

Viewpoint Article

Neck pain among smartphone users: an imminent public health issue during the pandemic time

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Abstract

COVID-19 pandemic resulted in social mobility and travel restrictions to contain the infection. It has been reported that there happened post-pandemic surge in the use of the internet and social media as people rely on it more often for entertainment, work, and learning purposes. It is also being used as an unhealthy coping strategy for pandemic related stress. The smartphone was found to be the most common gadget used for accessing internet-based services. Owing to the postural alterations related to smartphones' small screen size, neck pain was reported very commonly among smartphone users. Neck pain among smartphone users is a public health concern needing immediate attention in the pandemic time. Many of the risk factors leading to neck pain among smartphone users are modifiable. The authors outline preventive strategies that are mostly self-regulated. The strategies recommended include reducing Smartphone usage time (Smartphone-Free Time, Smartphone-Free Zone), maintaining ideal posture (Focus Breaks, Mobility Breaks, How am I keeping my posture?, Hands-free alternatives), doing regular exercises, preparing and following an activity schedule, and inculcating healthy habits.

Keywords: Neck Pain, Smartphone, Overuse, COVID-19, Pandemics, Public Health, Primary Prevention

Background

Governments imposed social mobility and travel restriction after the declaration by the World Health Organization (WHO) of COVID-19 as the Public Health Emergency of International Concern [1]. The educational institutions and companies were shut down, and people were encouraged to work from home. Students were provided online-based learning activities.

Smartphones are mini-computers, which, with the assistance of internet services, enhances communication. Smartphones had turned into one of the most popular electronic gadgets. Apart from communication, smartphones are used to access social media platforms, search in the World Wide Web (WWW) for information, entertainment through movies and games, and educational purposes. These advancements provided opportunities for continuing employment as well as educational activities during the pandemic.

Time spent at home increased exponentially after the pandemic, and it altered the daily routine of most people. Pandemic time reduced opportunities for direct face to face interactions, and hence people started relying more on internet-based services. To overcome boredom, seek information, and relieve anxiety related to the pandemic, people rely on

unhealthy coping strategies like spending more time on the internet and social media through smartphones [2]. There occurred much increase in internet usage during the pandemic [3]. Studies had found that an average smartphone user spends around 20 hours a week. It has also shown that smartphone user spends an average of 6 hours and 42 minutes a day for internet-based activities, which projects to nearly 100 days in a year [4]. Most of the smartphone users are young adults between the ages of 18 to 29 years old. About 52.9% are found to be smartphones over users [5].

Smartphone Addiction Scale-Short Version (SAS-SV) can be used to identify smartphone addiction. The prevalence of smartphone addiction or problematic smartphone use varies from 10% to 44% [6],[7]. Problematic smartphone among adolescents has been recognized as a growing public health issue in Korea [8]. There is still a controversy regarding the usage of "smartphone addiction", considering that smartphones are used for various purposes. Internet addiction, as well as game addiction, is widely accepted [9]. Still, we can use the SAS-SV for identifying smartphones over users as those crossing the cut-off score of 31 and 34 for males and females, respectively [10].

Problems due to smartphone overuse

There are many psychological and musculoskeletal problems due to smartphone overuse [11]. Musculoskeletal problems

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comprise discomfort and pain in various parts of the body, including neck, shoulder, elbow, wrist, hand, and thumb [12].

Neck pain and smartphone use

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% [13]. Neck pain was found more among frequent smartphone users [14]. Neck pain has a relation to the duration of smartphone use, especially bout of length and multitasking activities [15].

Posture and its relation to Smartphone Use

Smartphones are typically held below the eye level with one or both hands and thumb are used for touching and swiping the screen. The amount of head and neck flexion varies with different postures and activities. Using a smartphone in sitting while the upper back is not supported causes much flexion of the head and neck, and it will be much more during text messaging activities. There occurs an increased activity of neck extensors and thumb muscles during texting [16].

Smartphone use in standing causes a forward shift of head along with an increase in head tilt angle and reduction in neck tilt angle. The postural changes are significantly more in males compared to females [17]. One-handed web browsing while walking causes around 31 degrees of neck flexion while two-handed texting produces about 38.5 degrees of neck flexion [18]. The most common postural change seen among smartphone users is forward head posture and rounded shoulders [19].

Smartphone use results in more head and neck flexion due to its relatively small size [20]. The postural deviations cause alterations in muscle activities and an increase in cervical load. There occurs increased activity of neck extensor muscles and upper trapezius. Continuous use of a smartphone, when arms are unsupported, puts excess strain on the upper trapezius, reducing its pressure pain threshold. Besides, there occurs reduced activity in thoracic extensors and lower trapezius muscles [21].

