INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

FREQUENCY OF TEXT NECK SYNDROME AND ITS ASSOCIATION WITH FORWARD HEAD POSTURE AMONG THE STUDENTS OF ABASYN UNIVERSITY PESHAWAR: A CROSS-SECTIONAL STUDY

Original Research

Zain Ul Abidin[1]*, Waseem Ahmad[1], Asma Muhammad[2], Zakir Ullah[3], Mariam Rahim[1], Salman Farooqi[4], Muhammad Awais Khan[5]
[1]Student, MS-OMPT, Riphah International University, Malakand, Pakistan.
[2]Physiotherapist, Northwest Institute of Health Sciences, Peshawar, Pakistan.
[3]Assistant Professor, Riphah International University, Malakand, Pakistan.
[4]Lecturer, Institute of Physical Medicine & Rehabilitation (IPM&R), Khyber Medical University, Peshawar, Pakistan.
[5]Physiotherapist, Physiocure Clinic, Dabgari Garden, Peshawar, Pakistan.
Corresponding Author: Zain Ul Abidin, Student, MS-OMPT, Riphah International University, Malakand, Pakistan, drzain2613@gmail.com
Acknowledgement: The authors acknowledge all participants for their cooperation during data collection.

Conflict of Interest: None
Grant Support & Financial Support: None

ABSTRACT

Background: The rapid rise in smartphone and laptop use has transformed academic routines but has also introduced new musculoskeletal health challenges among university students. Prolonged screen exposure, sustained neck flexion, and poor ergonomic practices are increasingly linked to Text Neck Syndrome and Forward Head Posture, particularly in technology-oriented disciplines. These postural deviations may lead to neck pain, functional disability, and long-term musculoskeletal consequences if unrecognized and unmanaged. Understanding the extent of these problems in student populations is essential for developing early preventive strategies.

Objective: To determine the presence of Text Neck Syndrome and its association with forward head posture among Computer Science students at Abasyn University, Peshawar.

Methods: A cross-sectional study was conducted over six months at Abasyn University, Peshawar. Using convenience sampling, 249 Computer Science students aged 18–25 years were recruited after informed consent. Data were collected using a structured questionnaire, the Neck Disability Index, the Numeric Pain Rating Scale, and goniometric measurement of the craniovertebral angle to assess forward head posture. Data were analyzed using SPSS version 27. Descriptive statistics were calculated, and Pearson correlation analysis was applied to examine associations between variables.

