

Prevalence of Neck Pain among Laptop Users in Administrative Staff

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Abstract: **Background:** Neck pain (NP) is a common problem in the community, affecting approximately 70% of people at some point in their life. The prevalence of neck pain in administrative staff is 85.71%. Peoples who use laptops are at greater risk for neck pain complaints. The prevalence of neck pain and other musculoskeletal problems was found higher in most of the staff because of the extended use and adopting improper posture while using laptop. The incidence and prevalence of neck pain is increased with the development of information technology and the move toward service sector Oriented employment, and which is further influenced by an increase in sedentary work as well as occupational and recreational computer use. **Aim:** The aim of this study is to evaluate the prevalence of neck pain among laptop users in administrative staff. **Method:** A cross sectional survey was carried out among working Professionals who are administrative staff. The sample (n=105) staff were selected. 105 administrative staff were taken as per selection criteria which included both male and female between the age group of 25 to 50 years. Using convenience sampling, the staff Laptop Use and Neck Pain Risk Questionnaire with informed consent was distributed among 105 administrative staff. Laptop use was taken as outcome measurement parameters. **Results:** It was observed that long time use of laptops was ergonomically inappropriate. The prevalence of neck pain and other musculoskeletal problems was found to be higher in most of the staff because of the extended use and adopting improper posture while using laptop. Poor adaptation of posture was mainly because of unawareness about laptop ergonomics. The population of 105 subject (75 male 35female) were surveyed for the prevalence of neck Pain and disability in the age group 25-50years. Out of 105 staff NPRS score were no pain 15 (14.28%) staff and pain in 90(85.71%) staff Therefore prevalence of neck pain was 85.71%. **Conclusion:** The above study show that the neck pain in subjects between age 25 to 50 years who use laptop in sitting position for more than 6 hrs/day and. 85.71% showed neck pain. The study concluded that overuse of laptop in day-to-day life shows neck pain. But every patient neck pain is due to laptop use.

Keywords: Neck Pain, Neck disability index, Numerical pain rating scale

1. Introduction

Musculoskeletal pain has become a considerable issue worldwide, and encompasses a wide range of musculoskeletal tissue injuries, some of which are work related.¹ These kinds of disorders affect many areas of the body such as the neck, upper extremities or back.¹ Neck pain may arise from any of the innervated structures in the neck, such as intervertebral disc, muscles, ligaments, zygapophyseal joints, Dura or nerve roots. However, in most cases, the pathophysiological mechanisms underlying neck pain are unclear.¹

Nowadays, laptops are becoming so useful, fast and powerful that they are frequently replacing desktop computers and bring many benefits to Staff.¹

It was reported by Shears (1995) and McDonald (1995) that laptops provide flexibility in the learning process and that people appear to enjoy using them.¹ B Laptop users frequently assume inconvenient postures while using laptops.¹ Some of these postures are lying on the floor, using desks that are not designed for computers, and placing the laptop on one's lap.¹ This leads to uncomfortable or unhealthy postures for the laptop users that may lead to injury or discomfort.¹

Neck pain is the pain experienced anywhere from the base of the skull at ear level to the upper part of the back or shoulder.² Symptoms of neck pain can include general aches and pains that can be postural fatigue in the neck, shoulders, arms, or persistent pain or discomfort in soft tissues surrounding the neck and shoulders.² Neck pain and laptop users are clearly connected due to extended periods of sitting in a certain position with no breaks to stretch the neck muscle.² More than four to five hours of daily laptop use is a noted risk factor for neck pain in adolescents. An ideally aligned neck has a slight lordotic curvature. Prolonged laptop use and sitting with rounded shoulders and faulty neck posture disturbs the normal lordotic curve of neck leading to muscular imbalance and consequently neck pain.² Keeping the neck in proper alignment is very important in preventing neck pain.²

Several possible pathophysiological mechanisms of neck pain disorders have been proposed in the literature. According to Visser and Van Dieën, it is unlikely that a single comprehensive pathophysiological mechanism exists that is responsible for tissue damage. Selective and sustained activation of type I motor units can be seen as the most influential hypothesis for the development of muscle damage due to sustained low-intensity tasks (the Cinderella hypothesis)³. This may lead to Ca²⁺ accumulation in the

active motor units and other homeostatic disturbances due to limitations in local blood supply and metabolite removal in muscle compartment with larger numbers of active motor units. Additional mechanisms, such as nociceptor sensitization due to intra-muscular shear forces are also assumed to play a role³.