Cervical load acting on the neck while the neck is in a neutral position is about 10 pounds. The cervical load exponentially increases to around 60 pounds as the neck flexion reaches 60 degrees [22]. This clearly shows that the load on cervical structures increases as the neck deviates from normal. It will also be more when holding the phone close to the ear and tilting the head to the side. Head side flexion is not an isolated movement; it is a coupling 3-dimensional movements, including rotation. Rotational movements put more strain in your intervertebral disc as well as facet joints. Such repetitive and prolonged forces lead to cervical disc degeneration and long-lasting cervical and upper limb pain and discomforts [5].

Prevention strategies

Many factors leading to neck pain among smartphone users are modifiable. At the time of pandemic restrictions, self-management strategies play a key role. The following strategies are recommended.

a) Reduce smartphone usage time

As research had already established the relation between neck pain and smartphone usage time, reducing smartphone usage

time is of primary concern [14]. Designing "Smartphone-Free Time" is a method of self-regulation. That is deliberately keeping oneself away from using a smartphone for a particular time and being involved in other activities. The smartphone can be switched off and placed in a secure place away from the workplace [2]. The time can be gradually increased from a few minutes to an hour. This practice of "Smartphone-Free Time" needed to be integrated into your daily practice and habituated. Another strategy is "Smartphone-Free Zone". This involves designating an area where you will not be carrying a smartphone with you. For example, the dinner table and reading room can be made into "Smartphone Free Zones". It none of those mentioned above strategies work, telehealth consultation with a clinical psychologist can be sought. Cognitive Behavioral Therapy (CBT) is useful in smartphone overuse [2]. Online mental health services are encouraged during pandemic time [23].

b) Maintaining ideal posture

Smartphone users should adopt postures that limit neck flexion between 0 and 15 degrees. This will help in controlling excessive cervical load and muscle activity [24]. "Focus Breaks" should be adopted frequently. "Focus Breaks" involves taking eyes off the screen for few seconds and do the slight movement of the head, looking at the wall, etc. This helps to relieve tension off your neck. Besides, being mindful of one's posture also helps. Reflect by asking yourself, "How am I keeping my posture?" helps correct the posture. Take short "Mobility Breaks" every 20-30 minutes. During "Mobility, Breaks" involves few neck movements repetitions to all directions, stretching of arms, and upper back. Use headphones or Bluetooth devices while making calls. Also, try to use "speaker mode" while communicating in private spaces. Also, inculcate the habit of using large screen alternatives while doing typing activities wherever possible. Explore possible options for placing smartphones at the ideal height, especially when watching movies, webinars, and listening to educational content. Reduce single hand-holding and typing activities as it produces increased muscle activity [25].

c) Doing regular exercises

Exercises play a key role in the prevention of neck pain and the promotion of ideal posture. "Tuck Chin-in" exercise should be often repeated by smartphone users. This will facilitate and strengthen deep neck flexor muscles as well as stretch suboccipital extensors. Self-stretching of the upper trapezius, levator scapulae, sternocleidomastoid, neck extensors, and pectoralis minor are suggested. Strengthening shoulder girdle stabilizer muscles warrant special attention for controlling neck pain among smartphone users.

d) Prepare and follow an activity schedule

Design an activity schedule for each day as well for a week and diligently follow it. This will help bring order to life and help to use the time creatively and in a meaningful way [2]. This will help to reduce affinity towards the smartphone.

e) Inculcate healthy habits

Involve in activities like reading books, writing, listening to music, and meditation. This will help in alleviating stress as

well as improve mental health. When we have other activities to engage as well as stress is less, the tendency for problematic smartphone use ceases.

Conclusion

Particular attention should be taken to address neck pain's imminent public health issue due to problematic smartphone use. The relation between posture during smartphone use and neck pain development needs special attention. Considering the pandemic time and associated restrictions, preventive self-management strategies for neck pain like "Smartphone-Free Time", "Smartphone-Free Zone", "Focus Breaks", "Mobility Breaks", headphone or Bluetooth devices, regular exercises, preparing activity schedule, and inculcating health habits need to be promoted among the people.

Abbreviation

WHO: World Health Organization; COVID-19: Coronavirus Disease-19; WWW: World Wide Web; SAS-SV: Smartphone Addiction Scale-Short Version; CBT: Cognitive Behavioral Therapy; MIMS: Malabar Institute of Medical Sciences

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Authors' contributions

Binoy Mathew K V (BMKV), and Maryelizabeth Tidiya Walarine (MTW) are the principal and responsible investigators of the study. BMKV and MTW participated equally in the writing and editing of the manuscript. BMKV and MTW approved the final draft of the manuscript.

Ethics approval and consent to participate

We conducted the research following the Declaration of Helsinki. However, Viewpoint Articles need no ethics committee approval.

Consent for publication

Not applicable

Competing interest

The author (s) declare that they have no competing interests. The opinions expressed are personal and has no relation to the institutions represented.

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