Symbiosis

www.symbiosisonline.org
www.symbiosisonlinepublishing.com

Research Article | Journal of Exercise, Sports & Orthopedics | Open Access

Musculoskeletal Symptoms among Female Garmenmts Worker: Working Environment

Atiqur Rahman Khan[1], Jobair Khan[2*]

[1]*Integrated Disability Service Centre (IDSC), (JPUF), Ministry of Social Welfare, Hobigonj, Bangladesh*

[2]*Faculty of Medicine, University of Dhaka, Dhaka, Bangladesh*

Received: May 25, 2018; Accepted: June 29, 2018; Published: July 06, 2018

***Corresponding author:** Jobiar khan, Faculty of Medicine, University of Dhaka (DU), work: Apollo Hospitals Dhaka (AHD), Dhaka, Bangladesh, Tel: +8801912048846;E-mail: khan_pavel08@yahoo.com*

Abstract

Working environments were causing musculoskeletal symptoms of female garments worker and continuing substantial health problem. These disorders affect millions of garments worker in developing and developed nations. The purpose of the study was to determine the musculoskeletal symptoms of female garments worker, to assess the socio-demographic status among the respondents at garments factory. A descriptive cross-sectional study was conducted with a semi-structured questionnaire to collect information. Total respondents among the female garments worker were selected as purposive sampling technique. Data were numerically coded and put in SPSS 16.0 version software program. A total of 150 respondents 89 sewing worker, 61 non-sewing workers; they were significant (P= .009) and mean age 26.91 ± 8.774. The result showed 58.7% respondents had musculoskeletal symptoms. The most common symptom was pain 28.7% and maximum affected part of the body were lower back 24.7%, neck14% and these were highly significant P= .000. Visual Analogue Scale (VAS) used for pain measurement, where noted 36.7% moderate and 1.3% severe pain. Working tools and unadjusted ergonomic setup with body 79.3% and 80.7% respectively. Working with long duration of faulty posture 81.3% (P= .000) were statistically significant. It was identified the first experience of musculoskeletal symptom 7 days to 12 months were highest 43.4% and next 2 to 3 years 13.3. Musculoskeletal pain in the back due to the Ergonomical condition was a concern for the health in garments worker. Musculoskeletal symptom symbolized significant burden for garments worker.

Keywords: Musculoskeletal Symptom; VSA; Female Garments Worker

Abbreviations

WHO: World Health Organization; LBP: Low Back Pain; MSD: Musculoskeletal Disorders; RMG: Readymade Garment (RMG); VAS: Visual Analogue Scale; MSKC: Musculoskeletal condition; UN: United Nations

Introduction

Musculoskeletal condition (MSKC) has been raiding over the time throughout the globe, simultaneously developing and industrialized country. In developing country, it much more commonly observed among female Readymade Garments (RMG) workers. In Bangladesh, RMG sector played an inevitable role in the overall development of economy [1]. There were 5,100 garment factories, where around two million workers amongst them 80% female. It was exclusively highest remittance about 76% earning sector, which was worth mentioning [1,2].

United Nations (UN), World Health Organization (WHO), World Bank and many governments and international organizations across the world declared MSK conditions were major burden on individual's health and social system, having a substantial influence on health and quality of life and social care systems, with direct and indirect costs being predominant [3,4, 5].

The prevalence of MSKC was increased in the world with the amount of MSK disorders in developing countries [6]. Musculoskeletal (MSK) problems (69.64%) were the commonest health problem [7]. Globally, work-related MSK disorders liable for around 40% of the total compensated cost of occupational disease and injury [6]. Aetiology of the arising symptoms among the garments worker by performing the same movements like lifting, reaching, packaging, sewing and repetitive motion1, activities or the working environment like rapid motion, forceful exertion, awkward posture or non-neutral posture, prolonged stationary postures, and vibration[6]. In terms of ergonomic adjustment in workplace assessment of Asian garment factories spectacled that most of the reported incidences in the back, neck, and shoulders are relatively high and most likely the result of working with constrained postures, poorly designed workstations, and non-ergonomic tools [8,9].