In current era of information technology, laptops are widely used by staff. Though information, communication and technology are being used to improve health care systems, there are also associated health hazards with the use of these devices. Community based studies worldwide reported ranging from 7% to 11%.⁴ Prevalance of neck pain among office administrative staff has been reported between 15% to 34.4%.⁴

The etiology of work-related neck pain disorders (NPD) seems to be multidimensional and is associated with physical and psychosocial factors.⁵ A number of factors, including both individual factors (e.g. gender and age) and work related factors (e.g. repetitive work, prolonged sitting, and static posture), and also psychosocial factors have been discussed as risk factors for neck pain in office worker.⁵

Work related psychosocial factors, such as such as interpersonal associations at work, funds, and fiancés appear to play a major role on the occurrence of neck pain.⁵ Studies have provided evidence showing the role of these factors and the importance of controlling the risk factors for reducing or modulating occurrence of neck pain disorder in administrative staff.⁵

It may be noted that the laptop was not designed for long or constant use. The usages of laptop for four to five hours, each day is well unknown risk factor for neck pain.⁶ Common aches and pain in the neck, shoulders, arms, as well as continuous pain or discomfort in soft tissues around neck and shoulders are all symptoms of neck pain.⁶ A computers users with neck oain has reduced activity of cervical extensors muscle whereas improved activity of upper trapezius muscle, as related to those who are computer users having no neck pain.⁶

Women are more prone to develop neck pain than men and risk increase with age.⁷

The most common reason for work absenteeism among office workers is because of pain or tenderness in the neck region , inhibiting working abilities.⁸

With the growing use of laptops by staff. It is clear that staff members are potentially higher risk of developing neck and upper limb pain. So it is needed that musculoskeletal disorder in relation to laptop users are well understood to allow for appropriate precaution to be taken.

2. Materials & Methods

Project was approved by Ethical Committee of Nanded physiotherapy college&Research centre Nanded. Study was designed to determine the prevalence of neck pain among the administrative staffin colleges. Sample of 105 subjects were taken. Study subject included all of the administrative

staff in colleges in Nanded district. Then the purpose of the test was explained to all the subjects and consent was taken Patient Performa included demographic information, neck pain, history, NPRS Score and Neck disability score. Pre-assessment Should be done in that the outcome measures Included NPRS, Neck Disability Index. After the pre-assessment all interventions were performed.

Statistical Analysis

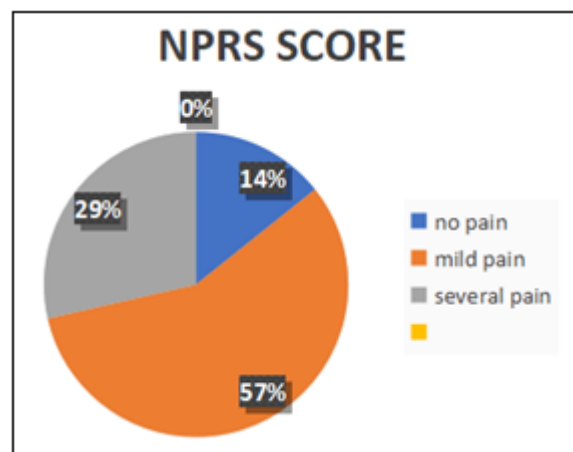
Data analysis was done using the Statistical Package for Social Sciences (SPSSversion 21). Basic descriptions were presented in the form of percentages. Simplebar Graph & pie chart were used to depict the neck disability index.

3. Result

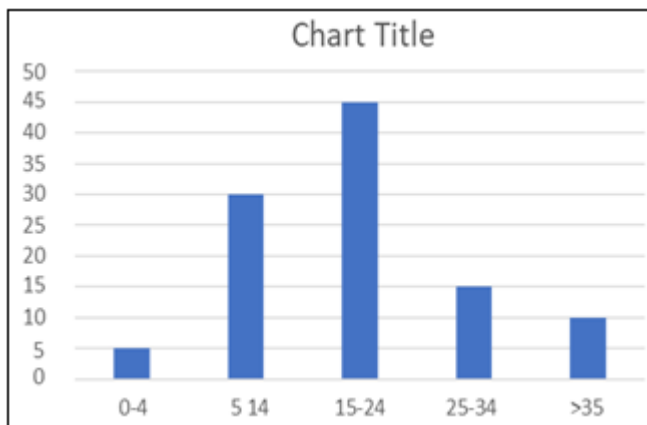
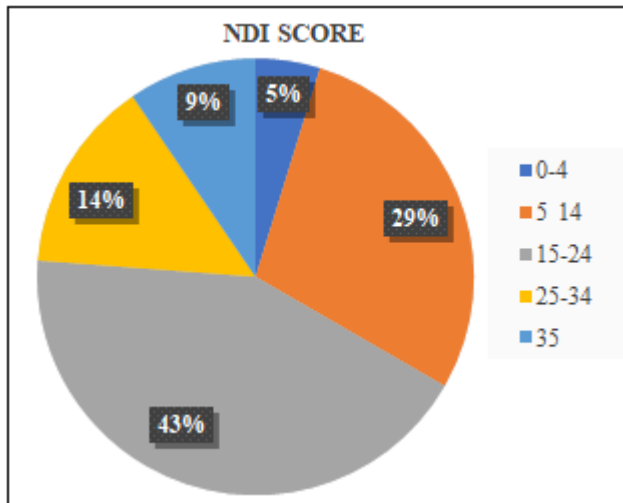
The population of 105 subject (75 male 35female) were surveyed for the prevalence of neckPain and disability in the age group 25-50years. Out of 105 staff NPRS score were no pain 15 (14.28%) staff and pain in 90(85.71%) staff. Therefore prevalence of neck pain was 85.71% On further classification it was found that 15(14.28%) staff had no pain, 60(57%) staff have mild pain , 30 (28.57%) staff have severe pain The intensity variable was used here as the measure of neck pain intensity.

