

Prevalence of Neck Pain among Clinical Laboratory Technicians in Mumbai

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ABSTRACT

Introduction: Work related musculoskeletal pain is on rise of which neck pain is the most common. Clinical laboratory technicians are prone to develop neck pain due to constant exposure to microscopic work for prolong periods.

Aim & Objectives: The aim of the study was to find the prevalence of neck pain in clinical laboratory technicians. The objective was to explore the neck symptoms experienced by laboratory personnel with prolong use of microscope and determine other musculoskeletal problems faced by them.

Materials and methodology: A cross sectional study was performed among 40 clinical laboratory technicians working in Mumbai hospital to determine the prevalence of neck pain in them. A self-made questionnaire and Neck Disability Index (NDI) scale was used for the same.

Results: 100% prevalence of neck pain was found among the subjects. NDI scale reported that 12.50% had no disability, 52.5% had mild disability, 35% had moderate disability and none of them had severe disability. Subjects also reported radiating pain to either of arms and pain in other regions of body apart from neck. There was statistically very strong association ($p=0.03$) between NDI score and neck pain.

Conclusion: The prevalence of neck pain in clinical laboratory technicians was found to be highest (100%). Neck pain is attributed as one of the factor contributing to the increase in functional disability.

Keywords: Laboratory technician, Neck Pain, Static Posture, Occupation related

INTRODUCTION

Musculoskeletal problems are faced by everyone in daily life. Most of the musculoskeletal pain is work or occupation related. Over a period of time due to increased hours of work and constant postural habits, work related musculoskeletal pain has evolved. Neck pain constitutes a large proportion of the musculoskeletal disorders which affects both personal health and overall well-being. [1-3] The cervical spine is the most mobile segment as compared to other spinal segment. [4] It has a complex and intricate

construct because of which many loads and stresses are placed on the cervical spine leading to disorders. [4] Cervical spine being at the top most of the entire spine, all the forces are transmitted from the cervical spine first. The neck and shoulders are intimately connected by muscles and multiple nerve pathways, so pain in any one of the structures can lead to pain in the corresponding structure.

Neck pain is associated with the amount of fixed working postures. [5] The prevalence of work related musculoskeletal disorders (WRMSDs) is high in occupations

which involve constant postures for long hours, excessive use of specific movements, lack of corrective measures taken etc. like IT professionals, call centre jobs, laboratory technicians, watch repairers, Tailors and many more. Of these, microscope users show high prevalence of neck pain, shoulder pain, elbow pain and hand pain. [5,6]

A clinical laboratory technician is a person who studies microscopic life i.e growth, interactions and characteristics of micro-organisms such as bacteria, fungi, parasites, viruses, algae etc. They work as to utilize their knowledge in a way to improve outcomes in medicine or some industry. The main aim of the clinical laboratory technician is to identify the causative organism in the given sample and diagnose the probable disease. A clinical laboratory technician is constantly associated with microscope throughout the day to examine the given samples.

The associations of prolonged use of microscope with development of chronic pain syndromes have been recognized. [6,7] By nature, work with microscopes demands precision and the ability to concentrate over long periods of time. Looking through a microscope requires keeping the head in the same exact position for long period. [8] This type of posture especially strains the neck muscles. Depending upon the type of microscope and sample, work can be either standing or sitting. Sitting or standing for long periods of time strains the muscles and cause discomfort. Work with a microscope often requires forward or side abduction movements of the upper extremities in order for the adjustment knobs to be used. [8] Such kind of occupations which require maintaining static postures for long hours put increase load or forces on the muscles and tendons which contributes to fatigue. [9] Microscope work is strenuous to the visual system as well. [10] Eye fatigue, aggravation of ametropia, headache and stress due to long working hours in these professionals have been reported. [10] Lack of awareness or ignorance to such symptoms and health issues may result in microscope users

becoming victim to many occupational hazards. Thus our study aims at finding the prevalence of neck and associated musculoskeletal problems in clinical laboratory technicians.

MATERIALS AND METHODOLOGY

Institutional ethics committee approval was taken before starting the study. The Study was conducted among 40 clinical laboratory technicians working in one of the hospitals in Mumbai. Both males and females were included in the study. It was a cross sectional type of study. A self-made questionnaire and the neck disability index were used to determine the prevalence of neck pain and their effect on functional activities. Neck disability Index is an outcome measure used to assess the severity of neck pain present in people with neck pain. The scale contains 10 sections. Each of the 10 sections is scored from 0 - 5. The maximum score is therefore 50. Level of disability is interpreted based on the scores. A score between 0-4 indicates no disability, 5-14 indicates mild disability, 15-24 indicates moderate disability, 25-34 indicates severe disability and a score above 34 indicates complete disability. [11] Subjects who were willing to participate in the study and those with minimum 2 years of experience were included and subjects not willing to participate, those with less than 2 years of experience and past neck trauma were excluded. A consent was taken before beginning the research. Research questionnaire and the NDI scale were distributed to the subjects. They were explained the motive behind the study and were asked to tick the appropriate option in the questionnaire and NDI scale applicable to them.

