Original Article

Correlation of Text Neck Syndrome is a Consequence of Smartphone Addiction in High School Going Children Observational Study

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Abstract

Background: Our aim is to assess the correlation of Smartphone use addiction with Text neck syndrome in high school going children in Vadodara.

Introduction: Our aim is to assess the correlation of smartphone use addiction with Text neck syndrome in high school going children in Vadodara. Mobile phone is a device which is used for voice and data communication. Along with the basic voice function of a phone, current mobile phones may support many additional services such as Text messaging, Email, gaming, camera, Whats app, Online classes. The neck or cervical spine is a coordinated network of nerves, bones, joint, and muscles directed by the brain and the spinal cord. Additionally, irritation along the nerve pathways can cause pain into the shoulder, arm and hand. "Text neck" is the term used to describe the neck pain and damage sustained from looking down at the cell phone, tablets or other wireless device too frequently and for too long.

Methods: A total 300 high school going children in Vadodara were asked to fill a questionnaires of Smartphone Addiction Scale (SAS) and Neck Disability Index (NDI) attached. Spearman correlation coefficient was used to correlate between the SAS and NDI respectively.

Results: In this study, males were more involve compare to females (males-142, females-158). Mean±SD of SAS and NDI was 140.13±14.319 and 36.73±17.489 respectively. Spearman correlation coefficient showed a significant moderate positive correlation between SAS and NDI (r=.201*, p=<0.001).

Conclusion: A total 300 participants were selected for the study from high schools. The two scales SAS and NDI are use in this study. By this study we concluded that SAS is strongly correlated with NDI.

Keywords: Neck disability index; Smart phone addiction scale; Text neck syndrome.

Introduction

A Mobile phone is a device which is used for voice and data communication. Current mobile phones may support a variety of extra services in addition to the fundamental speech function, such as text messaging and email, gaming, camera, WhatsApp, Online classes etc.[1]

Text Neck syndrome involving the heads, neck & shoulders usually resulting from excessive stein on the spine for looking in a forward and downward position at any hand held mobile device for example; mobile phone, videogame unit, computer. This can cause headache, neck pain, shoulder and arm pain.[2]

The brain and spinal cord direct a network of

nerves, bones, joints, and muscles in the neck, known as the cervical spine. Irritation of the nerve pathways can also result in discomfort in the shoulder, arm, and hand. The term "text neck" refers to neck pain and injury caused by staring down at a cell phone, tablet, or other wireless device too often and for too long.[2]

Never before has a technology been as universally accepted as the modern era cell phone, anywhere one looks, a person staining at their smartphone will be encountered.[1]

Neck pain is a common health issue that primarily affects adults. Recent studies, however, reveal that new technologies are causing a shift in the prevalence of this important issue from maturity to all ages of children. In fact, the development of a complex cluster of clinical symptoms known as "Text neck syndrome" may be linked to the precocious and inappropriate use of personal computers, particularly smart phones."[1]

Posture is the attitude of the body. A particular way of bearing one's body, or the relative arrangement of one's body for a given activity. Increased flexion of the lower cervical spine and upper thoracic region, as well as increased extension of the upper cervical vertebrae, characterize forward head posture, which also affects the lumbar spine. Because forward head posture is a marker of bad neck posture, this study was done to determine the prevalence of text neck syndrome among high school students.[3]

Neck pain is a common health issue that primarily affects adults. Recent studies, however, reveal that new technologies are causing a shift in the prevalence of this important issue from maturity to all ages of children.

In fact, the development of a complex cluster of "text neck syndrome" may be linked to the early and inappropriate use of personal computers and, particularly, cell phones, causes and risk factors for musculoskeletal pain, which can be modified by changes in daily life, different cultures and habits, and "text neck syndrome" as increased stresses on the cervical spine, which can lead to cervical degeneration as well as other developmental, medical, psychological, and social complications.