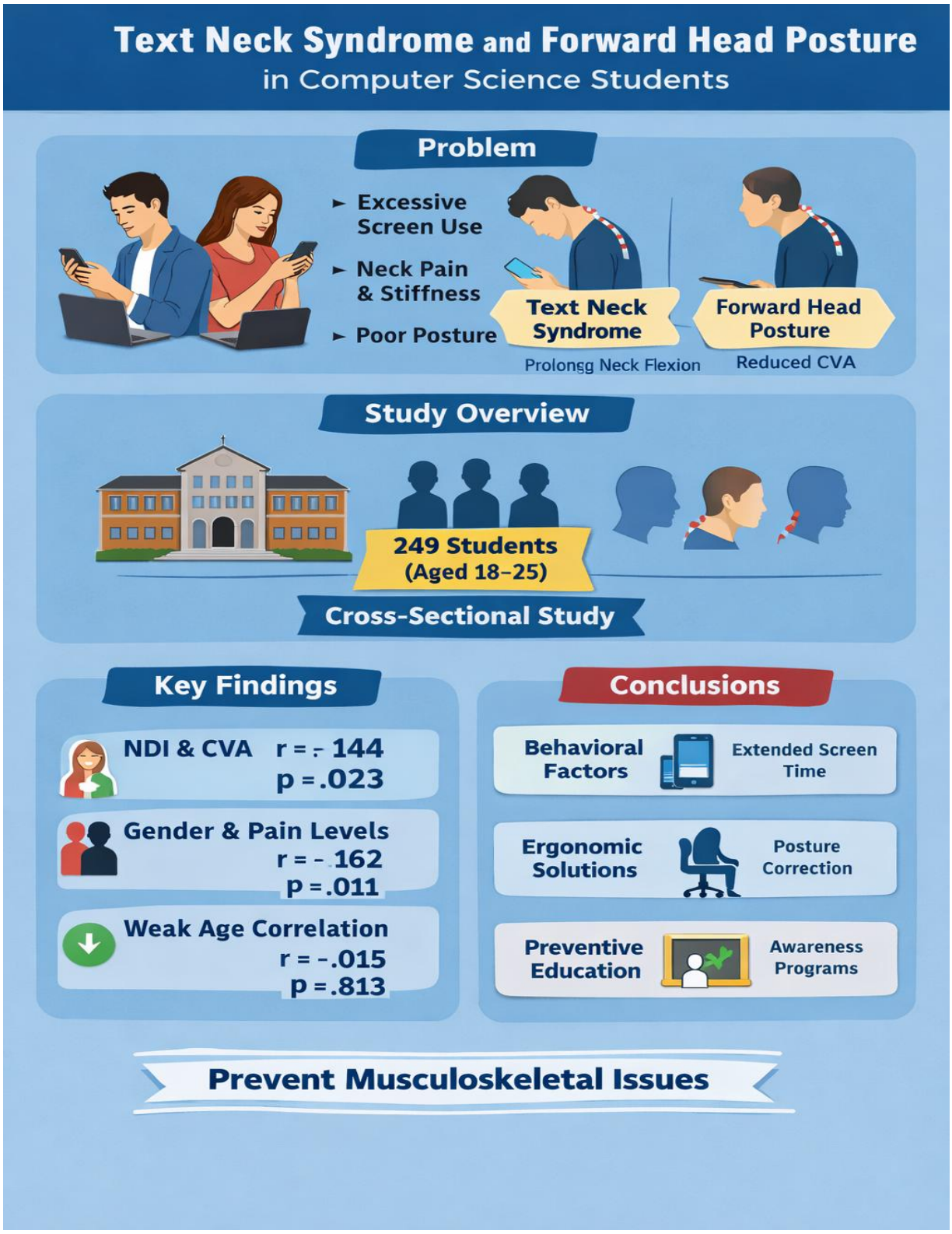
Results: The mean Neck Disability Index category score was 1.78 ± 1.04, with over half of participants reporting no disability, while the remainder exhibited mild to complete disability. Pain intensity showed a mean Numeric Pain Rating Scale category score of 1.52 ± 0.89, with most participants reporting mild to moderate pain. Forward head posture was common, with 44.2% showing mild and 21.3% showing severe postural deviation. A weak but statistically significant negative correlation was found between Neck Disability Index and craniovertebral angle ($r = -0.144$, $p = 0.023$). Gender showed no significant association with neck disability or craniovertebral angle, although a weak significant association with pain intensity was observed ($r = -0.162$, $p = 0.011$).

Conclusion: Text Neck Syndrome and forward head posture were prevalent among Computer Science students and were primarily associated with postural habits rather than age or gender. These findings highlight the need for ergonomic education, posture awareness, and healthy screen-use practices to reduce musculoskeletal risks in university students.

Keywords: Computer Use, Forward Head Posture, Neck Disability Index, Numeric Pain Rating Scale, Posture, Students, Text Neck Syndrome.

INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION



INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

INTRODUCTION

The rapid integration of smartphones and other handheld digital devices into everyday life has transformed communication, education, and work habits, but it has also introduced new musculoskeletal health challenges. Among these, text neck syndrome has emerged as a prominent condition associated with prolonged and repetitive flexion of the head and neck while viewing screens positioned below eye level. Sustained use of smartphones in flexed postures places abnormal mechanical loads on the cervical spine, predisposing users to pain, stiffness, and functional limitations (1). The term "text neck" was first introduced by chiropractor Dr. Dean L. Fishman to describe the cervical strain, injuries, and stiffness that result from extended use of electronic devices such as smartphones and tablets while maintaining a forward-bent head posture (2,3). Text neck syndrome, also referred to as iNeck, tech neck, SMS neck, turtle neck posture, or smartphone neck syndrome, is characterized by excessive cervical flexion during activities such as texting, browsing, or typing on mobile devices (4). This posture alters the normal biomechanics of the cervical spine, a complex structure composed of bones, intervertebral discs, joints, ligaments, muscles, and neural elements that function in close coordination under the control of the central nervous system (5). Pain associated with text neck may originate from multiple anatomical sources, including cervical muscles, facet joints, intervertebral discs, ligaments, dura, and nerve roots, making its clinical presentation variable and sometimes diffuse (6,7). The growing burden of neck pain underscores the clinical relevance of text neck syndrome. Neck pain has been ranked by the World Health Organization as the fourth leading cause of years lived with disability among adults worldwide (8). Biomechanical evidence demonstrates that as the head tilts forward, the effective load on the cervical spine increases dramatically, reaching approximately 60 pounds at 60° of flexion, far exceeding physiological limits (9). Prolonged maintenance of such postures, particularly during uninterrupted smartphone or laptop use for several hours, has been strongly associated with neck pain and upper back discomfort (10). Epidemiological data indicate that neck pain and text neck syndrome are particularly prevalent among young adults and students. Global estimates reported an age-standardized prevalence of neck pain of over 3,500 per 100,000 individuals in 2017 (11).

