

PREVALENCE OF TENSION NECK SYNDROME AMONG FREQUENT COMPUTER USERS IN KARACHI

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ABSTRACT:

Background: Tension Neck Syndrome (TNS) is a widespread musculoskeletal disease related to prolonged computer use that causes neck and upper back pain. The condition is particularly prevalent among individuals who spend extended hours working at desks or using digital devices without taking adequate breaks or maintaining proper posture. The study aimed to determine the frequency of Tension Neck Syndrome (TNS) among regular computer users in Karachi, Pakistan, with a specific emphasis on students and professionals.

Objective: To Determine the Prevalence of Tension Neck Syndrome among Frequent Computer Users in Karachi.

Methods: A Cross-sectional study was done among 190 Computer users in Karachi, including professionals and students aged 19 to 40 years. The Study Technique which was used in this study was Convenience Sampling to draw the results. A Structured Survey was used to collect information on demographics, work habits, and symptoms of Tension neck syndrome (TNS). The Outcome measurement tools utilized in the study included the Neck disability index (NDI), the Northwick Park Neck Pain Questionnaire (NPQ), and the Visual Analogue Scale (VAS). The sample size was calculated using OPENEPI with a 95% confidence interval and a 5% margin of error. The data were analyzed using SPSS version 26. The NDI, NPQ and VAS were distributed to collect data for analysis and result interpretation.

Result: Among 190 participants, NDI showed 51.1% had mild and 21.6% moderate disability, while NPQ indicated 58.4% had minimal and 33.7% mild disability. Lastly, VAS results revealed that 80.5% reported moderate pain. These findings underscore the high prevalence of neck pain and the need for ergonomic prevention.

Conclusion: A Recent study shows a high prevalence of TNS among young computer users, with most reporting mild to moderate neck pain and disability.

INTRODUCTION:

In today's digital age, prolonged computer use has become an integral part of both professional and

personal lives, which is increasing day by day. Although technology has significantly improved

efficiency and connectivity, it has also led to an increase in musculoskeletal disorders, particularly Tension Neck Syndrome (TNS) ¹. The prolonged use of computers during daily work activities and leisure time is often cited as a cause of neck pain. Tension Neck Syndrome (TNS) is a localized form of myofascial pain that causes discomfort in the neck and shoulders, often associated with muscle tension and stress ². The Initial symptoms include neck and shoulder stiffness, fatigue, and dull pain. The pain may be aggravated by movement of the neck and shoulder, and it may be stronger at nighttime ³. The risk of developing musculoskeletal pain increases with an increase in the amount of time spent on computers. Several studies have shown that prolonged computer use causes discomfort all throughout the body, including the back, neck, shoulders, fingers, wrists, eyes, and brain ⁴. Neck symptoms have been associated with low or high screen position, shoulder symptoms with high screen position, and shoulder elevation in computer mouse users, and the risk of neck pain with poor keyboard placement. Adolescent computer use was extremely low in the early 1980s, but it grew rapidly thereafter, with 10-to 14-year-olds spending an average of eleven minutes per day on average between 1987 and 1988 and forty-seven minutes per day between 1999 and 2000 ⁵. Having the highest point of the display at or near eye level can help lessen the biomechanical strain on the neck, as lower-mounted gadgets are linked to increased activity of the neck extensor muscles due to a more flexed neck position ⁶. Frequent computer users, including office workers, students, and IT professionals, are at a higher risk of developing TNS due to sustained neck flexion, inadequate ergonomic setups, and insufficient movement breaks ⁷. A systematic review reported that globally, the prevalence of neck pain among computer users ranges from 43% to 66.7%, with the incidence increasing with age ⁸. A study among Portuguese office workers found that the prevalence of neck/shoulder pain ranged from 20% to 60%, highlighting a significant concern among computer users ⁹. Another cross-sectional study was conducted in Ahmedabad by Shah and Patel in 2015. According to the study, the prevalence of neck pain in India was 47 percent ¹⁰. According to research conducted in Karachi, 26.5% of software engineers

reported having neck pain at the moment. By contrast, 64.32% have previously experienced neck pain linked to things like extended computer use and poor ergonomics ¹¹. Many studies conducted in different parts of the globe suggest that work-related neck pain is more prevalent among different work-related musculoskeletal disorders associated with computer use. Literature revealed that the studies attesting to this fact were conducted in Nigeria (33.9%), Turkey (21.6%), Estonia (51%), Sweden (50%), Finland (20.7%), Iran (54.9 %), India (45.2%), and Pakistan (16.8%) ¹¹.

