Pain Association between Smartphone Addiction and Neck Pain among Young Students: A Cross Sectional Study

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Abstract

Many smartphones users experience pain in the neck. This pain can be due to flexed neck position .The objective of this study was to evaluate the association between smartphone addiction and neck pain. **Methods** A total 195 young students were enrolled. The SAS -SV used to divide participants into addicted and non-addicted group both group completed the PRWHE questions to evaluate neck hand pain further analyzed in SPSS software. **Result** 56% students were smart phone addicts; 66% students reported pain. There was significant correlation between smart phone addiction and neck pain (PRWHE) among young Population.(P=.45) **Conclusion**: Our study found that prevalence of smart phone addiction among young population is high, furthermore a correlation between heavy smart phone usage and neck pain cause the subclinical effect.

Key words: Association, Neck pain, Mobile usage, SAS-SV,SPSS

INTRODUCTION

Smartphone has become vital in each individual's life. It has become necessity like other needs, within past few years rate of smartphone users has been increasing widely worldwide.[1]Musculoskeletal disorder is mainly focus on joint that cause effect on muscle and bone also other structures are strained and lead to injury. Musculoskeletal disorder has a large number of problems due to severity or varies according to causes. [2] Mostly Smartphone users complain of uneasiness at least minimum one area i.e upper extremity, upper back or neck is affected. Maximum time spend on smartphone cause continuous stress on muscle, tendons, and tissues which increases load on muscle and induce musculoskeletal symptoms.[3]

Majority of smartphone users may experience neck pain.It is agreed that the best position is the sitting position with straight neck and supporting the forearms in addition to holding the mobile phone with both hands and to use both thumbs and needless to say this position should not be maintained for longperiods[4].Among youngsters especially college students Overuse of smartphone can cause various issues such as concentration and memory problems, physical abnormalities, due to spending more time in Smartphone as they are addicted to smartphone. [5]SAS-SV is a well-validated questionnaire consisting of 10 questions that assess the level of risk on the addiction of smartphones. The SAS-SV showed good reliability and validity for the assessment of smartphone addiction.[6] Constant prolonged posture while using phone and continuous movement of thumb is a risk factors to musculoskeletal disorder. These awkward postures can affect soft tissues (e.g. Strain muscles and ligaments, irritate tendons, compress nerves) leading to musculoskeletal discomfort .[7]Many studies have been conducted to study the correlation between using mobile phones for texting and both, neck and shoulder pain[8]

Need Of Study

There has been enormous increase in the rate of smartphone usage by youth of India in recent years. Various literatures have reported Smartphone addiction among the young smartphone users, which has led to musculoskeletal pain and dysfunctions in upper extremity among the population. The basic requirement of using a smartphone is met by wrist and hand muscles.

Hence there is a need to closely examine the relationship of smartphone addiction and musculoskeletal symptoms in wrist and thumb region.

Aims

The Aim of this study is to find out the relationship between the neck pain and Smartphone Addiction Among Young Students

Objectives

- **Primary Objectives**: -

i. To evaluate the Smartphone addiction among youngstudents.

ii. To evaluate neck pain and discomfort amongyoung smart phones using students

- **Secondary Objectives**: -

i. To associate neck pain with Smartphone addiction in relation with age groups

ii. To associate neck pain with Smartphone addiction in relation with Gender.

Hypothesis

- **Null hypothesis:** -There is no association between neck pain and Smartphone addiction in young students.

- **Alternate Hypothesis: -**There is some association between neck pain and Smartphone addiction in young students.

Study Design

- **Type of study:** -Cross-sectional study

- **Study setting:** - NaviMumbai area

- **Study population:** - young students

- **Sampling size: -** 195

- **Sampling methods:** - convenience sampling

Inclusion criteria:-

i. Age of 18-28yrs Students

ii. Male and female

iii. Usage of Smartphone >2hrs/ day

Exclusion criteria:-

i. History of chronic systemic illness/ Psychiatric illness /Neurological disorders.

