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Text Neck Syndrome: A Modern Era Health Concern

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Abstract
Background: The "text neck syndrome" is becoming an increasingly prevalent syndrome in the 21st century. This medical term describes the development of cervical spinal degeneration that happens as a result of prolonged forward head flexion while using a mobile device or while "texting" for extended periods of time. The objective of the study is to assess the level of neck disability among students studying at selected educational institute of Greater Noida, Uttar Pradesh.
Material and method: A pilot study of purposive sampling among 20 students to confirm the feasibility and acceptability of the study. Data were collected using demographic profile, likert scale questionnaire based on objective hypothesis to be treated using frequency descriptive and interferential statistics using spss 28.
Results: Majority of participants were <20 years (70.0%), predominantly female (83.0%), and undergraduates (91.0%), with most (60.0%) of subjects were day-scholar, (65.0%) of the participants have no neck disability and (35.0%) of them have disability. no significant association ($p>0.05$) found between the level of neck disability with selected demographic variables among participants except for Mother occupational status ($p<0.05$).
Conclusion: This study highlights the prevalence of text neck syndrome, showing a link between excessive smartphone use and neck pain or disability. Significant associations were found with age, gender, educational status, and co-morbidities, underlining the need for awareness efforts, including physical therapy, stretching, and proper neck pain assessment to prevent text neck syndrome.

Keyword: Prevalence, Text neck syndrome, Smartphone addiction

INTRODUCTION:

Text neck, a term first introduced by U.S. chiropractor Dr. Dean L. Fishman, is increasingly recognized as a significant modern health issue.[1] This condition, sometimes known as "Modern Era Pain," is caused by the increased use of portable gadgets like smartphones and tablets.[2]The simplicity of combining communication, entertainment, and a variety of other tasks in a single device has made mobile technology important in everyday life. However, our constant reliance on technology has resulted in the creation of text neck syndrome, a condition characterized by physical discomfort and dysfunction in the neck and upper back as a result of prolonged neck flexion.[3]

Text neck is a term used to describe a 21st-century epidemic of digital age conditions which include degenerative health problems like early onset arthritis, disc compression as well as soft tissue swelling and damage caused by the head flexed forward over long periods of time. Teenagers commonly have this problem, as they keep on using their smartphones and laptops for hours. Research shows that this problem is more and more common in young adults.[4] In another research, the investigators found that 57% of 100 medical students have mild to severe text neck syndrome and moderate to severe nomophobia were reported by 15%.[5] A Saudi study showed that 45 % of the participants used smartphones regularly, between them 35.1% spent over than 6 hours to almost 9 hours a day using smartphones. Of those, 59.1% reported neck or shoulder pain, with only 2.7% using medication for relief.[6]

Musculoskeletal disorders become a common problem by using a smartphone for an extended period; it leads to adverse effects on the human body. When you use a mobile device (holding your phone below eye level and looking down) the second posture is created but with stress on your neck and upper back. Standing upright in this unnatural position for long periods can be very uncomfortable and lead to ongoing pain.[6-9] Repetitive movements in uncomfortable positions — a frequent danger of smartphone use — are well-documented as primary precipitants of musculoskeletal complaints. Bad head and neck posture is associated with upper back and cervical spine pain, muscular tension and spasms.[7]

The cervical spine's complicated anatomy, which includes the spinal cord, muscles, bones, and nerves, is susceptible to strain from prolonged forward head posture.[1] This position may cause nerve irritation, resulting in neck and shoulder pain. Lower cervical flexion and upper cervical extension put inappropriate pressure on the spine, potentially compressing facet joints and weakening ligaments. This can irritate the occipital nerve or vertebral artery, exacerbating the problem.[8]

According to the World Health Organization's Global Burden of Disease report, neck discomfort is the eighth most damaging ailment for people aged 15 to 19, emphasizing its impact on teenagers. Teenagers frequently spend 5 to 7 hours

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each day on smartphones, tilting their heads forward at postures that cause significant neck discomfort. For example, when the head is bent forward at 15 degrees, it exerts 27 pounds of pressure on the neck, which rises to 60 pounds at 45 degrees.[9] With over 4 billion people worldwide using mobile phones, and 25% of India's population being young, the incidence of text neck syndrome is worrying. Youth's lack of awareness about the risks might cause persistent inflammation in neck ligaments, muscles, and nerves, potentially causing long term problems.[10]
To tackle this, preventative actions are required. Posture correction exercises, neck stability routines, and careful smartphone use can help to delay the growth of text neck syndrome. Public health initiatives should raise awareness of the issue among the general public and healthcare professionals. Stretching, scapular retraction, resting, applying heat or cold, massages, and adopting lifestyle changes are all possible treatment methods.[11]The key to preventing text neck is to limit lengthy texting and maintain correct posture, with surgery suggested only in extreme cases where conservative treatments are ineffective.[12]

MATERIAL AND METHODS

A quantitative cross sectional study involving 200 students at Sharda School of Nursing Science and research (SSNSR) from April 10-15, 2023, assessed research feasibility without issues. Subsequent data collection for the main study at SSNSR from April 16 – May 05 2023, targeted under and post graduate students, who completed consent forms, Subject Information sheets, demographic surveys, and Likert scales. Participants meeting inclusion criteria (belonging to Sharda University and present during data collection) were included, while those unwilling or unavailable & had prior neck problems were excluded.