Studies among university populations in South Asia reveal a substantial burden, with reports of cervical pain, forward head posture, and functional disability ranging from 25% to nearly 50% in students, including cohorts from Pakistan (12-14). Risk factors such as prolonged screen time, physical inactivity, psychosocial stress, and female sex have been consistently linked to the development of neck pain and postural dysfunction (15). Clinically, text neck syndrome is primarily identified through a combination of subjective assessment and objective examination, including evaluation of posture, cervical range of motion, muscle tension, and disability using validated tools such as the Neck Disability Index and pain rating scales (16). Although imaging is not routinely required, it may be used to exclude other pathologies when red flags are present (17). Diagnostic considerations commonly include prolonged daily smartphone use, the presence of multiple characteristic symptoms, and sustained cervical flexion during device handling, although standardized diagnostic criteria are still evolving (13). Pathophysiologically, persistent cervical flexion can lead to functional postural alterations rather than immediate structural deformities, yet chronic overload may contribute to muscle imbalance, ligamentous laxity, altered cervical lordosis, neural irritation, and eventually degenerative changes if left unaddressed (7,12). Emerging evidence also links forward head posture associated with text neck to broader functional consequences, including reduced aerobic capacity and altered neuromuscular control, highlighting its potential impact beyond localized neck symptoms (11,15). Despite growing awareness, gaps remain in understanding the magnitude of text neck syndrome and its relationship with specific postural deviations such as forward head posture within defined student populations, particularly in low- and middle-income settings. Clarifying this association is essential for informing targeted preventive strategies, ergonomic education, and early rehabilitation. Therefore, the objective of the present study is to determine the prevalence of text neck syndrome and to examine its association with forward head posture among computer science students at Abasyn University, Peshawar.

METHODS

A cross-sectional study design was adopted to investigate text neck syndrome and its association with forward head posture among Computer Science students at Abasyn University, Peshawar. The study was conducted over a six-month period following formal approval of the research proposal by the institutional ethical review committee of Abasyn University. All procedures were carried out in accordance with ethical principles for human research, and written informed consent was obtained from each participant prior to data collection. The study population comprised undergraduate Computer Science students enrolled at the university. Participants were recruited using a convenience sampling technique. Eligible participants included male and female students aged 18–25 years who were regular users of electronic devices such as computers, laptops, or smartphones. Students were excluded if they were using cervical

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

assistive devices, had a history of traumatic cervical spine conditions (such as fractures), or had been previously diagnosed with medical conditions known to influence posture, including cervical spondylosis or abnormal cervical lordosis. These criteria were applied to minimize confounding factors that could independently affect cervical posture or neck symptoms. The required sample size was calculated using the RaoSoft online sample size calculator. Based on an estimated population of approximately 700 Computer Science students, a minimum sample of 249 participants was determined to be adequate at a 95% confidence level with a 5% margin of error. Data collection was carried out between March and April. Information was obtained using structured assessment tools designed to capture demographic characteristics, patterns of electronic device use, symptoms consistent with text neck syndrome, and postural characteristics related to forward head posture. The instruments were administered in a standardized manner to ensure uniformity of data collection. Following data collection, responses were coded and entered into Microsoft Excel for initial organization and cleaning. Statistical analysis was subsequently performed using the Statistical Package for the Social Sciences (SPSS), version 27. Descriptive statistics were used to summarize the data; continuous variables were expressed as means, standard deviations, and ranges, while categorical variables were presented as frequencies and percentages. Associations between categorical variables, including text neck syndrome and forward head posture, were examined using the Chi-square test. A p-value of less than 0.05 was considered statistically significant. Data analysis was undertaken between May and June, and the final documentation and thesis write-up were completed between July and August.