Study in different country like Denmark, Botswana and Slovenia illustrated higher prevalence among sewing machine operators [8]. High prevalence rates of difficulties in the upper body (the neck, shoulders, arms, hands, and back) were also detected by others [9]. In support of this a conducted research in Srilanka, musculoskeletal problems were stated by 15.5% of these workers; among those with musculoskeletal problems, 57.3% (n = 94) complained of back pain [10]. In addition other common symptoms were found pain (69.23%), weakness (38.46%), and stiffness (23.08%) of the affected parts [7].

Methods

A descriptive Cross-sectional study was conducted to determine the musculoskeletal symptoms among female garments workers, at Ashulia, Dhaka, Bangladesh. Study was conducted over the four months from September to December

2016. The study populations consisted of female whose age range were 16 - 45 years. The total sample size was 150 and to select the sample purposive sampling technique were adopted. Visual analog scale as a pain measurement tool used for categories (mild, moderate and severe) the pain severity. Data were collected by Face to face interview with a pretested semi-structured questionnaire. English questionnaire also translated into Bengali for the better understanding of the respondents. Prior to the data collection, verbal 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 written consents & interview simply they were excluded from the study. Participants had the right to withdraw themselves from any stage 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. To determine the association among the variables chi square test were observed in cross tabulation. The data were analyzed by using the software SPSS 16th.

Results

This descriptive cross sectional study was exploring the musculoskeletal symptoms of female garments workers. Total number of 150 respondents was interviewed using an interviewer semi structured questionnaire. The relevant findings are presented below. Age of the respondents 16-25 years were 57.3% (n=86) and mean age 26.91 ± 8.774. Total 64.7% (n=97) and 30% (n= 40) were married and unmarried respectively. 40% (n=60) of the participants, literacy was up to class eight level. Half (52% n=78) of the contributors had 2-5 years' job experiences (Table 1). Analysis showed that 59.3% (n=89) sewing worker and 40.7% (n=61) non-sewing worker. 60% (n=90) respondents mostly poses sitting posture. 57.3% (n=86) respondents were working more than 10 hours per day. 79.3% (n= 119) and 80.7% (n=121) were not adjusted working tools and furniture of body not adjusted respectively. More repetitive movement observed in both upper limb 56.7% (n=85). Nature of work and working posture are significant .009 and .027 respectively (Table 2). Among the 150 respondents 88 female garments workers

Table 1: Distribution of the respondents according to the Socio-demographic characteristics

Variable	Characteristics	Number	Percentage
Age years	16-25	86	57.3
	26-35	31	20.7
	36-45	33	22
Marital status	Unmarried	40	30
	Married	97	64.7
	Divorced	6	4
	Widow	2	1.3
Education level	Illiterate	8	5.3
	Primary	48	32
	Class eight	60	40
	SSC	15	10
	HSC	15	10
	Others	4	2.7
Job experiences years	0-1	23	15.3
	2-5	78	52
	6-14	49	32.7
	Total	**150**	**100**

Table 2: Distribution of the respondents according to the pattern of working condition and characteristics of work place

Variable	Characteristics	Number (%)	Musculoskeletal problems		P value
			Yes	No	
Nature of work	Sewing worker	89 (59.3)	60	28	.009
	Non sewing worker	61 (40.7)	29	33	
Working posture	Sitting	90 (60)	61	29	.027
	Standing	27 (18)	12	15	
	Sitting and standing	16 (10.7)	9	7	
	Sitting, standing, walking	17 (11.7)	6	11	
Working hours	Below 10	64 (42.7)	41	33	.247
	Above 10	86 (57.3)	47	39	
Working tools adjusted with body	Yes	31 (20.7)			
	No	119 (79.3)	--	--	--
Furniture adjusted with body	Yes	29 (19.3)			
	No	121 (80.7)	--	--	--
Repetitive movement	Both upper limb	85 (56.7)			
	Both upper limbs and right lower limb	65 (43.3)	--	--	--
Total		**150 (100)**			

