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Frequency of Neck and Low Back Pain and its Associated Risk Factors among Textile Industry Workers

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Author`s Contribution

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A B S T R A C T

Background: Musculoskeletal symptoms due to industrial work have become a source of increasing concern in the past decades. This may lead to increased suffering in people as well as economic problems for the government and employees.

Objective: This study was conducted to assess the frequency of neck and low back and its associated risk factors in textile industry workers.

Materials and Methods: This cross study was conducted in different textile industries of Gujranwala. After taking informed written consent data was collected from 180 textile workers by using a questionnaire containing two parts.(i) Modified Nordic questionnaire (ii) personal information such as age, daily working hours, duration of working, participation in sports, smoking habit, body mass index, work and leisure activity limitation and family history of MSD. Inclusion criteria were workers from textile industries in Gujranwala, age between 20-45yrs, and only male workers. An exclusion criterion was workers from any other industry than textile, with neurological and mental disorders and handicapped. SPSS version 25 was used for data analysis. Chi-square and fisher's exact test was used to check the association between different variables.

Results: Out of 180 participants, 98(54.4%) were experiencing neck pain, 118(65.5%) were experiencing low back pain. Chi-square and fisher's exact test P-value is <0.001 of neck and low back pain with age, work and leisure activity limitation. < 0.05 for neck and low back pain with years of working in the field, participation in an exercise or sports > 0.05 is for neck pain and low back pain with smoking, BMI, family history of MSD, the position of work and daily working hours

Conclusion: The frequency of low back pain is more than neck pain in textile industry workers. There is strong association of neck pain and low back pain with age, work and leisure activity limitation. There is also an association of neck and low back pain with years of working and participation in sports and exercise.

Introduction

Musculoskeletal symptoms due to industrial work have become a source of increasing concern in the past decades.[1] It has resulted in increased suffering in people as well as economic problems for the government and employees. Round about 20 to 60 million people are employees in textile industries worldwide. The global textile manufacturing was estimated at around 872 billion USD in 2017 and is expected to be 1237.1 billion USD by 2025. In third world countries, the textile industry is one of the major sources to provide employment and reduce poverty as many foreign investors are interested to invest in the textile industry in such financial unstable countries because of the cheap labour.[2] To get benefit from the textile industry, the labour worker of such countries must be physically healthy because if they will be healthy then they can work energetically and can play a vital role in the development of their nation as well as can support their families.[3]

Musculoskeletal conditions are the most commonly self-reported problem that is work related.[4] Neck pain and some stiff feeling, radiating towards the shoulder and sometimes to the occiput that may be episodic or chronical in nature.[5] Pain in the low back area is described as a problem that is not specific. The LBP could be chronic or acute. Some level of discomfort may occur in or around the lumbosacral spine that may be caused by inflammation, degeneration, gynecological, traumatic and metabolic or some other vast types of disorders. Many low back pain episodes are disabling, hence making it one of the most costly professional health problem.[6]

To the best of author's knowledge, a lot of data is accessible on neck and low back pain but the main reason of conducting this study is to investigate the problems in a population that is mostly neglected as there is lesser data available on neck and low back pain in textile industry workers.[7]

Methodology

A cross-sectional study was conducted after the ethical approval of the institutes. A total of 180 workers were consecutively (a type of convenient sampling) recruited from different textile industries of Gujranwala. After taking informed consent, data was collected using a questionnaire containing two parts (i) modified Nordic questionnaire (ii) personal information such as age, daily working hours, duration of working, participation in sports, the position of work, smoking habit, body mass index, work and leisure activity limitation and family history of MSD. Inclusion criteria were workers from textile industries in Gujranwala, age between 20-45yrs because in greater age group neck and low back pain can be common due to many other reasons and only male workers. An exclusion criterion was workers fractures, any systemic illness and handicapped. This study was completed in 6 months i.e. 11 January 2019 to 11 July 2019.

SPSS version 25 by IBM was used for data analysis. For quantitative data frequency and the percentage was calculated. Chi Square and fisher's exact test were applied to test the hypothesis. P-value <0.05 was considered to be significant.