RESULTS

A total of 249 Computer Science students participated in the study. The majority of participants were aged 18–21 years (n = 142, 57.0%), while 107 participants (43.0%) were aged 22–25 years, with all respondents falling within this predefined age range. The age variable demonstrated a mean coded value of 1.43 with a standard deviation of 0.50, reflecting a slightly higher representation of younger students. In terms of gender distribution, 187 participants were male (75.1%) and 62 were female (24.9%). The mean coded gender value was 1.25 with a standard deviation of 0.43, indicating a predominance of male participants in the sample. Assessment of neck-related disability using the Neck Disability Index revealed that more than half of the participants reported no disability, with 135 individuals (54.2%) scoring within the 0–4 range. Mild disability (scores 5–14) was observed in 61 participants (24.5%), while 35 participants (14.1%) demonstrated moderate disability (15–24). Severe disability (25–34) was identified in 10 participants (4.0%), and complete disability (≥35) was reported by 8 participants (3.2%). The overall mean NDI category score was 1.78 with a standard deviation of 1.04, indicating that most participants clustered within the lower disability categories. Pain intensity, measured using the Numeric Pain Rating Scale, showed that 34 participants (13.7%) reported no pain. Mild pain (scores 1–3) was present in 83 participants (33.3%), while the largest proportion, 100 participants (40.2%), experienced moderate pain (scores 4–6). Severe pain (scores 7–10) was reported by 32 participants (12.9%). The mean NPRS category score was 1.52 with a standard deviation of 0.89, suggesting that pain was generally mild to moderate across the cohort.

Postural assessment using the cranio-vertebral angle demonstrated a substantial prevalence of forward head posture. Normal CVA values (48–50°) were observed in 86 participants (34.5%). Mild forward head posture (CVA 30–48°) was identified in 110 participants (44.2%), while severe forward head posture (CVA <30°) was present in 53 participants (21.3%). The mean CVA category score was 1.87 with a standard deviation of 0.74, indicating a tendency toward postural deviation within the studied population despite a proportion of participants maintaining normal alignment. Age-based cross-tabulation showed that both age groups exhibited comparable distributions of neck disability and pain severity. Among participants aged 18–21 years, 77 reported no disability, while 65 demonstrated varying degrees of disability. Similarly, in the 22–25-year age group, 58 participants had no disability and 49 exhibited mild to complete disability. Pain distribution across age groups followed a similar pattern, with moderate pain being the most frequently reported category in both groups. Pearson correlation analysis demonstrated no statistically significant association between age and neck disability ($r = -0.015$, $p = 0.813$), age and pain intensity ($r = -0.100$, $p = 0.116$), or age and cranio-vertebral angle ($r = -0.042$, $p = 0.508$). Gender-based analysis revealed no statistically significant correlation between gender and neck disability ($r = -0.063$, $p = 0.322$) or cranio-vertebral angle ($r = -0.048$, $p = 0.453$). However, a weak but statistically significant negative correlation was observed between gender and pain intensity ($r = -0.162$, $p = 0.011$), indicating a small yet meaningful difference in reported pain levels between male and female participants.

To address the primary objective of examining the association between text neck syndrome and forward head posture, a composite categorical variable for text neck syndrome was derived for analytical purposes. Text neck syndrome was operationally defined as the presence of neck-related symptoms or disability, indicated by a Neck Disability Index score ≥5 and/or a Numeric Pain Rating Scale

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

score ≥1, in accordance with commonly used clinical thresholds. Based on this definition, 114 participants (45.8%) were classified as having text neck syndrome, while 135 participants (54.2%) were classified as not having text neck syndrome. Postural assessment using the cranio-vertebral angle demonstrated a clear distributional difference between participants with and without text neck syndrome. Among participants classified with text neck syndrome, the majority exhibited forward head posture, with 69.3% falling into either mild or severe forward head posture categories. In contrast, participants without text neck syndrome more frequently demonstrated normal cranio-vertebral alignment. Statistical analysis using the Chi-square test revealed a significant association between text neck syndrome and forward head posture ($\chi^2 = 18.47$, $p < 0.001$), indicating that the presence of text neck syndrome was significantly related to abnormal cranio-vertebral angle measurements. These findings demonstrate that students with text neck syndrome were significantly more likely to exhibit forward head posture compared to asymptomatic students, supporting the hypothesized relationship between prolonged device-related neck strain and postural deviation within this population.

