

Correlation between Alexithymia and Neck Pain in Smartphone Addicted users of Paramedical Students from South Gujarat: A Cross Sectional Study

Amit S. Patel¹, Azima M. Sheikh², Ankita H. Yadav³, Tazmin Z. Shaikh⁴, Heena N. Patel⁵

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ABSTRACT

Introduction: In the present era, the increasing use of Smartphone as brought about numerous musculoskeletal discomforts of which Neck Pain is the common and overuse of smartphone can lead to Smartphone Addiction (SA) which is related to Alexithymia in a south gujarat region.

Method: A group of students of age groups 17-27 years were recruited from different colleges of South Gujarat through convenient sampling technique. The prevalence of Alexithymia was calculated from enrolled 457 subjects and 117 subjects were enrolled on basis of inclusion criteria. The addiction level to a smartphone was measured using Smartphone Addiction Scale Short Version (SAS-SV), Alexithymia was measured using Toronto Alexithymia Scale (TAS) & the Neck disability was measured using the Neck Disability Index (NDI).

Result: The study showed Alexithymics with a prevalence of 52% and SA with a prevalence of 59%. The Spearman correlation analysis of the result clearly showed that there was a moderate positive correlation between SAS-SV & TAS ($r=0.63$, $p>0.05$) and also between SAS-SV & NDI ($r=0.52$, $p>0.05$) but there was no significant correlation between the variables ($r > 0.05$).

Conclusion: The study concluded that the Smartphone addicted subjects showed significant features of alexithymia, neck pain and disability in this age group due to excessive smartphone use.

Keywords: alexithymia; Smartphone addiction; university students; toronto alexithymia scale (TAS); smartphone addiction scale - short version (SAS-SV); neck disability index (NDI); standard deviation (SD).

Author Affiliation: ¹Principal & HOD, Department of Musculoskeletal, ²⁻⁵Interns of Bachelor of Physiotherapy, M. B. Gohil Institute of Medical Science and Research Center, College of Physiotherapy, Navsari 396445, Gujarat, India.

Corresponding Author: Amit S. Patel, Principal & HOD, Department of Musculoskeletal, M. B. Gohil Institute of Medical Science and Research Center, College of Physiotherapy, Navsari 396445, Gujarat, India.

E-mail: amitpatel.ortho@gmail.com

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INTRODUCTION

Individuals with alexithymia can use the internet to manage their problems in managing and defining emotions. Therefore, smartphone use and even addiction may be higher in individuals with alexithymia. Several previous studies investigating the relationship between alexithymia and SA were interesting. For example, previous studies have

identified that alexithymia is associated with the severity of Internet addiction, problematic Internet use, and mobile phone use.¹ The individual might have a strong desire to spend more time with the smartphone, and this may result in addiction because the use of smartphones causes a distance from the problem in real life.¹

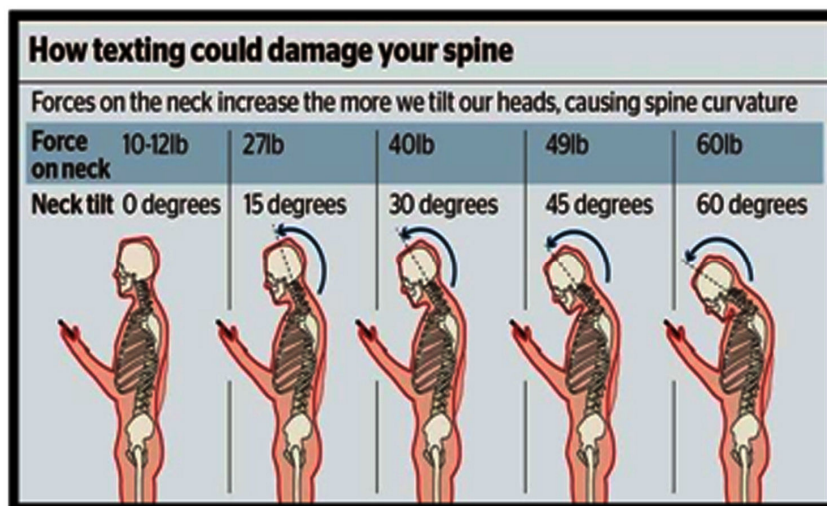
Smartphone addiction is also called "Mobile Phone Dependents", "Compulsive Mobile Phone Overuse" or "Mobile Phone Overuse". These terms mainly describe the phenomenon of problematic mobile phone use. "Smartphone addiction" is the term typically used in the literature. Smartphone addiction has been found to be an emerging public health problem.³

