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PREVALENCE AND DETERMINANT FACTORS OF MUSCULOSKELETAL PAIN AMONG FEMALE READY MADE GARMENT WORKERS RESIDING IN NORTHERN DHAKA CITY: A CROSS-SECTIONAL STUDY

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ABSTRACT:

Background: Musculoskeletal (MSK) pain is the most common occupational illness seen both in a developed & developing country. **Purpose:** The purpose of the study to determine the prevalence & factors responsible for MSK, & to identify the pattern of MSK pain among female Ready Made Garment (RMG) workers.

Methods: A descriptive cross-sectional survey was conducted among 260 RMG female workers residing in Northern Dhaka city. Data was collected by a structure administered questionnaire with face to face interview & data was analyzed by SPSS (Version 20).

Results: Results indicated that the prevalence of MSK pain was 41.9% where shoulder, neck, & lower back were the more prevalent site of MSK pain. A fair number of participants reported present job stress. However, there was a significant relation between MSK pains with sitting time ($p<0.05$) & job stress ($p<0.05$). **Conclusion:** It is concluded that MSK pain among female garment workers were moderately high. Knowledge about determinant factors might help to prevent & reduce the MSK pain.

Keywords: Musculoskeletal Pain, Factors, Female, Ready Made Garment, Workers

1. Introduction

Ready-made Garment (RMG) sector plays an important role in the overall economic development of Bangladesh. Presently, approximately 2.0 million workers (among which 80% are female) are working in this sector and established as a great source of employment (EPB, 2006).[1] Occupational health hazards are concerned with health hazard in relation to work environment. The science of occupational health hazards covers a wide field, like work physiology, occupational hygiene, occupational psychology, occupational toxicology etc. (Saraha 2012).[2] Work related musculoskeletal disorders have known as a key health problem among workers in both industrialized and industrially developing countries (Westgard and winkle 1997; Nag et al. 1992).[3-4] Musculoskeletal Disorders (MSDs) are the single largest category of work-related illness, representing a third or more of all registered occupational diseases in the United States (Bernard 2015).[5] Disorders of the musculoskeletal system are the single largest group of work related illness in the developed world. The ill health is compounded by various socioeconomic factors such as poverty, lack of education, poor working conditions, excess working hours, and poor diet. Upper extremity pain & discomfort are due to some workplace factors like repetitive work, awkward static postures (Westgard and Winkle 1997).[3] Musculoskeletal disorder (MSD) is a common health problem and a major cause of disability

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throughout the world. MSDs bring affecting not only the economic loss of individual levels, but also the organizational level & the company as a whole (Kemmlert 1994).[6] Carpal tunnel syndrome (CTS) is the most common diagnosis for both the garment workers and the computer users. Other common work-related MSD included lateral epicondylitis, forearm tendonitis, neck tension and wrist/digit tendonitis. Factors like prolonged standing, highly repetitive work, heavy lifting, working with the hands lifted to shoulder height or higher, and working with the back twisted or bent forward tend to impaired work ability that enhance long term sickness. So, it should be needed some health promoting initiatives to improve their work ability (Holtermann, 2012).[7] Stress at work is a growing problem for all workers, especially women. Family Issue, Job conditions are the influencing factors to stress in the workplace. The present study focuses on the identification and prevalence of musculoskeletal pain in different parts of the body and to find out the pattern and related factors responsible for MSK pain. There are some researches on this topic in our nation, but it is insufficient and it is considered as a burning issue. Research on this issue will help to determine the related factors responsible for MSK pain among RMG workers.

2. Material and Methods

It was a descriptive cross sectional study conducted among 260 female RMG workers & data was collected from eight garments situated at Mirpur, Uttara, and Azampur in northern Dhaka city. A Study was carried out over 12 months from June 2015 to May 2016. Purposive sampling technique was used & data were collected through face to face interview with the interviewer-administered structured questionnaire. The Numerical pain rating scale (NRS) & Likert scale was used in this study to assess the pattern of musculoskeletal pain & to assess the job stress. The questionnaire was developed to obtain information on the respondents about the following factors like socio demographic & socioeconomic factors, work related factors, job stress, site & pattern of musculoskeletal pain. The required information was collected from the patients after obtaining their due consent & the corrected data were statistically analyzed by using the SPSS (version 20).