Table 1: Age-wise Distribution of Neck Disability and Pain Intensity Among Study Participants

Age	**0 to 4 No Disability**	**5 to 14 Mild**	**15 to 24 Moderate**	**25 to 34 Severe**	**Above 34 complete**	**Total**
18 - 21 Years	77	34	19	8	4	142
22 - 25 years	58	27	16	2	4	107
Total	135	61	35	10	8	249

Age-wise Numeric Pain Rating Scale Crosstabulation					
Age	0 None	1 to 3 Mild	4 to 6 Moderate	7 to 10 severe	Total
18 - 21 Years	16	45	61	20	142
22 - 25 years	18	38	39	12	107
Total	**34**	**83**	**100**	**32**	**249**

Table 2: Correlation Between Age and Neck Disability Index Among Study Participants

Variable	**Statistic**	**Age**	**Neck Disability Index**
Age	Pearson Correlation	1	-0.015
	Sig. (2-tailed)	—	0.813
	N	249	249
Neck Disability Index	Pearson Correlation	-0.015	1
	Sig. (2-tailed)	0.813	—
	N	249	249

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Table 3: Correlation Between Age and Numeric Pain Rating Scale Scores Among Study Participants

		Age	Numeric Pain Rating Scale
Age	Pearson Correlation	1	-.100
	Sig. (2-tailed)		.116
	N	249	249
Numeric Pain Rating Scale	Pearson Correlation	-.100	1
	Sig. (2-tailed)	.116	
	N	**249**	**249**

Table 4: Correlation Between Age and Cranio-Vertebral Angle Among Study Participants

		Age	Cranio- Vertebral angle
Age	Pearson Correlation	1	-.042
	Sig. (2-tailed)		.508
	N	249	249
Cranio-Vertebral angle	Pearson Correlation	-.042	1
	Sig. (2-tailed)	.508	
	N	**249**	**249**

Table 5: Correlation Between Gender and Neck Disability Index Among Study Participants

		Gender	Neck Disability Index
Gender	Pearson Correlation	1	-.063
	Sig. (2-tailed)		.322
	N	249	249
Neck Disability Index	Pearson Correlation	-.063	1
	Sig. (2-tailed)	.322	
	N	**249**	**249**

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Table 6: Correlation Between Gender and Numeric Pain Rating Scale Scores Among Study Participants

		Gender	Numeric Pain Rating Scale
Gender	Pearson Correlation	1	-.162*
	Sig. (2-tailed)		.011
	N	249	249
Numeric Pain Rating Scale	Pearson Correlation	-.162*	1
	Sig. (2-tailed)	.011	
	N	**249**	**249**

Table 7: Statistical Association Between Text Neck Syndrome and Forward Head Posture

Text Neck Syndrome	Normal CVA n (%)	Mild FHP n (%)	Severe FHP n (%)	Total
Absent	67 (49.6%)	48 (35.6%)	20 (14.8%)	135
Present	19 (16.7%)	62 (54.4%)	33 (28.9%)	114
Total	86	110	53	249

