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Text Neck Syndrome Among Students at the National University in Sudan

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Abstract

Introduction: Text Neck Syndrome (TNS) characterized by discomfort and rigidity in the neck and upper back due to improper posture when utilizing digital devices. While many individuals recognize that overuse of smartphones can be detrimental, they often lack detailed information regarding the syndrome itself or effective prevention methods. Public understanding of TNS differs greatly, yet there is typically a disconnect between individuals who suffer from symptoms and those who have received a formal diagnosis or possess knowledge of particular preventive strategies.

The Aim of the study was to investigate the prevalence and awareness of TNS among students at the National University (NU) in Sudan.

Methodology: An analytical cross-sectional study was carried out involving 324 students at the NU from April to September 2025. Data collection was performed via an online survey, utilizing a questionnaire as the research instrument. Data were analyzed utilizing Statistical Package for the Social Sciences (SPSS). All ethical considerations were maintained.

Results: Majority (72.8%) of the participants utilize their phones for over 5 hours each day. In terms of posture while using a smartphone, the most frequently observed angle was between 30° to 45° of neck flexion, accounting for 43.6%. Approximately 43% of the participants indicated that they experienced neck pain. merely 13% of the participants in this study were aware of TNS, while 87% had not heard of text TNS. The findings revealed a significant relationship ($p=0.006<0.05$), suggesting that individuals who exhibit a greater neck flexion are more prone to experiencing neck pain. The findings were statistically significant ($P=0.003<0.05$), suggesting that extended daily use of smartphones is significantly linked to the experience of neck pain.

Conclusion: Awareness regarding NTS is significantly limited among students at NU in Sudan. There exists a strong correlation between the length of smartphone usage and neck pain, which is a primary symptom of TNS among NU students. Additionally, neck flexion while using a smartphone is also linked to the development of neck pain and TNS among students at NU.

Keywords: Text Neck Syndrome; Neck flexion; Pain; Awareness; Smartphone; National University; Sudan

1. Introduction

Text Neck Syndrome (TNS) characterized by discomfort and rigidity in the neck and upper back due to improper posture when utilizing digital devices[1]. This repetitive stress injury arises from prolonged periods of looking down at a screen, which exerts undue pressure on the cervical spine and may result in symptoms such as neck pain, headaches, muscle

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weakness, and potentially long-term spinal damage[1]. Specifically, the duration of time and the angle of neck flexion are associated with the development of TNS. Typically, people tend to flex their necks while utilizing smartphones. It is essential to examine both the angle and duration to determine the optimal duration and posture for smartphone use in order to prevent TNS.

The occurrence of TNS shows considerable variation based on the study population; however, numerous sources indicate elevated rates, fluctuating roughly up to 75% within the adult demographic[2]. Certain studies reveal even greater percentages, with one particular study documenting a prevalence of 93.2% among a defined group of young adults[1]. The occurrence of TNS among students differs, yet research indicates it is significant, with a meta-analysis revealing an overall prevalence of 60.8% among university students worldwide[3]. Additional studies present varying statistics, including 75% among certain medical students[3]. These prevalence rates are affected by factors such as the duration of smartphone use, improper posture, and smartphone dependency[3].

Public understanding of TNS differs greatly, yet there is typically a disconnect between individuals who suffer from symptoms and those who have received a formal diagnosis or possess knowledge of particular preventive strategies[4]. While many individuals recognize that overuse of smartphones can be detrimental, they often lack detailed information regarding the syndrome itself or effective prevention methods[4].

The National University (NU) is a private institution situated in Khartoum, Sudan[5,6]. It was established in 2005 under the name "National College for Medical and Technical Studies" and received official university status in 2014. The university holds accreditation from the Ministry of Higher Education and Scientific Research in Sudan and was the first institution in Sudan to achieve international accreditation from the British Accreditation Council (BAC). The NU provides a range of undergraduate and postgraduate programs, with instruction primarily delivered in English[5]. The university encompasses faculties across various disciplines, including Medicine & Surgery, Pharmacy, Dentistry, Medical Laboratory Science, Nursing and Midwifery, Radiography, Physiotherapy, Health Informatics, Administrative Sciences, Engineering, International Relations, and Diplomatic Studies[5].

Since April 15, 2023, Sudan has been experiencing a devastating civil war involving the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF)[7]. Around 13 million people have been forcibly displaced, 8.9 million within the nation and 3.7 million to neighboring countries, leading to immense strain on Sudan's declining infrastructure and the limited resources of the host nations[7]. The NU has temporarily relocated to Port Sudan city in the Red Sea State, Sudan, to conduct academic operations safely.

2. Methodology

A cross-sectional analytical study design used in this study. The study conducted in Port Sudan city, Red Sea state, Sudan. Convenience sample technique was used. The study involved 324 students at NU between April and September 2025. Data was gathered through an online survey. Respondents were required to accept a consent statement before proceeding to fill out the survey.

The analysis of the data was conducted using the Statistical Package for the Social Sciences (SPSS) version 30. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize findings. Inferential statistics Chi-square tests, were applied to examine associations between variables and the significant association were p-value<0.05.

