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PREVALANCE OF WORK-RELATED CERVICAL SPINE PROBLEMS AMONG THE TAILORS IN CITY MANSEHRA: A CROSS-SECTIONAL STUDY

Original Research

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ABSTRACT

Background: Neck pain among tailors in the city of Mansehra is one of the major challenges with regard to public health. Resultantly, the purpose of this study was to determine how common cervical spine issues are among tailors in Mansehra, regarding with the risk elements among employees with a gender association and to determine the other disorders like shoulder pain, headaches, dizziness associated with the cervical spine of tailors.

Objective: To find out the Prevalence of work-related cervical spine problems among the tailors in city Mansehra

Methodology: In this cross-sectional study design was implemented among 268 work-related tailors in city Mansehra. The concept of purposive sampling was applied. The Statistical tools for Social Science edition 22, was used to evaluate the data to conclude result.

Results: Two hundred forty-seven work-related tailors were enrolled in which 203 (82.2%) male and 44 (17.8%) females and response rates out of 100%. Findings depicted that majority workers (58%) were suffering from neck pain, which aggravates (stated by 62%) with prolong neck position. Data analysis showed that 93 (37%) tailors were having mild symptoms, 89 (36%) moderate intensity symptoms from more than a year 93 (37%). They (60%) stated workload and focusing as main cause of pain, which usually lasts minutes\hours in 164 participants (59%). Their pain leads to back pain in 27% individuals and to shoulder pain in 12% of total participants.

Conclusions: In the cross-sectional study, cervical pain is one of major problem in public health. This study indicated that majority tailors in Mansehra city are working continuously for longer than eight 8 hours per day regularly without taking break, excessively performing highly repetitive tasks and spending more than 4 hours in one posture while sitting is the main cause of neck pain.

Keywords: Tailors, neck pain, work-related cervical spine problems.

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INTRODUCTION

The cervical spine comprises the first seven vertebrae of the vertebral column and plays a crucial role in maintaining structural stability and facilitating the mobility of the head and neck. Anatomically, it supports the weight of the head, protects the spinal cord emerging from the brainstem, and enables a wide range of complex movements including flexion, extension, lateral flexion, and rotation. Under normal physiological conditions, cervical flexion ranges approximately between 80° and 90°, extension reaches nearly 70°, lateral flexion varies from 20° to 45°, and rotation may approach 90° toward either side (1,3). These biomechanical characteristics allow the cervical spine to maintain balance and functional alignment during routine activities. However, because of its mobility and the mechanical loads transmitted through it, the cervical region is particularly susceptible to strain and degenerative changes. Neck pain is therefore recognized as one of the most prevalent musculoskeletal complaints globally and represents a substantial contributor to disability and reduced quality of life (2). Beyond its physical manifestations, persistent cervical discomfort can adversely influence an individual's psychological wellbeing, social functioning, and occupational productivity, thereby increasing both healthcare utilization and socioeconomic burden (4). Neck pain may present as localized discomfort accompanied by stiffness, or it may radiate toward adjacent structures such as the shoulders and occipital region, with symptoms ranging from episodic to chronic patterns depending on underlying pathology and occupational exposures (5).

Work-related musculoskeletal disorders (WRMSDs) are a major occupational health concern and frequently arise when the physical demands of a job exceed the biomechanical capacity of the human body. Occupational environments characterized by repetitive movements, prolonged static postures, and inadequate ergonomic conditions significantly increase the risk of cervical spine disorders (6). Tailoring is a profession that inherently involves such risk factors, as sewing machine operators typically maintain a forward-flexed neck posture for prolonged periods while focusing on detailed manual tasks. This sustained head-down posture, often combined with poorly designed seating and inadequate workstation ergonomics, contributes to continuous mechanical stress on cervical muscles and intervertebral structures. Over time, these repetitive stresses may lead to chronic neck pain, shoulder discomfort, headaches, and dizziness, ultimately affecting functional performance and occupational endurance. Evidence suggests that the prevalence and severity of cervical spine problems increase with years of occupational exposure, particularly among workers who remain unaware of ergonomic principles and preventive health measures (6). Epidemiological investigations have demonstrated that neck pain ranks among the leading causes of disability worldwide, with some estimates suggesting it is the fourth most common cause of years lived with disability, affecting nearly 30% of individuals at some stage of life (8). Although acute neck pain episodes often resolve spontaneously, a substantial proportion of patients continue to experience persistent symptoms requiring clinical evaluation and targeted interventions.