Statistical analysis: Descriptive statistics was used. Since the data was not normally distributed, spearman's correlation was used to find association between neck pain and NDI score using SPSS 16. Level of significance was set at 95%.

Data Analysis

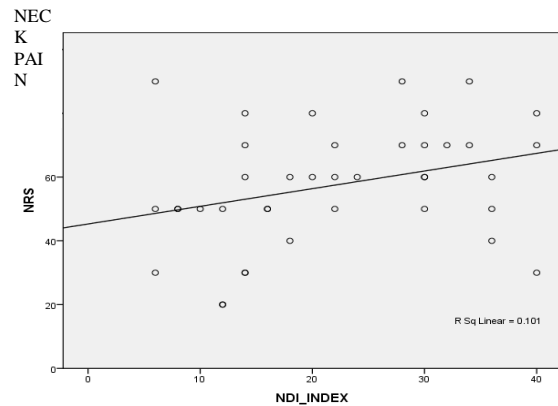
Both males and females were included in the study. 80% of the subjects were females and 20% were males. The mean age of males was 41.12±9.31 & females were 40.71±11.08. The mean years of experience of microscopic work are 12.47 ± 7.92 years. The subjects work for 6.02 ± 0.15 days per week and 7.22 ± 0.65 hours per day. The mean time of microscopic work of these subjects is 5.01 ± 1.37 hours per day. The subjects receive 59.87 ± 17.92 samples each day. Each one takes 9.62 ± 4.53 minutes to examine one sample. Mean break time taken by these employees is 16 ± 13.21 minutes. The subjects have neck pain since 5.75 ± 3.20 years.

NDI severity	NO	Mild	Moderate	Severe
	12.50%	52.50%	35%	0%

Table 1. Represents additional relevant Findings of the subjects

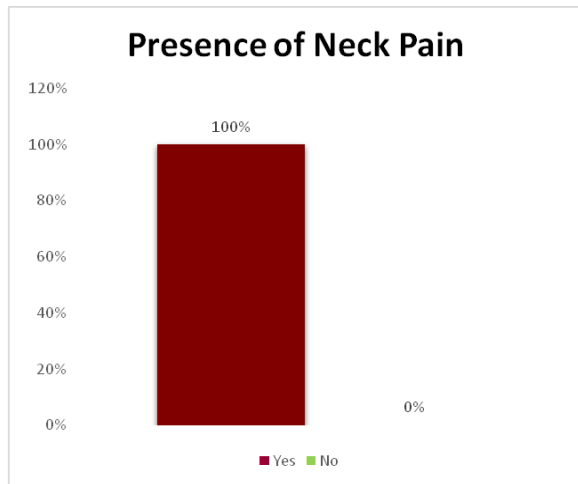
Factors	Present	Absent
Radiating pain	95%	5%
Pain in regions other than neck	95%	5%
Increased pain by end of the day	65%	35%
Restrict work due to pain	80%	20%
Skipped work due to pain	10%	90%
Physiotherapy treatment taken	75%	25%
Physiotherapy exercises practiced at home	65%	35%

TABLE 2: REPRESENTS CORRELATION BETWEEN NECK PAIN (NRS) AND NDI SCORE



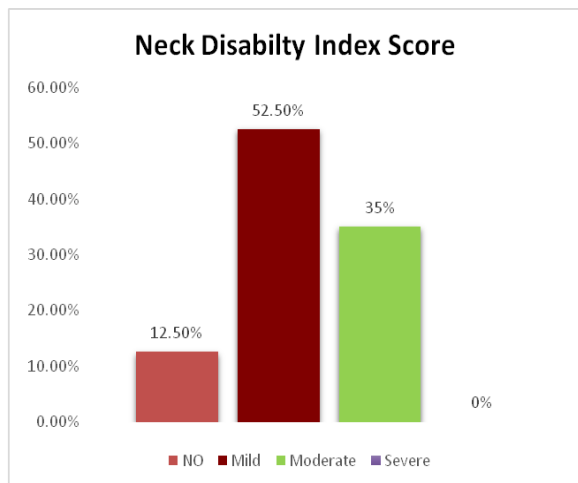
Correlation			
	Mean±SD	r value	Significance
NRS	5.75 ± 1.85	1	0.03
NDI Score	11.03 ± 5.30		

*. Correlation is significant at the 0.05 level (2-tailed)



Graph 1: Presence of neck pain.

Presence of neck pain	Yes	No
	100%	0%



Graph 2: Neck Disability Index Score

RESULTS

Presence of neck pain was found in all the subjects (100%)[Graph 1]. 85% of the subjects had sitting microscopic work whereas sitting and standing work was reported by 15% each. As represented (Table.1) 95% of them reported radiating pain to either of the arms along with neck pain. 95% of them had musculoskeletal pain mostly in shoulders and low back along with pain in neck. 65% of the subjects reported that their pain used to increase by the end of the day. 80% of the subjects reported that their pain used to restrict them from continuing work. Despite pain, hardly 10% of the population skipped work. 75% of the subjects took physiotherapy treatment for their neck and associated pain symptoms. But the subjects discontinued the treatment as the symptoms were relieved.

