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# Science Midwifery

# The relationship of gadget use to the level of upper trapezius muscle pain with complaints of myofascial pain syndrome

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## A R T I C L E   I N F O

## ABSTRACT

All fields including education and health are inseparable from the use of technology, one of which is gadgets, besides having benefits for users, there are also many negative impacts from using gadgets, one of which is musculoskeletal disorders. This study aims to determine the relationship between the use of gadgets with the Upper Trapezius muscle with Myofascial Pain Syndrome (MPS) complaints. The design of this study used an analytic observational method with a cross sectional approach. The sample in this study was 12 undergraduate physiotherapy students at the Banjarmasin Human Sanctuary College of Health Sciences who met the inclusive criteria. The results of this study there is a relationship between the use of gadgets with the level of Upper Trapezius muscle pain with MPS complaints by getting a p value <0.05. The conclusion of this study is that excessive use of gadgets will make the neck muscles of the upper trapezius muscles contract continuously which will result in myofascial pain, it is hoped that it can limit the use of gadgets and view for a while to reduce pain in the upper trapezius and stretch.

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# INTRODUCTION

The development of the times and technological advances have made most people do a lot of activities and spend their time using electronic devices (gadgets). All sectors including education and health are inseparable from the use of technology(Fauzi et al., 2023). This is also used by students to get the information they need by searching on the internet. During the COVID 19 pandemic, students carried out more activities using gadgets(Muhammadiah et al., 2022; Udayana et al., 2022).

In addition, the implementation of online learning, which is a learning system using platforms in the current teaching and learning process, requires students to use gadgets for a long enough duration, thus triggering negative impacts from using these gadgets. According to (Darmawan et al., 2020) one of the negative effects of using gadgets is musculoskeletal disorder (MDS). MDS disorders in the upper extremities that are often complained of are in the neck, shoulders and fingers(Darmawan et al., 2020). The negative impact of having MDS certainly

disrupts a person's activities (Aiello et al., 2020) that MDS can affect health status and mood(Donahoe, 2012; Gillman & Blaisdell, 2018).

Working on computers and operating smartphones for long periods of time will provoke repetitive use of certain muscles resulting in muscle injury, cumulative damage from acute trauma to the neck and shoulders (Rahmawati & Arin Supriyadi, 2020). And the most widely felt is pain in the neck. Neck pain that is felt is usually characterized by the presence of myofascial trigger points as a result of damage to the fascia in the muscle tissue so that it can cause pain which is commonly called myofascial pain syndrome(Rahmanto et al., 2021). Myofascial pain syndrome is usually seen in people who are teenagers or adults and affects both men and women(Nida Sha , Rehana Mushtaq, 2021). The reported prevalence of myofascial pain syndrome ranges from 20-95% in patients with musculoskeletal pain. The distribution of myofascial pain syndrome was comparable between sexes (24.1% women and 23.8% men).(Stella et al., 2021) 84% of pain points occur in the upper trapezius muscle which is the most commonly affected muscle and one of the conditions that causes pain in the upper trapezius muscle is myofascial pain syndrome.(Makmuriyah & Sugijanto, 2013)Myofascial pain syndrome is characterized by regional muscle pain that originates from a hyperirritable point located within the junction of the skeletal muscle bands, and is known as the myofascial trigger point (MTrP) (Stella et al., 2021). From this background, the purpose of this study was to see if there was a significant relationship between the use of gadgets and the level of pain in the upper trapezius muscle with myofascial pain syndrome, so that the benefits of research can provide analysis related to limiting the use of gadgets and diverting the eyes for a while to reduce pain in the upper trapezius and stretching in students.

# RESEARCH METHOD

The design of this research is a qualitative research using analytic observational method with a cross sectional approach. The population of this study were all physiotherapy students at the Suaka Insan Banjarmasin College of Health Sciences who had met the criteria and were willing to be the research sample. The data collection method was carried out using a physical examination to identify myofascial pain syndrome. In this study also used the Numeric Rating Scale (NRS) instrument to measure pain levels and a questionnaire on the duration of gadget use. Data analysis will be carried out in two stages, namely univariate and bivariate analysis (Sugiyono, 2017). Univariate analysis was carried out on each variable from the research results, namely: demographic data such as the age of the respondent and the gender of each participant.

The sample normality test is meant to see whether or not the distribution of the data to be analyzed is normal. The normality test in this study used the Shapiro Wilk. The interpretation of the Shapiro Wilk test is that if the significance value is above 0.05 then the data distribution meets the assumption of normality, but if the significance value is below 0.05 then the data is interpreted as abnormal data. Correlation analysis with Product Moment (Pearson) if the data is normally distributed and uses Spearman Rank nonparametric statistics if the data is not normally distributed.