3. Results

Table 1 revealed that most (77.7%) of the participant's age were less than 25 years where mean age was 21.89 years. More than half (56.92%) of the participant's family members were four or below four & very few of them (3.85%) had more than eight family members. Regarding educational level of the participants, a greater number (n=71, 27.3%) of participants can sign only whereas most of them completed primary level followed by 11.9% in SSC pass, 4.2% in HSC pass & 0.8% in Degree & above level. About half (52.3%) of the participant's monthly income was 6001 to 8000 BDT where mean income was 6750 BDT.

Table 1: Socio demographic and economic status of the sample (n=260).

Variables	Number (n)	Percent (%)
Age (In Years)		
<25 Years	202	77.7
≥ 25 Years	58	22.3
Mean Age±SD= 21.89±3.899		
Family Member		
≤ 4	148	56.92
5-8	102	39.23
>8	10	3.85
Educational Level		
Only can sign	71	27.3
Primary	72	27.7

Secondary	31	11.9
SSC pass	73	28.1
HSC pass	11	4.2
Degree & above	2	0.8
Monthly Income		
< 6000 BDT	54	20.8
6001-7000 BDT	136	52.3
7001-8000 BDT	39	15.0
>8000 BDT	31	11.9
Mean Income±SD= 6750±1.3575		

***BDT (Bangladeshi Taka)**

Study revealed that majority (n=179, 68.8%) of the participants had 2 to 4 years of job experience & near about half (n=127, 51.2%) of the participants were working 8 hours and more than 8 hours per day where mean working hours per day was 9.63. Most of the participant's sitting (n=165, 63.5%) & standing time (n=161, 61.9%) was more than 6 hours as shown in Table 2.

Table 2: Distribution of respondents based on work related Factors (n=260).

Variables	Number (n)	Percent (%)
Working Hours		
8 hours	127	48.8
≥ 8hours	133	51.2
Mean±SD= 9.63±1.725		
Working Experience		
≤ 1Year	39	15.0
2 to 4 Year	179	68.8
>4 Year	42	16.2
Sitting Time		
≤ 6 hours	95	36.5
>6 hours	165	63.5
Standing time		
≤ 6 hours	99	38.1
>6 hours	161	61.9

Regarding job stress of the participants, maximum (43.5%) reported sometimes presence of job stress whereas one fourth (26.2%) had all the time, about one fourth reported (25.4%) never, & very few of among the participants (5.0%) had often presence of job stress assessed by Likert scale as shown in Figure 1.