The etiological mechanisms underlying neck pain are multifactorial and may include mechanical strain, neuropathic involvement, degenerative disc disease, or structural abnormalities of the cervical spine. Clinical conditions such as cervical radiculopathy and cervical myelopathy may intensify pain severity and functional limitations, sometimes necessitating surgical intervention when conservative management fails (9,10). Degeneration of cervical intervertebral discs has been identified as a significant contributor to chronic cervical discomfort, while abnormalities in cervical curvature and disc herniation have also been implicated in the pathogenesis of neck pain, particularly among younger individuals (11). Advances in diagnostic technologies and knowledge-based clinical systems have further improved the identification and management of cervical spine disorders by assisting clinicians in distinguishing between musculoskeletal, neurological, and structural causes of neck pain (12). Numerous epidemiological studies have explored the prevalence and determinants of neck pain among various occupational groups, including university students, bankers, and office workers, highlighting the significant role of occupational posture and repetitive tasks in the development of cervical spine disorders (13,14,16). Among sewing machine operators, research has reported that approximately 43% of female workers experience neck pain associated with prolonged sewing activities (15). Despite these findings, there remains limited epidemiological evidence regarding cervical spine problems among tailors in many developing regions, particularly within Pakistan.

Existing literature demonstrates that occupational neck pain is influenced by a complex interaction of biomechanical stress, ergonomic conditions, duration of work exposure, and individual susceptibility factors. Nevertheless, most available studies have focused on healthcare workers, office employees, or industrial laborers, leaving a notable gap in research concerning tailoring professionals who routinely perform repetitive tasks in constrained postures. In regions where tailoring constitutes a common source of livelihood,

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particularly in small urban centers and developing economies, workers may lack awareness of occupational health hazards and rarely receive ergonomic guidance or preventive healthcare support. Consequently, cervical spine disorders among this population may remain underreported and insufficiently addressed within the public health framework. Understanding the prevalence and occupational determinants of cervical spine problems among tailors is therefore essential for developing evidence-based preventive strategies, improving ergonomic practices, and reducing the burden of work-related musculoskeletal disorders in this occupational group. Considering the scarcity of local epidemiological data, particularly from the city of Mansehra, this study was undertaken to determine the prevalence of work-related cervical spine problems among tailors and to explore the occupational factors contributing to these conditions within this population.

METHODS

A descriptive cross-sectional study was conducted to determine the prevalence of work-related cervical spine problems among tailors in the city of Mansehra, Pakistan. The study was carried out at the Helping Hand Institute of Rehabilitation Sciences, Mansehra, which served as the coordinating research center for study design, data collection supervision, and data management. The research was completed over a period of two months following formal approval of the study synopsis by the institutional research and ethics committee. Ethical approval for the study was obtained from the Helping Hand Research and Ethical Committee (HHREC), and all procedures were conducted in accordance with ethical standards for human subject research. Participants were approached in tailoring shops and workplaces across different areas of Mansehra. Prior to participation, the purpose of the study was explained to all eligible individuals, and written informed consent was obtained. The target population consisted of professional tailors actively engaged in sewing activities within the city. Both male and female tailors aged between 18 and 80 years were considered eligible for inclusion in the study. Individuals with a documented history of spinal surgery, ankylosing spondylitis, neurological disorders, systemic inflammatory diseases, behavioral abnormalities, malignancy, osteoporosis, rheumatoid arthritis, or Pott's disease were excluded in order to minimize confounding factors that could independently influence cervical spine symptoms.

The sample size for the study was calculated using the OpenEpi online sample size calculator. Assuming a hypothesized prevalence of cervical spine problems of 50% in the population, with a 95% confidence level and a margin of error of ±5%, the calculated minimum sample size was 268 participants. Purposive sampling was used to recruit participants who met the predefined eligibility criteria. Tailors were approached sequentially at their workplaces, and those who consented to participate were enrolled in the study. Data were collected using a structured questionnaire designed to obtain information regarding demographic characteristics, occupational exposure, and symptoms related to cervical spine discomfort. The questionnaire included items related to neck pain, stiffness, radiation of pain, work posture, and duration of occupational exposure to sewing activities. The instrument was administered either as a self-completed questionnaire or through interviewer assistance when participants were unable to read or write. In such cases, trained enumerators recorded responses according to the information provided by the participants to ensure accurate documentation. All collected information was carefully reviewed for completeness before being entered into the data record forms.