Results

In this study, the average age of the participant's was 34.6±8.23. Mean working hours were 11.2±1.35hrs/daily. The average duration of working was 16.87±8.11. Out of 180 interviewees, 98 (54.4%) were experiencing neck pain and 118 (65.6%) were experiencing low back pain.

As far as the weight of the participants is considered, out of 180 participants 12 (6.7%) were underweight, 109 (60.6%) had normal weight, 13 (7.2%) were overweight and 46 (25.6%) were obese.

Table I: Frequency and association of neck and low back pain with daily working hours, BMI, smoking habit and family history of MSD.

	Neck pain		P-value	Low back pain		P-value
	Yes (n=98) n (%)	No (n=82) n (%)		Yes(n=118) n(%)	No(n=62) n(%)	
Daily working hours			>0.05			>0.05
8hrs(20)	12(60)	8(40)		16(80)	4(20)	
10hrs(28)	18(64.3)	10(35.7)		20(71.4)	8(28.6)	
12hrs(132)	68(51.5)	64(48.5)		82(62.1)	50(37.9)	
BMI			>0.05			>0.05
Under wright(12)	6(50)	6(50)		7(58.3)	5(41.7)	
Normal weight (109)	60(55)	49(45)		72(66)	37(34)	
Over weight (13)	7(53.8)	6(46.2)		7(53.8)	6(46.2)	
Obese(46)	25(54)	21(46)		32(69.6)	14(30.4)	
Smoking habit			>0.05			>0.05
Smoker (37)	15(40.5)	22(59.5)		21(56.8)	15(43.2)	
Nonsmoker(128)	74(57.8)	54(42.2)		87(68)	41(32)	
Previous smoker(15)	9(60)	6(40)		10(66.7)	5(33.3)	
Family history of MSD			>0.05			>0.05
Yes (15)	11(73)	4(27)		12(80)	3(20)	
No(165)	87(57.8)	78(47.3)		106(64.2)	59(35.8)	

In the present study, 37(20.6%) were smokers, 128(71.1%) don't smoke and 15(8.3%) were previous smokers. In the current study, 126(70%) interviewees never play sports or do exercise, 33(18.3%) play sports and do the exercise once a month and 21(11.7%) play sports or do the exercise once a week. In this study, 157 (87.2%) used to work in a standing position while 23 interviewees (12.8%) worked in a sitting position.

Table I shows that P-value for chi-square and fisher's exact test was found to be > 0.05 for neck and low back pain along with smoking, BMI, family history of MSD and daily working hours which showed that there is no association between neck and low back pain with above-mentioned factors.

Table II shows that P value was <0.001 for neck and low back pain along with age work and leisure activity limitation which showed that there is a high association of neck and low back pain with age, work and leisure activity limitation.

Table III shows that P-value was < 0.05 for neck and low back pain with years of working and participation in exercise or sports which showed that there is weak association between neck and low back pain with years of working and participation in exercise or sports.

Discussion

In the present study, the incidence of neck pain in textile industry workers was observed to be high i.e. 54.4%. Similarly, the study was done in India which also showed high frequency(67.86%) of neck pain in male textile industry workers.[8] In the current study, 76.4% of participants were those whose work activity was also reduced due to their neck pain, while 79% of participants were those whose leisure activity was also got reduced. Similarly, a study conducted in Sweden also showed work and leisure activity limitation in textile industry workers due to neck pain.[9]

In 2015, Iman Dianat et al conducted a research study that showed no association between neck pain and smoking.[10] Likewise, in this study, it was found that there is no association between neck pain and smoking. However, in 2014 Chakrabarty et al conducted a research study in west Bengal on textile industry workers which showed an association between neck pain and age.[11] In the same way, a strong association between age and

Table II: Frequency and association of neck and low back pain with age, work activity and leisure activity limitation