The interpretation of score 0-4 with no disability have 15 staffs. 30 staff with 5-14 with mild disability. 45 staff with 15-24 with moderate disability. 15 staff with 25-34 with severe disability. 10 subject with more than 35 with severe disability.

Pain intensity	Number of staff	Percentage
No pain	15	14.28%
Mild pain	60	57.14%
Severe pain	30	28.57%



NDI score	Frequency
0-4	5
5-14	30
15-24	45
25-34	15
35	10



4. Discussion

The aim of this study was to explore the prevalence. In this survey of 105 staff, musculoskeletal disorders were observed in 105 patients (85.71%).

Neck pain is a common problem in the community, affecting approximately 70% of people at some point in their life. In comparison with any other health professionals, administrative staff workers report a higher incidence of work-related musculoskeletal disorder.

Jacobs et al in 2009 studied that 75.8% of student population use laptops in their educational institutions.¹ According to a study by Smith et al it was noticed that there is increase in laptop ownership from 66% in 2006 to 88% in the year 2009.¹

With increasing tendency of laptop use among staff it is clear that research on the prevalence of developing MSD due to laptop use is essential among this demographic. It is very evident from the results that maximum pain or discomfort is experienced in neck (69.3%).¹

According to a study by Kumari and Pandey (2010) it was also observed that similar type of result with 80% of participants were facing symptoms in neck, back, wrists, forearms, elbows followed by eye strain (42%) during the usage of computer.¹

Kumari and Pandey (2010) also found that prolonged sitting in awkward or poor postures were the common causes of these symptoms.¹ While working on laptop which leads to discomfort and Pain.¹ In the present study, 42.85% staff adopted a posture of slouching backward and 28.57% of the staff adopted a posture of lying on stomach while performing recreational activities. For academic and work related purposes, majority of staff adopted slouching forward posture.¹

A study by Moffet et al. (2002) also supported the result showing impact of two work situations (Laptop and desktop) on muscle activity and neck postures of individuals.¹

They observed that during the use of laptop individuals bend their head forward, had more back trunk inclination and wrist extension, resulting in more symptoms in back, wrist and neck. It was found that the setup of workstation influenced the physical exposure inconsistent while working on laptop.

Straker et al. (1997a) also reported that users of laptop tried to assume posture that would compromise their typing posture by increased neck, shoulder and elbow flexion. They adopt this posture in order to see a lower screen and reach a higher keyboard.¹

Harbison and Forrester (1995) also found that laptop users required increased forward head inclination because of lack of adjustability of laptop screen.¹ A study done by Ariens et al. also found a positive relation between neck flexion and neck pain, suggesting an increased risk of neck pain for those who spent a high percentage of the working time with the neck at a minimum of 20 degree of flexion.¹

This study showed that the factors associated with neck pain were past history, a physical exercise, duration of reading and bending or twisting in an awkward neck position.⁹

Upper musculoskeletal extremity complaints among computer office workers are known to be associated with both work related psychosocial and physical factors.¹⁰

The result of our study is in accordance with other studies that neck pain is a significant problem with prolonged laptop users. Therefore, preventive measures like ergonomics advice, postural adopted demonstration of neck exercises are to be integrated in work station of prolonged use of laptop.

Engaging laptop users in physical activity as a part of their work day, frequent micro breaks of 30 sec once every 20-40 min are an effective means to reduce neck pain and these micro breaks have no adverse effect on worker productivity.

Also, the use of neck muscles exercise are useful in treating those who have developed neck pain. The advantage of our study is that it explores all pain related complaints, while other studies explored only pain. In addition, our study includes multiple body parts, unlike other studies that included only one site.

The study findings also revealed that musculoskeletal disorders were one of the main causes of sick leave among study subjects.

5. Conclusion

The above study show that the neck pain in subjects between age 25 to 50 years who use laptop in sitting position for more than 6 hrs/day and. 85.71% showed neck pain.

The study concluded that overuse of laptop in day to day life shows neck pain but not every patient neck pain is due to laptop use.

The study depicted that use of laptop for longest period, adopted a slouching forward posture and not taking break while working on laptop.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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