DATA COLLECTION AND OUTCOME MEASURES:

The investigator administered face to face demographic questionnaires and Likert scale questionnaires after obtaining informed consent. Demographic information collected included age, gender, current educational status, father's educational status, mother's educational status, father's occupational status, mother's educational status and residence of the student. The Likert scale questionnaire consisted of 10 questions. The tool's reliability was confirmed with 20 subjects from the School of Nursing Science, achieving a coefficient of 1.00.

Research approach: Quantitative Research Approach.

Research design: Cross sectional Research Design.

Setting of the study: Sharda University

Population: Sharda students

Sample: Graduate and post graduate students of Sharda University

Sample size

The sample for the research study consists of students of Sharda University, Greater Noida, Uttar Pradesh. The sample size obtained for this study was 200, calculated using the given formula.

n=4pq/d2
p=Expected Proportion (From Previous-50% of them had neck disability)
q=1-p
d= Precision
p=50% (i.e., 0.50)
q=1-p=1-0.50=0.50
d=8%=0.08
n=around 200 sample

Sampling technique: In this study multistage Sampling technique will be adapted to conduct the research study.
Sampling criteria:
The following criteria is selected for the sample collection,

Inclusive criteria:-
- Students of Sharda University, Greater Noida, Uttar Pradesh
- Students who are willing to participate in the study
- Students who are present at the time of data collection

Exclusive criteria:-
- Students who are not present during the data collection

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- Students who are not willing to participate in the study
- Students who had prior neck problems

RESULTS

Section 1(Baseline characteristics of post vaccination student and faculty)

Using demographic performa, data was collected on age, gender, current education, father's educational status, mother's educational status, Father's occupational status, Mother's occupational status and residence of the students

Table1 Demographic characteristics of study participants

Background variables	Frequency (n)	Percentage (%)
Age in years		
<20 years	140	70.0
>20 years	60	30.0
Gender		
Male	34	17.0
Female	166	83.0
Current Education		
Undergraduate	182	91.0
Graduate	18	9.0
Father educational status		
No formal education	7	3.5
Undergraduate	52	26.0
Graduate	114	57.0
Above	27	13.5
Mother educational status		
No formal education	14	7.0
Undergraduate	80	40.0
Graduate	89	44.5
Above	17	8.5
Father occupational status		
Government job	48	24.0
Private job	72	36.0
Business	80	40.0
Househusband	0	0
Mother occupational status		
Government job	36	18.0
Private job	36	18.0
Business	16	8.0
Housewife	112	56.0
Residence of the student		
Hosteller	80	40.0
Day-scholar	120	60.0

Table 1 shows that, majority (70.0%) of the participants were in the age group of <20 years, most (83.0%) of them were females, majority (91.0%) of them were undergraduates, and most (57.0%) of the participant's fathers were graduates, majority (44.5%) of the participant's mothers were graduates, most (40.0%) of the participant's fathers were doing business, graduates, majority (56.0%) of the participant's mothers were housewives and most (60.0 %) of the participants were day-scholars.

Table 2 Level of neck disability of study participants

Level of disability	Frequency (n)	Percentage (%)
<22% No Disability	130	65.0
>22% disability	70	35.0

Table 2 shows that, majority (65%) of the participants have no neck disability and (35.0%) of them have disability.

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Table 3 Level of smartphone addiction of study participants

Level of smartphone addiction	Frequency (n)	Percentage (%)
<30% no addiction	94	47.0
>30% addiction	106	53.0

Table 3 shows that, majority (53.0%) of the participants have smartphone addiction and (47.0%) of them have no smartphone addiction.

Table 4 Association between the level of neck disability with selected demographic variables among participants.

Background variables	Level of disability				Chi-square test (χ^2) *p* value
	No disability		Disability		
	n	%	n	%	
Age in years					χ^2=0.419 *p*=0.312(NS)
<20 year	93	71.5	47	67.1	
>20 year	37	28.5	23	31.9	
Gender					χ^2=0.687 *p*=0.261(NS)
Male	20	15.4	14	20.0	
Female	110	84.6	56	80.0	
Current Education					χ^2=0.131 *p*=0.45(NS)
Undergraduate	119	91.5	63	90.0	
Graduate	11	8.5	7	10.0	
Father educational status					χ^2=0.724 *p*=0.391(NS)
No formal education	4	3.1	3	4.3	
Undergraduate	34	26.2	18	25.7	
Graduate	76	58.5	38	54.3	
Above	16	12.3	11	15.7	
Mother educational status					χ^2=1.713 *p*=0..509(NS)
No formal education	8	6.2	6	8.6	
Undergraduate	56	43.1	24	34.3	
Graduate	56	43.1	33	47.1	
Above	10	7.7	7	10.0	
Father occupational status					χ^2=2.784 *p*=0.471(NS)
Government job	35	26.9	13	18.6	
Private job	48	36.9	24	34.3	
Business	47	36.2	33	47.1	
Househusband	0		0		
Mother occupational status					χ^2=1.012 *p*=0.046(S)
Government job	22	16.9	14	20.0	
Private job	24	18.5	12	17.1	
Business	12	9.2	4	5.7	
Housewife	72	55.4	40	57.1	
Residence of the student					χ^2=2.289 *p*=0.086(NS)
Hosteller	57	43.8	23	32.9	
Day-scholar	73	56.2	47	67.1	

