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KEYWORDS	ABSTRACT
Musculoskeletal health status, electronic devices, musculoskeletal pain, undergraduate students	Background: Musculoskeletal problems describe as muscular pain, discomfort, numbness and ache to the support system of the human body. It occurs because of different causative factors like excessive forces, repetitive movement on the joints, and constantly sustaining the same position. Aim: To determine the comparative impact of various electronic devices on the musculoskeletal health status among medical and Physical Therapy students. Method: A cross-sectional study having 377 undergraduate medical and physical therapy students from a different institute of Karachi. A self-administrated questionnaire adopted by Woo et al. was distributed among students who fulfilled the criteria. Data was coded and confidentiality was maintained. Result: The result shows that the high prevalence of a musculoskeletal problem in mobile phone user (98%), laptop user (61%) and least in which devices uses in least amount desktop computer (23.3%), tablet computer (18.5%) and game console (16.4%). Conclusion: study concludes that the prolong use of electronic devices impact the musculoskeletal health especially in mobile phone and laptop user.  2026 Journal of Social Research Development
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Introduction

Musculoskeletal Health Impact

The disorder which disturbs the connective tissues of the body that are bones, muscle, tendon, ligaments, nerves and blood vessels. It covers a wide variety of condition and shows symptoms related to this structure. About 1.71 billion people effected from musculoskeletal condition. One of the major causes of disability in the entire world. The most commonly effecting the musculoskeletal

condition is low back pain, which across 160 countries included. The risk of the musculoskeletal pain is higher in university going students because of using huge time spending in electronic devices. The mobile phone user shows neck and shoulder symptoms. As talk about the gender, the prevalence of musculoskeletal pain is higher in female as compared to male. Mostly female experience low back pain because of hormonal fluctuation during menstrual cycle or female perceive more intensity of pain as compared to male.

Causes

it's a very significant health problem faces every school going children to adulthood person. Highly use or sometime misuse the soft tissue in an awkward posture for long periods without taking breaks during work, watching videos, making assignments and playing game trigger the symptoms, which are result from any underlying pathology which previously exists or either result from any new injury occurs because of wear and tear activities. Anti-ergonomics position: arrangement of the chair in bed, ergonomics back and knees not in 90 degrees manage. Repetitive movements at the extremities generate vibration and show signs of inflammation at the joint

From Electronic devices:

Over the growing years with the development of the advance technology people are more facilitate through the many types of developing electronic devices modification which is very easy to use feasibly carry to perform their task but it also inactive the people establish sedentary life style which get distance to the physical activity leads to harmful effect upon the musculoskeletal health. Almost every student carries a mobile phone. School going children age 12 to 14 years or university students. Mostly use the mobile with a single hand for huge time spent in constant awkward posture. A tablet is a wireless, portable personal computer with a large screen size smaller than a laptop but larger than a computer. Personal computer uses in sending or receiving emails, chatting, editing documents, online shopping the people are preferred to carry mobile phone. can use it only at the home or workplace not carry outside because of other equipment connect not a battery saving data continue plugging needed. Good ergonomics design chair required other it relate the musculoskeletal issues. It's a gaming box or device that primarily, design to play games that connect to TV, playing videos games in a variety way wasting the time get addicted to the games.

Problem of the Statement:

These undergraduates are reliant on considerably on computer-based devices for educational purpose including recorded lectures, PDF textbooks, articles, and research paper. Incorrect posture and poor ergonomic pattern of use could impact the musculoskeletal health. protracted the hours of the study in medical students, low functional activity that's increase the exposure risk of musculoskeletal discomfort. However, most of the published studies suggest the relation of the digital device uses and musculoskeletal disorder, but there is an insufficient contrastive data for describing which one device implicate the which one disorder. Along with there is a scarce data group among the medical and physical therapy students. The discrepancy of the evidence restricts

the formation of prophylactic approach for providing proper ergonomic training, taking breaks during study at the devices and mentor how to set a good posture. On that account, there is a critical to assess the impact of various electronic on musculoskeletal.

Objective of the Study:

To compare, the impact of various electronic devices on the Musculoskeletal health status among medical and physical therapy undergraduate students.

