



PREVALENCE OF NECK PAIN IN UNDERGRADUATE COMPUTER SCIENCE STUDENTS IN VISNAGAR CITY OF GUJARAT

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Abstract: The aim of this study was to find out the prevalence of neck pain among computer science students in Visnagar city. A cross sectional study performed among 200 Computer Science students aged 18 to 22 years. Results revealed 51.5% prevalence rate, 48.5% of participants had no disability, 48.0% had a mild disability, and 3.5% had a moderate disability. Students' self-reported gender distribution was 67% male and 33% female based on the results of the self-questionnaire. A study reveals mild neck pain among undergraduate computer science students, affecting everyday tasks. To prevent accidents and promote healthier habits and ergonomic education should be enhanced.

Index Terms - Neck pain, NDI, Musculoskeletal disorders, Musculoskeletal symptoms.

Introduction: Part of the long, flexible backbone that runs through the majority of the body is the neck. Seven vertebrae (C1 through C7) make up the cervical spine, and intervertebral discs them from one another. Throughout activity, these discs serve as shock absorbers and permit unrestricted spinal movement. The most superior part of the vertebral column, situated between the cranium and the thoracic vertebrae, is the cervical spine. There are seven different vertebrae in all, and two of them have special names:

- The atlas refers to the first cervical vertebra, or (C1).
- Axis is the name given to the second cervical vertebra (C2).

The cervical spine has two main purposes: it protects the spinal cord that extends from the brain and supports and cushions loads to the head and neck while allowing for rotation.^[1]

Static loads, whole-body vibrations, and repetitive motions are examples of extrinsic variables that might affect the cervical spine.^[2] Supporting and enhancing head and neck movement is the primary function of the cervical spine.^[3,4]

In the adult population, neck pain is one of the most common musculoskeletal conditions.^[5] Between 16.7% and 75.1% of people worldwide have it.^[6] The complex etiology of this illness involves multiple factors: Individual factors (age, BMI, history of musculoskeletal pain), behavioral factors (smoking and degree of physical activity), psychosocial factors (job satisfaction, stress level, anxiety, and depression), and ergonomic factors. (strenuous physical activity, use of force and vibration, inadequate posture, repetitive movement)^[7,8]

Throughout daily life and at work, neck pain is a leading source of morbidity and disability in many nations. In addition to raising expenses for society and businesses, it may have an effect on a person's health, social, and psychological well-being. Over 66% of the population will have neck pain at some point in their lives, indicating how common the problem is.^[9]

While it varies greatly between nations, neck pain is a global public health concern among general populations. It is strongly recommended that health data on all musculoskeletal diseases, including neck discomfort, be improved in all nations and regions in order to improve estimates of the Global Burden of Disease. To lessen the burden of neck discomfort in the future, more people need to be informed of the condition's risk factors, early detection, and care.^[10]

As a type of musculoskeletal pain, neck discomfort is becoming more prevalent and is distinguished by its high recurrence rate. One of the main causes of disability worldwide, neck pain affects most people in their later years and raises medical costs in addition to lowering quality of life and work productivity.^[11]

Students are no different from other people in that they utilize computers on a daily basis. The majority of colleges and universities today supply desktop computers or mandate that students have a laptop for academic work, in addition to the personal and social uses of technology. Students are frequently allowed to use laptops in class or even mandated to do so. Although a causal relationship between computer use and particular disorders affecting the upper limbs has not yet been demonstrated, computer use has been associated with musculoskeletal symptoms (MSS). A number of risk variables, including daily computer use, female gender, posture, and psychological factors, have been linked to computer-related MSDs in the workplace, according to prior studies.^[12]

The scientific study of human work is known as ergonomics. Ergonomics is more precisely the science of job design.^[13] Neck pain in adolescents increases the likelihood that they may experience similar symptoms as adults. Childhood trauma may be the cause of chronic neck discomfort that lasts a lifetime.^[14]

One of the most flexible and used parts of the body is the neck area. A prevalent musculoskeletal condition is neck pain. Though rarely life-threatening, neck issues can cause discomfort and stiffness, which frequently leads to the need for medical attention, missed work, and incapacity.^[15]

According to earlier research, preventative education may help reduce the incidence of certain musculoskeletal problems associated with laptop use. It is crucial to educate this community since medical personnel may treat these conditions and serve as role models for appropriate ergonomic use. It has been demonstrated that ergonomic education can avoid injuries and encourage good computing practices by addressing proper posture, work station design, and work habits.^[16]

RESEARCH METHODOLOGY:

TYPE OF RESEARCH - Observational study

STUDY DESIGN - Cross-sectional study

SAMPLE DESIGN - Convenient Sampling

STUDY POPULATION - Undergraduate computer science students with neck pain.