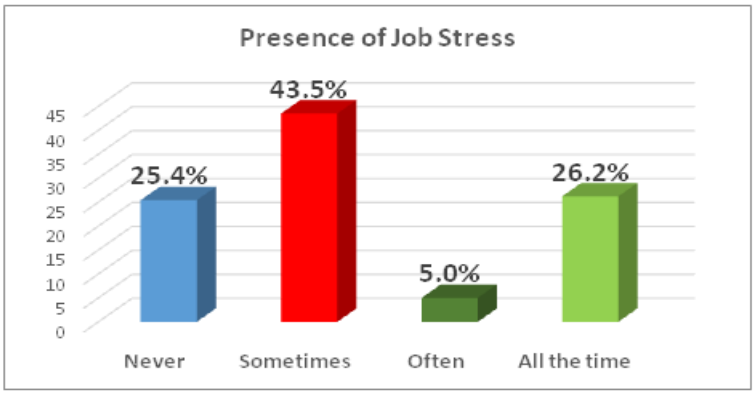

Figure 1: Presence of Job Stress

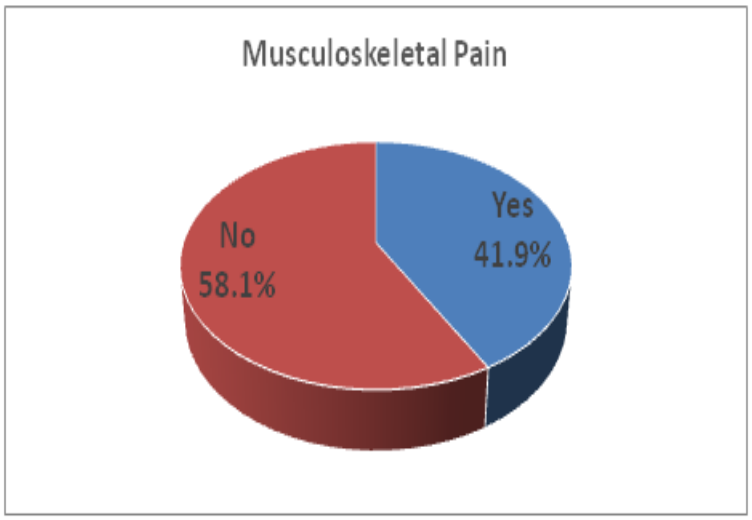

Figure 2: Prevalence of Musculoskeletal pain

The current study found 41.9% prevalence of musculoskeletal pain among female RMG workers as shown in Figure 2.

Table 3: Distribution of respondents by involving body site of musculoskeletal Pain (n=260).

Body Parts	Number (n)	Percent (%)
Neck	32	29.3
Shoulder	20	18.3
Elbow	11	10.1
Hips	8	7.3
Knee	12	11.0
Ankles/feet	10	9.2
Low Back Pain	16	14.6

Regarding body parts involvement, most of the participants reported neck pain (n=32, 29.3%) & shoulder pain (n=20, 18.3%) followed by 10.1% in elbow, 7.3% in hip, 11.0% in knee, 9.2% in ankles/feet & 14.6% in low back pain as shown in Table 3.

Considering the nature & severity of MSK pain assessed by NRS scale among (n=109) female RMG workers, most of the participants (42.9%) complained temporary pain in neck region with moderate level of severity. In the shoulder, the majority (44.4%) of the participants reported continuous pain with moderate & severe levels. In Elbow, maximum (40.0%) complained continuous with sever level of MSK pain. In the hip, temporary with severe level of MSK pain was reported by most (38.9%) of the workers. In the knee, maximum complained continuous (46.2%) with moderate level of musculoskeletal pain. Majority (46.2%) complained pain on movement with sever levels of MSK pain in the ankles/feet. On the other hand, in lower back, maximum (46.2%) complained pain during movement with moderate & severe level of MSK pain as shown in Table 4.

Table 4: Distribution of respondents by pattern (Nature & Severity) of musculoskeletal pain (n=109).

Body parts	%	Nature of complaints	%	Severity of complaints	%
Neck (n=32)	29.3	Temporary	42.9	Mild	32.4
		Continuous	31.4	Moderate	41.2
		On movement	25.7	Severe	26.5
Shoulders (n=20)	18.3	Temporary	22.2	Mild	20.0
		Continuous	44.4	Moderate	40.0
		On movement	33.3	Severe	40.0
		Temporary	30.0	Mild	32.4
Elbow (n=11)	10.1	Continuous	40.0	Moderate	31.0
		On movement	30.0	Severe	55.2
		Temporary	38.9	Mild	13.8
Hips (n=8)	7.3	Continuous	27.8	Moderate	27.8
		On movement	33.3	Severe	50.0
		Temporary	39.8	Mild	12.9
Knee (n=12)	11.0	Continuous	46.2	Moderate	55.9
		On movement	14.0	Severe	31.2
		Temporary	11.5	Mild	16.0
Ankles/feet (n=10)	9.2	Continuous	42.3	Moderate	40.0
		On movement	46.2	Severe	44.0
		Temporary	42.3	Mild	16.0
Low back pain (n=16)	14.6	Continuous	42.3	Moderate	40.0
		On movement	46.2	Severe	44.0

Table 5 shows that a greater number of participants (n=46, 42.2%) were out of treatment. Among the participants who taken treatment, most of them (n=51, 46.8%) treated with medication by physician, very few of them (n=9, 8.2%) taken physiotherapy by Physiotherapist.

Table 5: Distribution of the respondents by receiving treatment for MSK pain (n=109).