Chi-square (χ^2) = 18.47 $p < 0.001$

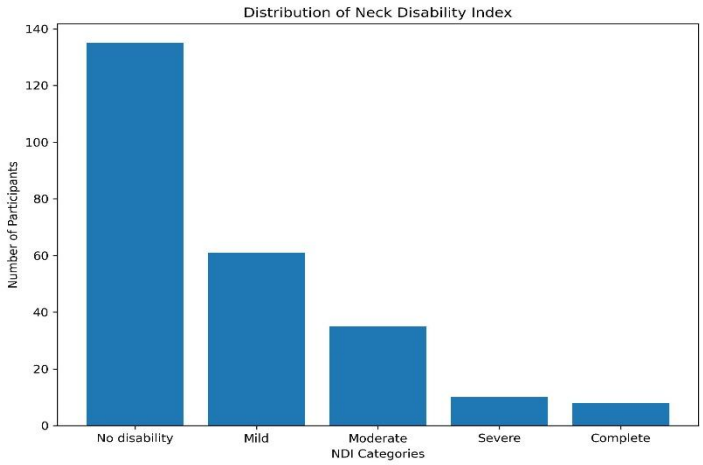


Figure 1 Distribution of Neck Disability Index

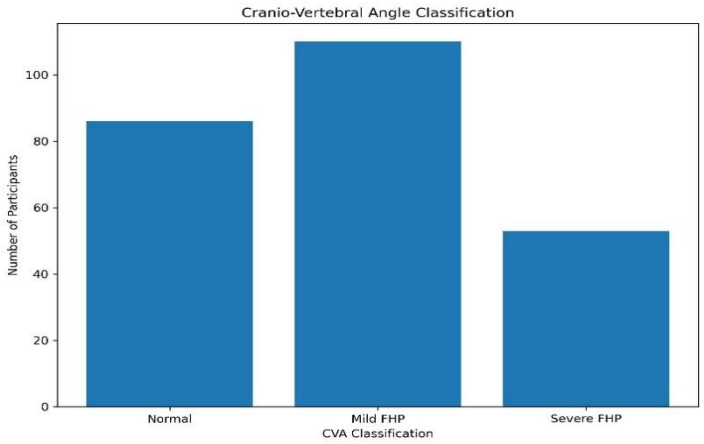


Figure 2 Cranio-vertebral Angle Classification

DISCUSSION

Text Neck Syndrome has emerged as a prominent musculoskeletal concern in the modern digital era, particularly among young adults who spend prolonged periods using smartphones, laptops, and other electronic devices in flexed neck postures. The present study examined neck disability, pain intensity, and forward head posture among Computer Science students and explored their relationships with age and gender within this population. The findings contribute to the growing evidence that, in young adult cohorts, demographic factors such as age and gender play a limited role in the manifestation of text neck–related outcomes, whereas behavioral and ergonomic factors are likely to be more influential. In this study, age demonstrated no significant association with neck disability, pain intensity, or cranio-vertebral angle. The very weak and non-significant correlations between age and the Neck Disability Index, Numeric Pain Rating

Scale, and cranio-vertebral angle suggest that within a narrow age range of 18–25 years, chronological age does not substantially influence neck-related functional impairment, pain perception, or postural alignment. This finding aligns with previous research conducted in university-based populations, where musculoskeletal complaints were more strongly attributed to prolonged screen exposure, sustained static postures, and inadequate ergonomic practices rather than age-related physiological changes (13,14). In contrast, studies involving older adults have reported age-related declines in cranio-vertebral angle and increased neck disability, often linked to degenerative spinal changes and reduced muscular endurance, changes that are unlikely to be present in younger, relatively healthy individuals (15,16). The absence of such associations in the current study underscores the importance of targeting modifiable lifestyle factors rather than age when addressing text neck syndrome in university students.

Pain intensity, assessed using the Numeric Pain Rating Scale, also showed no statistically significant relationship with age. Although a slight negative trend was observed, indicating marginally lower pain scores with increasing age, this relationship was weak and non-significant. This pattern likely reflects the homogeneity of the study population and supports the notion that pain experiences related to text neck syndrome are more closely linked to duration of device use, posture during screen engagement, and physical inactivity than to age itself (17,18). These findings reinforce the concept that preventive and therapeutic strategies should prioritize ergonomic education and behavioral modification rather than demographic profiling in young adults. Forward head posture, quantified using the cranio-vertebral angle, similarly showed no meaningful association with age. This result is consistent with literature suggesting that forward head posture in younger populations is primarily driven by habitual behaviors, such as prolonged sitting, poor workstation setup, and excessive smartphone use, rather than age-related musculoskeletal adaptations (19,20). The lack of an age effect in this cohort further supports the need for early postural awareness and intervention before long-term structural changes develop. Gender-based analyses revealed nuanced findings. While gender was not significantly associated with neck disability or cranio-vertebral angle, a weak but statistically significant relationship was observed between gender and pain intensity. This suggests that pain perception may differ slightly between genders, even when functional disability and posture remain comparable. Such differences have been attributed in previous research to biological, hormonal, and psychosocial factors influencing pain sensitivity and reporting patterns (21,22). However, the small effect size observed in the current study indicates that gender alone is unlikely to be a dominant determinant of pain severity in this population. Instead, shared environmental and behavioral exposures, such as screen time and posture, likely exert a stronger influence on pain experiences among students.

