Prevalence of Text Neck Syndrome Among Physiotherapy Students Using Smartphones in Visakhapatnam: A Cross-Sectional Study

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Abstract: *Background: Smartphones are among the most widely used electronic devices, leading to prolonged neck flexion and increasing the risk of text neck syndrome. Aim of the study: This study aims to assess the prevalence of text neck syndrome and smartphone addiction among physiotherapy students in Visakhapatnam. Methodology: A cross - sectional study was conducted over six months with a sample of 250 students using a random sampling technique. Data were collected using a self - administered questionnaire, including demographic details, the Smartphone Addiction Scale - Short Version (SAS - SV), and the Neck Disability Index (NDI). Results: The results indicated that 63.59% of students exhibited symptoms of text neck syndrome, with 49.51% reporting mild neck disability. Additionally, 61.65% of students demonstrated significant smartphone addiction. Conclusion: A moderate positive correlation was observed between smartphone addiction and neck disability. The study highlights the increasing risk of text neck syndrome among young adults and emphasizes the need for preventive measures.*

Keywords: Text neck syndrome, smartphone addiction, physiotherapy students, neck disability, musculoskeletal health

1. Introduction

In today's world, where the mobile technology has been advanced so much, there are more and more people who are spending an increased amount of time on handheld devices, such as Smartphone, tablets and e - readers [1]. Smartphones, which offer communication, information, and entertainment, have become an essential part of modern life. [2]. The mobile phone was not limited to communication but an entertainment and education tool for different age groups. 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 [3].

However, prolonged looking at the electronic devices leads to undesirable bending of the head and neck to the front in a declining position [3]. It is estimated that 75% of the world's population is hunched over their handheld devices hours daily with their heads flexed forward. It is also estimated that children and adolescents spend a medium of 5 to 7 hours a day on their smartphones and handheld devices [4]. Previous studies indicate that the prevalence of using a smartphone was higher among medical students [3]. The end result is prolonged flexion of the neck when bent over these electronic devices resulting in the "TEXT NECK" [1].

The term "TEXT NECK'' was first coined by an US Chiropractor Dr. Dean L. Fishman. This term is used to describe the neck discomfort and injury of upper back muscle which is caused by the frequent flexion of neck at various angles, while staring down at a mobile phone which alters the normal curve of the cervical spine. The text neck syndrome should be considered as "Pain of the Modern Era" since it is caused by modern - era gadgets such as cell phones, computers, and other smart devices, and it causes acute to chronic pain in the neck and upper back area [5]. During the last few years, a growing reporting of data is showing that the "TEXT NECK SYNDROME" might be considered as an emerging 21st century syndrome [4]. Nowadays, text neck is more common in today's generation of young adults and adolescents who for several hours a day and for several days a year, hunch over smartphones and personal computers more frequently than in the past [1, 4]. Mobile device users frequently adopt prolonged forward head posture while looking down at the screens of mobile devices [1].

Neck pain is a very complex and important public health problem in our modern societies. Any structure of the neck, such as intervertebral discs, ligaments, muscles, facet joints, dura, and nerve roots, might represent the origin site of the pain. Several pathologies might be the cause of neck pain, such as tumours, infection, inflammatory diseases, and congenital disorders. However, in most cases no systemic illness is detected, thus resulting in a clinical condition named "musculoskeletal neck pain" [4].

Research has been conducted to investigate the forces supported by the spine as the head is bent forward, into deteriorating position. The observations of the study concluded that, the weight observed by the spine significantly increases while bending the head in forward position at varying degrees. This leads to loss of the normal curvature of the spine which contributes to substantial increase of stress towards the cervical spine [6]. In fact, a full - grown head weighs 4.5–5.5 kg (10–12 pounds) in the normal position. Forward head flexion at different angles directly affects the cervical spine. At 15° head flexion, around 12 kg of force is placed on the neck. This force rises to 18 kg at 30°, 22 kg at 45°, and 27 kg at 60° [4, 7].