Additional research with more rigorous study designs and objective measures of musculoskeletal pain is needed to confirm significant relationships; additional research with more rigorous study designs and objective measures of musculoskeletal pain is needed to confirm significant relationships in children and adolescents who spend a lot of time

watching Smartphones and computers is needed to properly evaluate this emerging issue worldwide in children and adolescents who spend a lot of time watching Smartphones and computers. Non-objective metrics and the subjective character of musculoskeletal pain limit existing research.[4]

Overuse of a smartphone can result in a variety of issues, including depression and anxiety disorder.[7] Neck pain is a common health issue that primarily affects adults. Recent studies, however, reveal that new technologies are causing a shift in the prevalence of this important issue from maturity to all ages of children. In reality, excessive and inappropriate use of personal computers, particularly cell phones, may be linked to the development of "text neck syndrome," a complicated collection of clinical symptoms. The purpose of this article is to examine the new phenomenon of "text neck syndrome," the underlying causes and risk factors of musculoskeletal pain, which can be modified by changes in daily life, in different cultures and habits, and on "text neck syndrome" as increased stresses on the cervical spine, which can lead to cervical degeneration as well as other developmental, medical, psychological, and social consequences, and on "text neck syndrome" as increased stresses on the cervical spine, which can lead to cervical degeneration along with other developmental, medical, and social complications.

Additional research with more rigorous study designs and objective measures of musculoskeletal pain is needed to confirm significant relationships. The findings support the contention that an appropriate approach for early diagnosis and treatment is critical to properly evaluate this emerging issue in children and adolescents who spend a lot of time watching Smartphones and computers around the world; additional research with more rigorous study designs and objective measures of musculoskeletal pain is needed to confirm significant relationships.

Non objective metrics and the subjective character of musculoskeletal pain limit existing research.[8] Our society's "smart phone addiction" has recently become a major issue. According to a study related to the development of a smart phone addiction scale, smart phones also generate addiction symptoms similar to the impacts of the internet, such as seeking, withdrawal, tolerance, daily life disruption, and a preference for cyberspace oriented relationships.[9]

Neck Disability Index (NDI)

Index of neck disability (NDI) The NDI evaluation

consists of a ten item, 50 points index questionnaire that evaluates the impact of neck pain and symptoms on a variety of functional activities. Four of the ten questions relate to subjective systems (pain intensity, headache, concentration, sleeping), four daily activities (lifting, work, driving, recreation), and two discretionary daily activities (personal care, reading)[6]

Smartphone Addiction Scale (SAS)

The SAS is a self reporting scale used to determine whether or not a person is addicted to their smartphone. With a six point Linker scale (1: "strongly disagree" to 6: "strongly agree"), it consists of six criteria and 33 items. Daily life disruption, pleasant anticipation, withdrawal, cyberspace oriented relationship, overuse, and tolerance were the six factors.[5]

Methodology

Material & Methodology

Material Used

- Mobile Phone
- Laptop

Methodology

- *Sources of Data*: 300 High School going Children.
- *Study Design*: Observational study.
- *Sample Size:* In this 300 (n=300) High School going Children are taken.
- *Study Population:* High School going Children.

Criteria for Selection

Inclusion Criteria

- Who are willingly Participate
- Ability to Communicate in English.
- Minimum use of Smartphone ≥4-5 hour/day

Exclusion Criteria

- In High School going children with any medical condition which could lead to pain in neck or any injury of cervicalspine.
- Specific conditions like: Musculoskeletal trauma of neck or Neckpain.

Method

Participants were taken from high school going children, Vadodara. In this study participants with minimum Smartphone use of ≥4-5 hour/day, and able to fill the questionnaire in English were included. The research was conducted as an observational analytical study with random sampling. The SAS is an identity scale used to determine whether or not a person is addicted to their smartphone.[34] With a six point Linker scale (1: "strongly disagree" to 6: "strongly agree"), it consists of six criteria and 33 items. Daily life disruption, pleasant anticipation, withdrawal, cyberspace oriented relationship, overuse, and tolerance were the six factors with 300 participants. The purpose of the study was explained and oral consent was taken from the High school going children. The period for data collection inthe study was from April 2021 – September 2021, in which 300 participants gave positiveretort. The questionnaire were divided into 4 parts including (1) Demographic data (Name, Age, Gender, Name of school, (date of collection data) and Duration of Smartphone use / day. (2) Smartphone Addiction Scale (SAS) to measure the Smartphone addiction. (3) Neck Disability Index (NDI) to determine the musculoskeletal problems of neck in different activity.