A Smartphone is that the most well liked devices used among adolescents. In a study of university students of the United States, text messaging (SMS) was emerged as the most frequently used type of communicative medium. A recent study shows that seventy nine of the population between the age 18-44 have their cell phones with them most the time, with only 2 hours of their walking day spend without their cell in hand Excessive mobile phone use such as texting, emailing mid browsing the Internet has been associated with neck pain. With the dramatic growth of mobile usage, considerations are raised with respect to the adverse health effects of portable on spinal posture. World Health Organization (WHO) established the International Electromagnetic Fields (EMF) Project in 1996 to assess the scientific evidence of possible adverse health effects from electromagnetic fields, with the dramatic growth of mobile phone usage, concerns have been raised with regards to the adverse health effects of mobile phone on spinal posture.⁴

Alexithymia is a construct that means difficulty in identifying and describing feelings, and externally oriented thinking. Literally, alexithymia is a Greek word meaning "lack of words for emotions" or lack of the ability to find words that identify and describe feelings. Alexithymia is a cognitive affective style and a personality construct that is associated with various physical and psychological disorders. People with alexithymia have difficulties in identifying, describing, and expressing their subjective feelings, cannot distinguish between feelings and the emotional arousal, have difficulty in reflecting and regulating their emotions, have constricted imagination capacities such as paucity of fantasies, and have an externally oriented cognitive thinking. Also, it is difficult for people with alexithymia to verbally communicate their psychological distress, with failure to seek help from others. As a result, this could lead to a feeling of isolation and not being understood by others and potential of negative effect.²

Alexithymia is very common in individuals with psychiatric disorders⁵ and is a sign of negative emotion in psychiatric populations.⁶ Alexithymia may restrict the control of emotional states and may lead to negative affect, including depression and anxiety.⁷ Individuals who suffer from intolerable psychological disease sometimes cannot express themselves by suitable words.⁸

The prevalence of musculoskeletal discomforts among smartphone users ranges from 1% to 67.8%. Neck pain is the most common musculoskeletal problem among smartphone users, with a prevalence of 17.3% to 67.8%. Neck pain was found more among frequent smartphone users. Neck pain has a relation to the duration of smartphone use, especially bout of length and multitasking activities.⁹



The neck directly affects the spine while flexing the head forward at varying degrees when the head tilts forward at 15 degrees, the force on the neck surged to 27 pounds, at 30 degree 40 pounds, at 45 degree 49 pounds and at 60 degree 60 pounds, then at 90 degree the model prediction was not reliable. This issue is a major concern with children; since their heads are larger in relation their body size than adults, and thus they have an increased risk for text neck given their propensity to use mobile phones.¹⁰

When a person uses a smartphone, the cervical lordosis is obliterated, and it causes injuries to soft tissues around the neck. To balance the neck, the load on the upper trapezius and the erector spinae muscles of the cervical spine increases. With the head in a forward position or a slouched position, the load on the extensor muscles and the connective tissues increases. Subsequently, this poor posture can result in damaging the soft tissues and structure around the spine and thereby altering the proprioceptors in the muscles and ligaments. Poor posture for the long term, can damage not only the cervical spine but also the structures around the lumbar spine, the ligaments, and the bones. Muscle activation and degeneration of ligaments caused by poor posture can also cause neck pain and impair proprioceptors in the muscles and ligaments. The structures around the neck and shoulder show a high degree of fatigue, pain, and trigger point formation and are vulnerable to pain when the smartphones are used in an awkward posture.¹¹

The teenagers use Smartphone's more actively than adults and are more prone to be addicted to Smartphone. Regarding the age dependent prevalence of Smart phone addiction, previous studies have reported that teenagers are more likely to be absorbed in digital media and have a higher addiction rate than adults. Additionally different national survey revealed that Smartphone addiction is twice more prevalent among teenagers than the adults.¹²

