

PREVALENCE OF TEXT NECK SYNDROME AMONG MEDICAL STUDENTS AT THE
UNIVERSITY OF BAGHDAD, AL-KINDY COLLEGE OF MEDICINE 2025

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Article Received: 13 August 2026

Article Revised: 03 September 2026

Article Published: 01 October 2026



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DOI: <https://doi.org/10.5281/zenodo.23013208>

How to cite this Article: *Ghadeer Mohammed Dalaf (M.B.Ch.B), Mohammed Shihab Ahmed Aledanni (M.B.Ch.B., F.I.C.M.S) (2026). Prevalence Of Text Neck Syndrome Among Medical Students At The University Of Baghdad, Al-Kindy College Of Medicine 2025. World Journal of Advance Healthcare Research, 10(10), 86–92.

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ABSTRACT

Background: Text neck syndrome” has become an emerging public health issue of the twenty-first century. The clinical condition of text neck syndrome is degeneration of the cervical spinal. The study aimed to find out the prevalence of text neck syndrome and disability among medical students at the University of Baghdad, College of Medicine, Al-Kindy, Iraq. **Results:** The study revealed that 236 medical students (69.0%) have text neck syndrome, with higher prevalence among older students, females, and those in grades 4 and 5 ($P < 0.05$). More than half experience mild disability (57.6%), followed by moderate (22.5%), severe (9.9%), none (8.8%), and complete disability (1.2%). Univariate logistic regression showed that age groups 21-23 and 24-26 years are more likely to have neck disability compared to 18-20 years [odds ratios: 1.79 ($P=0.019$) and 2.42 ($P=0.050$)]. Additionally, female students are more likely to experience neck disability than males [odds ratios: 2.02 ($P=0.002$) and 2.35 ($P=0.001$)]. **Conclusions:** The current study concluded that the prevalence of text neck text syndrome is so high with a mild to moderate neck disability. More emphasis should be placed on raising awareness of the necessity of maintaining appropriate sitting posture and limiting the duration of mobile phone use.

INTRODUCTION

Neck and shoulder pain is a medical condition. It is a relatively mild musculoskeletal condition mostly found among young age people. Neck pain has become a major health issue among the general population. It has a high burden on the individuals and community. Based on the World Health Organization (WHO), neck pain and other musculoskeletal diseases are considered to be the 4th and 10th health issues, respectively. It is estimated that the prevalence of neck pain in the general population is from 0.4% to 86.8%. “Text neck syndrome” has become an emerging public health issue of the twenty-first century. The clinical condition of text neck syndrome is degeneration of the cervical spinal. The text neck syndrome is caused by repeated stress of forwarding head flexion. This condition happens when someone watches screens of mobile devices and performs texting for a long time. This condition is more commonly observed among young people because they spend several hours watching mobile phones and computers. The study of medicine is a big challenge. The student spends a great effort and a long time searching for information. The time and how to exploit it is a

determinant factor in the student's success. Modern technology, such as mobile phones and the Internet, formed a turning point in the curriculum of the study by providing, storing, and easy access to knowledge. The mobile phone was not limited to communication but an entertainment and education tool for different age groups. Previous studies indicate that the prevalence of using a smartphone was higher among medical students. In Iraq, a cross-sectional study was conducted by which found that the prevalence of text neck syndrome in medical students was 64.5%. About two-thirds (61.5%) of students were addicted to their smartphones and used them more than five h/daily (63.7%).^[1] Moreover, a non-practicing warm-up of neck muscles before using the smartphone or taking frequent breaks during smartphones raises the possibility of musculoskeletal and neurological neck problems, especially among young people. Poor head and neck posture has been linked to upper back and cervical spine musculoskeletal pain that lasts for a long time, tightness, and spasm in the upper extremity muscles. Relatively recent data show that advances in technology are driving this important problem's occurrence to migrate from adulthood to all

pediatric ages. In truth, a complicated constellation of clinical signs and symptoms known as “text neck syndrome” may have been brought on by impulsive and inapt usage of personal computers and tablets particularly mobile phones.

This study aims to find out the prevalence of text neck syndrome among medical students at the University of Baghdad, College of Medicine, Al-Kindy, Iraq. To determine neck disability level in medical students and the associated factors with it. To identify the level of smartphone addiction and correlated with disability index and demographic characteristics of students.