# RESULTS AND DISCUSSIONS

Based on the results of research conducted on 12 respondents, the following results were obtained:
   a.   **Univariate analysis**

Table 1. Distribution of demographic data

| No | Demographic Data | f | % |
|---|---|---|---|
| 1. | Age | | |
| | 18 | 1 | 8,3 |
| | 19 | 5 | 41.7 |

|  | 20 | 5 | 41.7 |
|  | 23 | 1 | 8,3 |
| 2. | Gender |  |  |
|  | Man | 4 | 33,3 |
|  | Woman | 8 | 66,7 |

Table 1 shows that the ages of the respondents ranged from 18-23 years with the highest age being 23 years (8.3%) and the lowest age being 18 years (8.3%) and as many as 8 (66.7%) of the respondents were women and 4 (33, 3) the respondent is male.

Table 2. Frequency distribution of duration of gadget use

| No | Use of Gadgets | F | % |
|----|----------------|---|---|
| 1. | Currently | 9 | 75 |
| 2. | Tall | 3 | 25 |
|  | Total | 12 | 100 |

Table 2 shows that the duration of gadget use is moderate with a total of 9 respondents (75%) and high use of gadgets by 3 respondents (25%).

Table 3. Frequency Distribution of Upper Trapezius Muscle Pain

| No | Painful | F | % |
|----|---------|---|---|
| 1. | Light | 1 | 8,3 |
| 2. | Currently | 6 | 50 |
| 3. | Heavy | 5 | 41.7 |
|  | Total | 12 | 100 |

Table 3 shows that the level of pain experienced by respondents in the moderate category was 6 respondents (50%) and the high category was 5 respondents (41.7%) while pain in the moderate category was 1 respondent (8.3%).

Table 4. Normality Test Results for Gadget Use with Upper Trapezius Muscle Pain Levels

| Variable | Statistics | DF | P Value |
|----------|-----------|-----|---------|
| Use of Gadgets | 0.460 | 12 | 0.000 |
| Pain Level | 0.279 | 12 | 0.006 |

Table 4 shows that the results of the normality of the data with the Normality Test of the data with Shapiro Wilk were found in the gadget usage variable (p-value) <0.05, the data distribution was not normal and the pain level variable (p-value) <0.05, the data distribution abnormal. So this study used the Spearman test to see the correlation between gadget use and pain levels.

## b. Bivariate analysis

Bivariate analysis aims to link the independent variable, namely the use of gadgets with the dependent variable, namely the level of myofascial pain syndrome pain. Bivariate analysis testing was carried out by conducting a Spearman rank correlation test. The analysis is said to be significant if the results of the analysis show that there is a statistically significant relationship between the two variables, with a p value <0.05.

Table 5. Relationship between the use of gadgets and the level of upper trapezius muscle pain

|  |  |  | Use Gadgets | Level Painful |
|---|---|---|---|---|
| Spearman's rho | User- and Gadgets | Correlation Coefficient | 1,000 | .651 |
|  |  | Sig. (2-tailed) | . | 022 |
|  |  | N | 12 | 12 |
|  | Pain Level | Correlation Coefficient | .651 | 1,000 |
|  |  | Sig. (2-tailed) | 022 | . |
|  |  | N | 12 | 12 |

Table 5 shows that the results of the correlation test with the Spearman test obtained a significant value (sig. 2-tailed) of 0.022. From these results there is a significant relationship between the use of gadgets on the level of upper trapezius muscle pain with complaints of myofascial pain syndrome. The correlation coefficient value is 0.651, so this value indicates a high relationship between gadget use and myofascial pain syndrome pain in the upper trapezius muscle.

From the statistical test results with the Spearman rank, the correlation coefficient (sig. 2-tailed) was 0.022 so that there was a significant relationship between the use of gadgets and the level of pain in the upper trapezius muscle and complaints of myofascial pain syndrome. This can be interpreted that the higher the use of gadgets, the higher the level of pain in the upper trapezius muscle with complaints of myofascial pain syndrome.

In line with research conducted by Eide et al (2018) which stated that excessive smartphone use for a long duration has negative effects, namely musculoskeletal disorders of myofascial pain, poor academic performance, anxiety and depression and poor sleep quality (Dewi et al., 2022; Eide et al., 2018). This was also expressed by Ayhualem et al, (2022) that using a cell phone for a long time causes pain in the neck. Myofascial pain syndrome has also been recognized as a significant and detrimental source of pain for millions of people in both developed and developing countries. It affects all age groups and can also have a major impact on worker function, performance and productivity (Ayhualem et al., 2021).

The more severe impact of having a musculoskeletal disorder is the disruption of one's activities(Umima, 2021). This was also revealed by (Ünal et al., 2022) that MDS can affect Activities of Daily Living.

# CONCLUSION

Based on the results and discussion, it can be concluded that there is a relationship between the use of gadgets and myofascial pain syndrome pain in the upper trapezius muscle because excessive use of gadgets will make the neck muscles, especially the upper trapezius muscle, contract continuously which will result in myofascial pain. The contribution of research is specifically for students are expected to be able to limit the use of gadgets and look away for a while to reduce pain in the upper trapezius and do stretching. It is hoped that further research will look at the severity of the pain level felt by students.

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