Following data collection, the recorded information was compiled and entered into the Statistical Package for Social Sciences (SPSS) software for statistical analysis. Descriptive statistical methods were applied to summarize the study findings. Continuous variables such as age were expressed as mean and standard deviation, while categorical variables such as gender, presence of neck pain, and other occupational characteristics were presented as frequencies and percentages. The analysis was conducted to determine the distribution and prevalence of cervical spine problems among the participating tailors. Data were carefully checked for accuracy and consistency prior to analysis to reduce the possibility of entry errors. The results generated from the statistical analysis provided a descriptive overview of cervical spine complaints within the study population and formed the basis for interpreting the occupational health burden associated with tailoring activities in the region.

RESULTS

Statistical analysis of data showed that gender of participant, female tailors' participants were 44(17.8) and male tailors participants were 203(82.2), and total no of participants were 247(100%).

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Table 1: Ages of the Participants

Total Number	Missing	Mean & SD
247	0	34.47 (12.48)

Descriptive Analysis:

After the informed consent, participants were asked nine questions regarding neck pain, and related symptoms, if their work and sleep gets affected by their pain, and difficulty of activities of daily living because of pain.

Table 2: Questionnaire 1-9

S/N	Questions	Status	Frequency	Percentages	Mean	SD
1	کیا آپ کی گردن میں درد ہوتا ہے؟ Does you suffer from neck pain?	YES	160	58.4%	1.40	0.491
		NO	108	39.4%		
2	کیا آپ کے گردن کے درد کے علاوہ کہیں اور درد ہے؟ Do you have pain anywhere other than your neck?	YES	151	55.1%	1.44	0.497
		NO	117	42.7%		
3	کیا اس درد کی وجہ سے آپ کے ہاتھ سن ہوتے ہیں/ آپ کو ہاتھوں میں کمزوری محسوس ہوتی ہے؟ Does this pain cause numbness/weakness in your hands?	YES	106	38.7%	1.60	0.490
		NO	162	59.1%		
4	کیا گردن کے درد کی وجہ سے آپ کا کام متاثرہوتا ہے؟ Is neck pain affecting your work?	YES	134	48.9%	1.50	0.501
		NO	134	48.9%		
5	کیا یہ درد گردن کی حرکت سے زیادہ ہوتا ہے؟ Does this pain increase with neck movement?	YES	129	47.1%	1.52	0.501
		NO	139	50.7%		
6	کیا زیادہ دیر تک ایک ہی حالت میں بیٹھنے سےگردن میں مسلسل درد ہوتا ہے؟ Does sitting in one position for a long time cause constant neck pain?	YES	170	62.0%	1.37	0.483
		NO	98	35.8%		
7	کیا آپ کے گردن کے درد کی وجہ سے نیند متاثر ہوتی ہے؟ Is your neck pain affecting your sleep?	YES	116	42.3%	1.57	0.496
		NO	152	55.5%		
8	کیا موسم کی تبدیلی کی وجہ سے گردن کے درد کی شدت میں کمی یا زیادتی ہوتی ہے؟ Does the change in weather increase or decrease in intensity of neck pain?	YES	115	42.0%	1.57	0.496
		NO	153	55.8%		
9	کیا گردن کے درد کی وجہ سے آپ کے روزمرہ کے کام متاثر ہوتے ہیں؟ Does neck pain affect your daily activities?	YES	119	43.4%	1.56	0.498
		NO	149	54.4%		

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When participants were asked about the severity of their pain, following statistics were obtained from their answers:

Table 3: Status of pain showing frequency and mean value

Question	Status	Frequency+ Percentage	Mean (SD)
آپ کے گردن کے درد کی شدت کیا ہے؟ What is the severity of your neck pain?	Mild	93 (37.7%)	±1.97(0.947)
	Moderate	89 (36%)	
	Severe	44 (17.8%)	
	Nil	21 (8.5)	

In response to a question regarding type of sewing machine they used during work, participants responded with following answers:

Table 4: Types of sewing machine used by the tailors in city Mansehra

Question	Type of Sewing Machine	Frequency	Mean (SD)
آپ سلائی مشین کون سی استعمال کرتے ہیں؟ What sewing machine do you use?	Electric	244 (98.8%)	±1.01(0.11)
	Manual	3(1.2%)	

Table 5: History of pain

Question	Duration	Frequency and Percentage	Mean (SD)
گردن کا درد کتنے عرصے سے ہے؟ How long has the neck pain been?	Days to Months	20 (8.1%)	±3.06 (0.994)
	Months to 1 Year	45 (18.2%)	
	More Than 1 year	93(37.7%)	
	Sometimes	10 (4%)	
	No Pain	79 (32%)	
	Total	247 (100%)	

Significant number (93) of participants were experiencing neck pain for more than a year while others had less duration of pain. Also 79 participants didn't have any pain.