Treatment types	Number (n)	Percent (%)
Medicine taken by Physician	51	46.8
Physiotherapy taken by Physiotherapist	9	8.2
Others	3	2.8
Taken no treatment	46	42.2

Table 6: Association between MSK pain with sitting time & Job stress

Sitting Time	MSK Pain		Total	p-value
	Present	**Absent**		
≤ 6 hours	21 (22.1%)	74 (77.9%)	95 (100.0%)	0.001
>6 hours	88 (53.3%)	77 (46.7%)	165 (100.0%)	
Job Stress				
Never	4 (16.0%)	21 (84.0%)	25 (100.0%)	0.001
Sometimes	42 (32.8%)	86 (67.2%)	128 (100.0%)	
Often	6 (28.6%)	15 (71.4%)	21 (100.0%)	
All the times	57 (66.3%)	29 (33.7%)	86 (100.0%)	

p-value indicated as significant relation was found between MSK pain with sitting time (p value= 0.001<0.05) & work stress (p-value= 0.001<0.05).

4. Discussion

The principal purpose of the study is to find out the determinant factors influencing of MSK pain and its pattern among young female RMG workers. The current study found a moderate prevalence (41.9%) of MSK pain where the neck, shoulder, & LBP were most common site was reported by the participants. On the other hand, a study among Srilankan garment workers found a low prevalence (15.5%) of MSK pain where the back & knee were mainly common site of pain (Sarah et al. 2012).[2] previous study found that sewing machine operators had a higher prevalence of self-reported upper back & upper extremity pain (Aghili et al. 2012).[8] It was calculated that the mean age of the respondents was 21.89 years which indicated that most of the participants were young age in this study. Regarding the education of respondents, a greater percent can sign their name only & due to low level of education the RMG workers were not to be conscious about their MSK pain. A previous study found that people with no or little education had high labour force participation rate (Rahman & Ahmed 2014).[9] The study revealed that more than half of respondents had four or less than four family members which shown a small family type & maximum respondent's monthly family income was 6001-7000 BDT where mean income was 6750 BDT indicated as a very low wages compared to their daily working hours. A majority of garment workers were performing more than 8 hours per day, which is a vital issue for developing MSK pain. In this study, most of the participants working experience were 2 to 4 years. A study founded by Tusher et al. (2010)[10] observed that MSD were more common among those who had worked for more number of years & worked for longer hours. More than half of the participants worked >6 hours in sitting & standing position which is a significant factor to develop MSK pain. Previous researchers showed that workers who have been employed for a longer period of time had less chance to encounter with occupational injuries than recently employed workers (Lemasters et al. 1998).[11] A study observed that long working hours (> 5 hours) & long duration (> 10 yrs) of job involvement had a positive impact on the occurrence of MSDs among women (Costa et al. 2006).[12] Current study found a greater percent of workers sometimes faced job stress & there was a significant relation between job stress & MSK pain. Bongers et al. (1993)[13] concluded that monotonous workload, & time pressure are related to MSK symptoms. Salik (2004)[14] found age, gender, injury history, smoking, & psychological variables have a very significant affect on work related low back disorders. Another studies stated that psychological stresses related to the job & work environment have a bearing on the development of MSDs (fredriksson et al. 2001; Faucell 2005).[15-16] Hopkins (1990)[17] stated that pain has often been associated with physical & psychological co-morbid features such as low levels of job satisfaction & high levels of boredom at work. A greater percent of participants in this study did

not take treatment which was very alarming because the MSK pain in long duration affects his/her quality of life as well as the burden of their family.

5. Conclusion

It is concluded that a moderate prevalent of MSK pain was seen among female garment workers where neck & shoulder were the commonest site of MSK pain. There were significant relation found between MSK pain with job stress & sitting time. A greater number of female garment workers were unable to afford their treatment. Some factors like working hours, job experience were the determinant factors for MSK pain. It should have proper attention on some determinant factors like working hours, working posture, & job stress which might help to prevent & control the MSK pain.

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Abbreviations

MSK: Musculoskeletal
RMG: Ready Made Garment
MSDs: Musculoskeletal Disorders
CTS: Curpal Tunnel Syndrome
NRS: The Numerical Pain Rating Scale
SSC: Secondary School Certificate
HSC: Higher Secondary School Certificate
BDT: Bangladesh Taka

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