Text neck may cause many harmful symptoms such as neck pain, shoulder pain, upper back pain, chronic headaches and increased curvature of the spine. If neck syndrome is not treated or corrected in time it can lead to permanent damage and can result into overuse syndrome. It may also lead to some serious damage, such as flattening of the spinal curve, onset of early arthritis, spinal misalignment, spinal degeneration, disc compression, disc herniation, excessive posterior curve in the upper thoracic vertebrae to maintain balance, placing stresses on the cervical spine and neck muscles. It may also result in nerve damage, muscle damage, stiff neck, sharp pain, radiating pain, general soreness, weakness and numbness [1, 8].

Many information campaigns have aimed to raise awareness of the problems related to musculoskeletal pain (neck pain in particular), with particular regard to the possible medical, psychological, and social consequences and the methods of prevention and treatment. Prevention is the key when it comes to text - neck [4].

The following suggestions should be kept in mind while using smartphones or other handheld devices [4].
1) Avoid excessive usage and take frequent breaks.
2) Avoid prolonged static postures.
3) Position the device such that it reduces stresses both on the head/neck and the upper extremities.
4) Avoid high repetitions of movements such as prolonged typing or swiping.
5) Avoid holding large or heavy devices in one hand for long duration.

A systematic review done by Xie Y et al showed that mobile device users most prevalent Musculo skeleton complaints were neck related (17.3 – 67.8%) [9]. Two studies conducted in Pakistan and India reported that prevalence of text neck syndrome was 43.6% and 42.5% [10, 11]. Another two studies conducted in Saudi Arabia at Aljouf University and Qassim University among mobile phone users showed that 71.2% and 59.5% complained of cervical pain, respectively [6, 12]. Several studies reported a significant relationship between neck pain and smart phone addiction. The first study conducted in India showed a positive correlation between nomophobia questionnaire scores and neck disability index (R = 0.36) [11]. The second study conducted at King Saud University, Riyadh, showed a significant relationship between the Smartphone Addiction Scale (SAS) and NDI scores (P < 0.05) [13]. Also, a study carried out in Australia reported a significant moderate correlation between the time spent on electronic devices and neck pain intensity (P ≤ 0.05) [7].

Now a days text neck syndrome has become a distressing problem, as more people are inclining towards technology. As the smart phone usage has been increased worldwide more studies are needed to find out the existence of Text Neck Syndrome. Therefore, we have targeted to assess the level of smartphone addiction along with the purpose of smartphone usage, position of neck while using their smartphones and whether the students are warming up their neck muscles before using their smartphones. We also aimed to know the prevalence of text neck syndrome among the physiotherapy students in Visakhapatnam.

2. Materials and Methodology

Study Method:

Study Design: Cross sectional study
Sample Design: Random Sample Technique at college level
Sample Size: A total of 206 students who met the inclusion criteria participated in the study and completed the questionnaire.
Study Setting: VAPMS College of Physiotherapy
Duration of the Study: The study was conducted over a duration of six months.

Selection Criteria:

Inclusion Criteria: [15, 14, 11]
- Students who were willing to participate.
- Gender – males and females.
- Age in between 18 - 25 years.
- Students who are able to understand and can fill the questionnaire in English.
- Duration of smartphone use ≥ one hour a day.
- Students who are using smartphones, tablets and laptops for the past 6 months or more.

Exclusion Criteria: [3, 17]
- Students who are not willing to participate.
- Incompletely filled questionnaires.
- Students with acute traumatic brain or spinal cord injuries.
- Students with cervical radiculopathies, congenital cervical disfunctions and any other medical conditions which would lead to neck and shoulder pain.

Materials:
A questionnaire consisting of 3 sections
- Section 1 - Demographic data
- Section 2 – Neck Disability Index (NDI)
- Section 3 – Smartphone Addiction Scale – Short Version (SAS – SV)

3. Procedure

This cross - sectional study was conducted at VAMPS College of Physiotherapy, Visakhapatnam from June 2023 to November 2023. The sample size was taken as N - 250 and the sample was selected using Random sampling technique at the college level.