MATERIALS AND METHOD

Study design and setting

This is a descriptive (a cross-sectional design) was conducted in University of Baghdad, Al-Kindy College of Medicine. This College was situated within the Baghdad governorate. The study is conducted throughout the period of 1st April, 2025 to 1st June, 2025.

Sampling Technique

In this study, 342 non-probability (convenience sample) students in University of Baghdad, Al-Kindy College of Medicine.

Criteria of Inclusion and exclusion

Inclusion Criteria

All students for all ages and sexes Students belonging to all stages.

Exclusion Criteria

Students who declined to participate. Students with autoimmune diseases that cause neck pain, including ankylosing spondylitis. Students who have a past or recent history of trauma or surgery around the neck area.

Data collection technique

After converting the questionnaire into Arabic, the local language, and employing closed-ended questions, the data was gathered through a self-administered questionnaire was designed to medical students of Al-kindly college of medicine via Google Forms through a social media platform. The data was collected through questionnaires distributed on the basis of axes following are.

Basic characteristics through a self-administered regarding (Age, gender, and class).

Factors associated with smartphone use; includes 5 questions (“Warming up neck muscles before using a mobile phone”, “Duration of smartphone use daily”, “Neck position during smartphone”, “Taking breaks while using their cell phones, and “Reasons behind using a smartphone”

Text neck syndrome symptoms; includes 6 symptoms (neck pain, upper back pain, shoulder pain, headache, insomnia, and tingling or numbness in hands).

Prevalence of text neck syndrome was determined according to the literature, the subjects who used to spend more than four hours/day using a smartphone and had at least 3 out of 6 TNS symptoms, including neck pain, upper back pain, shoulder pain, headache, insomnia, and tingling or numbness in hands, were vulnerable to having TNS.

Neck disability index: It is one of the most widely used tools to measure self-rated disability and functional status in patients with neck pain. It helps clinicians and researchers evaluate how much a person’s neck pain affects their daily life.^[2] This index includes 10 items such as pain intensity, personal care, lifting, work, headache, concentration, sleeping, driving, reading, recreation. While levels of neck disability involve No disability (0-4), Mild disability (5-14), Moderate disability (15-24), Sever disability (25-34), and Complete disability (35-50).

Validity of Questionnaire All expert observations were taken into consideration for a slight correction. Most of them agreed that the questionnaire was understandable, clear, and sufficient for the study.

Ethical considerations The researcher attached and explained each questionnaire in Arabic, informed participants of the study’s objective and substance, and secured confidentiality and utilized all data for research reasons.

Statistical Analysis The information for each item on the questionnaire was copied to code sheets, the data was input into a personal computer, and the statistical package from SPSS-27 was used to evaluate the data. Simple statistics like frequency, percents, average, standard deviation, and range displayed the data. A Chi-square test (X^2 -test) was utilized to identify the significance of qualitative data percentage differences. Univariate and multivariate logistic regression analysis to identify factors associated high neck disability. Pearson’s correlation coefficient was used to study correlation between numeric variables. The P-value was considered statistically significant when it was equal to or less than 0.05.

RESULTS

Prevalence of text neck syndrome

The results found that 236 (69.0%) of the medical students have text neck syndrome.

In Table 1, The study indicates a significant relationship between demographic characteristics (age, gender, and class) and text neck syndrome, with older age, female sex, and being in grades 3 or 4 showing a stronger association (P. value <0.05).

Table 1: The relationship between text neck syndrome and basic characteristics of students.

Independent variables		Text neck syndrome				P- value
		Yes		No		
		No.	%	No.	%	
Age groups	18-20 years	84	61.3	53	38.7	0.037
	21-23 years	121	73.3	44	26.7	
	24-26 years	31	77.5	9	22.5	
Gender	Male	92	63.0	54	37.0	0.039
	Female	144	73.5	52	26.5	
Class of study	1st	23	51.1	22	48.9	0.020
	2nd	37	59.7	25	40.3	
	3rd	49	76.6	15	23.4	
	4th	48	76.2	15	23.8	
	5th	48	73.8	17	26.2	
	6th	31	72.1	12	27.9	

P- value based on Pearson Chi-square test.