The prevention needed for treatment includes inserting needles into the skin at various anatomic locations to reduce pain or induce anesthesia. The muscle relaxant cyclobenzaprine for the acute neck is administered. The modification of the muscle and connective tissue grows function, relaxation, and well-being. Procedures designed to relieve spinal pressure, orthopedic devices are used to immobilize the neck and support the head and neck, often after an injury. Active or passive physical exercise designed to strengthen or stabilize the spine may reduce pain, prevent injuries, and improve posture and body mechanics ¹². The lack of awareness of preventive measures and ergonomic interventions further exacerbates this issue, leading to chronic pain and decreased productivity. This study aimed to determine the prevalence of Tension Neck Syndrome among frequent computer users in Karachi.

METHODOLOGY:

Study Setting:

Participants were selected from computer users at Indus University, Karachi University and Dow University as well. They were chosen based on their frequent use of digital devices for academic and personal activities.

Study Design:

A Cross-sectional study was designed to fulfill the purpose of the study.

Sampling Technique:

Non-Probability Convenience Sampling Technique was used in this study.

Duration of the Study:

The study was conducted over six months. This period covered the planning phase, data collection from participants, followed by data analysis and interpretation to draw meaningful conclusions.

Study population:

The study included regular computer users in Karachi, including students and office workers aged 19 years and above, who used computers for a minimum of two hours daily.

Sample Size:

The sample size for this study was determined using the OPENEPI software. Based on a 95% confidence level and a 5% margin of error, the calculated sample size was $n = 190$.

Inclusion Criteria:

- Individuals aged 19 to 40 years.
- Use of computers for at least 2 hours daily.
- Willingness to take part and provide consent.

Exclusion Criteria:

- Individuals with a history of neck injuries or surgeries.
- Those with neurological disorders affecting neck mobility.
- Individuals who are above 40.

Data Collection:

Volunteers were provided with comprehensive information about the study's objectives, methodology, potential risks, and benefits. Participants were selected through convenience sampling. The purpose of the study was communicated to each participant, and written consent was obtained before data collection. Data from the study environment were collected using standardized outcome measures. The study included 190 participants aged between 19 to 40 years. To ensure uniform exposure conditions, only individuals who used computers for at least two hours per day were included.

The Neck Disability Index (NDI), Northwick Park Neck Pain Questionnaire (NPQ) and VAS were distributed to gather data for analysis and result generation. Participants' privacy and confidentiality were maintained throughout the study.

Data Analysis:

The data were analyzed using descriptive statistical techniques. Frequencies and percentages were calculated to summarize demographic characteristics and key study variables. All data were carefully entered and processed in **SPSS version 26**, ensuring consistency, accuracy, and reliability in the statistical interpretation of the study findings.

Ethical considerations:

The study followed strict ethical standards to protect participants' rights, ensuring voluntary participation and the freedom to withdraw at any time. Personal data was kept confidential and anonymized for research use only. All procedures adhered to established academic and ethical guidelines.

RESULTS:

A total of 190 participants were included in the study. Among them, 35% were male, while 65% were female (Figure 1).

