to the balance theory of job design and stress (Smith and Carayon-Sainfort, 1989), exposure to psychosocial risk factors at work can lead to various stress reactions, and over the time, exposure to the stressors can lead to different types of strain, including musculoskeletal disorders. There is also a direct relationship between psychosocial risk factors and strain outcomes. Individual characteristics can influence the relationship between work-related psychosocial factors and musculoskeletal disorders of the model. In line with the theory, influence of individual factors in the relationship between work-related psychosocial factors and lower back pain has been observed in the present study. The results revealed that while adjusted for individual factors, including, age, BMI, job tenure, marital status, and educational level, odds of high job demand in developing lower back pain among handicraft workers increased by 3.55% from odds ratio of 1.97 (95% CI = 1.15-3.38; $p \leq 0.05$) in univariate analysis to odds ratio of 2.04 (95% CI = 1.17-3.54; $p \leq 0.01$) in multivariate logistic regression, and the odds of low job control in developing lower back pain reduced by 2.24% from odds ratio of 1.79 (95% CI = 1.05-3.07; $p \leq 0.05$) in univariate analysis to odds ratio of 1.75 (95% CI = 1.01-3.03; $p \leq 0.05$) in multivariate logistic regression. This corroborated with the findings of other several studies where a significant association between high job demand and lower back musculoskeletal disorder with an odds ratio of up to 3.52 after adjustment for confounding variables was reported (IJzelenberg and Burdorf, 2005; Myers et al., 1999). In the present study, the possible routes of association between high job demand and lower back pain among handicraft workers can be explained by the prolonged exposure to physical burden, which leads to the development of stress and results in a frequent complaint of lower back pain. The gradual increase in the demand for craft items is mounting as a pressure on the workers in handicraft profession to work for long hours and produce more in a short period of time. Therefore, time pressure, high visual and mental concentration at work, excessive workload, inadequate rest break and multiple functioning all act together on the handicraft workers as psychological pressure and make them perform movements faster and adopt awkward working posture, primarily forward lean posture during activities. Further, interrupt one activity to perform another, inadequate tools and workstations are a very common working condition in handicraft work setting. Moreover, the handicraft industry in India is one of the largest informal sector, and therefore, employment informality in this sector may play a role in progression of musculoskeletal pain among the workers. According to Porras et al. (2017), both the musculoskeletal pain and the exposure to adverse levels of psychosocial work risk factors were higher prevalent among informal workers, compared to the formal workers. Working at a high level of intensity under poor conditions often increases the biomechanical demand of the job on musculoskeletal system of the lower back region, which in turn, results increased forces in the lumbar extensor muscle and exhaustion. In long run, this leads to the development of psychosocial stress and exacerbation of lower back discomfort through the physiological mechanism (Bongers et al., 1993). Prolonged exposure to these working situations increases workers' pain perception threshold and might result in overlooking of their bodies' warning signals (Theorell et al., 1993). Therefore, the workers engaged in handicraft occupation might be more likely to develop lower back pain. A study of repetitive work at an assembly line revealed that perceived time pressure during work resulted in perceived low back load among the workers (Lundberg et al., 1989). Furthermore, the handicraft workers had to handle their household tasks, mostly agricultural work, apart from the craft works. This work-family conflict could be a key

mediator for growth of musculoskeletal pain and subsequent fatigue in handicraft occupational groups (Rahman et al., 2017). Consistent with the findings of present study, high psychological job demand was found to be associated with lower back pain (OR = 3.0; 95% CI = 1.79-5.36) among employees of a modern automobile production complex in Toronto (Kerr et al., 2001). A study of nursing workers in Brazil also reported significant association between high job demand and musculoskeletal disorder in lumbar column area (OR = 2.11; 95% CI = 1.15-3.85) (Magnago et al., 2010). However, there are some contradictory evidences for the relationship between lower back disorders and job demand. A study of public hospital nurses in Malaysia reported statistically significant association between psychological job demand and lower back musculoskeletal disorders in univariate analysis (OR = 1.52; 95% CI = 0.99-2.32), but it did not remain statistically significant after adjustment for age, BMI, weekly working hours, and years of employment in multiple logistic regression (Amin et al., 2014). A study of miners and teachers in China indicated high job demand as the most consistently associated factor with work-related musculoskeletal disorders, but did not show any significant relationship with lower back disorders (Yue et al., 2014).

In the present study, low job control was found to be another significant risk factor for the occurrence of lower back pain among handicraft workers. Corroborated with the findings, a study of general working population, including workers of service sectors and industries, reported that low job control significantly increased the odds (OR = 1.5; 95% CI = 1.1-2.2) of developing lower back discomfort among the workers in western Denmark (Andersen et al., 2007). Further, a study of Iranian industrial workers revealed a significant association of low job control and lower back pain with an odds ratio of 1.5 (95% CI = 1.5-2.4) for men (Ghaffari et al., 2008). The findings of the present study are also in line with the study of Zakerian and Subramaniam (2009) among computer users in Malaysia where the multiple linear regression results showed a significant negative association between job control and work stress ($\beta = -0.13$; $p \leq 0.01$). Job control simply refers to the ability of a person to influence his/her work in terms of authority to make decisions, the possibility of learning new things from work, ability to make a change in work method and procedure. Handicraft works are manual jobs where the workers sustain same static sitting posture and engage in extensive visual and mental concentration work for a long period of time. In Indian handicraft industry, the working methods and procedures are extensively rigid and traditional which do not allow the worker's flexibilities to change the work process. In a study of Indian goldsmiths, 57% of the workers agreed to rigid work methods and procedures (Ghosh et al., 2010). Low job control at work increases the psychological stress among handicraft workers, which can play a mediating role between work-related psychosocial factors and musculoskeletal pain. The findings of the present study suggested that the psychosocial factors of high job demand and low job control resulted in the genesis of high psychological stress, which in turn, was related to the occurrence of musculoskeletal pain in the lower back region among handicraft workers.

Furthermore, the analysis of Oswestry lower back pain disability questionnaire showed that the workers with minimal lower back pain disability can carry on most living activities. However, advice on lifting, sitting and exercises can be suggested. The workers who experienced moderate lower back pain disability face difficulty with sitting, lifting and standing. Travel and social life of the workers are more difficult and they may be disabled from the work. However, personal care and sleeping activities are not grossly affected and the workers can usually manage by conservative means. Amongst the workers who suffered from a severe disability, back pain remains the main problem which affected the daily living activities of the workers, and this group of workers requires a detailed investigation.

The present work has a number of limitations, including cross-sectional design and questionnaire-based study, which should be taken into account while considering the implications of the findings.

5. Conclusion

This study evaluated the association between work-related psychosocial factors and lower back pain among male handicraft workers in Jaipur, India. High job demand and low job control were proven to have a significant role to develop lower back pain in this occupational group. It is, therefore, important to consider work-related psychosocial issues while designing preventive strategies for the abovementioned problem. Ergonomic interventions with the purpose of reducing job demand and providing adequate job control are highly recommended. Ensuring ergonomic workload and flexibility at work should be taken into consideration.

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