Random sampling or Probability sampling is a sampling method that allows for the randomization of sample selected i. e. each sample has the same probability as other samples to be selected to serve as a representation of an entire population. This is taken at the college level i. e., there are three Physiotherapy Colleges in Visakhapatnam out of which randomly one college is selected, i. e. VAPMS college of Physiotherapy to conduct the study. All the students studying in the college who met the inclusion criteria were requested to participate.

An electronic, self - administered questionnaire was prepared using google forms which consists of 3 sections. Section I includes demographic data of the subjects who participated in the study such as name, age, gender, Name of the college,

amount of daily smartphone uses on an average, Purpose of smartphone use, warm up neck muscles before using smartphone, taking breaks while using smartphone, having

neck pain or not and position of the neck while using smart phone showing the images as below [7].
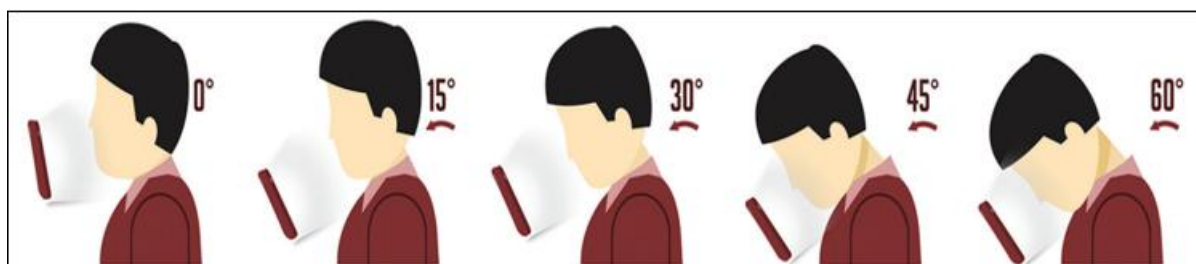
Figure 1: Illustration of neck positions while using smartphones at varying degrees

The section II consists of Smart Phone Addiction Scale - Short Version (SAS - SV). This was used to find out the level of smart phone addiction among the students. This is the short version of the smartphone addiction scale developed by Kwon et al; with internal consistency and concurrent validity. This scale involves 10 items scored using a Likert scale (1 - Strongly Disagree, 2 - Disagree, 3 - Weakly disagree, 4 - Weakly agree, 5 - Agree and 6 - Strongly agree) with a total score ranging from 10 to 60. so, this scale addresses the following areas; daily life disturbance, withdrawal, cyberspace - oriented relationship overuse and Tolerance. The cut - off value was taken as 31 for males and 33 for females as suggested by Kwon et al. A score more than the cut of value indicates a high risk for smartphone addiction. The internal consistency reliability of the SAS - SV has shown a Cronbach's alpha correlation coefficient of 0.91 [7, 16].

The section 3 consists of Neck Disability Index (NDI) questionnaire which includes 10 items. Each item is scored from 0 to 5, thus generating a minimum of total score of 0 and a maximum total score of 50. The interpretation is based on five categories of neck disability that is (0 - 4 = no disability, 5 - 14 = mild disability, 15 - 24 = moderate disability, 25 - 34 = severe disability and >34 = complete disability). This index is strongly validated for assessing disability in patients with neck pain [7].

This questionnaire has been shared to the class representative of each batch in the college through the WhatsApp link and asked to share among the students by instructing them to fill the questionnaire. The responses were collected.

4. Data Analysis and Results

The data collected was entered and analysed using Microsoft excel sheet. The descriptive statistics were used to explain the demographic data such as age, gender, amount of smartphone use daily on an average, purpose of smartphone use, warm up neck muscles before using smartphones, taking breaks while using smartphones, having neck pain and position of the neck while using the smartphones; and also to explain the level of neck disability from the scores secured from Neck Disability Index (NDI), to explain the level of smartphone addiction from the scores secured from Smart Phone Addiction Scale - Short Version (SAS - SV), and to explain the prevalence of Text Neck Syndrome among the physiotherapy students.