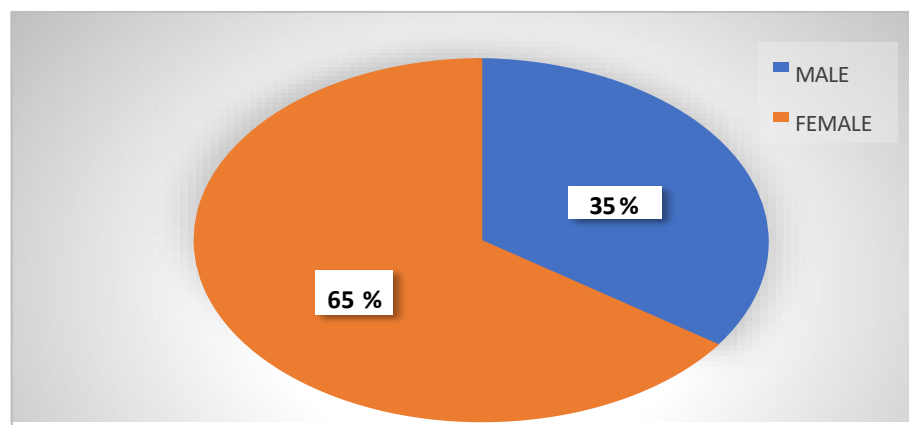


Figure 1: Higher Proportion of Female Participants Compared to Male

The participants in this study ranged in age from 19 to 40 years. The majority, 167 participants (87.9%), were between 19 and 26 years old. A smaller proportion 22 participants (11.6%), were aged

between 27 and 33 years. Only 1 participant (0.5%) fell within the 34 to 40 age group. (Figure-2)

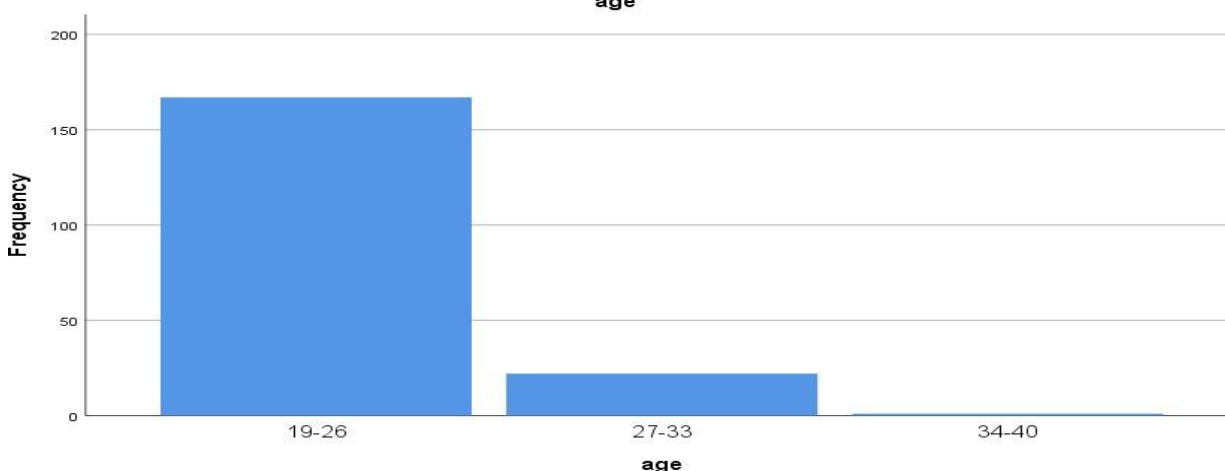


Figure 2: Age-wise distribution of study participants represented in frequency and percentage

Neck Disability Index (NDI) Score:

The Neck Disability Index (NDI) scores among the study participants revealed varying levels of neck-related functional impairment. Out of a total of 190 respondents, 23.2% reported no disability (NDI score 0–8%), while the majority, 51.1%, experienced mild disability (NDI score 10–28%). Moderate

disability (NDI score 30–48%) was observed in 21.6% of participants. A smaller proportion reported more severe levels of disability, with 2.6% falling into the severe category (NDI score 50–64%) and 1.6% classified as having complete disability (NDI score 70–100%). These findings indicate that while most participants had only mild to moderate

functional limitations, a small yet notable percentage experienced significant disability due to neck issues.

