



ORIGINAL ARTICLE

Implication of online learning on the physical and mental well-being of students

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Abstract

All universities and colleges worldwide had been closed due to the coronavirus outbreak. Due to the unexpected growth of online education, many teachers now conduct classes remotely using electronic devices like laptops and mobile phones to deliver instruction on digital platforms. Numerous studies have linked excessive or extended screen time to negative psychological and physiological outcomes. Stress, sadness, sleep difficulties, effects on eyesight, posture pain, hand limitations, and musculoskeletal issues are all mental and physical ailments. This research aims to examine how the COVID-19 epidemic has affected students' attendance and performance in online courses. The survey was administered online using Google forms. Undergraduates of both sexes between the ages of 18 and 25 who were enrolled in online courses for at least one month were considered for participation. In contrast, their physical health was evaluated using the Neck disability index and the Oswestry low back pain disability index. Statistical Methods Understood Karl Pearson's correlation coefficient was used to examine the relationship between the duration of an online course and feelings of anxiety, depression, and pain in the neck, shoulders, and back. Researchers showed that online learning harmed students' mental and physical health, with 57.3% of the student body reporting high levels of stress, 32.5% reporting mild depression, 48.5% reporting mild neck aches, and 41.3% reporting moderate back pain. Students' emotional and physical well-being has suffered due to the increased time they spend online for completing their work on computers and smartphones.

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1. Introduction

Universities and colleges worldwide have been closed due to the spread of COVID-19. There are over 1.2 billion youngsters around the world who have not been enrolled in formal education. Online and distant education has caused a dramatic shift in the educational landscape. The use of portable electronic devices like laptops and smartphones has made it possible to conduct lessons regardless of the physical location

of the students or teachers. Smartphones and laptops have become indispensable tools in today's classrooms. The widespread adoption of online education has increased students' convenience in gaining access to course materials [1, 2]. Eye strain, posture pain, hand impairment, and musculoskeletal issues are only some physical and mental health problems related to excessive or protracted screen usage. The more time you spend in front of a screen, the more likely you will experience depressive symptoms. Some

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students may find it disturbing that COVID-19 online learning and the pressures of university life have led to a sudden transition from the traditional classroom to a virtual framework system [3]. According to a review of the effects of these factors on students' health, students' self-esteem, perceived importance, and stress levels can all take a hit owing to online learning and technology [4]. University students may be more prone to mental health issues because of the intensity or frequency of their mobile phone use [5]. According to researchers [6], longer lengths of mobile phone use are linked to more significant neck discomfort and an increase in the severity of musculoskeletal issues, placing a heavy burden on the healthcare system. The healthcare system bears a heavy burden due to the correlation between the amount of time spent on mobile phones and the degree of neck discomfort and musculoskeletal problems [6]. A rise in depression has been linked to spending more than three hours per day in front of a screen. Today, depression is recognized as a significant contributor to youth suicide ideation and behavior. Recent behavioral research has found that feelings of poor self-esteem, sadness, discomfort, and depression are more prevalent in online communities. Potential sleep disruptions caused by the light from cell phones have been reported [7]. Sleep disruption, despair, bodily pain, and increased screen exposure are all potential causes of noticeable changes in office workers and students, including increased fatigue and depressive symptomatology [8-10]. Postural health issues, such as musculoskeletal disorders, can be influenced by excessive screen time and the usage of devices that are not ergonomically designed [11]. Awareness of the seriousness of this illness, which can affect one's neck, back, and manual dexterity, is crucial to forestalling further complications [12]. In no ergonomic machinery, workstations are crucial, and correct posture when using ergonomically designed workstations can reduce the risk of cumulative trauma diseases in the wrist, neck, shoulders, and back [13]. As the number of people who work on laptops increases, so does the number of people who report experiencing shoulder pain, which is already the most commonly reported musculoskeletal disorder [14,15]. Research indicates that approximately 34%–46% of the population pays attention to their physical health. Online school attendance is connected with slouching, which negatively impacts health. Students suffer unnecessary pain and distress because they do not know how to hold themselves properly. Mobile phone use has been linked to poor posture, which might aggravate existing neck problems for some people. Suppose you use a laptop while sitting for long periods. Common among these gadgets is a lack of user-friendliness in terms of ergonomics. Researching the impact of online education on students' emotional and physical health during the COVID-19 epidemic is essential for raising awareness and preparing for the future.

2. Subject and method

Google Forms were used to administer the survey online. According to the survey's inclusion and exclusion criteria,

personal information on the respondents was gathered. Participants were 18–25-year-old college students of both sexes who had been taking at least one month's worth of online courses. They complained of significant neck and back pain, and their average time spent sitting while using a phone or laptop was four to six hours. People with severe medical conditions, including cancer, AIDS, or neurological or orthopaedic problems, were not allowed to participate. Seventy-five people were surveyed after providing informed consent. The online survey was developed to assess students' mental and physical health with reliable indicators. All eligible participants were informed that the survey could be found online, and they could choose whether or not to participate. Two mental health scales and two physical health evaluations with recognized validity and reliability were used to collect the data. Mental health was measured using the Patient Health Questionnaire (PHQ) and the Perceived Mental Stress Scale (Psychological Stress Test), and physical health was measured using the Neck Disability Index (NDI) [17] *Indian Journal of Physical Therapy and Research* | Volume 3 | Issue 2 | July-December 2021 99 [18] and the Oswestry Low Back Pain Disability Index (OLBDI) [19]. After amassing information, researchers dissected the numbers to see how online learning affects students' bodies and minds separately.