significantly (P= .000) suffered from musculoskeletal problem most of the affected body parts were lower back 24.7% (n=37), neck14% (n=21), Shoulder 5.3% (n=8), upper back 2.0% (n=3), elbow 2.0% (n=3), wrist 4.7% (n=7), hip 0.7% (n=1), knee 2.0% (n=3) and ankle 3.3% (n=5) (Table 3). Study found that from 88 respondents 43.4% (n=65) were face their pain 7 to 12 month, 13.3% (n=20) were face their pain in between 2-3 years, 2 .0% (n=3) were face their pain in between 4-5 years. Treatment received medication 36% (n=54), physiotherapy 10% (n=15) and prognosis of the garments worker improved 23.3% (n=35), remain unchanged 20.7% (n=31), worse 14.7% (n=22) (Table 4). Garments worker who maintained erect (P=0.000) and faulty (P=0.002) posture demonstrated different musculoskeletal symptoms (P=0.000) with varied magnitude of pain (P=.002) were statistically significant (Table 5). Analysis demonstrated that 58.7% (n=88) respondents suffered from musculoskeletal symptom's and 41.3% (n=62) not suffered from musculoskeletal symptom's (Figure 1). From this study 81.3% (n=122) were not maintain erect posture and lowest number of respondent follow erect posture around 18.7% (n=28) (Figure 2). Analysis illustrated that respondent were exposed with faulty posture-51.3% (n=77), forward bending, 18.7% (n=28), bending right 8% (n=12), backward bending and bending left 3.3% (n=5), (Figure 3). Among 88 respondents who suffered from pain 28.7% (n=43). Numbness 4% (n= 6), tingling 10.7% (n=160), cramp 2.7% (n= 4), aching 10.7% (n=16), stiffness 2.0% (n=3), no pain 41.3% (n=62), (Figure 4). Severity of pain among 88 respondent's frequency were 36.7% (n=55), suffer from moderate pain 20.7% (n=31), suffered from mild pain and 1.3% (n=2) suffer from severe pain (Figure 5).

Table 3: Distribution of the respondents according to site of pain

Variable	Characteristics	Number (%)	Musculoskeletal problems		P value
			Yes	No	
Site of pain	Neck	21 (14)	21	0	.000
	Shoulder	8 (5.)	8	0	
	upper back	3 (2)	3	0	
	Elbow	3 (2)	3	0	
	Lower back	37 (24.7)	37	0	
	Wrist/Hand	7 (4.)	7	0	
	Hip/Thigh	1 (0.7)	1	0	
	Knee	3 (2)	3	0	
	Ankle/Feet	5 (3.3)	5	0	
	No pain	62 (51.3)	0	62	
Total		**88 (58.7)**			

Table 4: Distribution of the respondents according to the musculoskeletal symptoms

Variable	Characteristic	Number	Percentage
First experience Musculoskeletal symptoms	7 days to 12 month	65	43.4
	2-3 Years	20	13.3
	4-5 Years	3	2
Treatment received	Medication	54	36
	Physiotherapy	15	10
	Others	3	2
	No treatment	16	10.7
Prognosis	Improve	35	23.3
	Worse	22	14.7
	Unchanged	31	20.7
	Total	**88**	**58.7**

Table 5: Distribution of the respondents Association between variable factors and musculoskeletal problems

Variable	Characteristic	Musculoskeletal problems		P value
		Yes	No	
Maintain erect posture	Yes	2	86	.000
	No	26	36	
Type of faulty posture	Forward bending	41	36	.002
	Backward bending	10	2	
	Bending to right	23	5	
	Bending to left	10	1	
Musculoskeletal Symptoms	Pain	43	0	.000
	Numbness	6	0	
	Tingling	16	0	
	Cramp	4	0	
	Aching	16	0	
	Stiffness	3	0	
	No pain	0	62	
Severity of pain	Mild	31	0	.000
	Moderate	55	0	
	Severe	2	0	
	No symptoms	0	62	