The statistical tests such as Chi square test was used to find out the association between the duration of smartphone use and neck disability, Pearson's correlation coefficient test was used to explain the relation between smartphone addiction and neck disability. $P < 0.05$ was taken as statistically significant.

Mean, median, standard deviation, percentages were used to describe the demographic data, neck disability, smartphone addiction and the prevalence of text neck syndrome. The frequency distribution tables were used to show the values. For the easier visual representation Pie diagram was provided to show the neck disability and smartphone addiction, Scatter diagram was provided to show the relation between smartphone addiction and neck disability.

Demographic Data

Table 1 (a): Age

	Mean	Standard Deviation
Age	20.71	± 1.87

The above tabulation value shows the mean age of 20.71 with a standard deviation of ± 1.87

Table 1 (b): Gender

Gender	Count	Percentage
Male	67	32.52%
Female	139	67.48%

The above tabulation value explains the distribution of genders among the responders.

Data interpretation:
The mean age of the students was 20.71±1.87. Among those the majority were females 139 (67.48%) and remaining were males 69 (32.52%).

Table 1 (c): Amount of Smartphone Usage

Amount of Smartphone Usage	Total	Percentage
1 - 2 Hours	10	4.85%
2 - 3 Hours	47	22.82%
3 - 4 Hours	56	27.18%
4 - 5 Hours	47	22.82%
More Than 5 Hours	46	22.33%

The above tabulation value explains the amount of smartphone usage daily among the responders.

Data interpretation:
Among the students 10 (4.85%) members used their phones for 1 - 2 hours, 47 (22.82%) used for 2 - 3 hours, 56 (27.18%) used for 3 - 4 hours, 47 (22.82) used for 4 - 5 hours and 46 (22.33%) used for more than 5 hours.

Table 1 (d): Purpose of smartphone use

Purpose of Smartphone Use	Total	Percentage
Browsing Internet	29	14.08%
Social media	108	52.43%
Education	41	19.90%
Calling	16	7.77%
Gaming	12	5.83%

The above tabulation explains the purpose of smartphone use among the responders.

Data interpretation:
 Total of 29 (14.08%) used their smart phones for the purpose of browsing internet, 108 (52.43%) used for social media, 41 (19.90%) used for education, 16 (7.77%) used for calling and 12 (5.83%) used for gaming purposes.

Table 1 (e): Warm Up Neck Muscles, Taking Breaks, Having Neck Pain

	Yes	No
Warm Up Neck Muscles	43 (20.87%)	163 (79.13%)
Taking Breaks	177 (85.92%)	29 (14.08%)
Having Neck Pain	114 (55.34%)	92 (44.66%)

The above tabulation values explain the warming up neck muscles before using smartphones, taking breaks while using smartphones and neck pain.

Data interpretation:
Only 43 (20.87%) warmed up their neck muscles before using their smartphones and the majority of 163 (79.13%) did not warmed up.177 (85.92%) took breaks in between smartphone use and 29 (14.08%) did not took breaks. Majority 114 (55.34%) had neck pain and 92 (44.66%) did not had neck pain.
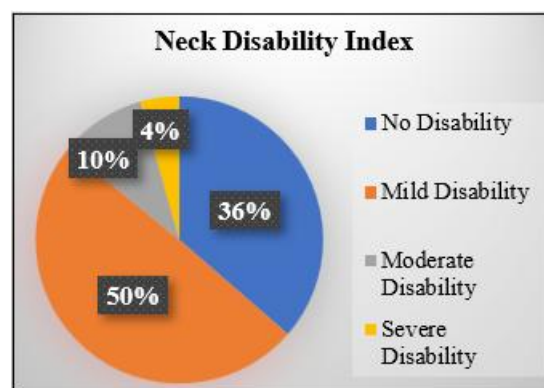
Table 1f: Neck Positions

Neck Positions	Total	Percentage
0 Degrees	8	3.88%
15 Degrees	80	38.83%
30 Degrees	87	42.23%
45 Degrees	23	11.17%
60 Degrees	8	3.88%

The above tabulation values explain the neck position while using smartphones.