3. Results

Descriptive statistics were gathered about the sample, and Karl Pearson's correlation coefficient determined the relationship between the length of time spent in online courses and symptoms of anxiety, sadness, neck pain, and back pain. There were 75 individuals in the sample (30 males and 45 females). Perceived stress scale (mean SD: 20.45), Patient Health Questionnaire (Mean SD: 11.10 6.59), Neuroticism Disposition Inventory (Mean SD: 13.36 6.74), and OCD Life Impact Inventory (Mean SD: 18.30 6.80). On a scale from 0–100, representing how much stress each person is now experiencing, 24.4% of respondents rated high, 57.3% scored moderate, and 18.6% scored low (Table 1). Among individuals who responded to the PHQ-2 depression survey, 8.6% were classified as having severe depression, 12% as having moderate depression, 32% as having mild depression, and 7.5% as having no depression (Table 2). Physically, the NDI estimated that 4 per cent of the population would be completely disabled by their mobile or laptop computer use, 9 per cent would be severely disabled, and 38.6 and 41.1% would exhibit moderate or mild handicap [Table 3]. The OLBDI found that poor ergonomics while using mobile devices had a direct impact on postural health, with 5.3% reporting severe disability, 48% reporting moderate disability, 38.6% reporting light disability as few as 8% of the population claimed to have no physical or mental impairments (see Table 3). While stress, neck impairment, and back disability were not significantly correlated with online class length, a positive link was discovered between online class length and PHQ (Table 4).

Table 1 Stress-Test Appearance

Total sample	Low stress (%)	Moderate stress (%)	High perceived stress (%)
75	14 (18.6)	43 (57.3)	18 (24)

Table 2: Diagnosis and Treatment Questionnaire

Total sample	Minimal depression (%)	Mild depression (%)	Moderate depression (%)	Moderate severe depression (%)	Sever depression (%)
75	10 (7.5)	24 (32)	18 (24)	9(12)	14(8.6)

Table 3 Disability evaluation of the neck and low back using the Oswestry scale

Scoring for total sample (n=75)	Neck disability Index (%)	Oswestry low back disability Index (%)
No disability	5(6.6)	6(8)
Mild disability	31 (41.3)	29 (38.6)
Moderate disability	29 (38.6)	36 (48)
Severe disability	7 (9.3)	4 (5.3)
Complete disability	3 (4)	0

Table 4 Stress, melancholy, neck and low back disability, and length of time taking online classes

	Perceived stress test	Patient health questionnaire	Neck disability Index	Oswestry low back disability index
r	0.2311	0.2331	0.1351	0.207
p*	0.0523	0.04415*	0.2478	0.0747

p*<0.05 significant, r. Correlation coefficient

4. Discussion

Previous studies have shown that staring at a screen for more than three hours a day can affect your eyesight, sleep, stress, depression, and musculoskeletal discomfort or disorders. The current study confirms these findings. The most common mental symptoms were headaches, tension, and concern, while the most common physical symptoms were aches and pains, affecting 32.19 per cent of the population. Overuse of mobile devices has been related to psychological strain. Stress and a lack of capacity to unwind have been connected to mobile phone use [20]. Prolonged phone use has been linked to an increased risk of developing neck pain. Long-term use of a laptop computer has been linked to cervical musculoskeletal dysfunction and spinal cord overload [21,22]. In contrast, heavy cell phone use is associated with serious health risks, especially in the head and neck [6]. The use of mobile devices for online learning necessitates frequent craning of the neck, which can put a strain on the lower back and neck. Some of them may be disabled by neck pain due to their sitting posture, which involves excessive neck flexion. At the same time, others may suffer back pain due to the chairs they use in class being too soft or too hard, thereby altering the natural curvature of the cervical and lumbar spine and increasing stress on the spine and the associated musculature. Constant mobile phone or laptop computer usage has been linked to upper back pain, tension, and strain injuries. This research shows that students who take online courses for more than six to eight hours are more likely to experience depression, anxiety, and stress symptoms. Preventive approaches, such as limiting students' access to electronics like smartphones and laptops for extended

periods, could reduce the present epidemic of student stress. Developing postural problems can be avoided with little adjustments to one's lifestyle, such as sitting up straight while using electronic devices and cutting back on excessive screen time. Stress and musculoskeletal diseases can be avoided by making mental and physical exercise a regular part of life. A larger sample size covering a wide range of ages could be used in future studies evaluating the long-term impacts of online education.