Informed consent was written, and was obtained and signed by each participant individually. Participants were made aware of the study objectives. Data protection procedures were in place and no personal identity were disclosed. Data were only accessible to researchers in order to uphold ethical norms and confidentiality.

3. Results

Table 1 Gender

Gender	Frequency	(%) Percent
Female	202	62.3
Male	122	37.7
Total	324	100.0

As shown in table 1, The study involved a total of 324 participants, among whom 62.3% were female and 37.7% were male.

Table 2 Faculty

Faculty	Frequency	%
Administrative Sciences	11	3.4
Clinical and Industrial Pharmacy	46	14.2
Computer Science and Information Technology	16	4.9
Dentistry	13	4.0
Engineering and Architecture – Electrical Engineering	1	0.3
International Relations and Diplomacy	24	7.4
International Relations and Diplomatic Studies	2	0.6
Medical Laboratory Sciences	37	11.4
Medicine and Surgery	60	18.5
Nursing and Midwifery	8	2.5
Physiotherapy	29	9
Postgraduate	1	0.3
Radiology and Medical Imaging	17	5.2
Other	59	18.2
Total	324	100.0

Participants encompassed a diverse array of faculties, with the most significant percentage coming from Medicine and Surgery (18.5%), followed by Clinical and Industrial Pharmacy (14.2%) as shown in table 2.

Table 3 Position During using smartphone

Category	Frequency	%
Sitting	35	10.8
Standing	1	0.3
Lying down	69	21.3
Walking	6	1.9
Mixed	213	65.7
Other	0	0.0
Total	324	100%

As shown in table 3. In this study, the majority of participants (65.7%) indicated that they utilized their devices in various positions. Conversely, standing (0.3%) was infrequently reported.

Table 4 Duration per day using smartphone

	Frequency	**%**
2-3 hours	2	.6
3-5 hours	62	19.1
Less than 2 hours	6	1.9
More than 5 hours	236	72.8
Other	18	5.6
Total	**324**	**100.0**

A significant majority (72.8%) of the participants utilize their phones for over 5 hours each day, whereas only a small fraction (1.9%) indicated using their devices for less than 2 hours as shown in table 4.

A Chi-square test was performed to investigate the correlation between daily smartphone usage duration and the occurrence of neck pain. The findings were statistically significant (P=0.003<0.05).

Table 5 Neck flexion when using a smartphone

	Frequency	**%**
0° - 15	18	4.6
15° - 30	96	29.6
30° - 45	138	43.6
45°<	72	22.2
Total	**324**	**100.0**

In terms of posture while using a smartphone as in table 5, the most frequently observed angle was between 30° to 45° of neck flexion, accounting for 43.6%, followed by 15° to 30° flexion at 29.6%, and a significant bend at more than 45° which represented 22.2%.

A chi-square test was performed to investigate the correlation between neck flexion angle and neck pain associated with smartphone usage. The findings revealed a significant relationship (p=0.006<0.05).

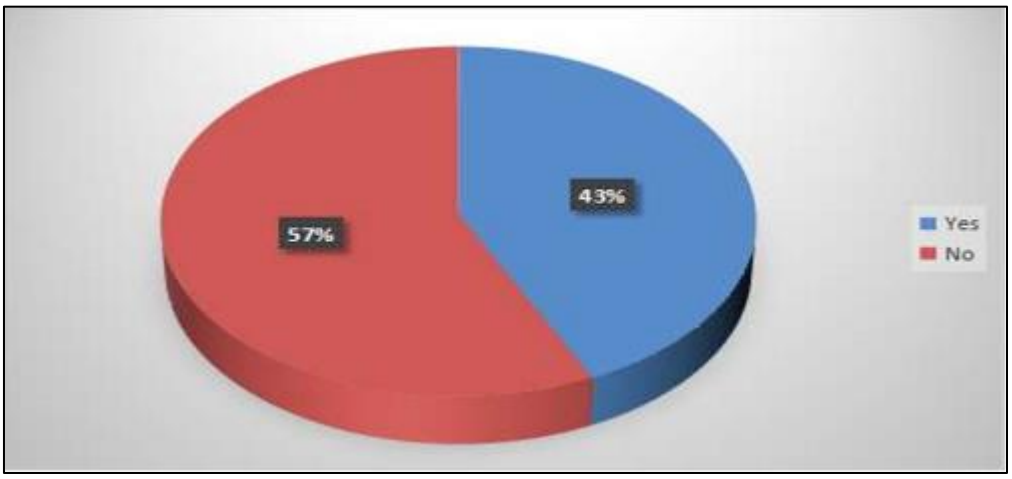

Figure 1 Neck pain when use smartphone

Approximately 43% of the participants in this study indicated that they experienced neck pain, whereas 57% reported no pain, as illustrated in figure 1.