Data interpretation:
Total of 8 (3.88%) had 0 degrees of neck position while using smartphone, 80 (38.83%) had 15 degrees, 87 (42.23%) had 30 degrees, 23 (11.17%) had 45 degrees and 8 (3.88%) had 60 degrees of neck position while using smartphones.

Table 2: Neck Disability Index

Neck Disability Index [NDI]	No. of Persons	Percentage	Median	Standard Deviation
No Disability [0 - 4]	75	36.41%		
Mild Disability [05 - 14]	102	49.51%		
Moderate Disability [15 - 24]	20	9.71%	8	± 6.99
Severe Disability [25 - 34]	9	4.37%		
Complete Disability [> 34]	0	0.00%		

The above tabulation values explain the median 8 and standard deviation ± 6.99 of the NDI scores.

Data interpretation:
The above table 2 and the below figure 1 explains the neck disability among the students. The interpretation of the total score is based on five categories of neck disability i. e.; 0 - 4 = no disability, 5 - 14 = mild disability, 15 - 24 = moderate disability, 25 - 34 = severe disability and >34 = complete disability. The Neck Disability Index scores showed that a total of 63.59% students are having neck disability among those 102 (49.51%) had mild disability, 20 (9.71%) had moderate disability, 9 (4.37%) had severe disability and none of the students had complete disability.75 (36.41%) students are not having neck disability. The median for Neck Disability Index score was 8 with a standard deviation of ± 6.99. This shows that the prevalence of Text Neck Syndrome among the physiotherapy students was 63.59%

Figure 1: Pie diagram - Neck disability

Table 3: Smartphone addiction

	Persons	Percentage	Mean	Standard Deviation
Addiction	127	61.65%	34.61	±10.17
No Addiction	79	38.35%		

The above tabulation value explains the smartphone addiction, mean 34.61 and the standard deviation ± 10.17 of the SAS - SV scores.

Data interpretation:
The above table 3 and the below figure 2 explains the level of addiction towards the smartphones among the physiotherapy students. The cut - off value for finding out the addiction levels were 31 for male and 33 for females. The scores of SAS - SV shows that the majority 127 (61.65%) students were addicted to smartphones and 79 (38.35%) had not addicted to the smartphones. The mean value for Smartphone Addiction Scale – Short Version was 34.61 with a standard deviation of ± 10.17.
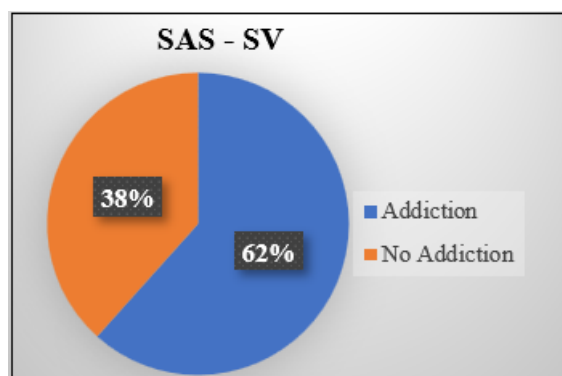
Figure 2: Pie diagram- Smartphone Addiction

Table 3: Amount of smartphone use and disability

	χ2 Value	P Value
Disability Duration	10.857	0.028

The above tabulation value explains the relation between duration and disability with a χ2 value of 10.857 and P value of 0.028.