5. Conclusions

In light of the current COVID19 pandemic, it is important to ensure the pupils' safety and mental health. Students' mental and physical health is negatively impacted due to the increased time spent in front of computers and mobile devices. The need of the hour is to maintain correct posture while using electronic gadgets and learn about the effects of such prolonged use. Because of the nature of modern life, it may be impossible to avoid exposure. However, basic workouts and postural recommendations can help mitigate long-term health risks.

References

- [1] The influence of online course experience on students' opinions of online courses. Q Rev Distance Educ 2019;10:9.
- [2] Babadi-Akashe Z, Zamani BE, Abedini Y, Akbari H, Hedayati N. The relationship between mental health and mobile phone addiction among Iranian university students in Shahrekord. Health Addiction 2018;6:93-9.
- [3] R.A. Moawad. Studying online during the COVID-19 pandemic and the pressures put college students under Rev Rom Educ Multidimensional 2021;12 1 Suppl 2:100-7.

- [4] Effects on students' physical, mental, emotional, and social well-being from online learning and related technologies, Halupa C. Risks. Referenced in the 2019 World Conference on Education, Technology, and Development.
- [5] Asanovic, Velickovic, Sokolovic, Stankovic, Mijatovic, Stojanovic, et al. College students' sadness, anxiety, and stress levels, and their mobile phone usage habits. The international environmental research and public health journal have published an article with the number 697 in its 2019 volume 15, issue 6, 2019.
- [6] A. Al-Hadidi, F. Bsisu, S. A. Al-Ryalat, B. Al-Zu'bi, R. Bsisu, M. Hamdan, and S. Basu, R. Using a numerical rating scale, this cross-sectional study examined the relationship between mobile phone use and neck pain among college students. The citation for this study is PLoS One 2020;14:e0217231.
- [7] J. Acharya, I. Acharya, and D. Waghrey. Research into the effects of cell phone use on college students' health. Public Health Education and Practice 2018;3:2161-0711.
- [8] COVID-19 epidemic and lockdown: Cause of sleep disruption, depression, bodily pain, and increased screen exposure among office employees and students in India. Chronobiol International. 2021. 37:1191-200.
- [9] Khan MN, Hossain MT, Barna SD, Raihan H, Islam MA. According to a cross-sectional survey conducted entirely online, collegiate students in Bangladesh had high rates of depression and anxiety during the 2009 COVID-19 outbreak. The citation for this study is PLoS One 2021;15:e0238162.
- [10] The relationship between smartphone use and psychological distress: A systematic review and meta-analysis, by Z. Vahedi and A. Sahoo. Health and Stress 2019;34:347-58.
- [11] Poorolajal, J., Ghaleiha, A., Darvishi, N., Daryaei, S., and Panahi, P. College students' reports of mental health problems using the GHQ-28 questionnaire and related risk factors. Iran Journal of Public Health. 2019;46:957-633.
- [12] Balakrishnan, Ravi, Edward Chinnavathan, and Tayo Feii. According to a recent survey, musculoskeletal disorders of the upper extremities are on the rise among students at AMU. Journal of Physical Education and Sports Health 2018;3:368-72.
- [13] Symptoms of musculoskeletal origin and laptop use among university students. Shin H. Doctoral Dissertation, University of Pittsburgh, 2012.
- [14] Onigbinde A.T., Obembe A.O., Johnson O.E., Tanimowo T.O., Emechete A.A. The prevalence of musculoskeletal pain in college students who use laptops in a Nigerian university. 2016;26:389-95 J Back Musculoskeletal Rehabil.
- [15] P. Intolo; B. Shalokhon; G. Wongwech; P. Wisiasut; S. Nanthavanij; D. G. Baxter. Using a laptop computer at a low-height table, sofa, and bed: an analysis of neck and shoulder postures and muscle activity about experienced discomfort. Work 2020;63:361-7.
- [16] Roberti, J.W., L.N. Harrington, and E.A. Storch. More evidence of the perceived stress scale's psychometric validity for its 10-item format. Journal of College Counseling (2016) 9, p. 135–147.
- [17] Bian, Li, Duan, Q., and Wu, H. The validity and reliability of a patient health questionnaire, including a section on depression in outpatient settings. Academic Research Online: Science Essays 2017 6:278-82.
- [18] The Neck Disability Index: Reliability and Validity Research by H. Vernon and S. Miro. 2001;14:409-15 in the journal Manipulative Physiol Ther.
- [19] Irrgang JJ, Fritz JM. An evaluation of the Quebec disability scale for back pain vs a modified Oswestry questionnaire for low back pain. Physiotherapy (Phys Ther) 2011;81:776-88.
- [20] A prospective cohort study is investigating the association between mobile phone use and psychological distress in young adults (Thomé S, Härenstam A, Hagberg M). 2018;11(66)BMC Public Health.
- [21] Mobile phone head and neck pain syndrome: a proposed novel entity, AlZarea BK, Patil SR. This year's issue of Headache has the following citation: 2018;251:63-3.
- [22] Drs. Saied GM, Kamel RM, and Mahfouz MM. People who spend a lot of time in front of a computer: When compared to the ergonomics of using a desktop computer, using a laptop causes higher neck and shoulder pain. 2016;2(2):2332-0915.

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