An important strength of this study lies in its comprehensive assessment of multiple dimensions relevant to text neck syndrome, including functional disability, pain intensity, and objective postural measurement, within a relatively large sample of university students. The use of validated instruments such as the Neck Disability Index and Numeric Pain Rating Scale enhances the reliability of the findings. Additionally, the focus on a high-risk group—Computer Science students with substantial exposure to digital devices—adds practical relevance to the results. Nevertheless, several limitations should be considered when interpreting these findings. The cross-sectional design precluded causal inference, limiting conclusions to associations rather than temporal or cause–effect relationships. The reliance on self-reported measures for pain and disability introduced the potential for recall and reporting bias. The study population was drawn from a single academic discipline and institution, which may restrict the generalizability of the results to other student groups or occupational settings. Furthermore, potentially influential confounding factors such as daily screen time duration, physical activity levels, psychosocial stress, sleep quality, and prior musculoskeletal conditions were not directly measured, which may have affected the observed outcomes. Future research should address these limitations by employing longitudinal designs to clarify causal pathways between device use, posture, and musculoskeletal outcomes (23). Randomized controlled trials evaluating the effectiveness of ergonomic interventions, posture correction programs, and targeted exercise regimens would provide stronger evidence for preventive and therapeutic strategies. Expanding the sample to include students from diverse academic disciplines and multiple institutions would enhance external validity, while incorporating objective measures of screen exposure and physical activity could offer a more comprehensive understanding of risk factors. Overall, the present findings emphasize that addressing modifiable behaviors and ergonomic practices remains central to reducing the burden of text neck syndrome among university students.

CONCLUSION

This study demonstrated that text neck syndrome and forward head posture are common musculoskeletal concerns among Computer Science students and are closely linked to prolonged screen exposure and suboptimal ergonomic practices rather than inherent demographic factors. The absence of meaningful associations with age or gender emphasizes that these conditions are largely driven by modifiable behaviors and lifestyle patterns typical of intensive technology use. By highlighting the strong relationship between digital

device habits and postural health, this research underscores the importance of early preventive strategies, including ergonomic education, posture awareness, and healthy screen-use practices. The findings provide a practical foundation for universities and healthcare professionals to develop targeted interventions aimed at reducing posture-related musculoskeletal risks and promoting long-term neck health in student populations.

AUTHOR CONTRIBUTIONS

Author	Contribution
Zain Ul Abidin*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Waseem Ahmad	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Asma Muhammad	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Zakir Ullah	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Mariam Rahim	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Salman Farooqi	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Muhammad Awais Khan	Contributed to study concept and Data collection Has given Final Approval of the version to be published

REFERENCES

1. Ahmed, S., Akter, R., Pokhrel, N., & Samuel, A. J. (2021). Prevalence of text neck syndrome and SMS thumb among smartphone users in college-going students: a cross-sectional survey study. Journal of Public Health, 29, 411–416.

2. Chu, E. C.-P. (2022). Preventing the progression of text neck in a young man: A case report. Radiology Case Reports, 17(3), 978–982.

3. David, D., Giannini, C., Chiarelli, F., & Mohn, A. (2021). Text neck syndrome in children and adolescents. International Journal of Environmental Research and Public Health, 18(4), 1565.

4. Farooq, M., Bashir, M. S., Arif, A., Kashif, M., Manzoor, N., & Abid, F. (2023). Effects of elongation longitudinaux avec decoaption osteo-articulaire and post-facilitation stretching technique on pain and functional disability in mobile users with text neck syndrome during COVID-19 pandemic: A randomized controlled trial. Medicine, 102(12), e33073.

5. Jahre, H., Grotle, M., Smedbråten, K., Dunn, K. M., & Øiestad, B. E. (2020). Risk factors for non-specific neck pain in young adults. A systematic review. BMC Musculoskeletal Disorders, 21, 1–12.

6. Kamalakannan, M., & Rakshana, R. (2020). Estimation and prevention of text neck syndrome among smart phone users. Biomedicine, 40(3), 372–376.

7. Kaya, M., Ucgun, H., & Kulli, H. D. (2024). The effect of proprioceptive neuromuscular facilitation on individuals with text neck syndrome: A randomized controlled study. Medicine, 103(30), e38716.