The results reveal that there is a statistically significant relationship between Warming up neck muscles before

using a mobile phone and text neck syndrome (P. value =0.004). As shown in **Table 2**

Table 2: The relationship between text neck syndrome and smartphone associated factors.

Independent variables		Text neck syndrome				P- value
		Yes		No		
		No.	%	No.	%	
Warming up neck muscles before using a mobile phone	Yes	7	13.7	44	86.3	0.004
	No	192	66.0	99	34.0	
Duration of smartphone use daily	Up to 2 h/ day	7	63.6	4	36.4	0.809
	Up to 3 h/ day	16	72.7	6	27.3	
	Up to 4 h/ day	25	67.6	12	32.4	
	Up to 5 h/ day	50	74.6	17	25.4	
	>5 h/ day	138	67.3	67	32.7	
Neck position during smartphone	0 degree	10	55.6	8	44.4	0.357
	15 degrees	46	63.9	26	36.1	
	30 degrees	100	69.0	45	31.0	
	45 degrees	64	73.6	23	26.4	
	60 degrees	16	80.0	4	20.0	
taking breaks while using their cell phones	Yes	168	70.9	69	29.1	0.259
	No	68	64.8	37	35.2	
reasons behind using a smartphone	Browsing Internet	42	70.0	18	30.0	0.228
	Social media	110	65.1	59	34.9	
	Education	76	76.0	24	24.0	
	Gaming	7	70.0	3	30.0	
	Calling	1	33.3	2	66.7	

P- value based on Pearson Chi-square test or Fisher exact

Neck disability index

The study revealed that students had the highest headache index at 2.4 ± 1.3 , followed by concentration at 2.2 ± 1.3 , and sleep at 2.0 ± 1.4 . Conversely, the personal care index was lowest among medical students at 1.0 ± 0.5 . As shown in **Table 3**.

Headache	2.4	1.3	1
Concentration	2.2	1.3	2
Sleeping	2.0	1.4	3
Driving	1.5	1.3	7
Reading	1.8	1.1	4
Recreation	1.3	0.8	9

Table 3: The mean score of neck disability index.

Neck Disability Index	Mean	± SD	Rank
Pain intensity	1.5	0.9	6
Personal care	1.0	0.5	10
Lifting	1.4	0.9	8
Work	1.6	1.0	5

In **Table 4**, the results showed that more than half of the students suffer from a mild disability (57.6%), followed by a moderate disability (22.5%), severe disability (9.9%), no disability (8.8%), and complete disability (1.2%).

Table 4: Levels of Neck Disability.

Level of Neck Disability	No.	%
No disability (0-4)	30	8.8
Mild disability (5-14)	197	57.6
Moderate disability (15-24)	77	22.5
Sever disability (25-34)	34	9.9
Complete disability (35-50)	4	1.2

In the univariate logistic regression analysis, age groups 21-23 years and 24-26 years showed a higher likelihood of neck disability compared to the 18-20 year group

(OR=1.79, P=0.019 and OR=2.42, P=0.050, respectively). Female students were also more likely to experience neck disability than males (OR=2.02, P=0.002 and OR=2.35, P=0.001). Additionally, students in advanced classes had a higher likelihood of neck disability than those in the first stage. The analysis indicated that maintaining a neck position at 45 degrees while using a smartphone significantly increased the risk of neck disability (OR=4.19, P=0.008 and OR=3.91, P=0.022).

Table 5: Univariate and multivariate logistic regression analysis to identify factors associated high neck disability.