Table-3: Distribution of Participants According to Neck Disability Index (NDI) Scores (n = 190)

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
No disability	44	23.2	23.2	23.2
Mild disability	97	51.1	51.1	74.2
Moderate disability	41	21.6	21.6	95.8
Severe disability	5	2.6	2.6	98.4
Complete disability	3	1.6	1.6	100.0
Total	190	100.0	100.0	

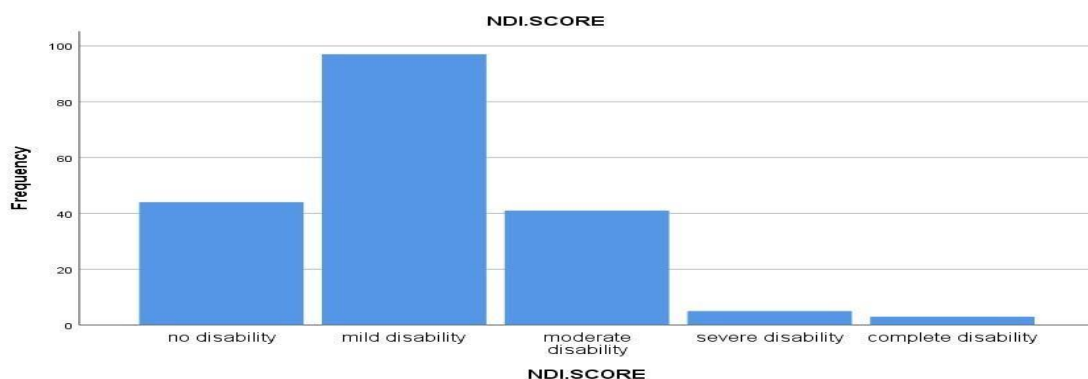


Figure 3: Frequency Distribution of Neck Disability Index (NDI) Scores among Participants

Northwick Park Neck Pain Questionnaire (NPQ)

Scores:

The Northwick Park Neck Pain Questionnaire (NPQ) scores among the 190 participants indicated varying degrees of disability related to neck pain. Most respondents, 58.4%, reported minimal disability (NPQ score 0–20%), while 33.7% experienced mild disability (20–40%). Moderate disability (41–60%) was noted in 5.8% of the participants. A smaller portion reported more severe

forms of disability, with 1.1% falling into the severe category (61–80%) and another 1.1% experiencing complete disability (81–100%). These results suggest that while most individuals had relatively low levels of neck pain-related disability, a small percentage faced moderate to severe functional limitations.

Table 4. Distribution of Participants According to Northwick Park Neck Pain Questionnaire (NPQ) Scores

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Minimal disability	111	58.4	58.4	58.4
Mild disability	64	33.7	33.7	92.1
Moderate disability	11	5.8	5.8	97.9
Severe disability	2	1.1	1.1	98.9
Complete disability	2	1.1	1.1	100.0
Total	190	100.0	100.0	

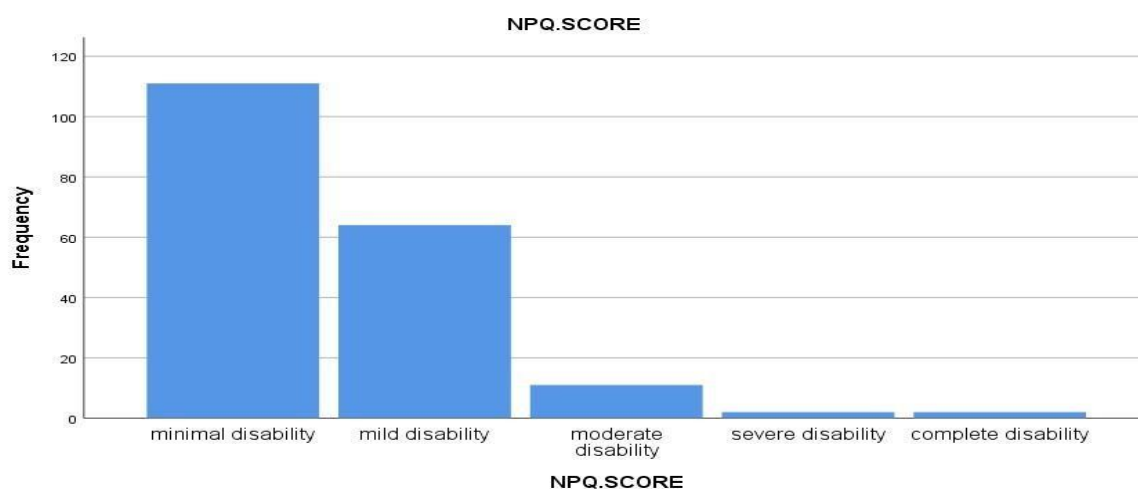


Figure 4: Frequency Distribution of Northwick Park Neck Pain Questionnaire (NPQ) Scores among Participants

