

Prevalence and Intensity of Neck Pain in Sewing Machine operators

Muhammad Kumail Hassan Raza¹, Maham Khalid¹, Muhammad Asbar Javed¹, Rizmi Naseer²

¹University Institute of Physical Therapy, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

Physiotherapy Clinic Hamza Medical Center, Islamabad

Highlights:

- Majority of sewing machine operators reported with neck pain.
- No association between intensity of pain and age of the participant.

Abstract:

During the past decades musculoskeletal disorders have been progressively common throughout the world.

Objective:

To determine the prevalence, and intensity of neck pain in tailors.

Methodology:

Cross sectional descriptive study was conducted in Leather Coordinator Factory, Sahiwal and Ahmad Kurta Collection, Lahore over a period of 4 months. Only sewing machine operators aged between 20-60 years were included. Modified Nordic Questionnaire was used to collect data and chi-square test was used to find association between the variables of hypothesis.

Results:

Results revealed that among one hundred and ninety one (191) participants that were recruited for neck pain, fifty six percent (56%) participants were suffering from this ailment and forty four percent (44%) were not having pain in the neck region due to sewing. Eighty four percent 84% participants were suffering from mild neck pain and 16% participants were suffering from moderate pain. Association was found between neck pain and gender of respondents (p-value=0.00).

Conclusion:

It was concluded that prevalence of neck pain was 56% in sewing machine operators. 84% participants were suffering from mild pain. There was association present between neck pain

and gender of the participants

Key words:

Neck pain, prevalence, sewing machine operators.

Introduction:

During the past decades musculoskeletal disorders have been progressively common throughout the world. It is the one of the most common work related complication in working individual.¹ Due to inactive and tiring lifestyle, there is a constant increase in severity, frequency and intensity of pain in neck that may cause stiffness and tension on areas of neck.² Neck ache is the pain that occurs in neck region. It also involves stiffness along with tenderness in the trapezius muscle. Neck ache is a difficult term to explain. Neck pain along with stiffness, radiates into the shoulder and occiput that can be episodic or chronic. Musculoskeletal complaints regarding neck region are extensively present in sewing machine workers. As this profession involves highly monotonous, repetitive work in sitting position with bent neck and upper part of back curved on the sewing machine for longer duration. This kind of effort requires greater concentration and precision. Psychological factors are also related like emotional stress and anxiety, headache, neck bending, cervical lordosis causes neck pain. In sewing machine workers, it has been found that the prevalence and occurrence of neck pain increases with the working years of experience. But it's also been found that some sewing machine operators not ever experience symptoms except slight or moderate and never acquire pain in the neck region or this kind of disorder despite of many years at work.³ Many studies describing the disorders of musculoskeletal origin in neck region are cross sectional, explaining

, combination of both acute and chronic conditions.⁴ Working in the profession of stitching for the time duration of greater than eight years possibly have some cumulative damaging effects on the neck area.⁵ Occupation related musculoskeletal system disorders are highly prevalent in the persons associated with the profession of stitching. Prolonged working extent, working at lower levels of table, accurate hand work, these are all the risk factors causing neck aching in stitching machine workers. Surface electromyogram is an appreciated tool to determine the muscular work activity and to measure the muscular loading in neck region during stitching in female seamstress. Results showing load on the muscles while sewing came to be, on (LCES); 6.78% MVE, on (RCES); 6.94% MVE, on (LUT); 6.47% MVE, on (RUT); 5.68% MVE. Hence, working load on the right sided muscles is greater as compared to the left sided muscles. Female seamstress are exposed to greater continued static burden on neck and shoulder muscles on both left and right sides.⁶ Trigger points in skeletal muscles of neck and shoulder can lead to referred pain in neck.⁷ 15.4% males reported neck pain. The corresponding prevalence in women was 24.9%.⁷ The Nordic Musculoskeletal questionnaire specifically directed towards neck-shoulder complaints showed a prevalence rate throughout the last 12 months of 75% and through the last 7 days a rate of 51%. Daily issues were intimate with by 26%. Some 27% had issues resulting in restraints in working period and 37% in leisure.⁸ In response to the overall question on expertise of pain or discomfort at work, two hundred ten 210 (95 %) production staff answered within the affirmative and 156 (74%) were convinced that their downside was associated with their operating conditions. These percentages were clearly lower among the thirty five subjects within the workplace cluster within which twenty five (71%) reportable pain discomfort at work and sixteen of those (46%) were convinced that the matter was because of operating conditions. Subjects convinced of a causative relation