Data interpretation
The above table 3 explains about the association between the amount of daily smartphone use and the neck disability among the physiotherapy students by showing the chi square value and the P value of significance. From the analysis the chi square value is $\chi2 = 10.857$ and the P value is P = 0.028 i. e.; P < 0.05. From the results the level of significance is good and there is a significant association present between the duration of smartphone usage and the neck disability.

Table 4: NDI and SAS - SV

	Mean / Median	Standard Deviation	r – Value	P – Value
NDI Score	8.00 (Median)	± 6.99	0.603	P < 0.05
SAS - SV Score	34.61 (Mean	± 10.17		

The above tabulation value explains the correlation between the neck disability and smartphone addiction with r value of 0.603 and P < 0.05.

Data interpretation:
The above (table 4) tabulation value shows the relationship between the Smartphone Addiction Scale – Short Version score and the Neck Disability Index score by showing the correlation value and P value. From the analysis the r (204) = 0.603, P = 0.00001 (P < 0.05). The Pearsons correlation coefficient shows a moderate positive correlation between the smartphone addiction and the neck disability among the students. The same has been showed in the figure 2.
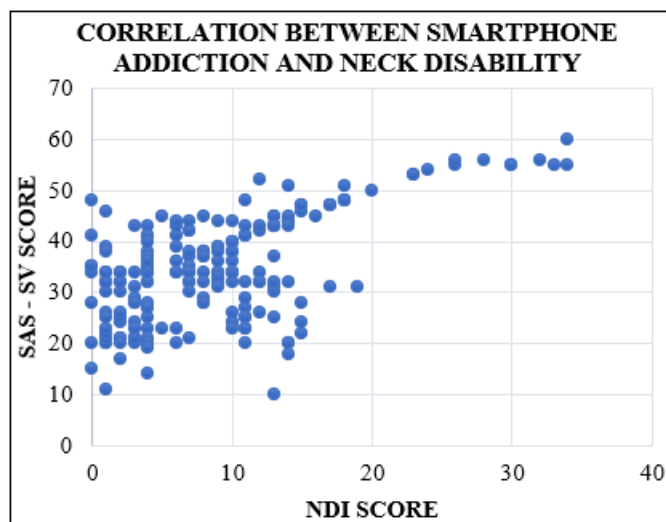
Figure 2: Scatter diagram showing relation between NDI and SAS - SV

5. Discussion

The purpose of this study was to find out the prevalence of Text Neck Syndrome among the physiotherapy students using smartphones in the Visakhapatnam. Along with the aim of assessing the level of smartphone addiction among the physiotherapy students and the level of neck disability in those students using smartphones. We have also aimed to find out the association between the smartphone addiction and the neck disability.

This study was a Cross – Sectional study conducted in the VAPMS college of physiotherapy. The random sampling technique at the college level was used to select the samples. The sample size was taken as 250. Students studying in the VAPMS college of physiotherapy those who met with the inclusion criteria were taken into consideration to perform the study.

A questionnaire consisting of 3 sections was created using the google forms, the link was generated, sent to the class representative of each year, asked to share it with every student and was requested to fill the questionnaire genuinely to minimize the errors.

Section 1 consisted of the demographic data such as the name, age, gender, name of the college studying, amount of daily smart phone use on an average, purpose of the smartphone use, warm up neck muscles before using the smartphone, taking breaks while using the smartphone, having neck pain and the position of neck while using smartphone.

Section 2 consisted of the Smartphone Addiction Scale – Short Version (SAS - SV). This scale has been used to find out the level of smartphone addiction among the physiotherapy students in the Visakhapatnam. The scale consisted of 10 items scored using likert scale 1 (strongly disagree), 2 (disagree), 3 (weakly disagree), 4 (weakly agree), 5 (agree), 6 (strongly agree). The total score for all the 10 components were added for each student and then analysed. The cutoff value for assesing the level of smartphone addiction was taken as 31 for males and 33 for females. The

score more than the cutoff value indicates risk for smartphone addiction.

