

Association of Screen Time with Shoulder Pain and Disability among Office Workers of Rawalpindi and Islamabad: A Cross-Sectional Analytical Study

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ABSTRACT

Purpose: The study was conducted to determine the association of screen time with the shoulder pain and disability among office workers.

Method: A cross sectional Analytical study was conducted on office workers in Islamabad and Rawalpindi from July 2020 To January 2021. 370 office workers of age 25-45 and having working hours greater than 6 were included in the study. Association between the variables was checked by calculating r value of SPADI variables individually with screen time and it was 0.271 for Screen time and SPADI pain scale, 0.240 for Screen time and SPADI disability scale, and 0.245 for Screen time and total SPADI score.

Findings: As all the values lies between 0-0.3, it shows that there is a weak positive co-relation between the Screen time and Shoulder pain and disability. The results of the current study concluded that there is a week positive correlation between the screen time and SPADI.

Practical Implications: Overusing screen-based technologies is creating issues in the community by harming physical health, contributing to bad posture, and misaligning the skeleton. Therefore, the research will provide a starting point for data from which additional research can be done.

Keywords: SPADI pain and disability, Shoulder disability, Painful Shoulder, Office workers and screen time.

INTRODUCTION

The shoulder joint being the most mobile joint is at the same time the most unstable joint of the body. . The excessive movement at the shoulder joint can cause impingement and instability of different structures of the shoulder joint and at the end it causes pain to the individual and hence the movements are compromised after that and further it can cause disability. About sixteen to twenty six percent of the population is suffering from shoulder pain. Occupation and actual factors, for example, substantial weight lifting and tedious developments in awkward posture increases the risk of instability ¹

The physical workplaces shears such as the overhanging work, grinding, and mainly the poor posture is a major risk factors for shoulder disorders. One of the most common and prevalent cause of musculoskeletal disorders, mainly neck and shoulder, is the computer usage i.e. the screen usage.² In a poorly defined ergonomic environment and at the same time spending couple of hours in a same activity often leads to some physiological disturbance, most commonly the musculoskeletal disorders³. Work places having excessive screen time and poorly ergonomics can sometimes cause physiological disturbances to the body and can cause musculoskeletal disorders. If the repeated activities are performed and not performed with care and in proper manner then it can cause different kinds of musculoskeletal issues The PC usage can cause pain in shoulder and neck if used excessively with poor posture because it cause the pressure and agony to the shoulder as well as to the neck . screen time is the measure of time went through using a device having screen, and safe screen time is two hours a day.³

The posture factor plays an important role in screen time users and shoulder pain as because while using a screen the users bend their neck in forward position for a long period of time in which they are doing work and hence trigger points are formed in the upper back and due to this type of pain , the user compensate it with further going in the faulty posture and cause tightening of the rotator cuff and at the result of which person felt the pain at the shoulder joint.⁴

Pain pattern observed is as followed: It is initially presented with the pain and shows restricted active passive, motion of GH in a later stage it is often reported with progressive increase in pain

decrease in ROM.⁵ Patient having difficulty in performing overhead activities and other grooming activities, these symptoms usually subsides between 6 months to 11 years but do not last throughout the life of a patient. ^{7,8}

In the community, problems are arising from overuse of screen-based technologies which causes detrimental effects on Physical health and can lead to poor posture as well as skeletal malalignment. So the research will provide a baseline data from which further studies can be conducted.

METHODOLOGY

A cross sectional analytical study was conducted in which data was collected from office workers (both government and private like brand and administration block in different institutes) of Rawalpindi and Islamabad. Individual (both genders) meeting inclusion criteria having age 25 to 45 years with no- comorbidities and working hours on screen 6 hours per day minimum were included after taking the consent and relevant questionnaire. A self-structured questionnaire was given to the participants in hard form and they were asked to fill the form with their bio data. Moreover, a spadi tool questionnaire was also provided to the participants. Data was taken and stored in hard form.

Study design: Cross section Analytical Study

Sampling technique: Non-probability Convenience sampling technique.

Inclusion criteria:

- Both Genders.
- Age group: 25-45 years old.
- Office timings >6hours/day

Exclusion criteria:

- History of injury, Inflammatory Joint Disease or Other Neuromuscular Conditions.
- Any systemic issue.

Data Analysis Procedure: The collected data was analyzed using spss. All the variables were continuous variables hence the mean of screen time, spadi pain scale, spadi disability scale and total spadi score was calculated.

RESULTS

370 office workers who satisfied the incorporation standards were selected in the study after appropriate consent. Self-structured questionnaire was provided for demographics, occupation, and screen time per day. SPADI was calculated to determine the association of screen time with shoulder pain and disability.

Table 1 shows the frequency of males who participated in the study was 286 i.e. 77.3% and females was 84 i.e. 22.7%. Moreover, out of a total 370 sample, 10.8% were teachers, 11.6% were accountants, 9.5% being the data entry operator, 7.3% were bankers and 9.2% were the business men/women. The remaining 51.6% were those who belonged to other occupations. Mean and SD of the age was 31.61 ± 5.35 .

Table 1 Demographics

Variables	Frequency(%)	age
Gender		
Males	286(77.3%)	
Females	84(22.7%)	
Occupation		
Teaching		40(10.8%)
Accountant		43(11.6%)
Data Entry Operator		35(9.5%)
Banking		27(7.3%)
Business		34(9.2%)
Others		191(51.6%)

The normality of the data was checked and since the data was not normally distributed hence nonparametric test were applied. Spearman test was applied for finding the correlation between screen time and SPADI pain scale, SPADI disability scale, and total SPADI score.