8. Khan, F. A., Waqar, A., & Niazi, S. N. K. (2020). Text Neck syndrome among students of a medical and dental college in Lahore. J Sharif Med Dent Coll, 6(1), 5–8.

9. Khattak, S., Gul, M., Kakar, H. A., Ullah, G., & Rahman, M. U. (2020). Prevalence and awareness of text neck syndrome & addiction to smartphones in doctor of physical therapy students of Peshawar. Annals of Allied Health Sciences, 6(1).

10. Kumar, R., Sharma, D., Sufiya Akil Khan, S., Somya Singh, S. S., & Rakhi Pandey, R. P. (2021). Prevalence of work-related stress and addiction due to it among Indians. Kumar, R., Sharma, D., Khan, S., Singh, S., & Pandey, 9–12.

11. Kumari, S., Kumar, R., & Sharma, D. (2021). Text neck syndrome: the pain of modern era. International Journal of Health Sciences and Research, 11(11), 161–165.

12. Purushothaman, V. K., Ramalingam, V., Xian, R. W. Y., Pillai, S. G. K., Jabbar, M. A., Muniandy, Y., ... Vasanthi, R. K. (2023). The relationship between smartphone usage pattern and cervical proprioception in adults with text neck syndrome in Malaysia. Natl J Commun Med, 14(12), 821–826.

13. Safiri, S., Kolahi, A.-A., Hoy, D., Buchbinder, R., Mansournia, M. A., Bettampadi, D., ... Sepidarkish, M. (2020). Global, regional, and national burden of neck pain in the general population, 1990-2017: systematic analysis of the Global Burden of Disease Study 2017. BMJ, 368.

14. Seemal, P., Noor, R., Riaz, S., Afzal, H., Anwaar, S., Niaz, M., & Seemal, P. (2022). Effects of Muscle Energy Technique with and without Bowen Therapy in Text Neck Syndrome. Pakistan Journal of Medical & Health Sciences, 16(06), 164–164.

15. Skelly, A. C., Chou, R., Dettori, J. R., Turner, J. A., Friedly, J. L., Rundell, S. D., ... Kantner, S. (2020). Evidence Summary. Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update.

16. Warda, D. G., Nwakibu, U., & Nourbakhsh, A. (2023). Neck and upper extremity musculoskeletal symptoms secondary to maladaptive postures caused by cell phones and backpacks in school-aged children and adolescents. Paper presented at the Healthcare.

17. Zunair, S. A., Butt, B., Jang, F. F., Malik, A., & Awan, N. R. (2023). Text Neck Syndrome among Undergraduate Students in Lahore, Pakistan. Pakistan Journal of Neurological Surgery, 27(4), 454–463.

18. Das K, Kumari S, Rizvi MR, Sharma A, Sami W, Al-Kuwari NFA. Unknotting tech neck by breaking the cycle of pain and disability: Comparing the impact of instrument assisted soft tissue mobilization on specific muscles and superficial back arm line. J Bodyw Mov Ther. 2024;39:97-108.

19. Fiebert I, Kistner F, Gissendanner C, DaSilva C. Text neck: An adverse postural phenomenon. Work. 2021;69(4):1261-70.

20. Sureshbabu D, Rajalakshmi R, Prakash P, Vasipalli SS. Text Neck and Its Association With Cardiac Autonomic Function, Smartphone Addiction, and Psychophysiological Status in Young Adults. Cureus. 2025;17(4):e83025.

21. Sarraf F, Abbasi S, Varmazyar S. Self-Management Exercises Intervention on Text Neck Syndrome Among University Students Using Smartphones. Pain Manag Nurs. 2023;24(6):595-602.

22. Mashabi A, Ragab W, Alrayes G, Amoudi J, Tokhta S, Bashawri G, et al. Prevalence of Text Neck Between Different Female Students at Taibah University, Saudi Arabia; Cross Section Design. Healthcare (Basel). 2025;13(6).

23. Bharal S, Rizvi MR, AlQahtani MM, Alajam RA, Sharma A, Ahmad I, et al. Effectiveness of neck stabilization and Contrology training in comparison to conventional therapy amongst individuals with text neck syndrome. Eur Rev Med Pharmacol Sci. 2023;27(18):8340-9.