Visual Analogue Scale (VAS) Scores:

Table 5 presents the distribution of neck pain severity among participants using the Visual Analogue Scale (VAS). The majority of respondents (81.1%) reported experiencing moderate neck pain, scoring between 1-5 on the scale. A smaller proportion (11.6%) indicated severe pain levels, ranging from 6-10 which suggests a high degree of

discomfort. Notably, only 7.4% of the participants reported no pain at all (score 0). These findings highlight a significant prevalence of neck discomfort within the study population, with most individuals experiencing moderate symptoms.

Table 5. Neck Pain Intensity Based on Visual Analogue Scale (VAS) Scores

Visual Analogue Scale				
Variables	Frequency	Percent	Valid Percent	Cumulative Percent
No Pain	14	7.4	7.4	7.4
Moderate Pain	154	81.1	81.1	88.4
Worst Pain	22	11.6	11.6	100.0
Total	190	100.0	100.0	

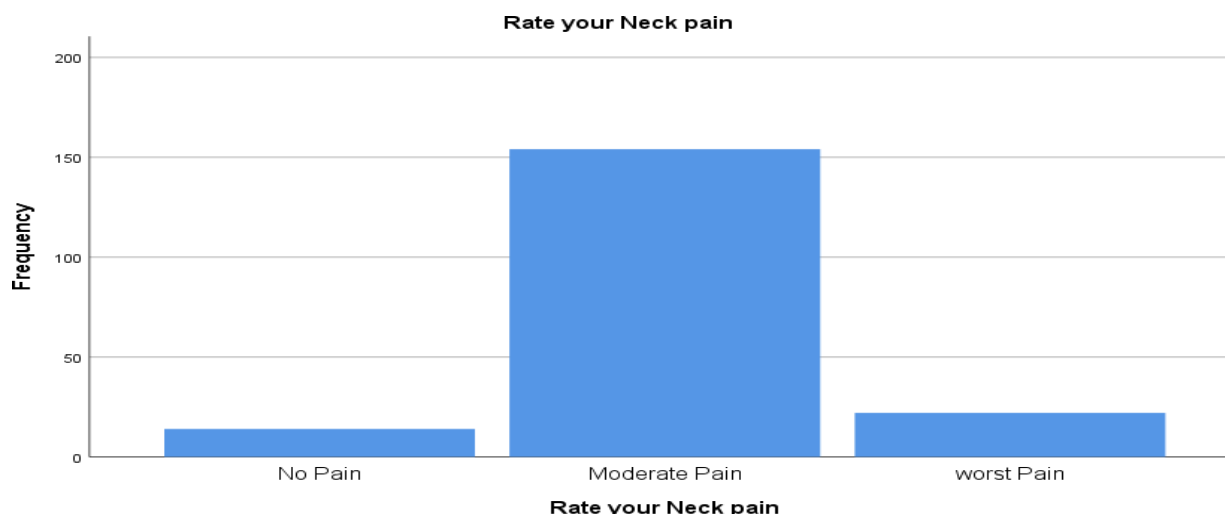


Figure 5. Neck Pain Intensity Based on Visual Analogue Scale (VAS) Scores

DISCUSSION:

Tension Neck Syndrome (TNS) is characterized by myofascial pain primarily affecting the neck and shoulder areas^{13, 14}. It is commonly associated with poor postural habits, especially during prolonged computer use. In such scenarios, the neck often assumes a forward-flexed position, which alters the natural cervical curvature and imposes excessive strain on the surrounding musculature. This altered alignment has been linked to persistent musculoskeletal discomfort in the cervical region, along with upper back tightness and muscular spasms in the upper limbs.