Literature Review

In the year 2016, Woo et al. conducted a study to determine the musculoskeletal pain correlates the usage of multiple electronic devices. Data collected from a self-reported questionnaire. Found that the half of the participants show neck and shoulder pain and half of the participants show muscular uneasy due to sustain faulty posture with prolong duration. Karaca conducted a study in the year 2019 to find out the musculoskeletal system pain in relation to physical activity, intensity and prolong sitting of university students using a smartphone. Found that a sedentary lifestyle, lack of relation with exercise and prolong static posture could affect the musculoskeletal system. There is an urgent need to provide ergonomic education and physical activity. Dole et al. conducted a study. In the year 2022, to find out the musculoskeletal pain and postural abnormalities among smartphone using native. Data collected from standardized Nordic musculoskeletal questionnaires. There was a clear association of musculoskeletal pain and postural deformity due to prolong duration of studying via the electronic devices last one year of data collection. Shaf.M et al. conducted a study in the year 2022 to check out the musculoskeletal pain among allied health science students during online learning classes in covoid-19. The global pandemic covoid-19 lead to increase usage of devices for learning or maintaining social distancing. Concluded that covoid-19 will last longer and will harm the musculoskeletal status. Milos Laski et al. conducted a study to determine the frequency of the use of information and communication technologies in school-age children and musculoskeletal disorder connected with their use. In recent era, the usage of technology, especially in teen-age and children at high intensity like watching TV, playing video game half of the day that increase the exposure of screen or ultraviolet radiation led to harmful effect to the soft tissue.

Study Design

cross-sectional study.

Study Setting

The study conducted in different Medical and Physical Therapy institutes of Karachi

Duration Of Study

Six months

Sample Size

377 students (calculated through Rao soft calculation)

Sample Collection

Inclusive Criteria

- Both undergraduate medical and doctor of Physical Students were included
- Both males and females were included
- Student who will take part

Exclusive Criteria

- Non-medical students
- Postgraduate Medical and Doctor of Physical Therapy students
- Students having any musculoskeletal deformities were excluded
- Students having a history of any spinal surgery were excluded
- Students who were not willing to take part

Sampling Techniques

Convenient non-probability sampling technique was used

Data Collection Tool

Adopted and evaluated questionnaire Woo et al. (2016) was used

Data Collection Procedure

Questionnaires were distributed among the recruited participants, who Filled with the inclusion criteria. Informed consent was signed. The participants filled out the questionnaires and then returned them to the researcher.

Data Analysis Procedure

Data analyzed using SPSS (Statistical package for social sciences) Version 23. Descriptive Statics were used. Frequency and percentage were find out. cross tab done for comparison.

Budget

The total budget was 25000 PICR.

Ethical Consideration

Permission granted from the Ethical Review Committee of ISRA University Karachi Campus. Informed consent was signed. Data were coded and confidentiality was maintained.

Results

The current study conducted to find out the Comparative impact of various electronic devices on the musculoskeletal health status among medical and physical therapy undergraduate students. The data was analyzed using SPSS, mean, and standard deviation were calculated.

Figure I: show the gender of participants. Out of 377 participants, 225 participants are female (60%) and 152 participants are male (40%)

Figure II: shows the program of study. Out of 377 participants, 188 participants were from the medical field (50%) and 186 participants from the Doctor of Physical Therapy (50%)

Figure III: shows the usage duration of devices. Out of 377 participants, 212 participants use over 5 hours (56%) and 165 participants use less than 5 hours (44%).

Figure IV: shows the cross tabulation between the neck pain and the electronic device user. Participants were used desktop computer (21%) we used participant's laptop computer (66%) participants were used tablet (19%) participants were used mobile phone (66%) participants were used game console (10%)

Figure V: shows the cross tabulation between low back pain and electronic device user. Participants were used desktop computer (25%) participants were used laptop computer (65%) participants were used tablet (20%) participants were used mobile phone (70%) participants were used game console (16%)

Figure I: Gender of participants

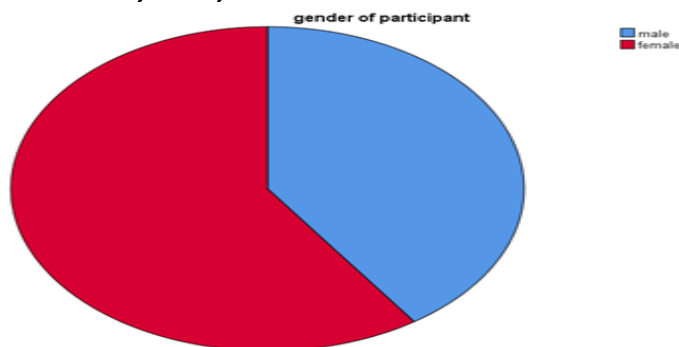


Figure I show the gender of participants. Out of 377 participants, 225 participants are female (60%) and 152 participants are male (40%)