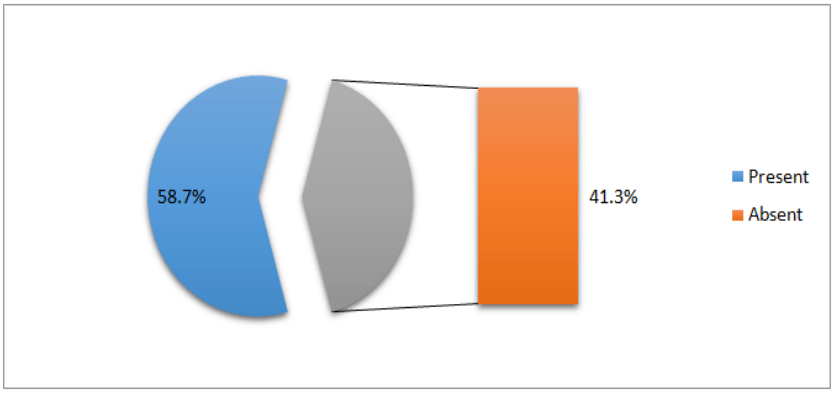

Figure 1: Distribution of respondents by musculoskeletal symptom

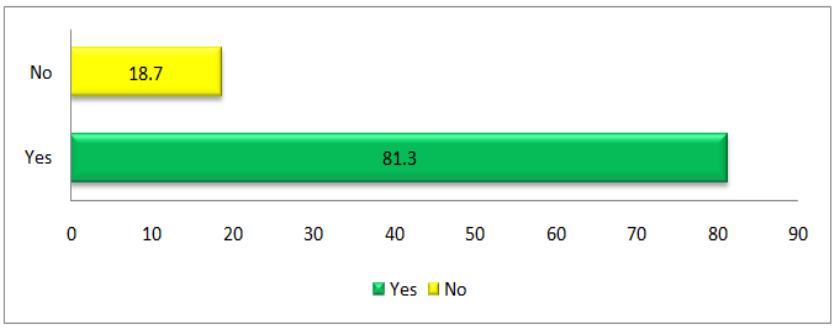

Figure 2: Distribution of respondents by maintaining erect posture

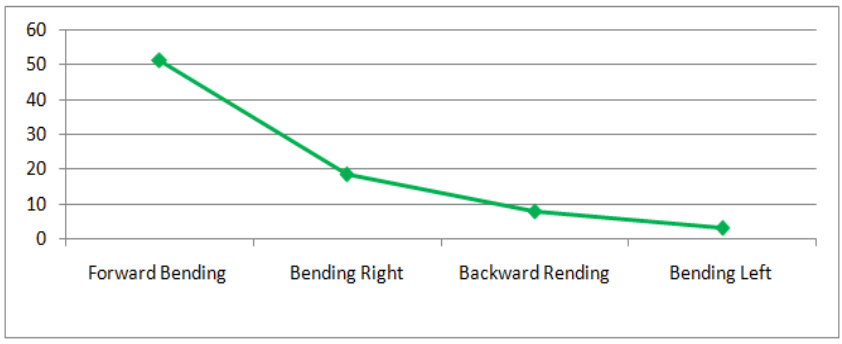

Figure 3: Distribution of respondents by presence of faulty posture of the garments workers

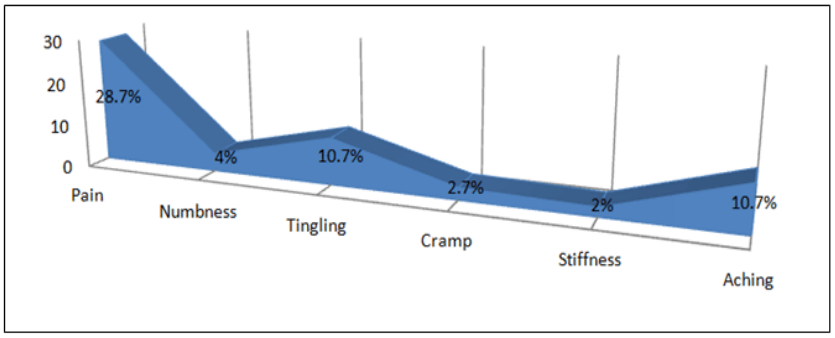

Figure 4: Distribution of respondent's musculoskeletal symptoms.

