

# PREVALANCE OF MYOFASCIAL TRIGGER POINTS DUE TO POSTURAL STRESSORS AMONG DIGITAL PRODUCT USERS

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## ORIGINAL ARTICLE

### ABSTRACT

**Background:** Myofascial trigger points form due to postural stressors among digital product users, which cause discomfort among them. **Objective:** This study examines the prevalence of myofascial trigger points due to postural stressors among digital product users. **Methodology:** A cross-sectional study analyzed 145 university students of both genders. A non-probability-purposive sampling technique was used. Data was collected through questionnaires and analyzed with SPSS version 24. Descriptive statistics, graphs, and tables summarized the population's characteristics. **Results:** The participant's age ranges from 16-32 years, with a mean of  $22 \pm 3.10$  years. The minimum age is 16 years, and the maximum age is 32 years. Out of the 145 participants in this study, the findings reveal that 73.8% reported pain or discomfort in their neck, shoulders, or back due to

their posture while using digital devices, while 25.5% did not experience it. **Conclusion:** Effective management of myofascial trigger points in digital product users is crucial to maintaining their work performance and productivity at an optimal level.

## INTRODUCTION:

Trigger point as "a hyper-irritable spot, usually within a taut band of skeletal muscle or in the muscle fascia which is painful on compression and can give rise to characteristic referred pain, motor dysfunction, and autonomic phenomena.<sup>1</sup> In approximately 74 percent of patients with muscular pain who visit an out-patient clinic, trigger points are considered to be the primary source of their pain.<sup>2</sup> Cervical discomfort is common in Pakistan, with a 54% prevalence of neck pain.<sup>3</sup> The development of trigger points is attributed to muscle fiber injuries, which can be caused by either significant traumatic events or

repetitive minor traumas. They generally coexist with persistent musculoskeletal disorders and produce localized as well as regional pain.<sup>4</sup> Repetitive motions, uncomfortable or protracted work positions, and a high cognitive load can all contribute to musculoskeletal difficulties,<sup>5</sup> which might result in trigger points formation from continuous work in the same position.<sup>3</sup> The digital user spends a prolonged period of time in the same position, evidencing the clinical changes in the muscles<sup>6</sup> A trigger point (TrP) consists of multiple contraction knots, also known as muscular segments with highly contracted sarcomeres and enlarged

diameters. According to the integrated TrP hypothesis, myofascial pain is attributed to the excessive release of acetylcholine from motor endplates. This histopathological phenomenon is characterized by the presence of shortened sarcomeres.<sup>7</sup>

Trigger points can be categorized as active or latent based on their clinical characteristics. An active trigger point is responsible for causing pain even when the body is at rest. It is tender to the touch and can generate referred pain that resembles the patient's original complaint of pain. It's important to note that this referred pain is not experienced at the trigger point's actual location but is felt in a different, remote area. This spreading or radiating pain sets trigger points apart from tender points, which only produce pain at the specific site of palpation.<sup>8</sup> Computer work involves both physical and mental exertion. Physically, it often involves low-force exertion and prolonged static postures. Risk factors for computer-related neck and shoulder issues include elevated shoulder postures, carrying heavy loads, prolonged muscle contractions, and extended task duration. These factors contribute to the development or worsening of neck and shoulder problems associated with computer use.<sup>9</sup> There are no specific pathological or laboratory tests available to identify trigger points. As a result, a considerable amount of pathophysiological research has been dedicated to validating various theories proposed for the development of trigger points.<sup>1</sup> Previous studies have demonstrated a link between cell phone use and complaints related to the neck. Gustafsson et al.<sup>10</sup> identified a correlation between text messaging and the experience of neck and upper back pain. Similarly, Berolo et al.<sup>11</sup> discovered an association between cell phone use and the occurrence of pain in the neck and shoulder region. These findings suggest that there may be a relationship between cell phone usage and the development of neck-related discomfort.<sup>12</sup>

While education levels have risen, the provision of adequate guidance and psychological counseling methods remains relatively inadequate. As a result, students often resort to sacrificing their sleep, and leisure time, and extending their study hours to meet various demands. Among adolescents, these factors can contribute to depression, a lack of physical activity, and skeletal-muscle dysfunction. Moreover, young individuals are typically highly enthusiastic about emerging technologies, resulting in substantial usage rates of personal computers (PCs), mobile phones, tablet computers (tablets), and other electronic devices.<sup>13,14</sup> Microbreaks are scheduled periods of rest designed to prevent or mitigate the development of cumulative trauma disorders in the computer workstation environment.<sup>14</sup>

Computer work typically entails a combination of physical and mental demands. The physical demands associated with computer work involve low force exertions and prolonged maintenance of static postures over extended periods of time.<sup>10</sup> Primary prevention strategies to mitigate the consequences include reducing smartphone usage, maintaining good posture, regular exercise, and promoting healthy habits. Psychological stress, alongside posture-related concerns, is a significant contributor to neck pain, especially among students and teachers.<sup>15</sup> This study aims to examine how myofascial trigger points affect the mental and physical performance of individuals who use digital products.

## Material and Methods:

### Study design:

It was a cross-sectional descriptive study.

### Setting:

The study was done at department of physical therapy, the University of Lahore

### Duration:

The data collection took place over a period of 6

months, starting from 13 February 2023.

