

# Musculoskeletal disorders among the garments workers in Rupandehi district, Nepal

## Abstract

**Introduction:** Musculoskeletal disorder are common work-related health problem which is common among garments workers as they are denied of their basic rights and less importance is given to their health. Garment workers are among the most vulnerable as they have to work for long hours in perilous posture.

**Objective:** Aim of this study was to determine the prevalence and types of musculoskeletal disorders among the workers of the garment factory.

**Methodology:** A cross-sectional study was conducted among 430 workers in garment industries at Rupandehi district of Nepal over a period of six months. Data collection was done using a semi-structured interview schedule and statistical analysis was done using IBM SPSS 23 version.

**Results:** There were 48.5 percent of respondents found to be suffering from musculoskeletal disorders. The most common affected site was low back (67%) and shoulder (26%). Most of the workers (82%) experienced that their pain occurred occasionally during heavy workload. The musculoskeletal disorders were found to be associated in age group, sex & educational status.

**Conclusion:** Health problems among garment workers are one of the areas of public health concern in the country. Reducing the work strain and providing a supportive workplace environment will have a favorable impact on work productivity.

**Keywords:** garment workers, musculoskeletal disorders, Nepal, vulnerable, occupational health

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PurnaLaxmi Maharjan,<sup>1</sup> Ashesh Shakya,<sup>1</sup>  
Sanjeev Shah,<sup>1</sup> Suraksha Subedi,<sup>2</sup> Koshish Raj  
Gautam,<sup>3</sup> Milan Gurung<sup>4</sup>

<sup>1</sup>Department of Public Health, National Open College,  
Pokhara University, Nepal

<sup>2</sup>Department of Nursing, Asian College for Advance  
Studies, Purbanchal University, Nepal

<sup>3</sup>Department of Public Health, K S Hegde Medical  
Academy, Nitte University, India

<sup>4</sup>Ganeshman Singh Memorial Hospital and Research Center,  
Nepal

**Correspondence:** Sanjeev Shah, National open collage,  
Pokhara university, Nepal, Tel 9851131401,  
Email just4sanjeev@gmail.com

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## Introduction

World Health Organization (WHO) expresses occupational health as all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards. The health of the workers has several determinants, including several risk factors at the workplace leading to cancers, accidents, musculoskeletal diseases, respiratory diseases, hearing loss, circulatory diseases, stress-related disorders and communicable diseases and others.<sup>1</sup> Garment industries are the main source of earning foreign currencies in Nepal which started basically from 1985 AD. Garment industries export five billion Nepali rupees accounting for over 80% of the nation's export earnings which employed around 15,258 workers in Nepal according to 2016/2017 AD national data.<sup>2</sup>

Work at a garment production unit represents a complex multifaceted physical work environment with interactions among the various dimensions of workplace, inappropriate non-neutral awkward postures and rapid piece-rate production.<sup>3</sup> musculoskeletal problems are the most common problem among garment workers. Work-related musculoskeletal disorders are often overlooked despite being very common among garment workers. Likely explanations for the high prevalence of work-related musculoskeletal disorders include repeated movement, static posture for a long time; prolong exposure to ergonomic risk factors.<sup>4</sup> Work-related musculoskeletal disorders (MSD) accounts for a substantial portion of post-workday illnesses and injuries. Hence, it constitutes a major proportion of temporary or permanent disability among garment industry workers in many countries.<sup>5</sup>

In most countries, Lower back and neck pain was the leading global cause of disability in 2015.<sup>6</sup> generally, in Nepal, the garment workers suffer from vertigo, headache, low backache, joint pain, respiratory distress, anemia, female diseases, and dysentery. They also suffer from needle prick injury, cut injury and burn injury. The competitiveness of the garment industry in the world market is seriously affected by the ill health of the workers since ill health decreases the labor productivity to a great extent.<sup>7</sup> there are risks of injuries and diseases in any occupational setting where men and machine are involved. The causes of these injuries pertain to unsafe work, machine, equipment, material and/or unsafe acts. These causes of injuries and diseases present in the work and workplace may develop physical and mental stress in workers, which may result in loss of production and productivity. Moreover, thousands of toxic chemicals pose serious health threats potentially causing cancer, respiratory and skin diseases as well as adverse effects on reproductive function. Workers can be and often are exposed to hazardous chemical agents such as solvents, pesticides and metal dust.<sup>8</sup>

Further, approximately 2 million people die prematurely of occupational accidents and diseases each year worldwide. It is estimated that in Nepal, each year approximately 2000 workers meet workplace accidents and because of which about 200 lives are lost.<sup>9</sup> By clear data and information, occupational hazards and injuries is a bulging issue in national and international level and musculoskeletal disorders are one of most alarming health issues in garment industries but Nepal has not been able to address these emergencies so far. The aim of this study was to determine the prevalence and types of musculoskeletal disorders among the workers of garment industries at Rupandehi district of Nepal.