Tailors were asked about the factor responsible for their neck pain and majority of them pointed out about workload and focusing as major factor that causes their pain.

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Table 6: Causes of neck pain

Question	Cause	Frequency and Percentage	Mean (SD)
گردن کے درد کی وجہ کیا ہے؟ What causes neck pain?	Workload/Focusing	166 (60.6%)	±1.82 (1.080)
	Any Disease/ Deformity	2 (0.7%)	
	Nil	82 (29.9%)	
	Others	18 (6.6%)	

When asked about the duration of symptoms, majority stated that their pain stays for minutes or hours only not for days.

Table 7: Duration of neck pain in tailors

Question	Duration	Frequency and Percentage	Mean (SD)
درد کا دورانیہ کتنا ہوتا ہے؟ How long does the pain last?	Minutes/Hours	164 (59.9%)	±1.74(0.945)
	Days	11 (4.0%)	
	Nil	93 (33.9%)	

Frequency and percentage of neck pain occurrence in different time of the day was also recorded, which is presented in the following table:

Table 8: Frequency and percentage of neck pain occurrence in different time of the day

Question	Time of Day	Frequency and Percentage	Mean (SD)
گردن کا درد دن کے کس پہر میں ہوتا ہے؟ What time of day does neck pain occur?	Morning	19 (6.9%)	±4.57 (2.062)
	Noon	34 (12.4%)	
	After noon	41 (15.0)	
	Evening	43 (15.7%)	
	Night	31 (11.3%)	
	Morning/ Evening	11 (4.0%)	
	Nil	89 (32.5%)	

Questionnaire followed another question about aggravating and relieving factors, and participants selected workload as major aggravating factor, while rest as relieving factor.

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Table 9: Percentage of pain aggravating / relieving Factors

Question	Aggravating /Relieving factors of Pain	Frequency and Percentage	Mean (SD)
گردن کا درد کس وجہ سے کم یا زیادہ ہوتا ہے؟ What causes more or less neck pain?	Rest/ Medication / Workload	181 (66.1%)	±1.96 (1.392)
	Sustained Posture	2 (0.7%)	
	Others	1 (0.4%)	
	Nil	84 (30.7%)	

Work duration was an important factor so they were asked about daily working hours, majority of workers reported 1-8 hours of work daily. Following figure number 1 shows the statistics:

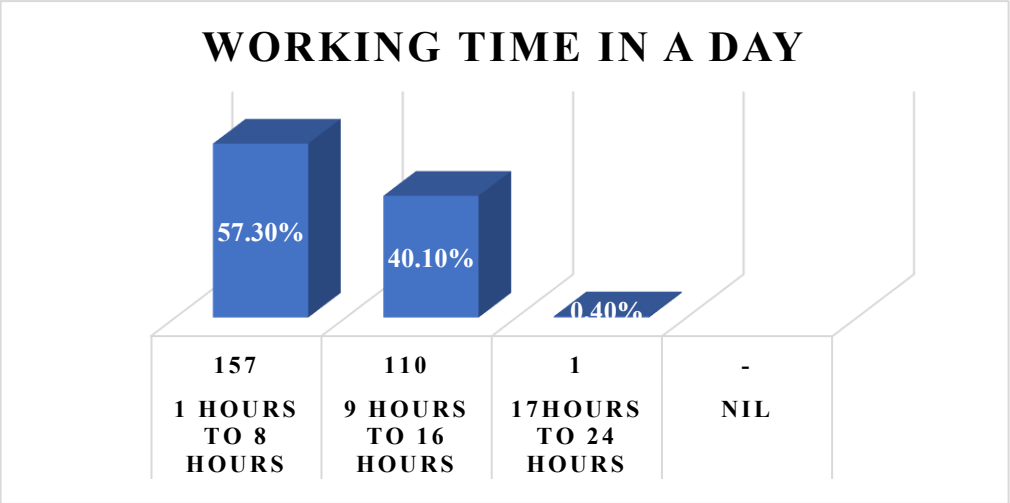

Figure 1 Working Time in a Day

Many participants reported more pain symptoms along with neck pain, which are stated in the following figure number 2:

