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Prevalence of text neck syndrome associated with smart phone addiction: A cross sectional study

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Abstract
Text neck syndrome is an injury due to inadequate position because of the forward flexion and stretched on the neck musculature due to Smartphone usage. The study aimed to find out prevalence of text neck syndrome associated with smartphone addiction among university students.118 students who fulfilled the inclusion criteria were recruited in this study. Neck Disability Index and Smartphone Addiction Scale-Short version data was obtained for screening. The study shows significantly high prevalence rate of attaining text neck syndrome due to smart phone addiction and concludes saying increase in smartphone addiction increases neck pain.

Keywords: Neck pain, phone addiction, neck spasm

Introduction
In today's growing international applicability of digital media together with computers, lap tops, cell phones, television, gaming consoles, pills and different associated devices have grown to be very not unusual place among all of the genders and age groups [1]. The total number of mobile phone users in India as per 2020 is expected to be 815.2 million [2]. In a study of college students United States- textual content messaging was emerged as most often used form of communication medium, 79%of the population between the ages of 18-44 have their smartphone with them nearly all the time [3]. The occurrence of musculoskeletal problems of hand, wrist, forearm and neck has been growing global because of the prolonged forceful, low amplitude, repetitive use of hand-held device. Looking down at your smartphone an excessive amount of can result in higher ache starting from chronic, nagging ache to sharp and excessive higher against muscle tissue spasm, shoulder ache and tightness probably ensuring in painful shoulder muscle spasm [4]. Harrison *et al* located that the compressive load at the cervical discs within side the neck-ahead flexed role changed into 10 kg extra than that within side the upright neck role [5]. Prolonged utilization of a cell phone may also attenuate the interest of visual field and additionally opportunities of increase of brain tumour, approximately 5% to 8% of cell phone users can also additionally occur with ephemeral symptoms of vestibular disturbance conjoined with the cell phone usage It is suggested that valid cell phone usage at some point of late night time by young adults may also even result in mood and character disturbances and different issues [1]. If textual content neck is left untreated, then it is able to lead to a few severe damages, such as:

- Loosening of the spinal curve
- Starting of early arthritis
- Spinal misalignment may be a final result of textual content neck
- Spinal degeneration
- Disc compression
- Nerve damage
- Muscle damage
- Loss of lung capacity [6]

The term "Text neck syndrome" was first invented by Dr Lean Fishman as an overuse injury. The injury may be due to the inadequate position, because, during the use of mobile phone, The neck goes into forward flexion and the normal curvature of the cervical spine is flattened and stretched on the neck musculature [7].

Material and Methods

This study was conducted at the department of physiotherapy of a tertiary care hospital. Study was authorized by the institutional ethical committee of Yenepoya (Deemed to be University). The motive of the study was described and a written consent was obtained from eligible candidates. Screening for inclusion criteria was done within a span of 6 months. 19-29 year old male and female subjects were recruited if they complained of neck pain, were using smartphone for more than two hours and the ones who had SAS score more than 3. Participants who were diagnosed with other neck related medical condition were excluded from the study. Once the subject met the inclusion criteria, neck disability index is evaluated and the obtained data is analyzed to obtain the prevalence.

Result

The study consist total sample size of 118 patients in which 51 are female and 67 are male. Based on the data availed the following results are drawn. There are total of 12 questions in short version of smartphone addiction scale and 10 in NDI scale.

Tables and figures

Table 1: Frequency distribution of SAS-SV

	NO	YES
Medical condition present	104(88.1)	14(11.9)
Presence of neck pain	0(0)	118(100)
Missing planned work due to smartphone use	37(31.4)	81(68.6)
Having a hard time concentrating in class, while doing assignments, or while working due to smartphone use	25(21.2)	93(78.8)
Feeling pain in the wrists or at the back of the neck while using a smartphone	27(22.9)	91(77.1)
Won't be able to stand not having a smartphone	79(66.9)	39(33.1)
Feeling impatient and fretful when I am not holding my smartphone	80(67.8)	38(32.2)
Having my smartphone in my mind even when I am not using it	73(61.9)	45(38.1)
I will never give up using my smartphone even when my daily life is already greatly affected by it.	65(55.1)	53(44.9)
Constantly checking my smartphone	57(48.3)	61(51.7)
Using my smartphone longer than I had intended	26(22)	92(78)
I use my smartphone too much	44(37.3)	74(62.7)

Table 1 tells about the frequency distribution of SAS scale where there was increase in frequency in questions such as if neck pain was present, if a planned work was missed due to smartphone, in concentrating, pain at wrist and neck while using smartphone, constantly checking phone, using phone longer than intended. (Fig 1)