## Materials and methods

This cross-sectional study was conducted among the garment industries workers in Rupandehi, Nepal, from March to September 2019. Considering the prevalence of musculoskeletal problems 77.6% with 95% confidence interval and a 5% margin of error, sample size for the study was calculated by using cross-sectional formula for the infinite population.<sup>10</sup> The total sample size was 430 with 1.5 design effect. Data were collected by Face to face interview with a pretested tools (Semi- structured interview schedule). English tools also translated into Nepali for the better understanding of the respondents. Ethical approval was taken from the Institutional Review Committee (IRC), National Open College, Pokhara University, Nepal. Prior to the data collection, written consent was taken from the Garments Industry. Participants who were willing to give consent and they were asked for the interview. Those who refused to provide information consents & interview simply they were excluded from the study. Participants had the right to withdraw themselves from any point of the study. All interviewed questionnaires were checked for its completeness, accuracy, and consistency to exclude missing or inconsistent data. The analyzed data were presented in tables, graphs, charts and bars, descriptive statistics performed at the aim of interpretation of the findings. Bivariate analysis was performed to determine the association among variables. The data were analyzed by using the software IBM SPSS version 23.

## Result

During data collection, it was observed that the ventilation and housekeeping of the industry were poor, and situated in a rented house. The industries were overcrowded; the floor space for each worker was very small which is 12-16 sq. feet. The provision of lightening was not sufficient and no medical facilities, restroom, adequate latrine, canteen facilities in almost all the industries.

Among the total 430 respondents, the mean age was 30.84 years. The half of the total respondents i.e. 51% were of 27-32 age groups followed by 21-26 age group respondents at 18% while only 0.5% of respondents were of 56-61 age groups. Majority of the respondents i.e. 71.6% were male and only 28.4% were female respondents. Similarly, the majority of the respondents i.e. 85.6% were Hindu by religion while only 1% of the respondents were Buddhist. Among the total respondents, 88.1% were literate out of which 49.7% were found to be able to read and write while only 0.6% completed their higher secondary level or above (Table 1 & 2).

Regarding the nature of the job of the workers, it was found that majority of the workers i.e. 86.6% work as sewing operator. While 2.1% of the workers categorized under other position were machine operators. The mean working year was found to be 3.86 and standard deviation was 2.14. The majority of the respondents i.e. 85.6% had been working from 1-5 years in the same industries while only 0.5% had been working from 16-20 years. The mean working hour per day was 9.19. Among the total respondents, 52.1% were found to be working for 6-8 hours per day. Among the total respondents, only 46.9% were found to be working overtime. The mean overtime working hour per week was 13.40 while the standard deviation was  $\pm 3.26$ . The majority of overtime workers i.e. 73.9% worked for 11-15 hours per week while only 2.2% of overtime workers worked for 21-25 hours per week.

**Table 1** Demographic Characteristics of respondents, n= 430

Variables	Frequency	Percent
<b>Age Group</b>		
15-20	20	4.6
21-26	77	18
27-32	219	51
33-38	60	13.9
39-43	31	7.2
44-49	20	4.6
56-61	3	0.5
<b>Gender</b>		
Male	308	71.6
Female	122	28.4
<b>Religion</b>		
Hindu	368	85.6
Buddhist	4	1
Christian	11	2.6
Islam	46	10.8
<b>Education status</b>		
Illiterate	51	11.9
Literate	379	88.1
<b>Education level</b>		
Can read and write	214	49.7
Primary level	95	22.2
Secondary level	118	27.5
Higher secondary level/above	3	0.6
Mean Age = 30.84	S.D= $\pm 6.33$	

**Table 2** Employment Status

Variables	Frequency	Percent
<b>Employment Position</b>		
Sewing Operator	372	86.6
Iron man	9	2.1
Helper	27	6.2
Supervisor	13	3.1
Other	9	2.1
<b>Nature of Work</b>		
Mild	22	5.2
Moderate	381	88.7
Heavy	27	6.2

Table Continued

Variables	Frequency	Percent
<b>Length of Job (in years)</b>		
1-5	368	85.6
6-10	60	13.9
16-20	2	0.5
<b>Working hour</b>		
6-8	224	52.1
9-11	153	35.6
12-44	53	12.4
<b>Overtime</b>		
Yes	202	46.9
No	228	53.1
<b>Overtime per week</b>		
5-10	28	6.5
11-15	318	73.9
16-20	75	17.4
21-25	9	2.2

## Musculoskeletal disorders

About half of the respondents i.e. 48.5% were found to be experiencing some kind of musculoskeletal discomforts. Among the total respondent experiencing musculoskeletal discomforts, the maximum respondents i.e. 67% had experienced back pain followed by shoulder pain at 26.6% while only 1.1% of respondents had experienced hand and legs discomforts. Most of the respondents i.e. 82% of the respondents reported that their pain occurred occasionally during heavy workload. The musculoskeletal disorders were found to be significantly higher in age group, gender and educational status (Table 3 & 4).