Table 2 Shows the Correlation between screen time and SPADI Pain Scale. Since the r-value was between 0-0.3 (i.e. 0.271), it showed that there is a weak positive correlation between screen time and SPADI pain scale. Thus, with an increase in working hours using a screen also increases the shoulder pain.

Table 2 Correlation between screen time and SPADI Pain Scale

Variable	Correlation Coefficient (R)	P Value
Screen time x SPADI Pain Scale	0.271	<0.001

Table 3 shows the Correlation between screen time and SPADI Disability Scale. The r-value for screen time and SPADI disability scale was 0.240, and it showed a weak positive correlation between them. Thus with an increase in time duration of screen usage the shoulder disability also increases.

Table 3 Correlation between screen time and SPADI Disability Scale:

Variable	Correlation Coefficient (R)	P Value
Screen time x SPADI Disability Scale	0.240	<0.001

Table 4 shows the Correlation between screen time and total SPADI Scale. The r-value for screen time and total SPADI score was 0.245 and it showed a weak positive correlation. Therefore, as the screen time increases the shoulder pain and disability both increases.

Table 4 Correlation between screen time and total SPADI Score:

Variable	Correlation Coefficient (R)	P Value
Screen time x SPADI score	0.245	<0.001

DISCUSSION

The aim of the study is to find out the frequency and association of screen time with shoulder pain and disability among office workers. The SPADI was a valid measure to assess pain and disability in people with shoulder pain. A self-structured questionnaire was given to the participants in hard form and they were asked to fill the questionnaire according to their pain and disability.

Cote P and colleagues have conducted a study in which they have searched for the most important risk factors for neck shoulder pain (NSP) in workers. The first risk factors are a high force work

demand. Bending the neck for hours can cause neck muscles contractures and it can also leads to cervicogenic headache. Hence the neck pain become persistent and leads to neck disability.⁹

254 participants were recruited in the study. They were assessed by different techniques to find out the association and frequency between screen time and shoulder pain and disability. The results of the study have revealed that the people who had excessive screen usage also had shoulder pain and disability.¹⁰

Anabela G. Silva, Pedro Sa. Cauto et.al. conducted a study in which they find that there was an association of screen usage with shoulder, neck, upper back and lower back pain (p-value = 0.04). A study conducted by Sarah A. Costigan, Lisa Barnett et. al. supports the study by concluding that there is a positive correlation between the screen-time and musculoskeletal pain in young female office workers. The results of our study also showed that there is a weak positive correlation between screen time and shoulder disability. The results are supported by a cross sectional study that was done on university students, staff, faculty and alumni in 2016. Results have shown increase prevalence of symptoms while using device, mostly in the neck and upper back area.¹¹

David M. Hallma, Nidhi Gupta et al conducted a study to find out the association between objectively measured sitting time and neck and shoulder pain among blue collar workers. The results of their study had shown that a high sitting time per day in blue collar workers had a high association with increase neck shoulder pain intensity.¹² Another supportive study by Torbjorn Torsheim, Lilli Erickson et. al. concluded that the screen-based exercises are an expected contributing element to actual well being grumblings chiefly the musculoskeletal issues (p- value=0.01).¹³

As indicated by a study, 56% of American grown-ups were cell phone clients in 2013. In Korea, more than 24 million individuals claimed a cell phone in 2013, and 97.4% of Koreans in their twenties had their own cell phone.¹⁴ A cross sectional examination was led on 120 members (financiers' populace). Purposive examining was utilized and Maastricht furthest point survey was utilized. Results showing 71.67% respondents experienced neck torment and 48.33% members had encountered shoulder torment. Just 3% don't have flexible armrests and seats with movable armrests were utilized by 25% brokers.

The article features the paper surveys of late 20 years of examination distributions. The primary focal point of which were the pathophysiology and different parts of Neck and Shoulder torment identified with PC use.¹⁵ The excessive neck flexion can change the natural curvature of the cervical spine hence it increases the total amount of stress and an increase of irritation and stress on the surrounding musculoskeletal structures and ligaments in the neck region. So the study proved the addiction of smartphone can be a major cause of neck disability.¹⁶

The outcomes are in accordance with an investigation of Finnish young people which demonstrates that PC use and staring at the TV were related with neck and shoulder torment. It explicitly highlighted time spent on screen based exercises as a particular danger factor and a frail affiliation recommends that the screen based exercises are supporters of actual grievances. Thus it has been presumed that just by changing ill- advised working style and conduct will decrease the take an enormous risk and shoulder. Furthermore, ergonomically amending the workplace settings will likewise assumes a huge part of avoidance.

CONCLUSION

The results of the current study concluded that there is a weak positive correlation between the screen time and SPADI.

Limitations of Study: Following limitations are observed:

- This was a cross-sectional study in which association between the variables was checked. The study does not indicate any cause and effect relationship.
- The data was only collected from Rawalpindi and Islamabad so further work is required on large sample size.

Recommendations

- A survey with a large sample size, including the population working greatly on computer systems for more than 6-8 hours should be conducted to find out the further causes of neck and shoulder pain.
- This study can be conducted on a broad scale to find out further issues regarding excessive screen usage.

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