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ORIGINAL ARTICLE

Association Between Body Posture and Incidence of Work-Related Musculoskeletal Disorders (MSDS)

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ABSTRACT

The paper seeks to highlight the most important agronomical risk factor 'Posture' as the major contributors for the musculoskeletal disorders in handicraft sector.

Methodology: The sample size calculated was 75. The questionnaire was comprised of multiple choice options. Questionnaire will include part Braggs Posture Chart and part Nordic Musculoskeletal Questionnaire-Extended. The data was collected by questionnaire form set on paper. The purpose of the study was delivered verbally among the participants and written consent was also taken.

Results: Poor and fair posture was noticed in all regions. Trouble in neck, shoulder, wrist, and lower back in last year was 54.7%, 64%, 56% and 64%. Trouble in last week in neck, shoulder, wrist and lower back was 56%, 54.7%, 54.7% and 60%.Association between posture and musculoskeletal disorders was checked by chi square test which showed significant association as p-value.

Conclusion: It is concluded by the results that there is a significant association between the posture and the musculoskeletal disorders in the handicraft sector. The association varies with the regions of body involved and the type of occupation.

Keywords: Handicraft sector, work related musculoskeletal disorders, posture

INTRODUCTION:

Pakistan has a 7000-9000-year-old culture. Pakistan's industrial industry includes handicrafts. 65% of the people lives off handicrafts[1] Most skilled handcraft enterprises in our nation are expanding without a good strategy and with fewer OHS facilities. Poor working conditions and posture expose workers to dangers and physical concerns. Since the 18th century, non-neutral posture has caused musculoskeletal diseases[2]

Musculoskeletal illnesses are caused by inappropriate sitting and working posture and impact muscles, tendons, ligaments, cartilage, soft tissues, and joints. Incorrect posture, working height, and machine design can cause discomfort and tiredness[3] Bone, joint, or muscle diseases that primarily affect the back are more common than upper limb and lower limb ailments, according to data. The issues affecting the lower limbs are more serious than those affecting the upper limbs[4]

Occupational musculoskeletal diseases are frequent in the handicraft industry, with prevalence rates of work-related MSDs ranging from 28 percent to 96 percent during a one-year period. These health issues vary from modest aches and pains to significant medical diseases that might result in lifelong impairment[5] The most common MSDs are low back pain, upper limb disorders like lateral epicondylitis, shoulder impingement syndrome, carpal tunnel syndrome, brewers arm, threaders wrist, cervical pain, kyphosis, scoliosis, anterior pelvic tilt, excessive flattening of lumbar spine etc. MSDs can be classified in major regions; neck, Upper limb musculoskeletal disorders, Trunk and Lower limb musculoskeletal disorders[6]

Angles between body segments determine working posture. Working posture impacts musculoskeletal load, which affects musculoskeletal sickness. It illustrates how size and posture affect dysfunctions[7] A departure from the typical aligned posture is caused by poor posture. As a result, normal biological functions are disrupted, which can result in malfunctions and illnesses. Non-neutral postures may be classified according to different perspectives on the body such as lateral view and anterior view. Also, poor posture may cause secondary deformities and compensatory postural defects, high fatigue and energy expenditure, decrease both respiratory and circulatory efficiency[8]

MATERIAL AND METHODS

This was a cross sectional study**.** Cases were enrolled from Lakar Mandi (having carpenters), Bohr gate (ceramic workers) and Hussain Agahi (Zari workers). The study was completed within December 2018 to March 2019 in a period of 4 months. Non-Probability convenient sampling technique was used to collect the data due to time limitation. Selection of the sample was done by obeying the following criteria i-e inclusion and exclusion.

All those between the ages of 25 and 45 who have worked 8 to 10 hours a day for the past 5 to 10 years in the woodwork, ceramics, Zari, and Adda industries were enrolled. Females and children, and those with serious spinal pathologies: fracture or disc herniation was excluded. Using a paper questionnaire, data was collected. Questions will have numerous choices. The questionnaire includes the Braggs Posture Chart and Nordic Musculoskeletal Questionnaire-Extended. Before data collection, participants will be told the author's identity and the project's purpose and given a consent form. SPSS 20 was used for input and analysis. Using mean deviation and standard deviation, we provided quantitative data. Where applicable, frequency tables and diagrams were used to demonstrate qualitative findings.