Figure II program of study

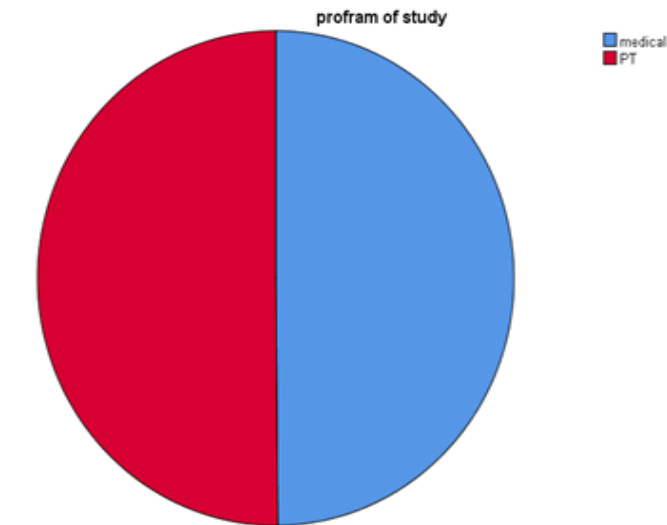
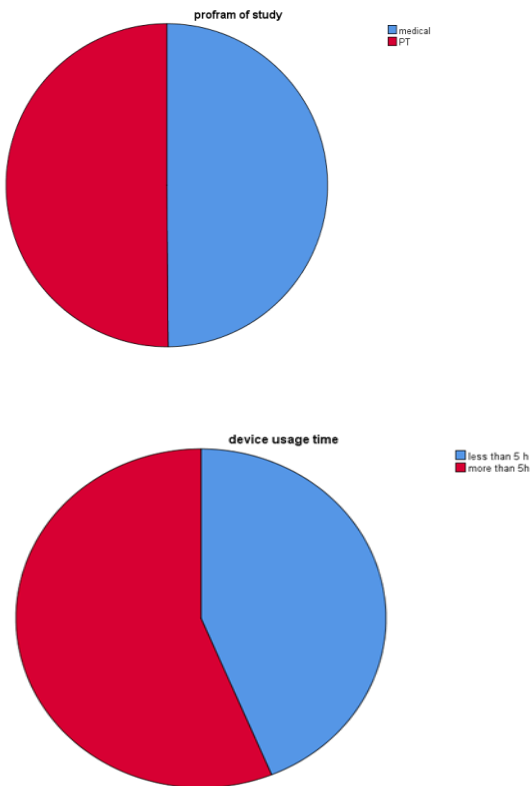
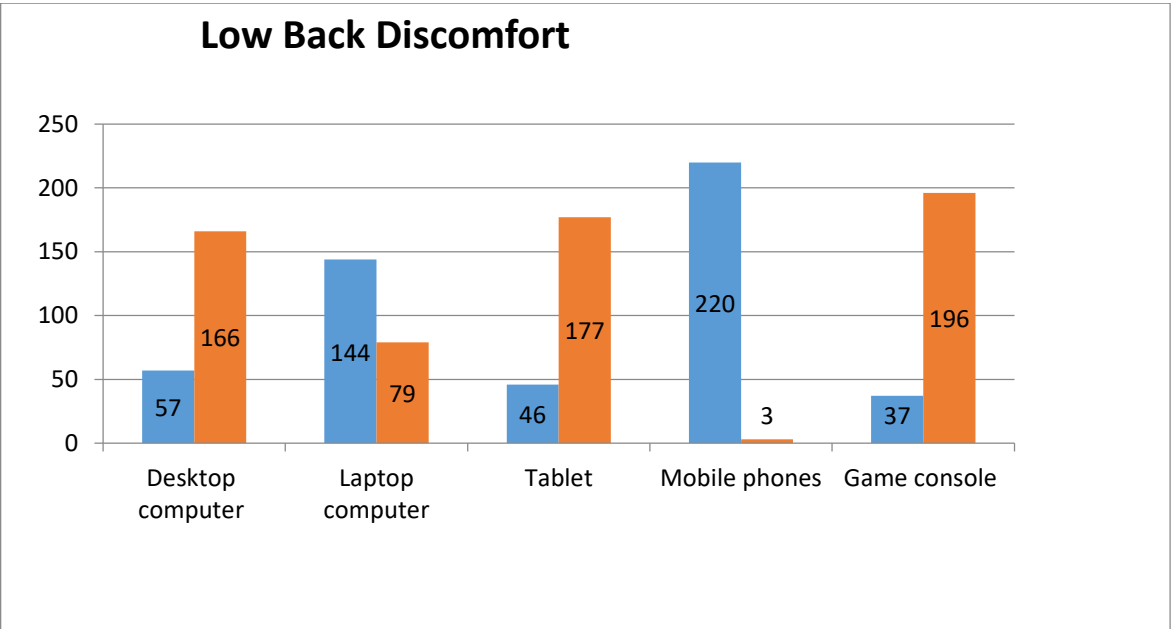
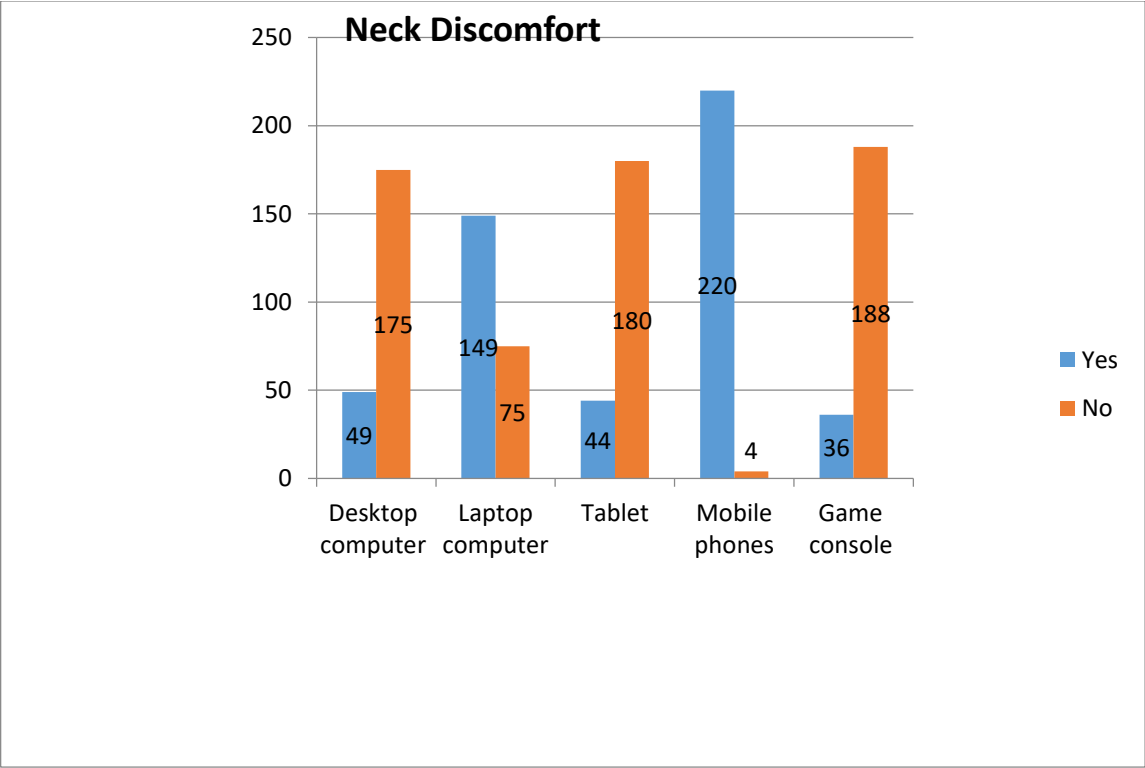


