



Musculoskeletal Disorders among Male Tailors in Clifton Karachi Pakistan

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Authors' contributions

This work was carried out in collaboration among all authors. Author AD designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SB, AS, ZIS, HK, AAJ and AA managed the analyses of the study and managed the literature searches and data collection. All authors read and approved the final manuscript.

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ABSTRACT

Objective: The study was done to assess the prevalence of musculoskeletal disorders among the workers (tailors) who are working in tailoring occupation and see if they ever consult physician.

Methodology: A cross sectional survey was conducted in various large markets of Clifton area of Karachi city administration from February 2017 to December 2017. Sample size of 278 tailors was chosen by random sampling technique. Nordic questionnaire was used to assess the musculoskeletal symptoms among subjects that include the bio data of respondent, factors

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associated with the symptoms, pain symptoms, and other problems faced due to symptoms through self-reported questionnaire. The collected data was inputted and analyzed in SPSS v16 and considered significant p value of <0.05 .

Results: 78.4% of the participants were observed for musculoskeletal disorder during last 12 months. From total of 278 subjects included in the study 34.9% subjects were in the age group 31-40 years, and majority of them (36.7 %) working from 6- 10 years, and 87.1 % reported working more than 8 hours per day . The most affected anatomical body part was lower back which is 26.6% followed by upper back 18.3 %, neck 12 %, knees 13.3%, ankle 11 %, wrist 7.3%, shoulder 6.9 %, hips 2.3% and elbow 2.3%. 72 (33%) individual ever seen a physician while 146 (67 %) not ever seen a physician. There was statistically significant association between the pain and number of working years ($p <0.001$), and also statistically significant association between working hours per day and pain among the workers ($P =0.002$). There was no association between the age and sleeping disturbance due to pain.

Conclusion: work related musculoskeletal disorders are high among the tailors and most common complaints include lower back. Age, working years, working hours could predispose the work related musculoskeletal disorder among tailors. Improvement of work posture, ergonomic tools and further research has been recommended.

Keywords: Musculoskeletal; disorders; prevalence; male tailors; Karachi.

1. INTRODUCTION

Work related musculoskeletal disorders (WRMSDs) have been considered as the potential threats of major public health problems associated with unsafe work environments.

(WMSDs) is commonly experienced by sewing workers and large number of workers are at risk of developing WMSD. T R Allison, et al. reported that there is more musculoskeletal problems in Asians which include Bangladesh, India and Pakistan which is about 75% and 47% in African Caribbean [1].

According to WHO report, about 50 to 70% people formed work related musculoskeletal disorders while working in poor working situation [2]. Musculoskeletal disorders is one of the largest group of disorders among the work related disorders in the developing nations [3]. These problems are not the result of a single incident, but develop over time [4]. "Work-related musculoskeletal disorders are also known as Cumulative Trauma Disorder (CTD)" [5]. There are numerous risk factors that are responsible for MSD such as occupational ,medical and way of life [6].The most important risk factor for the developing of work related musculoskeletal disorder is the sedentary life style such as working in awkward position for lengthy time [3]. World health organization (WHO) global burden of disease report on bone and joint decade acknowledge the burden of musculoskeletal disorders around world [7], there is strong correlation between musculoskeletal disorder

and span of employment in work place [8]. In Europe, musculoskeletal disorders, especially of the back and upper limb, are the biggest single cause of incapacity for work, with direct costs amounting to between 0.5% and 2% of GDP [9]. In industrialized nations and industrial developing nations work related musculoskeletal disorders are categorized as one of the foremost cause of occupational injuries. However, work related musculoskeletal disorders are extremely serious in developing nations due to poor working conditions and inadequate ergonomics related program [6]. There is a greater burden of musculoskeletal disorders that can effect on individual, indirect cost, health system and social care system [10]. Work of tailoring, involves monotonous, repetitive shoulder rotation that performed in a sitting posture with upper back curved and head bent over the sewing machine thus the work is highly demanding and this requires a greater concern for accuracy [11]. Repetitive, sustained and powerful movements occurring after some time may affect the working of human soft tissues, consequently causing inflammation of the ligaments, tendons, and resulting to work related musculoskeletal disorder [5]. Some epidemiological studies identified that low level static exertions is a risk factor for the development of cumulative trauma disorders or repetitive strain injuries, due to increased exertion of force may affect human body and causes physical damages. Much work has been carried out in different occupations related to ergonomics and their issues. Study that was conducted in Nigeria 2015 showed that high prevalence of cumulative trauma disorder of

right hand in the form of contusion among custom tailors due to use of scissors [5]. Neck, forearm, shoulder, hand and low back are most commonly affected body parts and impacts on quality of life [12].