RESULTS

This cross-sectional study used non-probability convenient sampling in multiple centres over 4 months. All 25-45-year-old Woodworkers, Ceramicists, Zari/Adda workers with 5-10 years of experience were asked about neck, shoulder, wrist, and lower back pain. Cases were taken equally from all age groups from 25 to 45 years as shown in the table no. 1. All of these cases reported a working daily duration of 10-12 hours, with around half of these working for last 9-10 years. It was seen after analysis of data that in the last one year among the total 75 cases of skilled workers / handicrafts with history of abnormal stress on posture reported pain in different regions. Percentage of cases who reported trouble in the neck, shoulder, wrist, and lower back were 54.7%, 64%, 56% and 64%, respectively. Shoulder and lower back pain was reported by 48 of 75 cases; similarly wrist pain and neck pain was seen in 42 and 41 of the total 75 cases studied, respectively.

Association between head posture and neck trouble was checked by chi square test which showed significant association

as p-value (0.002). Trouble in last week in neck, shoulder, wrist and lower back was 56%, 54.7%, 54.7% and 60%. Trouble in relaxation in neck, shoulder, wrist and lower back was 50.7%, 61.3%, 33.3% and 60%. Data analysis showed that due to abnormal posture of these cases hip and head / neck region was most commonly involved. Association between shoulder posture and shoulder trouble was checked by chi square test which showed significant association as p-value (0.000). Similarly, abnormal posture of the neck and neck trouble, p-value (0.000); spine posture and low back trouble with p-value (0.001) and low back posture and low back trouble p-value of 0.001. Overall analysis of abnormal working posture in relation to the frequency of musculoskeletal disorders in this population showed a significant association, by chi square test which showed significant association as p-value (0.000).

Table: 1 showing the Age, length of the service and frequency of various work-related musculo-skeletal disorder involving various regions of body

		Frequency	Percentage
Age	25-30	25	33.3%
	31-35	20	26.7%
	36-40	15	20.0%
	41-45	15	20.0%
Length of service	5-6 years	19	25.3%
	7-8 years	19	25.3%
	9-10 years	37	49.3%
work-related musculo-skeletal disorder	Involving neck	41	54.7%
	Involving shoulder	48	64%
	Involving wrist	42	56.0%
	Involving lower back	48	64.0%

Table 2: showing the association of abnormal posture with the incidence of work-related musculo-skeletal disorder

Association of	Chi square value	Df	p-value
Head posture with neck trouble	12.66	2	0.002
Shoulder posture with shoulder trouble	26.74	2	0.000
Spine posture with low back trouble	9.18	2	0.001
Neck posture with neck trouble	42.91	2	0.000
Low back posture with low back trouble	23.57	2	0.001
Posture with musculoskeletal trouble	1.41	1	0.000

P-value less than 0.005 are significant.

DISCUSSION

Musculoskeletal illnesses are linked to task-related biomechanical and psychological factors, as well as employee traits. Posture, postural duration, and postural loading and unloading determine body load. Stress causes MSDs[9]

This study looked at the musculoskeletal problems handicraft workers face due to their extended posture. This study found poor and fair posture everywhere. 54.7 percent, 64%, 56%, and 64% of people had neck, shoulder, wrist, and lower back problems in the previous year. 60% of people had trouble relaxing their neck, shoulder, wrist, and lower back. 56%, 54.7%, 54.7%, and 60% of people had neck, shoulder, wrist, and lower back problems the week before.

Handcraft production had the highest risk factors for musculoskeletal illnesses in a 2018 study. The neck, knees, and upper limbs are the most afflicted body parts among handicraft workers (38.5%-100%). Working posture, daily hours, repeated and forceful motions, job experience, age, gender, and work environment were risk factors. This study found that higher-educated workers had a lower risk of WMSDs. Further longitudinal studies should focus on work-related variables to investigate WMSDs in this occupational group[10]

The neck (69.72%), shoulder (69.17%), and ankle (69.17%) have the highest prevalence of musculoskeletal issues (23.89%). Most sick leaves at work were taken for neck, knee, shoulder, and hip pain. According to the study, these workers' ages affected lower back and ankle musculoskeletal disorders. Musculoskeletal disorders were linked to poor work posture and long periods of standing[11]

In a 2016 study on posture and WMSD among porcelain workers, 36% of the workforce reported discomfort in at least one body area in the previous year, with the waist, hands, wrists, and neck suffering the most. Printing, carpentry, engineering, and material supplement units (average REBA scores: 6-6.5) were the most dangerous units in the porcelain sector, while enamelling posed the least risk. This study found that proper training and correction stations improve overall posture[12]

These fields require a higher level of awareness among the general public. Under this umbrella of study, various parts of the body can be investigated. It is possible to conduct research on professions other than those listed above.

CONLCUSION

The findings indicate that there is a substantial relationship between posture and musculoskeletal diseases in the handicraft industry. The relationship varies depending on the parts of the body engaged and the sort of activity.

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