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Discussion

The preceding study was to find out the work-related musculoskeletal disorder among faculty member of a college of applied medical sciences. This prior finding specifically spot light the duration of the use of electronic devices and musculoskeletal discomfort. Which faces challenges and decreases the academic performance musculoskeletal discomfort. (70.3%) most of the participants were working 8h/day, (46.7%) participants were using a laptop on the bed, (48%) participants were taking insufficient break time, however (91.7%) were not following ergonomics. (28) However, (53.5%) participants reported neck discomfort. (43.3%) participants reported low back discomfort, (31.6%) participants were reported wrist/hand discomfort, (28%) participants were reported upper back, (21.6%) participants reported shoulder discomfort, (15%) participants were reported elbow and knee, (13.3%) participants were reported ankle/foot, (11.6%) participants were reported hip complain, although in the current study shows a high prevalence of musculoskeletal pain (98%) report in mobile phone user (61%) report in laptop user, (23.3% report in desktop computer, (18.5%) report in tablet computer. This study strives to compressively elucidate the occurrences the musculoskeletal pain related to electronic devices user. data collection relies on a self-administrated questionnaire comprises demographics electronic devices 5 items and 6 regional discomfort which is highly reported in low back pain (98%), neck pain (61%) and least in shoulder (18.5%), wrist discomfort (16.4%) and elbow discomfort (16.4%).

Conclusion

It concludes that the prolong use of the electronic devices impact the musculoskeletal health, especially in mobile phone and laptop user. However, there is a strong desire to spotlight the musculoskeletal issue, which is basically responsible for the beginning of the more extreme health issues. Healthcare provider make provision the education about the position maintenance during the working hours. Follow up the proper guideline, taking minimum breaks in every one hour. As it may avoid the advancement of the musculoskeletal health risk.

Recommendation

It recommends for future researcher to work on large sample size and with other medical fields.

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