MATERIALS AND METHODS

This is a cross sectional study that conducted in M.B. Gohil institute of medical science and research center, college of physiotherapy, Navasari. We used a convenience sampling method to produce a sample of college students. Prior permission was obtained from respective authorities of the colleges before the data collection. A written consent was taken from the students from participants prior to their participation. The participants were requested

to fill the questionnaire in a traditional pen and paper mode. The study consists of two parts:

1. **Demographic data:** Consisting of name, age, gender, handedness, duration of smartphone use, faculty, academic year, personal, medical, and surgical history.
2. **Questionnaires:** The following questionnaires were used to collect the data,

❖ **Smartphone Addiction Scale: Short Version (SAS - SV):** The SAS - SV is a self-reporting scale to assess smartphone addiction (Kwon et al).⁸ It consists of 10 items, with a six-point Likert scale (1: "strongly disagree" to 6: "strongly agree"). The higher the score (60), the greater the degree of pathological use of the smartphone. The SAS - SV is a reliable and valid measurement tool for the evaluation of smartphone¹³ and it's Validity is 0.911

❖ **Toronto alexithymia scale (TAS 20):** Toronto Alexithymia Scale was used to measure alexithymia. TAS consists of 20 items that is divided into three subscales: difficulty identifying feelings (DIF) with seven items, difficulty describing feelings (DDF) with five items, and externally oriented thinking (EOT) with eight items. TAS is five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree," with five items negatively keyed. The scale showed good internal consistency reliability, test-retest reliability, convergent, discriminant, and concurrent validity¹⁴ and it's Reliability is 0.78

❖ **Neck disability Index (NDI):** The NDI assessment involves a 10 items, 50 points index questionnaire that assesses the effects of neck pain and symptoms during a range of functional activities.¹⁰ Each item is scored on a 0 to 5 rating scale, in which zero means "No pain" and 5 means "Worst imaginable pain". A higher NDI score indicates greater neck disability. The interpretation of NDI scores was 0 to 4 - no disability; 5 to 14 - mild disability; 15 to 24 - moderate disability; 25 to 34 - severe disability; and greater than 35 - complete disability and was used for this study. This index is the most widely used and most strongly validated instrument for assessing self-rated disability in patients with neck pain.¹⁵ Reliability: 0.93.

Statistical Analysis

The data was analyzed using SPSS 20 software

RESULT

Table 1: Shows mean of age and duration of smartphone use

Demographic Data	Mean
Age	20.02
Duration of Mobile Phone Use (hrs)	4.11
Gender	Number of Participants
Male	15
Female	102
Total	117
Handedness	Number of Participants
Right	112
Left	5

Table 1 Shows mean of age (20.02) and duration of smartphone use (4.11)

Table 1 Also shows the percentage of Female to Male is 102% to 15% and the handedness of participants Right (112) and Left (5).

Table 2: Shows the descriptive statistics of outcome measures

Outcomemeasures	Mean $\pm$ Sd
TAS	53 $\pm$ 10
SAS-SV	30 $\pm$ 10
NDI	7 $\pm$ 6

Table 2 Shows the descriptive statistics of outcome measures, TAS = 53 $\pm$ 10, SAS-SV = 30 $\pm$ 10, NDI = 7 $\pm$ 6.

Table 3: Shows the prevalence of TAS, SAS-SV, NDI

Outcome Measures	Prevalence
TAS	48%
SAS -SV	59%
NDI	35%

Table 3 Shows the prevalence of TAS (48%), SAS-SV (59%), NDI (35%) from total population of 457.