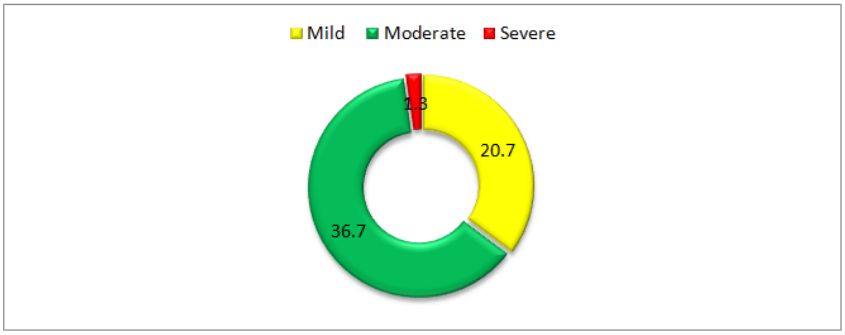

Figure 5: Distribution of the respondents according to severity of pain

Discussions

Current study depicts that 57.3% female participants were younger, whose age range in between 16-25 and mean age ± SD 26.91 ± 8.774. Interestingly, lions portion among the participants were married around 64.7%. Considering literacy, only 10% completed HSC but the 40% passed class eight. Most of their job experience was within 2 to 5 years (Table-1). The previous study describe the demographic details were (mean} SD): age, 34.5 ± 11.5 [11]. The mean age of the study participants was 30.53 years [12]. In a study, total of 150 participants were observed where females were more in number as compared to males Female swing 98.57% (n=69). Total female 78.67 (n=118). Age of sewing Mean ±SD 30.59±7.89 [13]. The average age of the 39 workers assessed was 29 years with a range from 19-44; 62% were female. It was observed from that musculoskeletal problems were more common among workers among workers aged 35 years and above (95%) compared to workers with age less than 35 years (71.4%) [14].

In the present study, 59.3% participants were swing machine operator and 40.7% non-swing operator and which was statistically significant (P=0.009). Operators mostly adopted poor posture in working environment such as 60% prolong sitting and 18% standing (P=0.027). 57.3% worker worked more than 10 hours (P=0.247). 79.3% participanes working tools were

maladjusted with the body. In considering egronomical status, not only 79.3% tools were unadjusted with the body but also 80.7% furniture was not adjusted with the body properly. 56.7% performed with both upper limbs in gripping clothes in different direction and 43.3% used both hand and right foot (Table 2). Compared with a Cambodian study sewing machine worker prolong sitting and non-sewing operator worked 10 to 12 hours per days and repeated or forceful motion [6]. Another study showed that Malaysian sewing operators had repetitive tasks awkward static posture, awkward grips and hand movement pulling, lifting, pushing, in India 65.8% of the workers were working in those sections which involved prolonged hours of standing [8,12].

In our current study, contributors stated common site of the experiencing pain which was also statistically significant (p= 0.000) where among the different body regions the highest in lower back 24.7%, next to the neck 14%, followed by shoulder 5.3% upper back 2.0%, elbow 2.0%, wrist 4.7%, hip 0.7%, knee 2.0%, ankle 3.3% (Table 3). Norwegian study showed that lower back 30%, neck 15% and shoulder 11% [15]. In Taiwan lower back 19.7%, neck 10%, Shoulder 17.4% and wrist 10%. In China participations complain lower back 22.0%, neck 16.7%, Shoulder 27.3% [16]. Interestingly, all three studies found the same pattern in site of pain were highest in three regions like lower back, neck and shoulder. Somewhat different result found in an Indian study where lower back 41.03% and neck 64.10%, but another study of India, where they found the most common sites affected in neck 32.1%, knee 28.7% and low back (26.6%) [7,12]. Almost similar results found other research in Bangladesh were respondents who had musculoskeletal disorders and pain in different sites whereas neck-36.7%, lower back-22.2%, shoulder joint-18.9% and rest of them was pain in elbow, upper back and in hip joint [4]. Comparison with automobile mechanic professionals, estimated that 77% troubled with musculoskeletal symptoms and he most affected body parts were lower back 67% and then the hip 53% [17].