In 1999, About 1 million people took duration of the time far from work to treat and recover from work-related musculoskeletal pain or impairment of function in the low back or upper limbs [13]. Musculoskeletal disorder remains the foremost reason of work related illnesses [14]. Large number of cross sectional studies and few prospective studies gave a positive findings that provides a strong evidence for the musculoskeletal problems due to work [15].

There are studies that define reasons of musculoskeletal problems other than work such as carpal tunnel syndrome, increased body mass index or any history of past back pain and these factors may interact with other physical element [15]. Due to non-availability of ergonomically design, prolong working in awkward position may affect vision, muscles of upper back, neck, shoulder, wrist, lower back and cause the visual problems and musculoskeletal pain and discomfort [16]. Work related musculoskeletal disorders have been reported as different in different working groups [3]. The increased prevalence of musculoskeletal symptoms are observed in the lower extremities, neck, back, shoulder, hands, and fingers [17]. These disorders may execute a significant financial burden in compensation cost, productivity and lost incomes and reasonable work related cost which is 50 dollars annually but conservative cost may vary [13].

This model shows the stages of disability, with the base comprises of workers with no symptoms of MSD, some workers with MSD not seeking medical treatment and some seeks treatment but

no any work disability. Some of them progress to short term disability or chronic work disability and functional impairment when the risk reduce then there will be an improvement of symptoms and workers comes down to the lower level at asymptomatic level. Number of personal, therapeutic interventions, non-work related and work related exposure to psychosocial and physical stressors, work place policies, medical co morbidities and other social reasons can mediate change between these levels. The risk factors play a predominant role in the shift from asymptomatic to symptomatic level that are different from the factors that influence the disability and prognosis among the workers who are symptomatic. Number of Literature suggested that biomechanical factors are more powerfully associated with initializing the MSD and transition from asymptomatic stage to symptomatic stage and modification of ergonomics in work place may play an important role in the faster return to work among those who are long term absent from work [18].

Prevention of work related musculoskeletal disorders might be a national priority of many countries. [19]. Incongruence of work with man or the other way around with poor work stances have caused hazardous problems with locomotive organ issues which has brought about formation of different mental, physical and economic burden, the impression of which can at long last be seen in the community. Age and sex of sewing machine workers of shoe producing industry in Iran have factually noteworthy relationship with work related musculoskeletal disorders (WMSDs) of the elbow and shoulder. According to study, done in Iran in 2004 in relation to the disease burden with risk factors, musculoskeletal disorder was among the second position after the cardiovascular disorders in the work related illnesses [20].

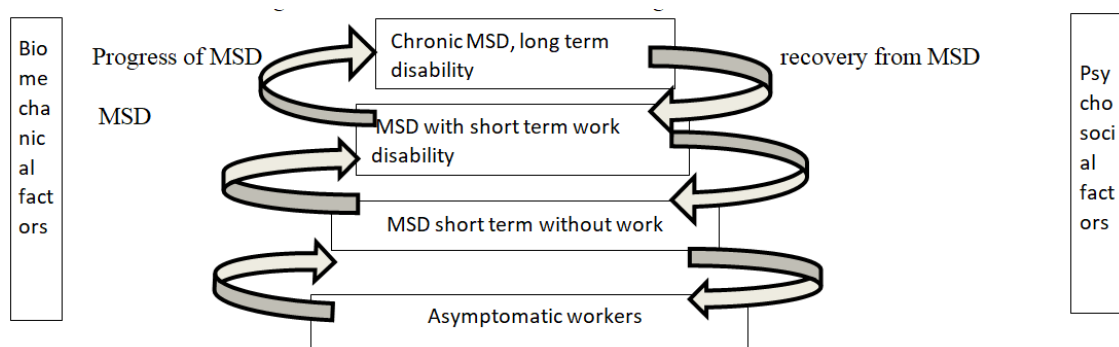


Fig. 1. Conceptual model of musculoskeletal disorders for professionals
[18]

Musculoskeletal disorders (MSD) are the most common cause of the severe long term discomfort and ill health influencing a huge number of individuals over the world in which osteoarthritis, back pain and rheumatoid arthritis are most common musculoskeletal disorders. In a large number of the developing nations, working individuals are essentially presented to various work related issues that may bring about a deterioration of their wellbeing, health and safety [21].