ii. History of neurological/ musculoskeletal deformities

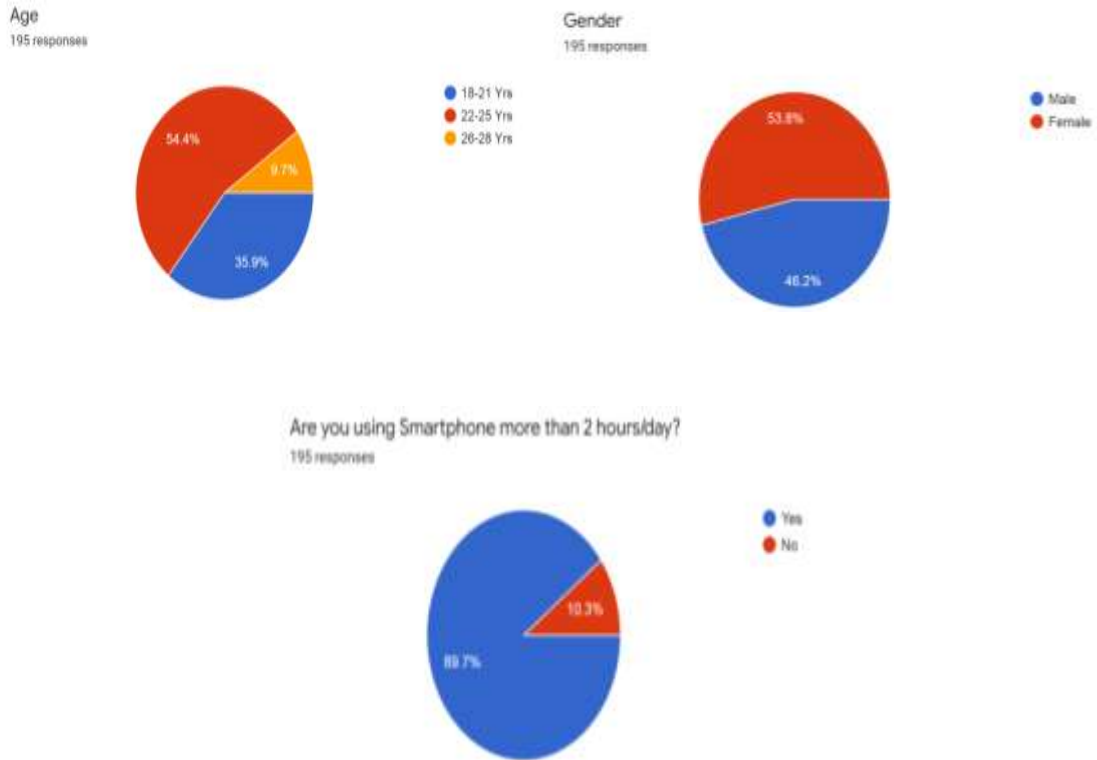iii. Who hasn't given his/her consent to participate

Statistical Analysis:

The questionnaires collected were screened to exclude any incomplete questionnaire or participant that fell under the exclusion criteria as well as participants who did not fulfill the Inclusion criteria. Data entry was then carried out by using Microsoft Excel before analyzed using SPSS software. The

descriptive statistic are presented as numbers percentages and Pie-chart, The statistical significance of the relationship between the independent and dependent variable are calculated by using the Chi-square test , Kruskal- Wallis and Mann-Whitney test were; P-<_0.05 or P-<_0.01 was considered a statistically significant performed by using this software to analyze the data collected.

Interpretation: -

- Total number of participants in this study was 195 with a response rate of 100 % majority age range was 22-25 year of population 107 [54.9%] ,where -18-27 yrs-69[35.4%] ,26-28 year -19 [9.7%]as represent in figure no.1. Female dominates the males [53.3% vs. 46.7%9] –as represented in figure no.2

- Total no .of person using Smartphone are 195-[100%]and using Smartphone more than 2 hours per day was yes-175 [89.7%] and No-20[10.39 %] represented as in figure no.3.

- The prevalence of Smartphone addiction among young population is represented in figure no 4. Smartphone addiction were determined among 195 students 100% overall percentage of 92% While those without symptoms of addiction were 8 %

- Figure no 5- represented the prevalence of neck pain among Smartphone addictors via PRWHE-subscale –pain with 70% No Pain and 2% worst pain

- Table no – 1. represented Mann-Whitney U test and Table no 2 represented kruskal-wallis test to measure the intergroup comparison between age groups and Gender associated with SAS-SV and PRWE scale .So Results were There was a statistically highly significant difference seen for the values between the groups (p<0.01) for Pain subscale total with higher values in F and There was a statistically significant difference seen for the values between the groups (p<0.05) for total PRWE with higher values in Females.

- There was a statistically highly significant difference seen for the values between the groups (p<0.01) for total PRWE with higher values in 18-21 YrsPain subscale, function subscale total with higher values in 18-21 Yrs.

Age
195 responses

- 18-21 Yrs
- 22-25 Yrs
- 26-28 Yrs

Gender
195 responses

- Male
- Female

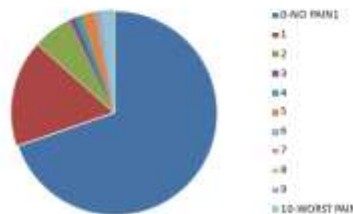Are you using Smartphone more than 2 hours/day?
195 responses

- Yes
- No

- Fig no-4.Sas-sv scale (addictors /non-addictors)

SMARTPHONE ADDICTION SCALE

- Fig no-5.PRWHE-SCALE (Subscale-pain)