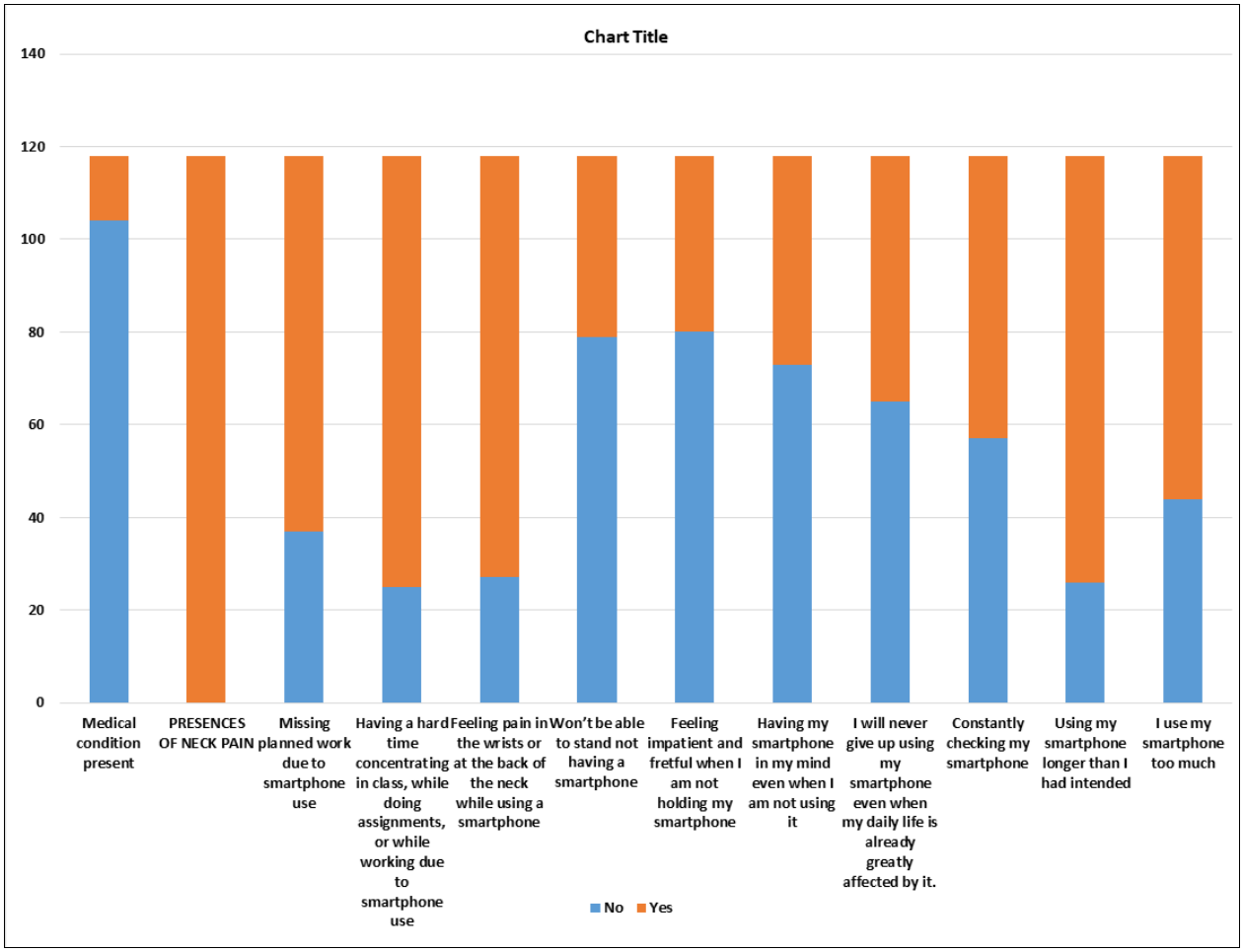

Fig 1: Frequency distribution of SAS

Table 2: NDI distribution

	Score 1	Score 2	Score 3	Score 4	Score 5
Pain intensity	49(41.5)	42(35.6)	20(16.9)	4(3.4)	3(2.5)
Personal care	86(72.9)	21(17.8)	5(4.2)	4(3.4)	2(1.6)
Lifting	67(56.8)	37(31.4)	6(5.1)	4(3.4)	4(3.4)
Reading	37(31.4)	54(45.8)	17(14.4)	9(7.6)	1(0.8)
Headache	39(33.1)	56(47.5)	13(11)	9(7.6)	1(0.8)
Concentration	41(34.7)	50(42.4)	20(16.9)	6(5.1)	1(0.8)
Work	56(47.5)	44(37.3)	12(10.2)	5(4.2)	1(0.8)
Driving	62(52.5)	33(28)	10(8.5)	2(1.7)	11(10.2)
Sleeping	74(62.7)	28(23.7)	11(9.3)	2(1.7)	3(2.5)
Recreation	60(50.8)	44(37.3)	9(7.6)	5(4.2)	0(0)

Table 2 tells about the Neck Disability Index scores among 118 participants.