Independent Variables (n)	Neck pain		P-value	Low back pain		P-value
	Yes (n=98) n (%)	No (n=82) n (%)		Yes(n=118) n(%)	No(n=62) n(%)	
Age			<0.001			<0.001
20-25(38)	8(21)	30(79)		10(26.3)	28(73.7)	
26-35(49)	25(51)	24(49)		23(46.9)	26(53.1)	
36-45(93)	65(69.9)	28(30.1)		85(91.4)	8(8.6)	
Work activity limitation			<0.001			<0.001
Yes(110)	84(76.4)	26(23.6)		108(98.2)	2(1.8)	
No (70)	14(20)	56(80)		10(14.3)	60(85.7)	
Leisure activity limitation			<0.001			<0.001
Yes (119)	94(79)	25(21)		110(92.4)	9(7.6)	
No (61)	4(6.6)	57(93.4)		8(13.1)	3(86.9)	

Table III: Frequency and association of neck and low back pain with years of working in the field and participation in exercise and sports

Independent Variables (n)	Neck pain		P-value	Low back pain		P-value
	Yes (n=98) n (%)	No (n=82) n (%)		Yes(n=118) n(%)	No(n=62) n(%)	
Years of working			<0.05			<0.05
0-7yrs(30)	8(26.7)	22(73.3)		8(26.7)	22(73.3)	
8-15yrs(40)	20(50)	20(50)		22(55)	18(45)	
>15yrs(110)	70(63.6)	40(36.4)		88(80)	22(20)	
Exercise/sports			<0.05			<0.001
Never(126)	77(61.1)	49(38.9)		98(77.8)	28(22.2)	
Once a week (21)	5(23.8)	16(76.2)		4(19)	17(81)	
Once a month(33)	16(48.5)	17(51.5)		16(48.5)	17(51.5)	

intensity of neck pain was found in the present study.

In this research study, no association was seen between neck pain and daily working hours but was a weak association between neck pain and years of working in the field of textile industry workers. Likewise, a research conducted by Hossain et al in 2016 also found no significant association between neck pain and daily working hours but that study found an association between neck pain and years of working in the textile industry workers.[12]

Kumail et al researched the factory of Sahiwal and found an association between neck pain and work and leisure activity limitation.[7] Similarly in this research association was found between neck pain and work and leisure activity limitation. In 2015, Prabha Thangaraj et al conducted the research which showed no association between neck pain and working position.[13] Just like that, no association between neck pain and the working position was found in this research.

Association between low back pain and the working position was found in the present research. Likewise, are search conducted in India also showed an association between low back pain and working position.[13]

In the current research, no association was seen between neck pain and low back pain with body mass index (BMI). Similarly, in 2019research conducted by Iwan Muhamad Ramdan et al also concluded that there was no association between BMI and neck pain or low back pain.[14]

Tiwari et al conducted research and found no association between musculoskeletal symptoms and family history.[6] In the same manner, in this research, no association was seen between family history of musculoskeletal disorders (MSD) and neck pain/low back pain in textile industry workers.

In the present study, 65.6% was the frequency of low back pain. Likewise, research conducted in India in 2014 found a 68% frequency of low back pain in textile workers.[11] P. Paudyal et al researched that showed association between age and incidence of low back pain.[15] Similarly in this research association was found between age and occurrence of low back pain and between age and intensity of low back pain.

No association was seen between low back pain and smoking in the current research. On the other hand association was found between low back pain and smoking in the research conducted by Mostafa Ghaffari et al in Iran.[16] In 2014, Santu Durlov et al conducted research that showed that there was no association between low back pain and daily working hours.[11] Likewise in this research, no association was seen between low back pain and daily working hours. Research conducted in west Bengal showed an association between low back pain and years of working in the field.[11] Similarly, in the present research association was seen between low back pain and years of working in the field.

Conclusion

Contrast the frequency of low back pain is more than neck pain in textile industry workers. There is strong association of neck pain and low back pain with age, work and leisure activity limitation. A weak association of neck and low back pain with years of working and participation in sports and exercise was also found. However, there is no association of neck and low back pain with smoking, family history of musculoskeletal disorders, position of work and daily working hours.

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Limitations: The main limitation of this study was that the data was collected only from one city i.e. Gujranwala. In order to make the results generalized it is recommended that in future such study should be conducted in multiple cities of Pakistan.

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