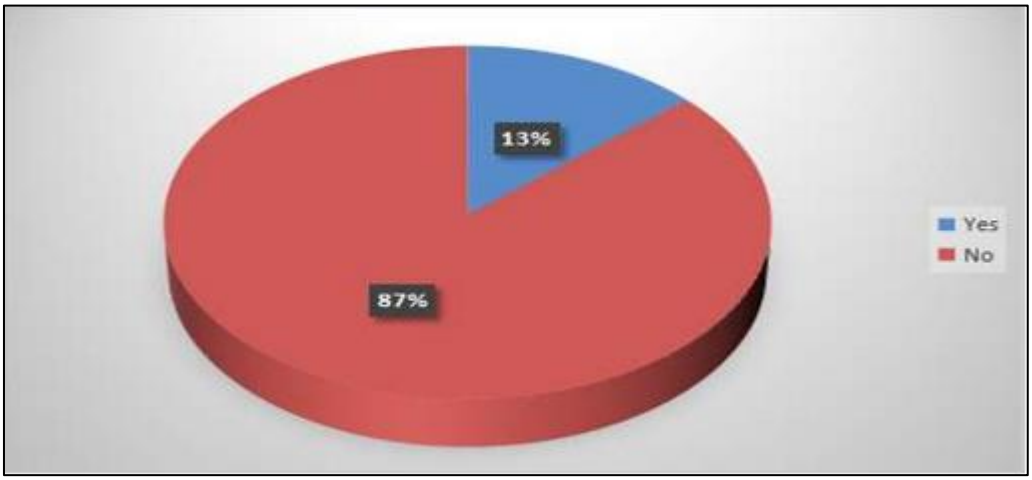

Figure 2 Hearing of Text Neck Syndrome before

Figure 2 Illustrates that merely 13% of the participants in this study were aware of TNS, while 87% had not heard of text TNS

4. Discussion

A total of 324 students from various faculties at NU participated in this study, with 62.3% being female and 37.7% being male. In Sudan, females are higher prevalence in higher education institutions. A study conducted in 2024 found that 93% of Sudanese physiotherapists registered in Sudanese Physiotherapy Association (SuPTA) were females[8]. In recent years, there has been a significant increase in female enrollment, particularly in tertiary education, along with higher completion rates observed in certain regions[9]. A study conducted in 2023 about medicine students in Khartoum State in Sudan, revealed that 91% of the participating students were female[10]. The majority of the students participated in this study are pursuing degrees in Medicine. The field of medicine in Sudan boasts a rich history, characterized by formal medical education. Additionally, the evolution of health practices in Sudan can be traced back to ancient civilizations that employed traditional and folk medicine. This extensive history has facilitated the advancement of both modern and traditional medical practices. The Faculty of Medicine at the University of Khartoum was founded in 1924, with the Khartoum Civil Hospital acting as its main teaching hospital. It was the inaugural medical school in Sudan, aimed at educating Sudanese physicians to address endemic diseases and aid in the nation's development.

The study showed that most of the participants engage with their phones for more than 5 hours daily. In the United States, individuals spend an average of more than 5 hours daily on their phones, a figure that greatly exceeds the 2 hours suggested by certain health professionals[11]. A Chi-square test was performed in this study to investigate the correlation between daily smartphone usage duration and the occurrence of neck pain. The findings were statistically significant ($P=0.003<0.05$), suggesting that extended daily use of smartphones is significantly linked to the experience of neck pain. The literature strongly advises minimizing the duration of smartphone usage and taking breaks during smartphone use.

Regarding posture while using a smartphone the most frequently observed angle was between 30° to 45° of neck flexion. The typical range of neck flexion while using a smartphone is approximately 0° to 15° degrees to reduce strain and muscle activity[12]. In this study, chi-square test was performed to investigate the correlation between neck flexion angle and neck pain associated with smartphone usage. The findings revealed a significant relationship ($p=0.006<0.05$), suggesting that individuals who exhibit a greater neck flexion are more prone to experiencing neck pain.

Regarding the awareness about TNS, the majority of the study participants were unfamiliar with TNS. Understanding TNS syndrome is vital, as neglecting it may result in chronic pain, limited mobility, and irreversible spinal injuries such as disc herniation and premature arthritis. Recognizing the condition early and taking action can avert lasting health issues by promoting proactive measures like enhancing posture, taking regular breaks, and engaging in stretching exercises, all of which are critical for sustaining overall health.

5. Conclusion

Awareness regarding NTS is significantly limited among students at NU in Sudan. There exists a strong correlation between the length of smartphone usage and neck pain, which is a primary symptom of TNS among NU students. Additionally, neck flexion while using a smartphone is also linked to the development of neck pain and TNS among students at NU.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors affirm that there are no conflicts of interest.

Statement of informed consent

Informed consent was written, and was obtained and signed by each participant individually. Participants were made aware of the study objectives. Data protection procedures were in place and no personal identity were disclosed. Data were only accessible to researchers in order to uphold ethical norms and confidentiality.

Authors contribution

All authors participated in every phase of this study, including data collection, data analysis, manuscript writing, editing, and reviewing.

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