Smartphone addiction scale (SAS)

The SAS is a self reporting scale to assess smartphone addiction.[34] It consists of six factors and 33 items, with a six point Linker scale (1: "strongly disagree" to 6: "strongly agree"). The six factors were daily life disturbance, positive anticipation, withdrawal, cyberspace orientated relationship, overuse and tolerance. The respondent circles the statement that best describes their smartphone usage patterns. The range of scores is from 33 to 198. The higher the score, the more pathological smartphone usage there is.[5]

Neck Disability Index (NDI)

The NDI is a ten item, 50 point index questionnaire that evaluates the impact of neck pain and symptoms on a variety of functional tasks. Four of the ten questions relate to subjective systems (pain

intensity, headache, concentration, sleeping), four daily activities (lifting, work, driving, recreation), and two discretionary daily activities. (personal care, reading). Each item is rated on a scale of 0 to 5, with 0 indicating "no discomfort" and 5 indicating "worst imaginable pain." With a maximum score of 50, the test was regarded as a raw score. A higher NDI score suggests a more severe neck problem.[6]

Result

A statistical analysis (spearman correlation coefficient) was done in the SPSS version 20. A total 300 participants (Age mean ± SD = 32.64 ± 7.65), in which 142 were male and 158 were females. The mean value of males 101.00 and females 101.13.

Table 1: Gender distribution.

Gender	Total
Male	142
Female	158
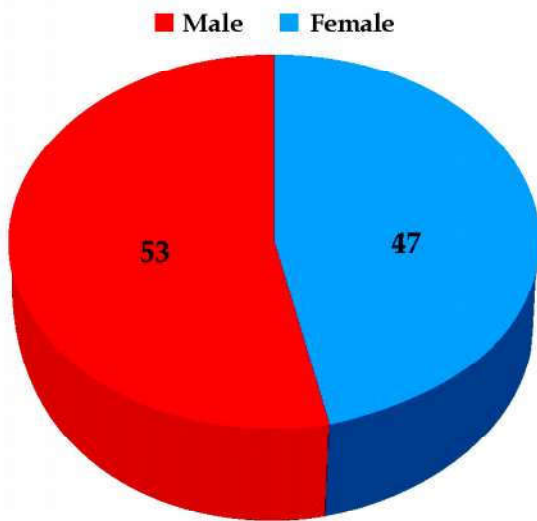
Fig. 1: Gender Distribution of Subjects of Participants.

Table 2: Mean ± Standard deviation of outcome measures.

| Outcome measures	Mean ± SD
SASa	140.13±14.319
NDIb	36.73± 17.489

(a) Smartphone addiction scale.

(b) Neck disability index

Mean±Standard deviation of SAS, NDI are shown into Table 2.

Table 3: The Spearman Correlation Coefficient between two Variables is SAS and NDI.

			SAS	NDI
Spearman's Rho	**SAS**	Correlation coefficient	1	.201**
		Sig. (2-tailed)	—	.000
		N	300	300
	NDI	Correlation coefficient	.201**	1
		Sig. (2-tailed)	.000	—
		N	300	300

P value is <0.001 hence We reject the null hypothesis and embrace the alternative hypothesis. There is positive co relation between smart phone addiction and text neck syndrome in high school going children.
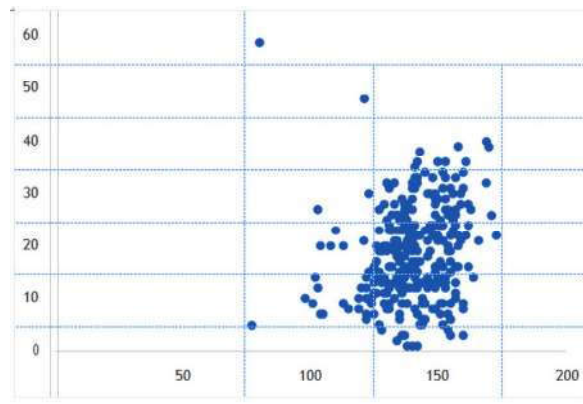
Fig. 2: Correlation between SAS and NDI (r=0.201*)

Spearman correlation coefficient showed significant positive moderate correlation between SAS and NDI (r=0.201*, p<0.001). The correlation between SAS and NDI is shown in Table 3 and Figure 2.

Conclusions

The present study shows there is strong correlation between smart phone addiction and text neck syndrome in high school going children.

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