There was shortage of available literature on work related musculoskeletal disorder in sewing workers particularly in our country. Various studies have identified relatively high frequencies of musculoskeletal problems among sewing machine workers [11]. "Reasons are prolong static posture, poor posture, exertion on muscles for long term, poorly designed and maladjusted workstations contributed to such reported problems" [19]. In Pakistan, there has been no research conducted regarding MSD in tailors. Also there has been no efforts made regarding health guidelines or infrastructure for tailors or other work related musculoskeletal disorders (WMSDs). Therefore, this study was conducted to see the prevalence of musculoskeletal disorders among tailors and have they consulted doctors or received any treatment regarding musculoskeletal disorder.

The objective of this study is to assess the prevalence of musculoskeletal disorders among Tailors working in Clifton Karachi Pakistan.

2. METHODOLOGY

A sample of 278 male tailors was taken using simple random sampling technique. The study is quantitative in nature. Descriptive type cross sectional survey was conducted in different large markets of Clifton area (a wealthy seaside area) of Karachi city administration from September 2016 to December 2017 to assess the prevalence of work related musculoskeletal disorders among tailors in Clifton Karachi. Karachi is the most populated metropolitan city of the Pakistan and comprises of six districts, south, east, west, central, Korangi, Malir (AmerP, 2013) . Clifton is union council of district south and comprises of Bath Island and nine blocks. Block 1, Block 2, Block 3, Block 4, Block 5, Block 6, Block 7, Block 8, Block 9, and then did mapping of all Clifton blocks and markets of Clifton where sewing workers worked. Clifton's business centers are amongst the furthestmost high-end for

Pakistan, (District South, n.d.). It was observed that mostly markets where tailors worked are situated in the block 5, block 7, block 8, and block 9. So that samples taken from all these blocks. Six markets were randomly selected from these blocks. Tailors were told about the purpose of sampling and those who voluntary participated were asked to fill the questionnaire. Data were collected through close ended questionnaire which were modified from short version of standard Nordic questionnaire, used for work related musculoskeletal problems for assessing the symptoms in working population, questionnaire were taken from original paper Kuorinka et al., this questionnaire was used earlier in different study and found to be suitable and reliable for the assessment of prevalence of such musculoskeletal discomforts or disorder [19].

2.1 Data Analysis and Interpretation

After filling out the questionnaires from the tailors working in different markets of Clifton Karachi, then the gathered data were compiled entered and coded in statistical software SPSS version 20 for analysis. Mean and Standard deviation was calculated for age, duration of working hours/day and number of years since working. Frequency and percentage were calculated for title of master, musculoskeletal disorder and site of pain. Stratification with respect to age, duration of working hours/day and number of years since working. Chi-square test was applied to see the association. P-value <0.05 taken as significant.

3. RESULTS

As 278 subjects were selected for the study with 100% response rate. And all subject were males as study were conducted on male tailors. Table 1 shows that Most of subjects were in age group of category 31-40 years (34.9%), followed by age group 21-30 (33.8%), (17.6%) were in age group more than 40 and 13.7% were in age group less than 20 ,title of respondent either master or worker, 65 (23.4%) were master and 213 (76.6%) were workers. Working years among the study subjects 102 (36.7%) working from 6- 10 years, 66 (23.6%) working from 11-15 years, 59 (21.2%) working from 1- 5 years and 51 (18.3%) working from more than 15 years. 242(87.1%) of the respondents in the study, work more than eight hours per days and 36 (12.9%) working less than 8 hours per day.

Table 2 shows that 218 (78.4%) subjects respond yes for pain due to work and 60 (21.6%) respondent no for pain during last 12 months.

And site of pain where highest percentage of lower back pain which is 26.6% followed by upper back 18.3%, neck 12%, knees 13.3%, ankle 11%, wrist 7.3%, shoulder 6.9%, hips 2.3% and elbow 2.3%.

When outcome variable i.e musculoskeletal disorder was stratified with respect to age, no of working hours/day and number of years since working, significant difference was observed, as shown in Tables 3-5.