Study reported regarding the first experience of MSK symptoms from 7 days to 12 months around 43.4 % and only 2% reported in 4-5 years. In terms of receiving treatment, most of them about 36% were intake medication from the advice of doctor and fewer 10% received physiotherapy treatment from physiotherapist. As the consequences, only small number 23.3% were improved and little bit lower 20.7% noticed remain unchanged but 14.7% noted condition become worsen from the past (Table 4). In other study with the large sample size 1058 in garment factory workers employed in the free trade zone of Kogalla, Sri Lanka where 164 (15.5%) female workers reported musculoskeletal symptoms occurring more than 3 times or lasting a week or more during the previous 12-month period in subjects having 5 or more years of work experience (92.4%) compared to those with less than 5 years of experience (70.9%) [18,14]. In Nigeria participant's health seeking behavior most of them prefer self-medication 31.4% and herbal 17.8% [19].

The current study showed that 58.7% respondent was musculoskeletal symptom whereas only 41.3% did not have any symptoms. The majority of musculoskeletal symptoms were perceived as work- related (Figure-1). In MSKC where proper maintaining of the posture accordingly was an important factor to arise the symptoms but in our study 81.3% did not maintain erect posture (p=0.000) (Figure 2). Significantly (P=.000) adapted percentage of faulty posture among the workers, 51.3% possessed forward bending position in work (Figure 3). Considering symptoms (p=0.000), both tingling sensation and aching symptoms were reported from equal percentage 10.7% respondent, even though the maximum 28.7% perceived and noticed pain (Figure 4). Regarding severity of pain (P=0.000), 36.2% ached from moderate pain, 20.4% suffered from mild pain, and 1.3% grieved from severe pain (Figure 5). Almost similar 60.7 and 57.5% percentages found in other study in Bangladesh [20, 21]. It was higher 69.64% and 77.6% in our neighboring country India, but surprisingly lower 39.5% in Taiwan likewise European nation 49% in Norway[7,12,22]. In Africa higher trained about 69% observed in Nigeria [19]. In respond form the other research, severity of the pain 38.5% was mild pain, 35.2% was moderate pain and 2.4% was severe pain (P=.000) [20]. Among them low back pains (78.2%) were found more common, followed by ankle / feet pain (76.3%) and neck pain (73.7%) during the last 7 days [12].

Conclusion

Study suggested that the garments workers in different inadequate setting was affected considerably and need more suitable modern technology in terms of adopting operator's appropriate posture and adjustable ergonomics, so that the recent and upcoming devastating effect of musculoskeletal disorder among the productive group can be avoided. Further study can be done in a larger scale with number of population.

References

1. ASM Hoque, SMT azim Ahmed, SK Paul and MS Parvez. Topsis based ergonomic analysis on work related musculoskeletal disorders of sewing machine operators: International Journal of Advances in Engineering & Technology. 2015;8:728-738.
2. Shaheen Ahmed and Mohammad Zahir Raihan. Health Status of the Female Workers in the Garment Sector of Bangladesh: Journal of The Faculty of Economics and Administrative Sciences: 2014;4:43-58.
3. Anthony D. Woolf and Bruce Pfleger. Burden of major musculoskeletal conditions. Special Theme - Bone and Joint Decade 2000-2010, Bulletin of the World Health Organization. 2003;81(9):646-656.
4. Juan A. Jover, Cristina Lajas, Leticia Leon, Loreto Carmona, Jose A. Serra, Agustin Reoyo, Luis Rodriguez-Rodriguez and Lydia Abasolo. Incidence of Physical Disability Related to Musculoskeletal Disorders in the Elderly: Results From a Primary Care–Based Registry. For the acute physical disability in the elderly group. Arthritis Care & Research: 2015;67 (1):89–93. Doi: 10.1002/acr.22420
5. Girish M Mody, Anthony D Woolf, and Aaron Bearel . The Global Burden of Musculoskeletal Disorder. Business Briefing: European Pharmacotherapy 2003.
6. Leap Van, Naesinee Chaiear, Chat Sumananont and Chheng Kannarath. Prevalence of musculoskeletal symptoms among

garment workers in Kandal province: Cambodia Journal of Occupational Health: 2016;58(1):107–117. Doi: 10.1539/joh.15-0100-FS