Section 3 included the Neck Disability Index (NDI). This index was used to find out the neck disability among the physiotherapy students based on five categories. This index includes 10 items. They include; Pain Intensity, Personal care (washing, dressing etc), Lifting, Reading, Headaches, Concentration, Work, Driving, Sleeping, Recreation. Each item is scored from 0, 1, 2, 3, 4, 5. This generates a minimum of total score of 0 to a maximum score of 50. The scores obtained were added and interpretation was done based on five categories that is 0 - 4 (no disability), 5 - 14 (mild disability), 15 - 24 (moderate disability), 25 - 34 (severe disabilty) and more than 34 (complete disability).

The data that has been collected from the google form was entered into the Microsoft Excel sheet and the statistical tests were also performed in the Excel sheet. Descriptive statistics were used to express the demographic data of the responders, level of smartphone addiction, level of neck disability and the Prevalence of Text Next Syndrome among the physiotherapy students. The Chi square test has been used to express the association between the amount of smartphone use and the neck disability. The Pearsons correlation coefficient test has been used to find out the relation between the smartphone addiction and neck disability. $P < 0.05$ was considered as the level of significance.

A total of 206 students had participated in this study with the mean age of 20.71 ± 1.87 (SD). The majority of them were females i. e.; 67.48% and males 32.52%. More students used their smartphones for 3 - 4 hours (27.18%), 22.82% students used their smartphones for 4 – 5 and more than 5 hours. Larger number of students used their smartphones for the purpose of social media (52.43%).

Most of them are not warming their neck muscles before using the smartphones (79.13%). Majority of the students were taking breaks while using the smartphones (85.92%) and only 14.08% of them were not taking breaks. Larger part of them were having neck pain (55.34%). Greater number of the students were using 30 degrees of neck position (42.23%), and 15 degrees (38.83%).

We have found that higher percentage of the students are having neck disability with majority reporting mild disability (49.51%) and none of them are having complete disability. The median value for the Neck Disability Index score is 8 ± 6.99 (SD). The larger part of the responders is showing addiction towards the smartphones (61.65%) with a mean score of 34.61 ± 10.17.

From the results we have found that there is association present between the duration of the smartphone usage and the neck disability with $\chi2$ value of 10.857 and P value of 0.028. It showed a good level of significant as P value is less than 0.05. From the Pearsons correlation coefficient value i. e.; r = 0.603 we have found a moderate positive correlation between the smartphone addiction (SAS - SV score) and the neck disability (NDI score). From the overall study we have come to know that the Prevalence of Text Neck Syndrome was 63.59%.

In the study conducted by Kholoud T. Alsiwed et al; among the medical students in Saudi Arabia found that the prevalence rate of Text Neck Syndrome was 68.1% among which the majority reported mild neck disability as 49.5%. Most of the participants were addicted to the smartphone use (63.1%). Regarding the amount of daily use most students use their phones for more than 4 hours a day (78.5%). The high prevalence of participants using a mobile phone for more than 4 h per day is an alarming problem since the severity of musculoskeletal symptoms in the upper extremities is significantly related to the amount of time spent using smartphones. Their study showed a moderate correlation between SAS - SV and NDI scores [7].

A systematic review performed by Yanfie Xie et al concluded that a wide range of prevalence rates of musculoskeletal complaints in different body regions has been reported, with the highest Prevalence commonly found in neck complaints. The study showed that there is a significant association between total durations of device use and musculoskeletal complaints such as the neck, shoulder and low back pain [9].

A cross - sectional study done by Muayad Kadhim Rashid et al also found a higher rate of prevalence of Text Neck Syndrome (64.5%) and smartphone addiction (61.5%) using mobile phones for more than 5 hours daily (63.7%) among the Iraqi medical students. Moreover, the neck disability was significantly associated with; not warming up neck muscles before using the smartphones, addiction to smartphone, increased daily hours using the smartphone during the COVID - 19 related quarantine, using the phone for five hours and more daily, neck pain, female gender and have no frequent breaks during the smartphone usage [3].