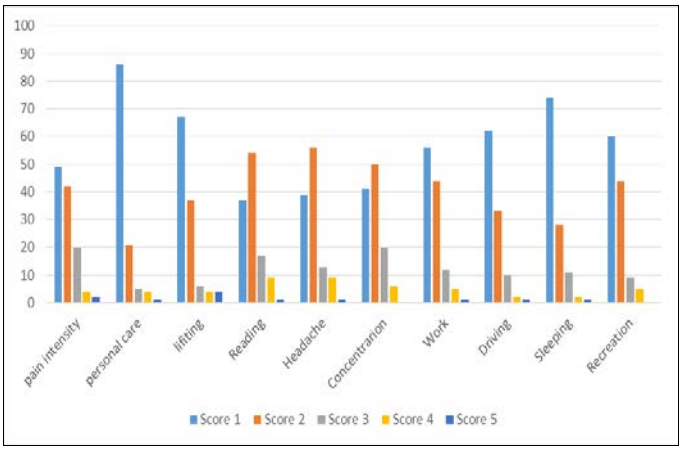

Fig 2: NDI distribution

Table 3: Correlation between SAS and NDI score using Pearsons correlation

Paired Samples Correlations				
		N	Correlation	P value
Pair 1	SAS & NDI	118	.220	.017

There is significant moderate positive correlation indicating as SAS increases the NDI increases

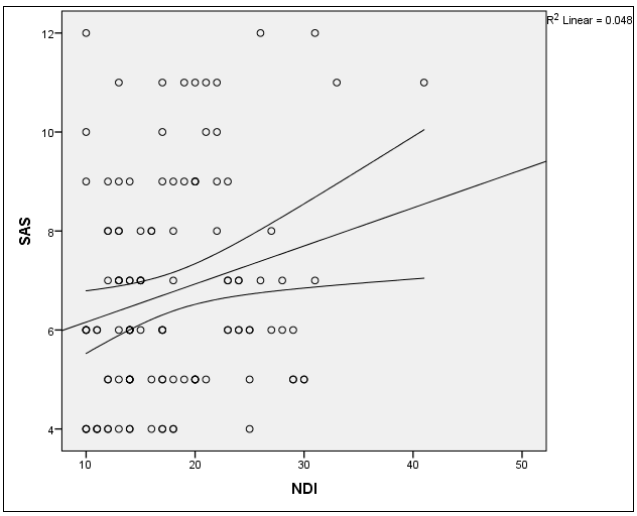

Fig 3: Scatter plot with the line going upward

Discussion

The goal was to estimate prevalence of neck pain among those addicted to smartphone. It suggests spending more hours in order to text, play games, using internet etc over smart phone shows powerful impact on musculoskeletal system mainly involving neck. Study also concludes showing correlation between smartphone addiction and text neck syndrome, which was quantified by using smart phone addiction scale-short version and neck disability index.

Priya *et al* conducted a study on students between ages of 20-25 years using smart phone were included. The students response to questionnaire method and outcome was measured using smartphone addiction scale, neck disability index and cornell hand discomfort questionnaire. The study concluded that muscular problem in neck and hand be seen in smartphone addicted students which is short-term. But can be late to long term disability. Comparatively in our study we have used neck disability index to understand the prevalence of text neck syndrome in university students.

Kwon *et al* (2013) a study on smartphone addiction scale: development and validation of short version of adolescents. 10 final questionnaires were used to find validity of revised and short version of the smart phone addiction scale. Smart phone addiction scale is validated in the study and it can be used efficiently for the valuation of smartphone addiction in community and research area. Thus we used smart phone addiction scale short version to find the prevalence of smartphone addiction and text neck syndrome

In summary most of the above mentioned review of literature suggest that there is correlation between smartphone usage and musculoskeletal disorder where; particularly in this study neck pain and smartphone addiction is considered and evaluated.

Conclusion

This study concludes saying that there is significant increase in neck pain associated with smartphone addiction. It indicates increase in smartphone addiction increases neck pain. However it was analyzed neck pain due to smartphone addiction was not significantly affecting any individual in their activities like personal care, reading, work, driving, sleeping or recreational. Therefore it is found if appropriate measures are not taken; neck pain due to smartphone addiction may lead to any form of injury for disability as age passes.

Conflicts of Interest

None

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