		P- value	OR (95% Confidence Interval)	P- value	aOR (95% Confidence Interval)
Age	18-20 years	R			
	21-23 years	0.019	1.79 (1.10-2.91)	0.928	0.96 (0.40-2.29)
	24-26 years	0.050	2.24 (1.01-5.08)	0.196	2.16 (0.67-6.94)
Gender	Male	R			
	Female	0.002	2.09 (1.32-3.33)	0.001	2.35 (1.39-3.96)
Class of study	1st	R			
	2nd	<0.001	7.08 (2.99-16.72)	<0.001	8.08 (3.23-20.18)
	3rd	<0.001	6.29 (2.71-14.63)	<0.001	6.53 (2.67-15.98)
	4th	<0.001	8.62 (3.59-20.70)	<0.001	10.46 (3.22-34.01)
	5th	<0.001	8.97 (3.74-21.51)	<0.001	8.48 (2.64-27.27)
	6th	<0.001	5.68 (2.27-14.19)	0.020	4.35 (1.27-14.92)
Warming up neck muscles before using a mobile phone	Yes	0.754	1.11 (0.58-2.13)		
	No	R			
Duration of smartphone use daily	Up to 2 h/ day	R			
	Up to 3 h/ day	0.088	0.14 (0.02-1.34)		
	Up to 4 h/ day	0.081	0.15 (0.017-1.27)		
	Up to 5 h/ day	0.293	0.319 (0.04-2.69)		
	>5 h/ day	0.141	0.211 (0.03-1.68)		
Neck position during smartphone	0 degree	R			
	15 degrees	0.022	3.49 (1.20-10.14)	0.067	2.97 (0.93-9.56)
	30 degrees	0.050	2.69 (1.10-7.26)	0.128	2.34 (0.78-6.97)
	45 degrees	0.008	4.19 (1.47-12.03)	0.022	3.91 (1.22-12.52)
	60 degrees	0.782	0.83 (0.23-3.03)	0.615	0.69 (0.17-2.89)
Taking breaks while using their cell phones	Yes	0.426	1.22 (0.75-1.99)		
	No	R			
Reasons behind using a smartphone	Browsing Internet	R			
	Social media	0.762	0.91 (0.49-1.69)		
	Education	0.155	1.67 (0.82-3.41)		
	Gaming	0.836	1.17 (0.27-4.99)		
	Calling	1.000	1.00 (0.09-11.70)		

DISCUSSION

Prevalence of text neck syndrome

The present results found that the prevalence of text neck syndrome was 69.0% among the medical students. These findings were consistent with the study findings conducted in Iraq, which found that the prevalence of text neck syndrome was 64.5%. we can discuss that This gap in prevalence could be attributed to the lack of knowledge of students of the symptoms and diagnosis of Text neck syndrome.

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Similar prevalence was reported in studies from Jourdan (65%)^[6], South Africa (66.2%)^[8], Turkey (71.7%)^[69]

However, our finding is higher than that reported in Ethiopia (49.2%)^[70], Pakistan (43.6%)^[71], Brazil (55.44%)^[72], United States (35.0%)^[73], Australia (52.8%)^[74]. Numerous educational institutions, including universities, use the Internet more to interact with students via electronic mail or social communication groups, such as WhatsApp. Information about educational materials, tasks, and curriculum directions are communicated via the Internet. So the students could easily manage a small and smart gadget that can satisfy students' learning and recreation needs rather than older gadgets like laptops and desktops.

Factors associated with text neck syndrome

In this study, most students were using smartphone for more than 5 hours daily. This result agreed with^[1], which indicated that about two-thirds (61.5%) of students were addicted to their smartphones and used them more than five h/daily (63.7%). A study by^[3] reported that spending more than three hours a day sitting down among students. Furthermore, a study conducted in Erbil city^[4], which indicated that adolescents (96.05%) those who used smartphones >3 h (83.56%).

A study conducted in Korea and one in Brazil revealed that 42.1% and 76.6% of their respondents used their cell phones for more than 4 h per day, respectively,^[5] ^[6] High percentage of participants using mobile phone for more than 4 h per day is alarming as the severity of musculoskeletal symptoms in the upper extremities is significantly correlated with mobile phone usage time.^[7]

In this research, the students reported that measurement of neck position during smartphone were moderate neck tilt while using a smartphone (30 degrees) among the highest frequency of students. While most the students were taking breaks while using their cell phones. These results agreed with the study findings done by^[3] which found that same results.

Our results reported that more reasons behind using a smartphone among students were social media. This result was aligned with the study findings conducted by^[8] which revealed that most students use smart phone as browse at free time and rest. A study in Saudia Arabia^[9] which reported that the main purpose of using these applications was social networking (89.7%), followed by academic tasks (57.7%). The most used applications were TikTok (60.1%), Snapchat (52.6%) and WhatsApp (46.1%).