7. Tushar Kanti Saha, Aparajita Dasgupta, Arindam Butt, and Onkarnath Chattopadhyay. Health Status of Workers Engaged in the Small-scale Garment Industry How Healthy are: They, Indian journal of community medicine: 2010;35(1):179-182. Doi: 10.4103/0970-0218.62584
8. R Nawawi, BM Deros, DDI Daruis, A Ramli, RM Zein and LH Joseph. Effects of payment method on work control, work risk and work-related musculoskeletal health among sewing machine operators: Journal of Mechanical Engineering and Sciences: 2015;9:1705-1713. Doi: 10.15282/jmes.9.2015.16.0164
9. B Sarder, Sheik N Imrhan, and Nabeel Mandahawi. Ergonomic workplace evaluation of An asian garment-factory: Journal of Human Ergonomical.: 2006;35(1-2):45-51.
10. De Silva PV, Lombardo S, Lipscomb H , Grad J , Ostbye T. Health status and quality of life of female garment workers in Sri Lanka: Galle Medical Journal. 2003;18(1): 1-7. Doi: 10.4038/gmj.v18i1.5510
11. Iman Dianat,Mohammad, Ali Karimi. Musculoskeletal symptoms among handicraft workers engagedin hand sewing task: Journal of Occupational Health. 2016;58(6):644-652.
12. Sreesupria Purushothaman Ravichandran, Pankaj Badamilal Shah, Kannan Lakshminarayanan,Abinayaa Purushothaman Ravichandran. Musculoskeletal problems among workers in a garment industry, at Tirupur, Tamil nadui: Indian Journal of community health: 2016;28(3):269-274.
13. Santosh Metgud, Mangala Pai and Anand Heggannavar. Musculoskeletal Risk Levels and Discomforts In Garment Factory Workers-An Observational Study: Asian Journal of medical and health research: 2017;2(6).
14. DL Holness, D Beaton, RA House. Prevalence of upper extremity symptoms and possible risk factors in workers handling paper currency: Journal of Occupational medicine. 1998;48(4):231-236. Doi: 10.1093/occmed/48.4.231
15. R H Westgaard, T Jansen. Individual and work related factors associated with symptoms of musculoskeletal complaints. II Different risk factors among sewing machine operators: British Journal of Industrial Medicine. 1992; 49(3):154-162.
16. Stephen Bao, Jorgen Winkel. Prevalence of musculoskeletal disorders at workplaces in the people's republic of china: International journal of occupational safety and ergonomics: 2000;6(4):557-574. Doi: 10.1080/10803548.2000.11076472
17. Shamima Akter, Mahammad Mominur Rahman, Shipra Mandal, Nazmun Nahar. Musculoskeletal symptoms and physical risk factors among automobile mechanics in Dhaka, Bangladesh: South East Asia Journal of Public Health. 2016;6(1):8-13. Doi: 10.3329/seajph.v6i1.30338
18. Lombardo S, De Silva PV, Lipscomb H. Musculoskeletal symptoms among female garment factory workers in Sri Lanka: International journal of occupational and environmental health. 2012;18(3):210-219. Doi: 10.1179/1077352512Z.00000000029
19. Akinpelu, Oyewole, Odole, Ogunbamowo. Work-related musculoskeletal pain and health-seeking behavior among Nigerian sewing machine operators: Tropical Journal of medical Research. 2016;19(2):152-154. Doi: 10.4103/1119-0388.185446
20. Jahan, Das, Mondal. Prevalence of Musculoskeletal Disorders among the Bangladeshi Garments Workers: Sikkim Manipal University Medical Journal.2015;2(1).
21. Sk. Akhtar Ahmad, MH Salimullah Sayed, Manzurul Haque Khan, MH Faruquee, Nahid Yesmin, AFM Sarwar, et al. Musculoskeletal disorders and ergonomic factors among the garments workers', Journal of preventive and social medicine: 2007;26(2):97-110.
22. How-Ran GUO, Ya-Ching CHANG, Wen-Yu YEH, Chun-Wan CHEN and Yuliana L GUO. Prevalence of Musculoskeletal Disorder among Workers in Taiwan: Journal of Occupational Health. 2004;46(1):26–36.