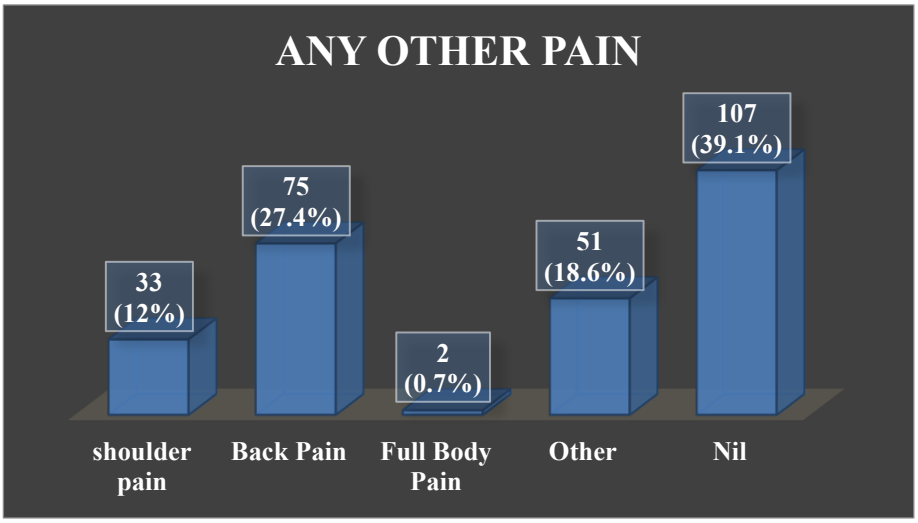

Figure 2 Any Other Pain

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Cervical spine problems can occur because of another occupation along with sewing, and also because of any comorbidity. In order to rule out these two, participants were inquired about both.

Table 10: Occupation

Question	Occupation	Frequency	Mean (SD)
کیا آپ سلائی کے علاوہ کوئی اور کام کرتے ہیں؟ Do you work anywhere other than sewing?	Driving	4 (1.6%)	±2.96 (0.267)
	Salesman	2 (0.8%)	
	Nil	241 (97.6%)	

Table 11: Frequency of diseases other than neck pain

Question	Further information	Frequency and Percentage	Mean (SD)
دیگر معلومات: Other information:	Any disease	3 (1.1%)	±4.81(0.602)
	Any operation	3 (1.1%)	
	Any deformity	1 (0.4%)	
	Others	27 (9.9%)	
	Nil	234 (85.4%)	

DISCUSSION

The present study investigated the prevalence of work-related cervical spine pain among tailors working in the city of Mansehra, with the aim of identifying the magnitude of this occupational health concern within a population that is frequently exposed to prolonged static postures and repetitive manual activities. The findings demonstrated a considerable burden of cervical discomfort among tailors, with more than half of the participants reporting symptoms of neck pain associated with sewing activities. The demographic profile of the study population revealed that the majority of participants were male, with a mean age of approximately 34 years, indicating that individuals within the economically productive age group constituted the largest proportion of the tailoring workforce. The relatively high prevalence of neck pain observed in this study can plausibly be attributed to the nature of tailoring work, which typically requires sustained forward head posture, repetitive upper-limb movements, and prolonged sitting without adequate ergonomic support. Continuous engagement in such activities can lead to cumulative biomechanical stress on the cervical musculature, ligaments, and intervertebral discs, thereby predisposing workers to musculoskeletal discomfort and functional limitations. Occupational health literature has consistently emphasized that repetitive tasks performed in awkward or constrained positions contribute substantially to the development of work-related musculoskeletal disorders. In this context, tailoring represents a profession in which ergonomic awareness and preventive strategies are often limited, particularly in developing regions where workplace health policies are insufficiently implemented. Consequently, the results of the present study highlight the occupational vulnerability of tailors and underscore the importance of recognizing cervical spine disorders as a relevant occupational health issue within this workforce.