4. DISCUSSION

In this study work related musculoskeletal disorder were common problem in tailors working in different markets of Clifton area of Karachi. In this study the prevalence of pain or discomfort due to work is 78.4% among the tailors. Study by Bandyopadhyay et al. In 2011 found that the prevalence of MSD among small scale garment industry workers were 78.5% [22]. As this finding compare with the study done in Delhi by Tushar et al., where the musculoskeletal pain among tailors were 70 %. [23]. While the study done in Nigeria by Akodu et al., in 2004 shows prevalence of work related musculoskeletal disorders were 92% among the sewing workers

Table 1. Socio-demographic characteristics of study participant, title, years of working and working hours among male tailors working in Clifton Karachi

Category of variables		Frequency	Percentage (%)
Age in years	Less than 20	38	13.7
	21-30	94	33.8
	31-40	97	34.9
	More than 40	49	17.6
	Total	278	100.0
Title (master n worker)	Master/ Cutter	65	23.4
	Tailor	213	76.6
	Total	278	100.0
Years of working	1-5	59	21.2
	6-10	102	36.7
	11-15	66	23.7
	More than 15	51	18.3
	Total	278	100.0
Working hours per day	Less than 8 hours	36	12.9
	More than 8 hours	242	87.1
	Total	278	100.0

Table 2. Prevalence of pain due to MSD among male tailors in Clifton Karachi (N=278)

Variable	Frequency	Percentage (%)
Pain		
Yes	218	78.4 %
No	60	21.6%
Total	278	100%
Site of pain		
Neck	26	12%
Shoulder	15	6.9%
Upper back	40	18.3%
Elbow	5	2.3%
Wrist	16	7.3%
Lower back	58	26.6%
Hips	5	2.3%
Knees	29	13.3%
Ankle	24	11%

Table 3. Prevalence of work related musculoskeletal disorder among male tailors in Clifton based on age

	Pain		Total Number (%)	Chi-square	
	Yes Number (%)	No Number (%)		Value	P value
Age					
<20	10(4.6)	28(46.7)	38(13.7)	1.06	<0.001
21-30	63(28.9)	31(51.7)	94(33.8)		
31-40	96(44)	1(1.7)	97(34.9)		
>40	49(22.5)	0(0%)	49(17.6)		
Total	218(100)	60(100)	278(100)		

Table 4. Prevalence of work related musculoskeletal disorder among male tailors in Clifton based on years of working

	Pain		Total Number (%)	Chi-square	
	Yes Number (%)	No Number (%)		Value	P value
Years of working					
1-5	19(8.7)	40(21.1)	59(21.2)	1.03	<0.001
6-10	84(38.5)	18(30)	102(36.7)		
11-15	64(29.4)	2(3.3)	66(23.7)		
>15	51(23.4)	0	51(18.3)		
Total	218(100)	60(100)	278(100)		

Table 5. Prevalence of WMSD among tailors working in Clifton area Karachi and association with working hours per day

	Pain		Total Number (%)	Chi-square	
	Yes Number (%)	No Number (%)		Value	P value
Working hours per day					
Less than 8 hours	21(9.6)	15(25)	36(12.9)	9.85	0.002
More than 8 hours	197(90.4)	45(75)	242(87.1)		
Total	218(100)	60(100)	278(100)		

in Nigeria (Akodu Ak1, 2004). A study conducted by AK et al. (2013) assessed the prevalence of MSD and workspace provided to the sewing machine. The results showed that prevalence rate of 78.6% of the families are affected by lower back pain Maduagwu et al. [24]. In the present survey work related musculoskeletal disorder among the worker prior to last 12 months were highest percentage of lower back pain which is 26.6%, followed by upper back 18.3%, neck 11.9%, knees 13.2%, ankle 11%, wrist 7.3%, shoulder 6.9%, hips 2.3% and elbow 2.3%. Same finding in Delhi were reported by Tushar et al., [23]. Same findings may be due to same working conditions. As the finding were also comparable with the other Study was done in Iran which published in 2012 was done on sewing workers in shoe factory that shows that in exposed group Neck 13.5%, Right elbow 4.9, left elbow 1.8%, both elbows 1.2%, right wrist 2.4%,