between their subjective symptoms and dealing conditions were able to establish specific work tasks that, in their opinion, were related to the event of such symptoms.⁹ A high prevalence of musculoskeletal complaints and neck and shoulder disorders are found in studies of ladies textile machine operators, and likewise among many alternative teams of ladies acting repetitive industrial work. The duty involves monotonous, extremely repetitive tasks performed in an exceedingly sitting operating posture with higher back curving and head bent over the stitching machine. The work is visually tightened and needs a high degree of concentration and accuracy.⁴ According to a study conducted in Turkey prevalence of neck pain in women was 51% whereas they use Visual Analogue Scale (VAS) for measurement of pain intensity.¹⁰ A study conducted in 2008 work activity limitation was 13% because of neck pain. This study provide evidence that interventions aimed at modifying workstations and worker posture are not effective in reducing the incidence of neck pain in workers.¹¹ In a study conducted by Guez, Hildingsson et al. prevalence was more in women (48%) than in men (38%).¹² According to a systematic review neck pain is a common symptom in the population and the prevalence is more in women than men.¹³ In a study prevalence of neck pain was 29% in men and 40% in women.¹⁴ According to study conducted in Hong Kong there was association between neck pain and gender ($p=0.02$).¹⁵ There is a lot of data available on neck pain but our purpose behind conducting this study is to investigate the issues in neglected population because there is less data available on neck pain associated with tailors. So that awareness could be created with the help of identification of reasons behind the neck pain, in order to reduce this problem in the society.

Methodology:

Cross sectional descriptive study was carried out in Leather Coordinator Factory, Sahiwal and Ahmad Kurta Collection, Lahore over a period from December 2016 to January 2017. The sample

for this study was taken from two hundred sewing machine workers of “leather coordinator” garment factory of Sahiwal. Total 191 sewing machine operators were recruited to the study on the basis of fulfillment of our inclusion and exclusion criteria. Primary outcome measure was neck pain. Neck ache was measured by visual analogue scale (VAS). Secondary outcome measure was the assessment of activities that were limited in working environment and cause limitation in leisure activity. Modified Nordic questionnaire to collect the data, was used in current study. For the purpose of analysis and coding of data, SPSS was used.

Results:

Among 191 subjects, 56% subjects were suffering from neck pain, whereas 44% subjects were not suffering from neck pain as shown in (Table: 1). According to results, 44% participants were suffering from neck pain for less than 24 hours, 54% participants were suffering from neck pain for 1-7 days, 1% participants were suffering from neck pain for 8-30 days and 5% participants were suffering from neck pain every day. (Table 2) According to results, 90 participants were having mild pain on Visual Analogue Scale (VAS) that ranges from 1-2 points, 17 participants were having moderate pain that interferes with tasks and it ranges from 2-5 points on the VAS scale and none of the participants was having severe pain ranges from 5-10 points. (Table: 3). According to results p-value is 0.00 which shows there is association between neck pain and gender and it is more prevalent in women (Table: 4).

Demographics	Frequency (%)
Yes	101(56)
No	84(44)
Total	191(100)

Table 1: Demographic of Prevalence of Neck Pain

Demographics	Frequency (%)
<24 hours	47(44)
1-7 Days	54(50)
8-30 Days	1(1)
Everyday	5(5)
Total	107(10)

Table 2: Demographics of Duration of Neck Pain

Grading	Frequency (%)
Mild	90(84)
Moderate	17(16)
Severe	0(0)
Total	107(100)

Table 3: Demographics of Grading Visual Analogue Scale

		Neck Pain		P value	Total
		No	Yes		
Gender	Female	22	53	0.00	75
	Male	62	54		116
Total		84	107		191

Table 4: Gender and Neck Pain Cross Tabulation

Discussion:

The modified Nordic Musculoskeletal Questionnaire was used to find out prevalence, risk factors, description and intensity of neck pain which was also used in a study on female sewing machine operators in a garment industry in Turkey. Visual Analogue Scale (VAS) was used for measurement of pain intensity which had also been used in a study conducted in Turkey.¹⁰ Because sensitivity of VAS is 95% and specificity is 88%.¹⁷ Outcomes of our study describes that the rate of prevalence for neck pain is higher 56%. A research conducted in Turkey also demonstrated higher prevalence rate of neck issue in garment makers.¹⁸ Greater Prevalence is also supported by a study which showed prevalence rate 75%. In current study prevalence of neck pain in men is 47%, where as 71% in women. Higher prevalence of neck pain in females is also supported through a study conducted by Guez, M et al. In that study prevalence was 48% in women and 38% in men.¹⁹

In current study 11% of participants limited their work due to the complaint of neck ache. Similar results were manifest by a study conducted in 2008 work activity limitation was 13% because of neck pain. Results of study conducted Blader also indicate that participant's work was limited due to neck pain.²⁰ In our study, the absenteeism from the work in sewing machine operators was in less percentage due to neck complaints. The similar finding came out in another study conducted on female sewing machine operators according to which amongst all the participating population, only 17.8% were absent for 1 day from their work due to neck pain problems, in the past one year

Conclusion:

Among the whole population of these sewing machine workers, 56% reported neck pain whereas 44% were not suffering from neck pain. According to the results of the study, 84% participants were suffering from mild neck pain. There is association between neck pain and gender of participants.