Asad Ali Chaudary et al had found that the Text Neck Syndrome was common in the medical students using smartphones among which females were more prone than males. The neck pain was mostly associated with the flexed neck posture while using smartphones/laptops for approximately 3 - 4 hours without breaks while using smartphones and not doing any warmup exercises before using smartphones [11].

Supriya Kumari et al had conducted a study in which they have found the prevalence of Text Neck Syndrome to be higher. Out of all responses, 36.5 percent of respondents reported mild text neck syndrome, 23.4 percent reported moderate, 2.1 percent reported severe and complete text neck syndrome, and 35.7 percent did not suffer text neck syndrome. And 73.4 % people reported mild to severe pain in neck and upper back region. They have concluded that the Text Neck Syndrome should be considered as "Pain of the Modern Era" since it is caused by modern - era gadgets such as cell phones, computers, and other smart devices [5].

In a study carried out by Priya P Shah et al; out of the total study population most of them were females (76/100) with maximum people having usage hours of 2 - 4 hours per day (46/100). The correlation coefficient showed significant positive moderate correlation between SAS and NDI. This study showed that musculoskeletal problems in neck and hand (predominantly the thumb) can be seen in smartphone

addicted students which may be short term initially but may later lead to long term disability [15].

Abdullah M Alsalameh et al have performed a study in which the prevalence of smartphone addiction among medical students was relatively high (60.3%). The most frequent pain related to smartphone addiction was in the neck (60.8%), followed by lower back (46.8%), shoulder (40.0%). Moreover, they found a significant relationship between musculoskeletal pain and smartphone addiction [12].

A study conducted on Canadian university population by Sophia Berolo et al found a significant association between the total time spent using a mobile device and pain in neck region, shoulder region and pain in the base of the right thumb. In their study the associations observed, in combination with case reports, laboratory studies, and information from the occupational epidemiology literature, suggest anatomically feasible relationships between mobile hand - held device use and musculoskeletal symptoms of the upper extremity and neck [18].

Alaa Aziz Alhazmi et al conducted a study to evaluate the prevalence and factors associated with smartphone addiction and found out that the prevalence of smartphone addiction among the medical students to be 36.5%. They believed that one of the reasons for this high prevalence could be a lot of educational material is available on the internet, and students feel more comfortable using a smartphone than a laptop or desktop computer. Their study showed that addiction is higher among males than females, which is similar to a few other studies, while other studies reported that gender was not associated with smartphone addiction. Their study participants showed a statistically significant relationship between daily hours of smartphone usage and smartphone addiction [19].

A study was conducted in Saudi Arabia by Sami S. AlAbdulwahab et al to find out the association between the smartphone addiction and neck disability. In this study they demonstrated that addiction to smartphone use is associated with neck problems and disability among healthy young adult subjects. They state that the neck disability among smartphone users might be related to frequent neck flexion posture which changes the natural curve of the cervical spine and increases the amount of stress on the cervical spine leading to irritation and spasm in the surrounding skeletal structures, ligaments and proprioception deficits in the cervical vertebra [13].

6. Conclusion

This study highlights the high prevalence of text neck syndrome and smartphone addiction among physiotherapy students. A significant association was observed between smartphone usage duration and neck disability, emphasizing the need for preventive strategies. Future research with larger sample sizes is recommended to further explore this growing health concern.

7. Limitations and Suggestions

1) The actual sample size taken for performing this study was 250 and this could not be reached because we got no response from the other college for our request to perform the study.
2) So, this study was conducted only among the students of VAPMS college of physiotherapy and the total responses that were received are 206.
3) As the questionnaire was self - administrable the answers given might not be unfeigned.
4) The study population was too small and as the study was conducted only in one college the result cannot be represented to the whole population.
5) Further studies are recommended to find out the prevalence of Text Neck Syndrome and the level of smartphone addiction using larger number of populations so that the results might be more accurate.

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