left wrist 1.8% , both wrists 3.7%, right shoulder 3.7%, left shoulder 1.2%, both shoulders 9.8, back 15.3% ,thigh 6.7%, right knee 1.2%, Left knee 0.61%, both knees 12.3%, ankles 6.7% , [6] and Study done in America, Boston which showed that sewing workers were highly influenced by upper extremities pain related to their work [25]. Difference in finding may be due to different study setting as present study done in small shops while comparable studies was done in industries. while on the other hand study by ArarsoTafese in Ethiopia reported the prevalence of work related musculoskeletal disorders among sewing workers in garment industry that reports that worker feels discomfort, pain were 51.7% shoulder disorder and 45% neck disorder [19]. In present survey most of the workers work for more than 8 hours per day which is 87.1% as compare to study done in Delhi shows the workers worked for 8 hours. This

difference may due to study in Delhi was done in industrial setting and may follow the rule of factory act. Data analysis showed that the some factors that are associated with pain such as working years and working hours per day. It was also observed in this study that workers working in the unsuitable condition and there is a little rest of the muscle of the back and wrist as just like in the computer workers (Akodu Ak1, 2004).

Our finding also showed that there is a significant association between the age of workers and pain, it was shown that those age more than 40 and those between the ages of 31 to 40 years have the high prevalence of complain of pain as compare to age less than 20 and 30. As finding compare with the study of King P, et al., support these finding which also showed that the older one report more pain than the younger ones [26], also results from study done in Kathmandu by Karen walker et al., showed that the musculoskeletal disorders are more in older age (55- 66 years) [27]. Study by Woldendorp et al., also showed that the rate of age related diseases is increased among the older adults, where the pain is often characterized as cardinal symptom [28]. While on other hand study by Wang P etal showed that elevated prevalence of upper body pain was associated with age less than 30 years (Wang P, 2007).

This study also shows that there is a significant association between the years of working in this occupation with pain, it was shown that those who working from 11- 15 years and more than 15 years have the high prevalence of pain. Comparing with the study by Banerjee et al., shows the same finding as the workers who work from more than 10 years had complain pain which 88.1% and those who worked from less than 10 years which is 39.5% [3]. In a study conducted by Mir Masih, et al., has also pointed that work related musculoskeletal disorder has increase with increase work record [20].

5. CONCLUSION

Generally there is a high prevalence of work related musculoskeletal disorders and the pain in lower back were most common complain among the tailors in the study area. The independent variable such as age, years of working and more working hours per day are associated with musculoskeletal disorders. Some individual also complains other health problems due to work other than musculoskeletal. Work related musculoskeletal disorders among tailors who

sewing the clothes are mainly due to awkward sitting position with bending their back and MSD among the master due to prolong standing position and cutting and ironing the clothes. Most of the worker do not ever visit a doctor for their problem so the periodic examination should be conducted and work related disorders are also under diagnosed in the country. Further research is needed to found a more precise relationship of characteristics of job and associated work practice that causative the disorders with a view to formulating the preventive approaches. Therefore endorsing workers contribution in efforts to improve the work place condition is critical section and enhance worker inspiration, greater knowledge of work experiences and added problem solving capabilities, and the work guidelines and sewing machine stations including sitting surfaces and work areas be adjusted as per the most recent ergonomic models.

6. LIMITATIONS

This study is cross sectional so that causal interpretation cannot be drawn from the study result.

- No ergonomic tools were assessed.
- Lack of some independent variables.
- No questions regarding the personal habits.
- No questions regarding the co morbid.
- No regression analysis done.

Self-administration questionnaire among majority of illiterate tailors might biased the results.

Confounder were not controlled in these analysis.

Non-Probability consecutive sampling technique was used thus generalizability of results is questionable.

7. RECOMMENDATIONS

Work related disorders must be included in the notifiable illnesses, this will help in collecting data regarding incidence of work related musculoskeletal disorders and work relatedness. Government should give appropriate attention to check, control and prevent the problems through proper channel of health and occupation safety policy implementation in our country. Furthermore training is a fundamental component for the any powerful health and safety program to identify work place environment factors that are associated with

musculoskeletal disorders. Occupational health administration should outline powerful working environment format in blend with an input review of the psychosocial workplace and individual preparing focusing on the working system to expand the effectiveness and profitability of representatives, and to limit the danger of repetitive injuries in all age groups.

Here these small work place are not regularized as their working hours are not as per labor law of Pakistan so small market place should be regularized and watched.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Study was conducted after obtaining the ethical approval from ethical review board of ShaheedZulfiqar Ali Bhutto Institute of Science and Technology.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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