SAMPLE SIZE - 200 participants

STUDY SETTING - Nootan college of Physiotherapy, Sankalchand Patel university, Visnagar - 384315, Gujarat.

STUDY DURATION - January 2024 to April 2024.

SAMPLING CRITERIA:

Inclusion Criteria:

Both male & female

Age: 18 to 22 years

Neck pain because of computer use (more than 2 hours a day).

Exclusion Criteria:

Patients who have undergone a cervical surgical procedure.

Cervical fracture

Neck sprain & strain

Cervical radiculopathy

Any degenerative or inflammatory Spinal Condition.

OUTCOME MEASURE: Neck disability index(NDI)

DATA COLLECTION PROCEDURE:The research conducted in Visnagar city, Gujarat, focused on individuals with neck pain and followed a meticulous data collection process. Firstly, authorization was obtained from universities to conduct the study on their premises, ensuring compliance with institutional regulations. The data collection occurred in February and March 2024. During data collection, interviewers accompanied participants to address questions promptly and ensure a smooth process. To minimize bias, participants were instructed not to communicate during questionnaire completion. The Neck Disability Index (NDI) scale was employed to assess neck pain's impact on daily activities.

Scores categorized participants into different disability levels: none, mild, moderate, severe, or complete. A higher NDI score indicated greater disability, with a maximum score of 50. The mean test duration ranged from 3 to 7.8 minutes, making it feasible for clinical or research settings. In interpretation, NDI scores were categorized based on disability severity: 0-4 points (no disability), 5-14 points (mild), 15-24 points (moderate), 25-34 points (severe), and 35-50 points (complete).

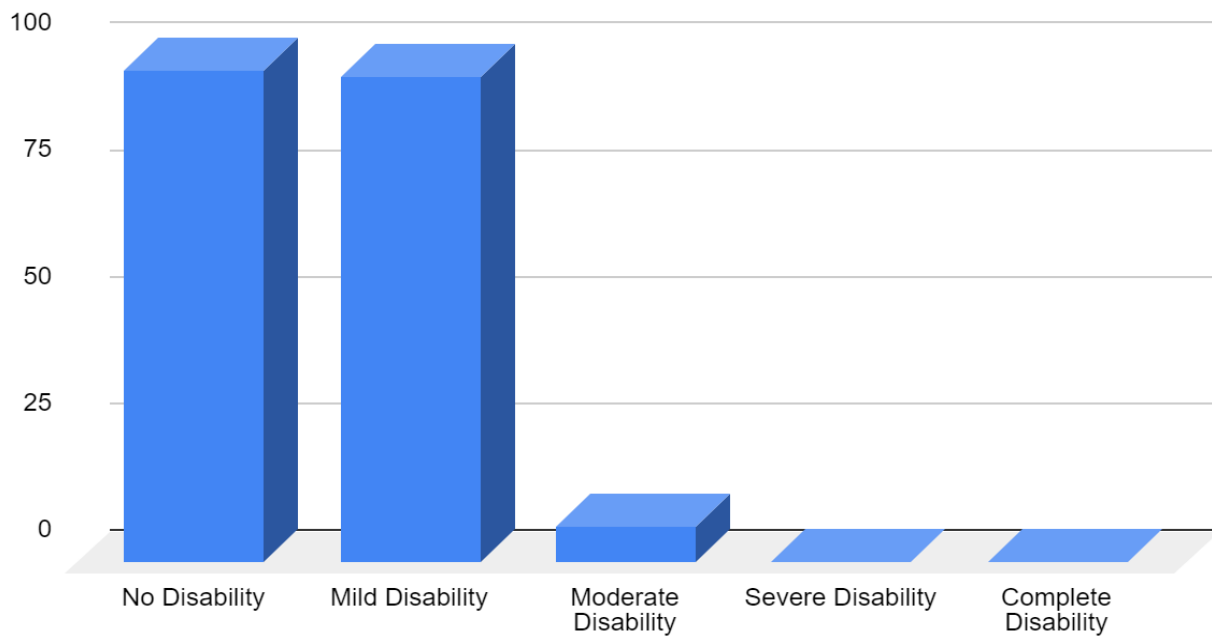
RESULT:

This study is about prevalence of neck pain in undergraduate Computer Science students was conducted with 200 participants. Mean age is 19.9 ± 1.40 years. In this study, male and female both included in which 134 participants were male and 66 participants were female.