**Sampling technique:** Non probability purposive sampling technique was used.

**Sample size:** The Sample size of 145 was calculated by using open api tool

**Sample selection criteria**

**Inclusion criteria**

- Age ranges from 16-32 years
- Both male and female genders
- Participants was recruited Who use Computer, laptop, mobile, video gaming, and other digital product users

**Exclusion criteria**

the participants who have any recent injury in the neck or having any past or present medical conditions, systemic illness, or prior surgical history were excluded

**Data collection procedure:**

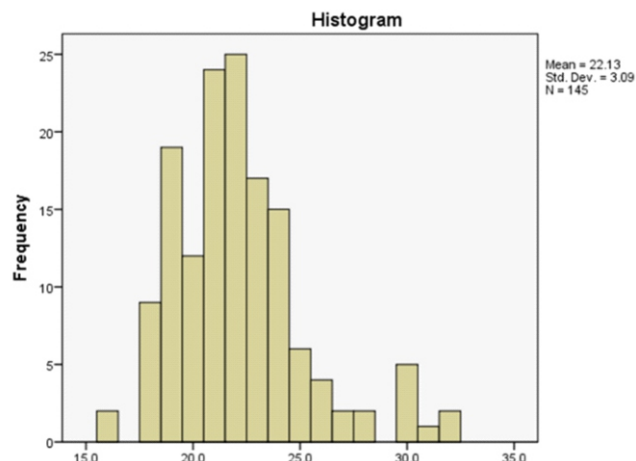
The population will be screened based on the inclusion and exclusion criteria mentioned above. A questionnaire was developed using information from relevant articles to gather data for the study. The questionnaire used in the study consisted of over 16 questions and demographic questions. Male and female students from different departments were given the questionnaires, which took approximately 10 minutes to complete on average.

**Data analysis plan:**

The data was analyzed by using SPSS version 24

## RESULTS:

There were 145 participants in this study. The participant's age ranges from 16-32 years with a mean of  $22 \pm SD 3.10$ . The minimum age is 16 years and the maximum age is 32 years.



**Figure 1: The Histogram is showing the age range of participant's using Digital product**

Table 1 is showing the frequency of trigger points occurrence in digital product users

	Frequency	Percentage
Yes	51	35.2
No	62	42.8
Unsure	32	22.1
<b>Total</b>	<b>145</b>	<b>100.0</b>

Among the respondents who have experienced MTrPs, 35.2% believed that their trigger points were caused by their posture while using digital products. On the other hand, 42.8% of the respondents did not believe their MTrPs were caused by their posture, and 22.1% were unsure about the cause.

## DISCUSSION

Myofascial trigger points are localized areas of muscle tightness and discomfort that can be associated with various factors, including poor posture, muscle overuse, and stress. If respondents have experienced MTrPs, it may be helpful for them to seek appropriate treatment or strategies to manage or alleviate the symptoms. The purpose of this systematic study was to assess the prevalence of active and latent myofascial trigger points (MTrPs) in various spinal diseases. To determine the point prevalence of MTrPs, twelve cross-sectional studies encompassing six distinct spinal pain

conditions were considered. The pooled point prevalence of active MTrPs in persistent neck pain (NP) has a low overall quality of evidence. Data regarding active MTrPs in whiplash-associated disorder (WAD) and non-specific low back pain (NSLBP) were retrieved from single studies with low quality and small sample sizes.<sup>16</sup> A high-quality study, on the other hand, found no significant differences in the incidence of latent MTrPs between chronic NP and chronic WAD patients. Low-quality evidence revealed that those with chronic NP were more likely than healthy people to have latent MTrPs in the sternocleidomastoid muscle, but not in the upper trapezius or levator scapulae muscles. Individual investigations on diverse spinal illnesses (NP, WAD, NSLBP, CR) frequently have limited sample sizes and/or inadequate methodological quality, resulting in inconsistent conclusions for latent MTrPs. Future research with bigger sample sizes and greater methodological quality are expected to have a major impact on the provided MTrP point prevalence estimates in these illnesses.<sup>17</sup>

To address the issue, some respondents have sought treatment for their pain and discomfort, with massage therapy (35.9%) being the most common treatment reported. Other treatments mentioned include chiropractic care, physical therapy, acupuncture, and pain medication. However, a significant proportion of respondents (52.4%) indicated that they have not sought treatment. The suggestions provided by respondents for preventing or managing pain and discomfort related to posture while using digital products offer a range of recommendations. These include maintaining good posture, taking regular breaks, limiting usage, incorporating exercise, using ergonomic equipment, and improving work-life balance.<sup>18</sup>

### **CONCLUSION:**

It can be concluded that there is a notable prevalence of myofascial trigger points (MTrPs)

among digital product users, specifically in the neck, shoulders, and back. A significant percentage of respondents reported experiencing MTrPs (34.5%). Furthermore, a considerable number of respondents (73.8%) who experienced MTrPs believed that their posture while using digital products played a role in causing these trigger points.

### **LIMITATION AND RECOMMENDATIONS:**

This study had relatively small sample size of 145 participants, data was collected only in a single university, biased or inaccurate information and lack of real-time information were the limitations. Raise awareness among digital product users about the potential risk of developing MTrPs due to prolonged and poor posture. Encourage users to setup their workstations ergonomically. Short breaks and movement throughout the day is recommended.

### **AUTHORS CONTRIBUTION**

**ZH:** Substantial contributions to the conception or design of the work Analysis and interpretation of data, **IW:** Drafted the work or revised it critically for important intellectual content; Literature search and approved the version to be published, **AZ:** Collection and assembly of data, Literature search

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