(p<0.05-Significant level, S: Significant, NS: Non-significant)

Table 4 shows the association between the levels of neck disability with selected demographic variables among participants. Chi-square test was computed to find the significant association. It reveals that there was no significant association (p>0.05) found between the level of neck disability with selected demographic variables among participants except for Mother occupational status (p<0.05).

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Table 5 Association between the level of smartphone addiction with selected demographic variables among participants.

Background variables	Level of smartphone addiction				Chi-square test (χ^2) *p* value
	No addiction		Addiction		
	n	%	n	%	
Age in years					χ^2=3.674 *p*=0.039(S)
<20 year	72	76.6	68	64.2	
>20 year	22	23.4	38	35.8	
Gender					χ^2=0.580 *p*=0.283(NS)
Male	76	80.9	90	84.9	
Female	18	19.1	16	15.1	
Current Education					χ^2=7.306 *p*=0.006(S)
Undergraduate	91	96.8	91	85.8	
Graduate	3	3.2	15	14.2	
Father educational status					χ^2=3.005 *p*=0.391(NS)
No formal education	3	3.2	4	3.8	
Undergraduate	29	30.9	23	21.7	
Graduate	48	51.1	66	62.3	
Above	14	14.9	13	12.3	
Mother educational status					χ^2=2.318 *p*=0.509(NS)
No formal education	7	7.4	7	6.6	
Undergraduate	42	44.7	38	35.8	
Graduate	39	41.5	50	47.2	
Above	6	6.4	11	10.4	
Father occupational status					χ^2=1.508 *p*=0.471(NS)
Government job	21	22.3	27	25.5	
Private job	38	40.4	34	32.1	
Business	35	37.2	45	42.5	
Househusband	0		0		
Mother occupational status					χ^2=8.007 *p*=0.046(S)
Government job	10	10.6	26	24.5	
Private job	20	21.3	16	15.1	
Business	6	6.4	10	9.4	
Housewife	58	61.7	54	50.9	
Residence of the student					χ^2=0.214 *p*=0.375(NS)
Hosteller	36	38.3	44	41.5	
Day-scholar	58	61.7	62	58.5	

(p<0.05-Significant level, S: Significant, NS: Non-significant)

Table 5 shows the association between the levels of smartphone addiction with selected demographic variables among participants. Chi-square test was computed to find the significant association. It reveals that there was no significant association (p>0.05) found between the level of smartphone addiction with selected demographic variables among participants except for age, current education & mother occupational status (p<0.05).

DISCUSSION

The present study indicates the prevalence of text neck syndrome among students, 70%, are under 20 years old, with 83% being female and 91% being undergraduate students. Most participants' fathers (57.0%) were graduates, and 44.5% of mothers had graduate-level education. Most participants' fathers were engaged in business (40.0%), and the majority of mothers (56.0%) were housewives. Most participants (60.0%) were day-scholars, 65.0% had no neck disability, and 53.0% exhibited smartphone addiction. A cross-sectional study conducted by Bansal et al. (2013) examined 74 dentists from North India, revealing that 73% of females and 56% of males experienced neck pain. Using questionnaires and the neck disability index, the study found that 56% of participants had no neck impairment, while 36% had mild and 6% had moderate impairment. The study concluded that neck pain is common in dentists due to their work posture and repetitive tasks. Preventive measures such as ergonomic training and better workplace organization were suggested to reduce musculoskeletal issues. In this study the association between neck disability scores and demographic variables was examined using the chi-square test. The results showed no statistically significant association (p>0.05) between neck

disability scores and demographic variables, leading the researcher to accept the null hypothesis. A descriptive cross-sectional survey conducted by Kumari et al. (2021) at Galgotias University, Uttar Pradesh, studied 283 college students to determine the prevalence of text neck syndrome and its impact on daily activities. The study used a snowball sampling technique, distributing a Google Forms survey consisting of a consent letter, socio-demographic information, an NDI questionnaire, and a visual analogue scale. The results revealed that 35.7% of respondents did not have text neck syndrome, while 23.4% experienced moderate, 23.4% severe, and 2.1% complete text neck syndrome. This study concluded that the prevalence of text neck syndrome is higher than in earlier studies.

CONCLUSION

The study concludes that text neck syndrome is prevalent among students at Sharda University, with a significant number experiencing neck disability. Smartphone addiction was common, indicating a possible link between prolonged phone use and neck issues. However, no significant association was found between neck disability and demographic factors such as age, gender, or academic background. These results highlight the need for increased awareness of the risks associated with excessive smartphone use and improper posture. Preventive measures, such as education on ergonomic practices and moderated phone use, are recommended to reduce the impact of text neck syndrome.

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