Table 4: Mean and SD of the TAS, SAS-SV, NDI

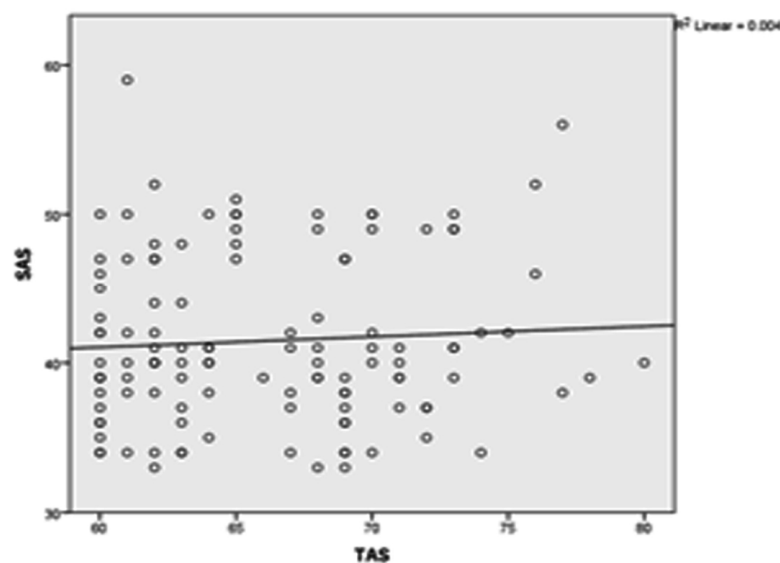
Scales	Mean $\pm$ Sd
TAS	66 $\pm$ 5
SAS-SV	41 $\pm$ 5
NDI	13 $\pm$ 4

Table 4 Shows the Mean and SD of the TAS (66 $\pm$ 5), SAS-SV (41 $\pm$ 5), NDI (13 $\pm$ 4) in among (117) participants.

Table 5: Shows Spearson correlation test, the Pearson product correlation of TAS & SAS - SV

-	TAS		NDI		TOTAL
SAS-SV	R	P	R	p	N
-	0.63	0.503	0.52	0.579	117

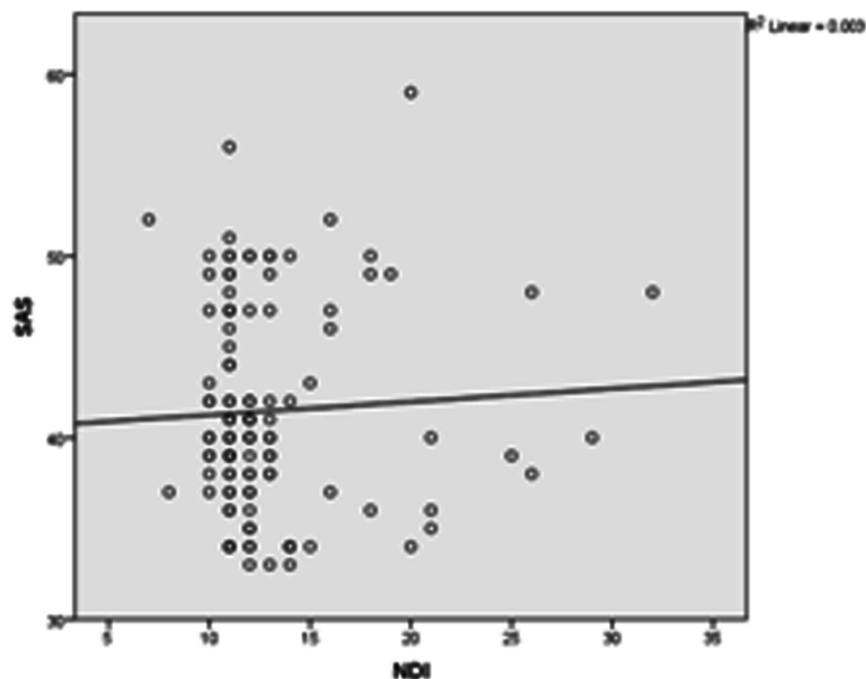
Table 5 Shows Spearson correlation test, the Pearson product correlation of TAS & SAS - SV was found to be moderately positive but not statistically significant ($r=0.63$, $p>0.05$). So there was no significant relationship between SAS-SV & TAS. SAS-SV and NDI was found to be moderately positive relationship but no statistically significant ($r=0.52$, $p>0.05$) so there was no significant relationship between SASSV & NDI among 117 participants.



Graph 1: Pearson product correlation of TAS & SAS-SV

Graph 1 shows the Pearson product correlation of TAS & SAS-SV was found to be $SCALES\ MEAN \pm SD\ TAS\ 66 \pm 5\ SAS - SV\ 41 \pm 5\ NDI\ 13 \pm 4$ TAS NDI Total SASSV R P R p N 0.63 0.503 0.52 0.579

117 be moderately positive but not statistically significant ($r=0.63$, $p>0.05$). so there was no significant relationship between SAS-SV & TAS in 117 participants.