References:

- 01- Andersson GB. Epidemiological features of chronic low-back pain. *The lancet*.2017.8(2).19-29.
- 02- Binder AI. Cervical spondylosis and neck pain. *BMJ: British Medical Journal*. 2018.9(10).28-38.
- 03- McCormack BM, Weinstein PR. Cervical spondylosis. An update. *western Journal of Medicine*.2019.5(40).10-19.
- 04- Kaergaard A, Andersen JH. Musculoskeletal disorders of the neck and shoulders in female sewing machine operators: prevalence, incidence, and prognosis. *Occupational and environmental medicine*. 2000.;57(8):28-34.
- 05- Andersen JH, Gaardboe O. Prevalence of persistent neck and upper limb pain in a historical cohort of sewing machine operators. *American journal of industrial medicine*.2017.24(6):77-87.
- 06- Zhang FR, He LH, Wu SS, Li JY, Ye KP, Wang S. Quantify work load and muscle functional activation patterns in neck-shoulder muscles of female sewing machine operators using surface electromyogram. *Chinese medical journal*. 2011.124(22).1-7.
- 07- Alvarez DJ, Rockwell PG. Trigger points: diagnosis and management. *American family physician*. 2002 65(4):53-62.
- 08- Hasvold T, Johnsen R. Headache and neck or shoulder pain-frequent and disabling complaints in the general population. *Scandinavian journal of primary health care*.2019.1(3):19-24
- 09- Blåder S, Barck-Holst U, Danielsson S, Ferhm E, Kalpamaa M, Leijon M, Lindh M, Markhede G. Neck and shoulder complaints among sewing-machine operators: a study concerning frequency, symptomatology and dysfunction. *Applied ergonomics*.2014. 31;22(4):1-7.
- 10- Westgaard RH, Jansen T. Individual and work related factors associated with symptoms of musculoskeletal complaints. II.Occupational and Environmental Medicine.2019.;49(3).54-62.
- 11- Öztürk N, Esin MN. Investigation of musculoskeletal symptoms and ergonomic risk factors among female sewing machine operators in Turkey. *International Journal of Industrial Ergonomics*. 2011.41(6):85-91.

- 12- Côté P, van der Velde G, Cassidy JD, Carroll LJ, Hogg-Johnson S, Holm LW, Carragee EJ, Haldeman S, Nordin M, Hurwitz EL, Guzman J. The burden and determinants of neck pain in workers. *European Spine Journal*. 2008.17(1):60-74.
- 13- Guez M, Hildingsson C, Nilsson M, Toolanen G. The prevalence of neck pain. *Acta Orthopaedica Scandinavica*. 2019.;73(4).5-9.
- 14- Fejer R, Kyvik KO, Hartvigsen J. The prevalence of neck pain in the world population: a systematic critical review of the literature. *European spine journal*. 2006.15(6):34-48.
- 15- Ariens GA, Van Mechelen W, Bongers PM, Bouter LM, Van Der Wal G. Physical risk factors for neck pain. *Scandinavian journal of work, environment & health*. 2000.8(9).16-19.
- 16- Chiu TT, Ku WY, Lee MH, Sum WK, Wan MP, Wong CY, Yuen CK. A study on the prevalence of and risk factors for neck pain among university academic staff in Hong Kong. *Journal of occupational rehabilitation*. 2002.12(2):77-91.
- 17- Björkstén MG, Boquist B, Talbäck M, Edling C. The validity of reported musculoskeletal problems. A study of questionnaire answers in relation to diagnosed disorders and perception of pain. *Applied ergonomics*. 2019.;30(4):25-30.
- 18- Rugbeer N, Neveling N, Sandla. The prevalence of work-related musculoskeletal disorders in long-distance bus drivers. *South African Journal of Sports*. 2016.28(2): 55-88.
- 19- Saberi HR, Moravveji AR, Fakharian E, Dehdashti ARJD, syndrome m. Prevalence of metabolic syndrome in bus and truck drivers in Kashan, Iran. *BMC Musculoskeletal Disorders*. 2011 3(1): 1-5
- 20- Mujawar JC, Sagar JHJlJoo, medicine e. Prevalence of upper cross syndrome in laundry workers. *Indian Journal of Occupational and Environmental Medicine*. 2019 23(1): 54-60