Table 1 : Demographic data of participants :

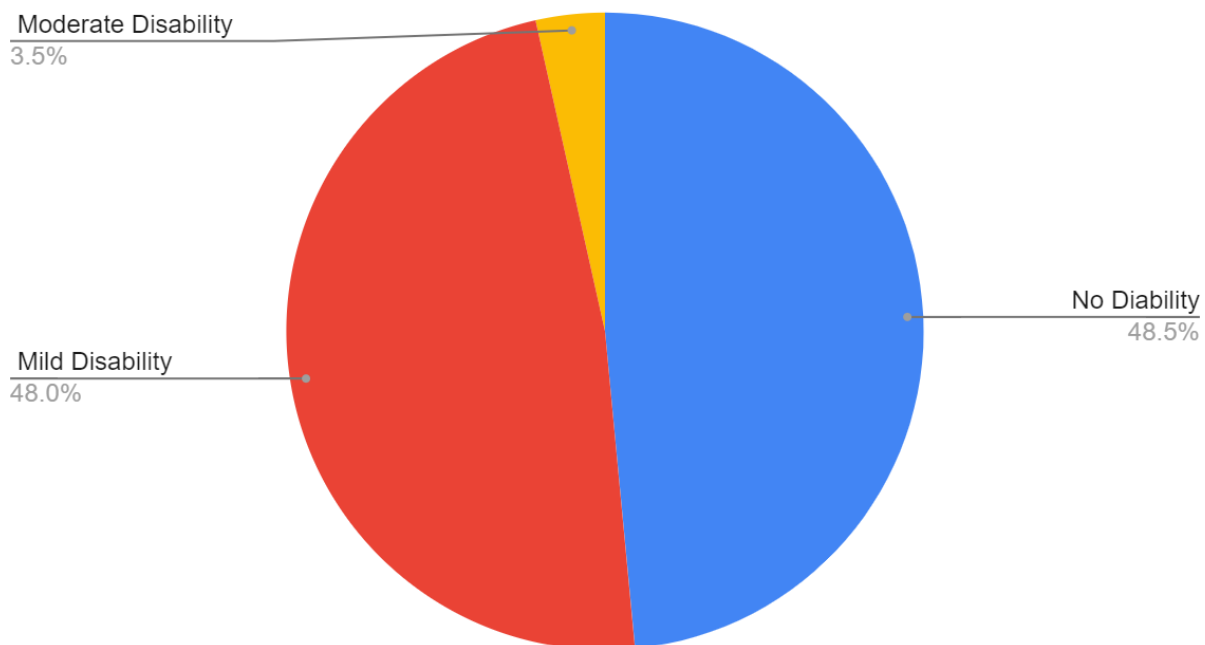
No. Of Participants	N = 200
Mean age	19.9 ± 1.40
Male	134
Female	66

Severity Of Neck Disability Index



Graph 1: This Bar diagram shows 97 students have no disability, 96 students have mild disability and 7 students have moderate disability

Prevalence of Neck pain



Graph 2 : This pie chart shows, the prevalence rate for neck pain is 51.5%. Out of 200 participants, 48.5% participants have no disability, 48.0% participants have mild disability and 3.5% of participants have moderate disability

DISCUSSION: It's concerning that adolescents with neck pain may experience symptoms similar to those of adults. Addressing childhood trauma as a potential precursor to chronic neck pain underscores the importance of early intervention and prevention strategies. Identifying predictive characteristics in younger populations could indeed be pivotal in curbing the prevalence of neck pain in adulthood.