This study aimed to assess the prevalence and impact of Tension Neck Syndrome (TNS) among frequent computer users aged 19 to 40 years. The findings reveal a significant presence of neck-related symptoms, particularly among younger adults aged 19–26, with females constituting the majority of the affected population. Over 63% of participants reported experiencing neck pain during or after computer use, with 48.9% indicating that symptoms interfered with their work or daily activities.

The high percentage of mild (51.1%) and moderate (21.6%) disability, as measured by the Neck Disability Index (NDI) and the NPQ results, where 33.7% showed mild and 5.8% moderate disability, underscores the functional implications of TNS. Notably, the Visual Analogue Scale (VAS) revealed that 80.5% experienced moderate pain,

reinforcing the discomfort experienced by computer users. Only 16.3% of individuals had sought professional help, and even fewer (15.8%) had received a formal diagnosis, suggesting that TNS remains underdiagnosed and underreported.

The prevalence of TNS symptoms may be attributed to several modifiable ergonomic and behavioral factors. Most respondents (56.3%) did not use ergonomic equipment, and 27.9% reported not taking regular breaks. These findings align with literature that highlights poor posture, lack of breaks, and non-ergonomic setups as major contributors to musculoskeletal discomfort among computer users. These behavioral patterns can result in prolonged static postures and muscular overuse, especially in the neck and upper trapezius region, contributing to the development and persistence of TNS symptoms.

STRENGTHS:

- The study targets a specific and relevant population, frequent computer users in Karachi, where sedentary lifestyles and screen exposure are common, enhancing the contextual relevance.
- Standardized Assessment tools such as the Neck Disability Index (NDI), Northwick Park Neck Pain Questionnaire (NPQ), and Visual Analog Scale (VAS) were utilized, which

increases the reliability and comparability of the results.

- A sufficient number of participants (e.g., 190) was included, allowing for robust statistical analysis and generalizability within the target population.
- This design is appropriate for estimating prevalence between computer usage and neck symptoms in a defined population.
- Inclusion of participants from various computer-intensive professions improves the diversity and representation of the sample.

LIMITATIONS:

- As a cross-sectional study, it cannot establish causal relationships between computer usage and Tension Neck Syndrome.
- Findings may not be generalizable to populations outside Karachi or to individuals with different occupational or ergonomic conditions.
- Variables such as psychosocial stress, sleep posture, or pre-existing cervical conditions were not controlled, which may influence outcomes.

FUTURE RECOMMENDATIONS:

- Employers and Institutions should conduct regular workshops to raise awareness about ergonomics and neck health among computer users.
- Encourage users to take frequent breaks and perform neck stretching and strengthening exercises during work hours.
- Expand future studies to include participants from other cities and rural areas in Pakistan for broader applicability of findings.
- Suggest the integration of ergonomic policies in workplace health and safety regulations to reduce the burden of musculoskeletal disorders.

CONCLUSION:

The study highlights a notable prevalence of Tension Neck Syndrome (TNS) among frequent computer users, with 63.7% of participants reporting neck pain either during or after computer use. The majority of the study population were young adults aged 19–26

years (87.9%) and predominantly female (65.3%). Despite the high rate of symptoms, only 16.3% had consulted a healthcare provider, and 15.8% had received a formal diagnosis of TNS, suggesting a significant underdiagnoses. Functionally, 51.1% of participants reported mild disability and 21.6% reported moderate disability on the Neck Disability Index (NDI), while 33.7% experienced mild disability and 5.8% moderate disability on the Northwick Park Neck Pain Questionnaire (NPQ). Pain severity assessed via the Visual Analogue Scale (VAS) showed that 80.5% of respondents experienced moderate pain and 11.6% experienced severe pain. Additionally, ergonomic habits were lacking, 56.3% did not use ergonomic equipment, and 27.9% did not take regular breaks while using computers. These findings suggest that poor ergonomic practices and prolonged computer use are key contributors to TNS and associated functional limitations. Preventive strategies including ergonomic education, early intervention, and regular work breaks are essential to reduce the burden of neck pain and disability among computer users.

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CONFLICT OF INTEREST:

The author affirms that there are no financial, personal, or professional conflicts of interest that could have influenced the conduct, analysis, or reporting of this research. All procedures were carried out with complete academic honesty, transparency, and ethical responsibility.

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