PRWHE-PAIN SUBSCALE

	Gender	N	Mean	Std. Deviation	Std. Error Mean	Mann-Whitney U value	Z value	p value of Mann-Whitney U test
SAS SV	M	91	29.45	11.885	1.246	4426.500	-0.777	0.437#
	F	104	29.44	9.021	.885			
total PRWE	M	91	12.89	21.530	2.257	3825.000	-2.322	0.020*
	F	104	15.82	19.471	1.909			
Pain subscale total	M	91	5.02	8.996	.943	3392.500	-3.446	0.001**
	F	104	8.33	9.698	.951			
Function subscale total	M	91	4.49	9.343	.979	4317.000	-1.135	0.256#
	F	104	5.00	9.300	.912			
Usual Activities subscale total	M	91	3.37	8.394	.880	4576.000	-0.430	0.667#
	F	104	2.49	4.715	.462			

- There was a statistically highly significant difference seen for the values between the groups ($p<0.01$) for Pain subscale total with higher values in F

- There was a statistically significant difference seen for the values between the groups ($p<0.05$) for total PRWE with higher values in F

- There was a statistically non-significant difference seen for the values between the groups ($p>0.05$) for SAS-SV, functional subscale, usual subscale.

		N	Mean	Std. Deviation	Std. Error	Chi square value	p value of Kruskal-Wallis Test
SAS SV	18-21 Yrs	69	31.64	10.731	1.292	5.258	0.072#
	22-25 Yrs	107	28.36	9.913	.958		

	26-28 Yrs	19	27.63	11.369	2.608		
total PRWE	18-21 Yrs	69	19.78	22.839	2.749	13.532	0.001**
	22-25 Yrs	107	12.77	19.639	1.899		
	26-28 Yrs	19	4.58	6.292	1.444		
Pain subscale total	18-21 Yrs	69	9.49	11.694	1.408	10.895	0.004**
	22-25 Yrs	107	5.84	8.172	.790		
	26-28 Yrs	19	2.26	2.725	.625		
Function subscale total	18-21 Yrs	69	6.61	10.453	1.258	8.991	0.011*
	22-25 Yrs	107	4.18	9.087	.879		
	26-28 Yrs	19	1.37	2.385	.547		
Usual Activities subscale total	18-21 Yrs	69	3.68	7.576	.912	4.681	0.096#
	22-25 Yrs	107	2.75	6.588	.637		
	26-28 Yrs	19	.95	1.649	.378		

- There was a statistically highly significant difference seen for the values between the groups (p<0.01) for total PRWE with higher values in 18-21 YrsPain subscale total with higher values in 18-21 Yrs

- There was a statistically significant difference seen for the values between the groups (p<0.05) for function subscale total with higher values in 18-21 Yrs

- There was a statistically**non-significant**difference seen for the values between the groups (p>0.05) for SAS SVUsual Activities subscale total

Discussion

- Previously a cross sectional observation study was done by Ayman Badshah was held in Jeddah among 387 students where Smartphone addictions are 66.4% whereas a study done in Switzerland among prevalence of Smartphone addiction among adolescent are [6.9%] whereas

India approximately 44% of population addict to Smartphone to spend free time where our study has % addicted to Smartphone.

- According to previous study by nesma ahmed helmy comparison between gender of Smartphone addiction in relation MSK pain between gender where 62.4% was increase level in female than men. Whereas our study has in female are prone to wrist pain and difficulty in function activities.

- Our results shows that neck pain difficulties were significantly correlated with age group[18-21yrs] gender [female students].

- The neck is usually involved in Smartphone usage. There are many studies that have reported on neck pain and its association with different electronic devices.

Conclusion

Our Study Concluded that Prolonged use of Smartphone results in emerging Smartphone addiction that had cause musculoskeletal discomfort in neck considered as risk factors of repetitive use of Smartphone.

- A Significant association was recorded between the Smartphone addiction scale and PRWHE-subscale **Pain** part in order to comparison with gender and age groups.

- While **female students** and age group **(18-21yrs)** are more prone to Smartphone addicts and wrist pain.

- There was no significant correlation found between the level of Smartphone addiction and gender /age.

- There was no significant correlation found between the PRWHE-subscale function and usual activities with gender/age.

Recommendations for future scope

- The Effect of Smartphone must be further evaluate using more accurate diagnosticmeasurement as Range of motion of wrist/hand to understand its effect on human being inorder to prevent it. Our study had other multiple weakness such as data about dominance,occupation, size of Smartphone, Positions during usage of Smartphone, single or doublehanded of usage of Smartphone to evaluate prevalence of MSK symptoms. Informationabout other devices as well as personal laptops or tablets & how often they are used are notbeen taken into account in our study

Limitations:

- More population could have been taken to have significant difference in the data obtained.
- Many different areas could have been involved to do the study versatile. As this study is limited to Navi-Mumbai.
- Using SAS-SV has been shown that it is less accurate than the long form of same , though it is valid and reliable for measuring Level of Smartphone addiction

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