These results explain that older age, and female sex were more associated with text neck syndrome. These results agreed with the study findings done by^[3] which found that females were more associated with text neck syndrome ($P < 0.001$). Also, a study by^[10] who revealed that Females and older age were most affected among universities students. A study by^[11] the pooled prevalence of TNS was 64.73% among female students. This may be due to biological, behavioural, and lifestyle factors.

Senior medical students are more likely to have long-term exposure to cellphones, computers, and study screens, causing forward-head posture, muscular fatigue, and cervical spine strain. As age and study level grow, academic burden increases, promoting sedentary behaviour and poor ergonomics. Female students may have a stronger association due to variations in musculoskeletal anatomy, lower neck and shoulder muscular strength, muscle fatigue sensitivity^[12], and longer or more continuous usage of portable devices for academic and social purposes.

The current study found that medical students in their third and fourth and academic years had higher text neck syndrome due to increasing academic burden and longer digital gadget use. Students at this level spend long hours on cellphones, tablets, and computers researching, accessing medical resources, online courses, and clinical communication, sometimes in bad posture. Long durations of reading, note-taking, and test preparation increase musculoskeletal strain by promoting neck flexion and reducing physical activity. In advanced classes, stress and lack of ergonomic awareness during rigorous training led to text neck syndrome.

Levels of Neck Disability

The findings of the present respondents indicated that the majority of the students have mild disability. This result agreed with the study findings done in Iraq^[1] which found that among the participants, 116 (42.5%) had mild (5-14), 42 (15.4%) had moderate (15-24), and 18 (6.6%) had severe (25-34) neck disability. However, 97 (35.5%) had no disability (0-4). Moreover, a study similar to^[3] revealed that the majority of students suffer mild neck disabilities. In Malaysia, a similar study concluded that 68.6% of the students had mild to moderate level of neck disability.^[13] In a study in India, 42.5% of the participants were suffering from text neck syndrome, and most of this was due to mild disability (31.9%).^[14]

We can discuss that university students often experience academic stress, intense schoolwork, excessive screen time, and unpredictable sleep habits, which can cause modest functional deficits without severe disability. For a lesser percentage of kids, poor access to early assessment, counselling, or supportive accommodations may cause mild problems to continue and develop into moderate handicap. Social pressures, lifestyle changes, and poor coping methods may worsen these challenges, making intermediate disability less common than mild variants.

The results indicated that the age groups (21-23 years and 24-26 years) and females were significant associated with high a neck disability level. These results were consistent with the study findings conducted in Japan^[17], which found that the NDI score was higher in middle age and female. Furthermore, this study agreed with^[18] which indicated that females predominated in all disability categories. We discuss that behavioural, occupational,

and biological variables may explain the substantial relationship between greater neck impairment levels and age groups 21–23 and 24–26, particularly in females. Due to scholastic or early career obligations, these age groups use cellphones, computers, and other digital gadgets for lengthy periods, which can cause bad posture, neck flexion, and musculoskeletal strain. Neck impairment may be more common in women because to variations in muscle strength, neck biomechanics, hormonal factors, and musculoskeletal pain sensitivity. Young adulthood psychosocial stress may increase muscular tension and pain perception, worsening neck-related impairment in these people.

In this study, univariate and multivariate logistic regression analysis showed that neck position during smartphone at 45 degrees were more likely for developing neck disability. This result were compatible with^[19] who revealed that there were a significant association between disability level and positions of neck ($P < 0.001$). We can discuss that because of the higher biomechanical strain on the cervical spine at this position. Forward neck flexion significantly increases head weight, straining cervical muscles, ligaments, and intervertebral discs. This position can cause muscular fatigue, cervical alignment changes, diminished blood flow, and soft tissue microtrauma over time.^[20] These mechanical pressures may cause neck discomfort, stiffness, and functional limits over time, increasing the risk of neck impairment in smartphone users who often flex their necks at 45 degrees.

CONCLUSIONS

The current study concluded that the prevalence of text neck text syndrome is so high with a mild to moderate neck disability. More emphasis should be placed on raising awareness of the necessity of maintaining appropriate sitting posture and limiting the duration of mobile phone use.

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