The statistic regarding undergraduate students experiencing musculoskeletal issues in their necks and upper limbs is alarming. It highlights the need for proactive measures to promote better posture, ergonomic practices, and stress management among students, potentially lessening the burden of musculoskeletal issues later in life. Such findings underscore the significance of holistic approaches to healthcare that consider both physical and psychological factors in addressing neck pain.^[14]

The neck region is among the most used and flexible areas of the body. Neck pain is a common musculoskeletal disorder. Although they are rarely fatal, neck problems can cause stiffness and discomfort, which commonly results in medical attention being needed, missed work, and incapacity.^[15]

This study aimed to investigate the prevalence of neck pain among undergraduate computer science students in Visnagar city, Gujarat. To accomplish this, the researchers selected 200 participants based on specific inclusion and exclusion criteria, ensuring the relevance of the sample to the study's objectives. The participants had a mean age of 20 years.

Regarding gender distribution, the study found that 67% of the participants were male, while 33% were female. This gender breakdown provides insight into the composition of the study sample. The researchers utilized the Neck Disability Index scale as the primary measure to assess the level of disability associated with neck pain among the participants. The results indicated that out of the 200 participants, 97 reported no disability, 96 had a mild disability, and 7 exhibited a moderate level of disability. This breakdown highlights the varying degrees of neck pain severity experienced by computer science students.

The key finding of the study revealed that the prevalence rate of neck pain among undergraduate computer science students in Visnagar city was determined to be 51.5%. This statistic reflects the substantial proportion of students affected by neck pain, emphasizing the importance of addressing this issue within the academic community. Overall, the study contributes valuable insights into the prevalence and severity of neck pain among undergraduate computer science students, thereby informing potential interventions and support mechanisms to alleviate discomfort and improve overall well-being.

The previous study conducted by Nevein M M Gharib and Nashwa Hamid in 2013 focused on assessing the prevalence and associated risk factors of mechanical neck pain among female undergraduate students. The study involved 300 female volunteer students with ages ranging from 18 to 27 years old, and a mean age of 20.49 years. Data collection was facilitated through a self-administered questionnaire. The key finding of the study was a relatively high prevalence rate of neck pain among the participants, with 54% reporting experiencing neck pain. This prevalence rate was notably higher than the prevalence rate reported in the current study, which stood at 51.5%. Such variations in prevalence rates between the two studies could be attributed to several factors including differences in sample characteristics, methodology, cultural factors, or even changes in lifestyle or environmental factors. It's essential to consider these factors when interpreting and comparing the findings of different studies on the same topic.

The study conducted by Lloyd Long Yu Chan and Arnold Yu Lok Wong et al. in 2020 aimed to investigate the prevalence of neck pain among undergraduate students, specifically comparing rates across different undergraduate programs and exploring associated risk factors. Their findings revealed a relatively high prevalence rate of neck pain among undergraduate students, with 67.4% of participants reporting experiencing neck pain. This prevalence rate is indeed higher than the rate reported in the current study. Such differences in prevalence rates between studies could stem from various factors, including disparities in sample characteristics, methodology, cultural contexts, or even variations in the definition and measurement of neck pain used in the studies.

The study conducted by Siriluck Kanchanomai et al. in 2011 focused on identifying risk factors for the onset and persistence of neck pain among undergraduate students, with the aim of preventing the development of neck pain later in life. Data collection involved the use of a self-administered questionnaire at baseline. Among the 684 students recruited for the study, the prevalence rate of neck pain was reported as 46%. This prevalence rate is indeed lower than the rate reported in the current study. The study identified specific risk factors associated with both the onset and persistence of neck pain. Factors such as the computer screen position not being level with the eyes and self-rated suitable mouse position were associated with the onset of neck pain.

Additionally, the persistence of neck pain was predicted by factors such as the keyboard position being too

high and the use of a computer for entertainment purposes. Further research and interventions focused on optimizing computer workstation ergonomics and promoting healthy computer usage habits among students may be beneficial in reducing the prevalence and impact of neck pain in this population.

The Study Concluded Following : This research suggests that neck pain experienced by undergraduate computer science students is generally not considered severe, although it is a common musculoskeletal issue that results in discomfort and stiffness. While neck problems are not typically life threatening, they can still impact daily activities. The study advocates for enhancing ergonomic education, focusing on teaching proper posture, optimizing workstation design, and promoting healthy work habits. These measures aim to prevent injuries and encourage healthier computing practices. Failure to prioritize ergonomics when using computers increases the likelihood of developing health issues.

Limitation of the study :

Small sample size

An only selected sample in Visnagar city

Future recommendations of the study:

Carry out the study with a large sample size

Awareness of Physiotherapy among Computer Science college students

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