65% of them manage to practice the given exercises at home only when the symptoms occur; but discontinued exercises as the symptoms relieved.

Neck Disability Index scale showed that 12.5% of the subjects have no disability. 52.5% of the subjects have mild disability. 35% of the subjects have moderate disability and none of the subjects had severe to complete disability [Graph 2]. Very strong statistically significant correlation ($p=0.03$) was found between neck pain (NRS) and NDI score. Hence neck pain had statistically positive impact on functional activities related to ADLs. [table 2].

DISCUSSION

Work related musculoskeletal problems (WRMSDs) are on a rise and are affecting the social lives of the people. There was a strong evidence that High levels of static contraction, prolonged static loads, and awkward postures were associated with an increased risk for WRMSDs. [12] Not only dynamic activities or high intensity activities cause overuse syndromes but sedentary work or static postures are also responsible for a lot of musculoskeletal problems. [9] The WHO has characterised work related diseases as multifactorial to indicate that a number of risk factors contribute to causing of these disease. [5] WRMSDs arise from repetitive work activities which are not hazardous initially but cause a problem when they are practiced for a long period of time.

Our study included 40 professional clinical laboratory technicians of mean age 40.8 ± 10.64 years. Both males and females were included; 80% were females and 20% were males. The mean years of microscope work experience for these professionals was 12.47 ± 7.92 years. Mean working hours for these professionals on microscope per day was 5.01 ± 1.37 hours. Each of them receives 59.87 ± 17.92 samples every day. Mean time required for each sample was 9.62 ± 4.53 minutes. They take an average break of 16 ± 13.21 minutes in between.

The mean years of neck pain experienced by the subjects was since 5.75 ± 3.20 years.

High presence of neck pain (100%) in clinical laboratory technicians was reported in our study. The mean years of neck pain experienced by these professionals was 5.75 ± 3.20 years. All of the subjects reported that they have pain in their neck due to constant exposure to microscope, static neck postures for long a long period of time.

These clinical laboratory technicians have an occupation which is mostly sedentary i.e. sitting job with static posture of the spine and other body parts for long periods of time. Microscopic works requires a lot of steady posture for examination of samples. Keeping the neck in steady position and simultaneous movements of arms to adjust the eye piece is the main demand of the job. Static postures refer to physical exertion in which same position is held throughout the time. This exertion puts increased loads on the muscles and tendons which leads to fatigue. [9] These situations often lead to overuse or repetitive syndromes, persistence of such symptoms thus becomes chronic. Repeated exposures to such situations often do not let the healing happen completely leading to relapse of the symptoms. [13,14] Lack of movements also impedes the blood flow which is necessary for tissue healing. [9] Therefore, these practicing professionals are at high risk for the development of MSDs of the neck, upper back, lower back, shoulders, and upper extremities related to cumulative trauma. [12]

The subjects in our study not only reported exclusively neck pain but also radiating type of pain (95%) to either of the arms, shoulder & lower back pain (95% each). Radiating pain is referred to as pain along the nerve course which is irritated. Radiating pain may be experienced in the upper extremity due to irritation of nerves of cervical spine. Constant bending of neck causes constant muscle tension & excess load on the intervertebral discs and other soft tissues of the cervical spine. This causes

pressure on the nerve roots or nearby nerves, causing their irritation, inflammation and impingement and causes symptoms like tingling, numbness or simply pain in the upper extremity.

Pain not only affects body but it also has a great impact on work, especially if the pain is due to the occupation. According to our study, pain in the neck restricts 80% of the subjects from their work, but they also reported that their pain used to reduce with rest or change in the posture. Stiffness and pain caused due to prolonged posture is relieved by change in position or with movements. [15] Present study reports very strong statistically significant correlation between neck pain and NDI score therefore, correction of prolonged or faulty posture becomes necessary to reduce discomfort and to enhance healing.

Rehabilitation plays an important part in treatment of such syndromes. About 75% of our subjects underwent physiotherapy for their pain at least once and got positive results after the treatment. But they discontinued the treatment as soon as the symptoms were relieved. Almost 65% of them manage to practice these exercises at home which reduce their pain. But as the symptoms used to subside, subjects did not follow the exercise programme which leads to re occurrence of the pain symptoms.

Based on the results obtained in our present study it has been observed that all the participants showed presence of neck pain due to static and repetitive working postures.

CONCLUSION

We conclude that there is 100% prevalence of neck pain in clinical laboratory technician and radiating pain to either of the arms along with musculoskeletal pain in shoulder and lower back. Also neck pain is found to be one of the factors contributing to the increase in functional disability in laboratory technicians.

Limitations: Study was carried out on smaller sample size, which reduces generalization. Data was collected only from Government hospitals, Private hospitals were not included. Associated pain areas like Shoulder and low back areas were not assessed in detail for Symptoms.

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