The prevalence observed in this investigation was broadly consistent with findings reported in previous epidemiological studies examining musculoskeletal problems among sewing machine operators and other occupational groups exposed to repetitive manual work. Hassan et al. reported that approximately 39.64% of tailors experienced neck pain associated with sewing activities, a prevalence somewhat lower than that observed in the present study, where more than half of the participants reported cervical discomfort related to their work tasks (18). The difference between these findings may reflect variations in ergonomic conditions, working hours, occupational awareness, or healthcare access across different study settings. Similarly, Carroll et al. reported that between 60% and 80% of individuals

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engaged in certain occupational tasks experienced neck pain at some point during their working life, emphasizing the widespread nature of cervical musculoskeletal disorders in occupational environments (19). The results of the current study align with this broader evidence indicating that neck pain represents a significant occupational health concern across multiple professions. Furthermore, Borhi demonstrated that prolonged sitting and sustained forward-bent posture while operating sewing machines substantially increased the risk of cervical pain among workers, with a very high proportion of participants reporting symptoms related to occupational posture (20). These findings reinforce the concept that biomechanical strain, particularly when associated with inadequate ergonomic support, constitutes a major contributing factor to cervical spine disorders among sewing machine operators.

In addition to cervical pain, the present study also observed that a proportion of participants reported pain extending to adjacent anatomical regions, including the back and shoulders. Such findings are consistent with the recognized pattern of musculoskeletal symptom progression in which prolonged cervical strain may lead to compensatory muscular tension and referred discomfort affecting surrounding structures. Similar patterns have been reported in occupational health studies examining musculoskeletal disorders among garment workers and sewing machine operators. For instance, a study conducted in Bangladesh reported that a substantial proportion of tailoring workers experienced musculoskeletal disorders related to their occupational environment, with cervical pain representing one of the most frequently reported symptoms (21). The distribution of musculoskeletal complaints in the current study therefore reflects the broader occupational health challenges associated with prolonged static posture and repetitive upper-body activity. These findings further support the view that tailoring work imposes sustained biomechanical stress on multiple segments of the musculoskeletal system. Over time, such stress may lead not only to localized neck discomfort but also to secondary symptoms involving the shoulders and lumbar spine, particularly when ergonomic adjustments or periodic rest breaks are absent.

The study possessed several methodological strengths that contributed to the reliability of the findings. Data were collected directly from practicing tailors in their occupational settings, allowing the investigation to capture real-world exposure to work-related ergonomic conditions. The inclusion of participants across a broad age range provided a representative overview of cervical spine problems among individuals engaged in tailoring as a profession. Additionally, the use of a structured questionnaire enabled systematic documentation of musculoskeletal symptoms and occupational characteristics. Despite these strengths, certain limitations should be acknowledged when interpreting the results. The study was conducted within a limited geographical area and over a relatively short data collection period, which may restrict the generalizability of the findings to other regions. Furthermore, although the study documented the prevalence of cervical pain, detailed analytical correlations between demographic variables such as age and gender and the occurrence of neck pain were not performed. The reliance on self-reported symptoms may also introduce the possibility of recall bias or subjective interpretation of pain severity. Future research could benefit from incorporating larger sample sizes, multi-center data collection, and ergonomic assessments of workplace conditions to provide a more comprehensive understanding of occupational risk factors associated with cervical spine disorders. Nevertheless, the present study contributes valuable epidemiological evidence highlighting the substantial prevalence of work-related cervical spine problems among tailors and emphasizes the importance of preventive occupational health strategies, ergonomic education, and early clinical intervention to reduce the burden of musculoskeletal disorders in this workforce.

CONCLUSION

In the cross-sectional study, cervical pain is one of major problem in public health problems. Tailors who work continuously without taking breaks for more than 8 hours per day on average, sitting in the same position for more than 4 hours, and perform continuously highly repetitive operations were found to have a considerable risk of neck pain.

AUTHORS' CONTRIBUTION

Authors	Contribution
Fayaz Ahmed	Substantial contribution to study design, research methodology. Supervised the overall project.
Rafaqat Afridi	Substantial contribution to data acquisition, ethical compliance and critical review.
Urooba Khan	Substantial contribution to data collection, data analysis and interpretation of results.

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Hira Waqar	Substantial Contribution to statistical analysis, and graphical presentations.
Mahnoor Abbasi	Substantial contribution to literature review, data analysis and theoretical framework development.
Sonainna Ashfaq	Substantial contribution to manuscript drafting, critical revision of content and finalizing manuscript.
Laiba Khan	Substantial contribution to proofreading manuscript, ensured accuracy of references and formatting.
Yasir Majeed*	Substantial contribution to critical review, result analysis and proofreading.
Muhammad Naveed	Substantial contribution to proofreading manuscript, ensured accuracy of references and formatting etc.

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