Table 3 Respondents by Musculoskeletal Disorders

Characteristics of Musculoskeletal Disorders	Frequency	Percent
<b>Occurrence of Musculoskeletal Disorders (n= 430)</b>		
Yes	209	48.5
No	221	51.5
<b>Sites of pain (n=209)</b>		
Neck	9	4.3
Waist and backbone	140	67
Hand	2	1.1
Shoulder	56	26.6
Legs	2	1.1
<b>Frequency of Pain (n=209)</b>		
Occasionally	172	82.3
Regular	29	13.9
Invariably	8	3.8

Table 4 Respondents by Musculoskeletal problem and some related factors

Factors	Musculoskeletal problem	Non-Musculoskeletal problem	$\chi^2$ and p-value
<b>Age Group</b>			
15-30 years	98 (22.7%)	140 (32.5%)	$\chi^2= 5.136$ ; p<0.05
31 years – Above	110 (25.8%)	82 (19.1%)	
<b>Gender</b>			
Male	137 (32.0%)	171 (39.7%)	$\chi^2=2.909$ ; p<0.05
Female	71 (16.5%)	51 (11.9%)	
<b>Education Status</b>			
Illiterate	38 (8.8%)	13 (3.1%)	$\chi^2=6.772$ ; p<0.05
Literate	171 (39.7%)	208 (48.5%)	
<b>Nature of Work</b>			
Mild	9 (2.1%)	13 (3.1%)	$\chi^2=0.308$ ; p>0.05
Moderate	186 (43.3%)	195 (45.4%)	
Heavy	13 (3.1%)	13 (3.1%)	

## Discussion

The garment industries are growing without a proper plan and adequate occupational health and safety facilities. The provisions as mentioned in Labour Act 1992 regarding health, hygiene, safety, and welfare has not been found to be implemented as desired. In this study it has been found that in the studied garment industries there was no adequate space for each worker and about half of the workers were working more than eight hours a day which results in decrease in the efficiency of the workers and also affects the physical and mental health of workers. In order to earn more, the garment factory workers are compelled to work for long hours in a day resulting in them to develop various musculoskeletal discomforts.

It has been found that about 74% of the workers were within 30 years and 13.9% of workers had been working for more than 5 years in the same factory. In a similar study conducted in eastern Nepal in 2014 revealed that most of the workers 62.1% were in the age group of 20-39 years and 30.6% workers had been working for more than 10 years which indicates that the young people are coming more in the production life which is important for economic development of the country.<sup>11</sup> This study also revealed that about 12% illiterate and 50% of the workers who were literate only can read and write. For skilled manpower and to maintain proper Occupational Safety and Health (OSH) in the factory, education of the workers is one of the important factors, so, necessary measures, as well as motivational activity, should be undertaken to increase the educational level in the community.

In this study, it was found that about half of the respondents (48.5%) of the respondents were suffering from some sort of musculoskeletal disorders and the most common musculoskeletal disorders was found in the wrist and back (67%). It has been reported that occupational

musculoskeletal disorders are associated with physically heavy work, manual material handling, repetitive work and unsuitable work posture.<sup>12</sup>

A study conducted in Bangladesh during 2013, the respondents experiencing shoulder pain was 51% and there was a significant relationship between the length of job (in years) and musculoskeletal discomforts.<sup>2</sup> While in our study there was no establishment of any statistical significance between working years and musculoskeletal discomforts. Analysis of the results of the study was significant with age group, gender, and educational status. A research conducted in Jaipur, India in 2012 revealed that in stitching section majority of workers (55%) complained about a musculoskeletal problem which is similar to this study where the majority of the respondents working in stitching section (49.4%) complained about musculoskeletal discomforts.<sup>13</sup> A study conducted in 2011 among female garment factory workers in Sri Lanka revealed that the majority of the respondents (63.7%) worked as a sewing machine operator. 15.6% were found to be reporting musculoskeletal problems, the most prevalent complaint being lower back problems among the respondents.<sup>14</sup> In comparison to our study, the 58.2% of the female respondent were reported to experience musculoskeletal problems. This study gave quite similar results in terms of specific musculoskeletal discomforts of the lower back among the respondents. These comparisons so far show an alarming condition of workplace injuries and health hazards.

## Conclusion

In this study, it is evident that half of the workers had been suffering from some kind of musculoskeletal disorders. The musculoskeletal disorders were more among the workers who worked in the sewing section. The occurrence of musculoskeletal disorders is significantly associated with age, sex, and educational status. The working space per worker was extremely inadequate. There were no medical facilities and proper toilet facilities. Almost every day the workers had to work overtime. To protect and promote the health of the workers, necessary measures should be undertaken as soon as possible to provide proper health, hygiene, and medical facilities to the workers.

## Recommendation

The acceptance of modern techniques and making machine work-friendly should help in improving the health conditions of garment factory workers. Health examinations of workers should be done on a regular basis and adequate precaution should be taken by workers to ensure safe health.

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## Conflicts of interest

The authors declare that there was no conflict of interest.

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