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PREVALENCE OF MUSCULOSKELETAL PAIN IN PHYSIOTHERAPY STUDENTS USING SMARTPHONE

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ABSTRACT

Back ground: These days, many students use smartphones for longer periods and more frequently than computers because they are small, portable, and accessible. Since smartphone users do internet surfing, chatting, use social network sites, write documents, and perform other tasks while looking at their phone's small monitor, their constant and repeated motions in a certain posture can cause musculoskeletal disorders. **Methods:** A questionnaire based survey was done in physiotherapy students. A self-made validated questionnaire containing demographic data, questions related to the use of phone and musculoskeletal pain were included in the study. Subjects were asked to fill an online self-made questionnaire. The Data was analyzed and graphical representation was done using Google forms and Microsoft excel. **Results:** The study showed that the musculoskeletal problems are higher in neck followed by fingers, thumb and wrist. **Conclusion:** There is a prevalence of musculoskeletal pain in Physiotherapy students using smartphone.

KEYWORDS

Smartphone, Physiotherapy and Musculoskeletal Pain.

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INTRODUCTION

US market, according to a report. For 2016, the number of smartphone users in India is estimated India has become the second-biggest smartphone market in terms of active unique smart phone users, surpassing to reach 204.1 million. The age group of smart phone users varies, ranging from students to workers to elderly people. Since smartphone users search the Internet, chat with others, use social networking services (SNS), write documents and perform other tasks while looking at their phone's small monitor, their constant and repeated motions in

a certain posture can cause musculoskeletal disorders^{1,2}. Furthermore, since smartphone users in their teens and twenties commonly use their smartphones more than the elderly do, they are at a risk of developing musculoskeletal disorders like pains in the upper extremity, neck, shoulders, arms, wrists, back of the hand, and fingers. The static repeated motion while using smartphone reduces blood circulation prevents nutrients from being supplied to muscles leading to fatigue and pain. The musculoskeletal problems observed in smartphone users are caused by repetitive movements occurring for by long period of time. In addition, poor postures leads to fatigue reduced physiological function, disruption of the autonomic nervous system, leading to problems in daily life affecting both the visual and the musculoskeletal systems, leading to headaches and stress^{3,4}. Repeated motions of hands, wrists, and arms lead to muscle fatigue and loading of neck and shoulder muscles in smartphone users⁵⁻⁸. As a result, pain, stiffness, in sensitivity to pain, and quivers in the neck, shoulders, and arms may appear. There are lot of studies available on of musculoskeletal disorders in students using computers. There are studies done on visual display terminal (VDT) syndrome experienced by middle and high school students. However, in the current scenario, students use smartphones for longer periods and more than computers because they are small, easily portable, and accessible. Despite this, there is not much literature available on the musculoskeletal problems in smartphone users. Physical therapy is a dynamic profession. It has established theoretical and scientific base and widespread clinical applications in the restoration, maintenance, and promotion of optimal physical function. Majority of these students are using Smartphone for communication, to study, for sharing study material and their personal use. Therefore the aim of this study was to find out the Prevalence of Musculoskeletal Pain in Physiotherapy Students Using Smartphone

METHODS

The survey was carried out with 350 Physiotherapy students in MGM College of Physiotherapy, Navi Mumbai. Subjects were asked to fill an online self-

made questionnaire. The questionnaire was validated and was found to be reliable. The questionnaire made of two sections, demographic details of the students and smartphone use related questions. The 2nd section of questionnaire consisted of information like duration of smartphone use in months ; duration of smartphone use in years, rest pause taken by them; pain prevalence; pain assessment includes site, type, intensity; position used most commonly, purpose of smartphone use, type of usage, smartphone size, if forearm is supported or no, etc. The Data was analyzed and graphical representation was done using Google forms and Microsoft excel.

RESULTS AND DISCUSSION

Out of the 350 students 292 were girls and 34 were boys with the mean age 21.7+1.24. Our study shows that the 39.3% physiotherapy students were suffering from musculoskeletal discomforts. Neck being the most affected region followed by fingers, thumb and wrist. Lee S, Kang H⁹, showed in their study that Repetitive or prolonged head flexion posture while using a smartphone is known as one of risk factors for pain symptoms in the neck. In our study majority of the students have been found to use the Smartphone in sitting and standing adopting a poor posture for a prolonged period of time therefore there is a high likelihood that they will suffer from neck pain. When someone constantly bends their head to look at a small screen, various problems, such as a forward-head posture or a slouched, turtle-like posture, can arise. External flexion torque increases due to forward-head posture which places load on the extensors of neck and surrounding connective tissues. In the long-term, poor posture can damage not only the neck bones and structures around the lumbar vertebra but also the ligaments¹⁰. Muscle activation and degeneration of ligaments caused by poor posture can also cause neck pain and impair proprioceptors in the muscles and ligaments¹¹⁻¹³.

Mobile phone users are at risk of developing various repetitive strain injuries (RSI) type of conditions to the soft tissues due to repetitive use of the phone in text messaging i.e. chatting. RSI can manifest as musculoskeletal pain which can be described as any

pain that may involve the muscles, nerves, tendons, ligaments, bones or joints. Musculoskeletal problems of the upper limb and especially the thumb have been reported in mobile phone users due to text messaging¹⁴. Studies have revealed that while texting in mobile keypad the thumb covers motions in all the three planes of movement. These motions occur simultaneously in three dimensions and as a result it becomes difficult to measure the kinematics of thumb¹⁵. Thumb movements in adduction and abduction were almost twice as fast as those in flexion or extension. Extreme ranges of thumb movements, may contribute to the development of musculoskeletal disorders in mobile phone users while texting.

The most commonly found conditions were tendinitis of extensor pollicis long us, myofascial pain syndrome of the nar muscles and 1st interossei, extensor digito rum communis. Nintendo thumb, Gamer’s grip, Nintendinitis¹⁶ is a video game related disorders similar to the disorders occurring in text messaging, affecting the hands. Movement of fingers is quite similar as in typing the text on mobile screen. This may affect any finger and it may lead to tendinitis, bursitis etc. In our study similar results were obtained.

Table No.1: General characteristics of study subjects

Smartphone size	< 5 inch: 139 (38.8%) > 5 inch: 219 (61.2%)
Smartphone use hours per day	< 2 hour: 20 (6.1%) 2-3 hours: 56 (17.2%) 3-4 hours: 79 (24.2%) >4 hours: 171(52.5%)
Purpose of smartphone use	Chatting: 245(68.49%) Playing games: 137 (38.39%) Searching: 217(68.69%) Social networking: 255 (71.29%) Watching videos and listening music: 226 (63.19%) Writing documents: 79 (22.19%) Other: 49 (13.79%)
Posture while using Smartphone	Sitting : 71.5% Standing : 52.5% Forearm not support while using Smartphone: 193(56.9%) Wrist position in flexion while using Smartphone :159 (44.4)
Eye strain while using Smartphone	Yes: 110 (33.7%)

Table No.2: Musculoskeletal symptoms by body region

Neck	84 (24%)
Upper back	56 (16 %)
Shoulder	56 (16 %)
Elbow	56 (16 %)
Wrist	70 (20 %)
Fingers	49 (14 %)
Thumb	56 (16 %)
Lower limbs	35 (10 %)

CONCLUSION

It is concluded that there is a prevalence of musculoskeletal pain in physiotherapy students using Smartphone affecting neck and upper limb. Although this research is preliminary, the findings of the study along with the rising use of smart phones in the current generation raises future risk for heavy users.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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