Graph 2: SAS-SV and NDI was found to be moderately positive relationship but no statistically significant

Graph 2 Shows SAS-SV and NDI was found to be moderately positive relationship but no statistically significant ($r=0.52$, $p>0.05$) so there was no significant relationship between SAS-SV & NDI among 117 participants.

DISCUSSION

The present study was done to evaluate correlation between alexithymia and neck pain due to smartphone addicted users in paramedical students specifically in South Gujarat Region, the mean age of participants was 19.93 from total sample ($n=457$). The result showed a higher prevalence of Alexithymics (48%) from a total population of 457, the rate of smartphone addicted users was found to be significantly higher (59%) due to the increasing use of smartphone. The correlation between the alexithymics, smartphone addicted users and neck pain participants were found on the basis of cut-off scores of individual scales, there was a moderately positive correlation between TAS & SAS-SV having no significant correlation ($r=0.63$, $p>0.05$). SAS-SV and NDI was found to be moderately positive relationship but no statistically significant ($r=0.52$,

$p>0.05$) so there was no significant relationship between SAS-SV & NDI among 117 participants.

Out of 457 students that were analyzed 59% of the subjects are under smartphone addicted category which is quite alarming as similar results was reported by Kholoud T. Alsiwed *et al.* The prevalence of text neck syndrome and its association with smartphone use among medical students in Jeddah, Saudi Arabia, reported the smartphone addicted subjects with a prevalence of (63.1%).¹⁶ A total 48% of subjects were alexithymics. Besides this it was also found that 35% of subjects suffered from neck pain and disability, this result is almost the same as Lee JI, Song HS. The correlation analysis between hours of smartphone use and neck pain in the Gachon University students, who also reported a prevalence of neck pain (34%).¹⁷ The Spearman correlation analysis of the result clearly showed that there was a moderate positive correlation between SAS-SV & TAS ($r=0.63$, $p>0.05$).

In a study by İbrahim Gündog *et al.* The Relationship of Smartphone Addiction and Alexithymia found a high level of positive correlation ($p<0.001$) between both subscale and total TAS-20 scores and SAS-SV scores. (1) As

showed in the study by Hussein Elkholy, et al. Rates of alexithymia and its association with smartphone addiction among a sample of university students in Egypt. It was concluded that around one third of the sample met the criteria of smartphone addiction. There was a strong association between alexithymia and smartphone addiction and alexithymia was a significant predictor of SA.¹⁸

Our study showed a moderately positive relationship between SAS-SV & NDI ($r=0.52$, $p>0.05$) but there was no significant correlation between the variables.

Two studies support this finding. First, a study by Abdulwahab et al. Smartphone use addiction can cause neck disability, this study found a positive correlation between addiction to smartphone use and various degrees of neck problems among the participants. The Spearman correlation coefficient showed a significant correlation ($p<0.05$) between SAS and NDI, this strongly agreed with the moderate positive relationship of current study.¹⁹ Second, the correlational analysis by Lee JL, Song SH also suggested the long-time use of smartphone has a strong relationship with neck pain ($p<0.05$).

Many studies have shown a strong correlation between alexithymia & neck pain due to smartphone addiction and so it can be stated that smartphone addiction can result into musculoskeletal discomfort such as neck pain & can have possible effects on alexithymia as well. Whereas in a study by Maittla et al. Alexithymia, Human Relationships, and Mobile Phone Use, showed the link between alexithymia & interpersonal problems like not having a close friend was associated with less smartphone use.²⁰ In a study by Tanaya Panova et al. from Department of Psychology, Spain on analyzing the qualitative and quantitative studies did not find sufficient support from the addiction perspective to confirm the existence of smartphone addiction.²¹

CONCLUSION

The present study finds correlation between alexithymia & neck pain due to smartphone addiction, after screening the subjects it can be stated that there is positive relationship between Alexithymia and Neck pain due to Smartphone Addiction but there is no significant correlation between the variables. It also demonstrated the higher level of smartphone addiction.

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