



## **Prevalence of Neck Pain among University of Sharjah Students during COVID-19 Distanced Learning**

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**Abstract**

*Background:* The switch into the online learning process affected the quality of students' lifestyle due to the COVID 19 pandemic and caused the development of musculoskeletal discomforts along with their impairments in the students' quality of life. Before the new learning process with the prolonged sitting in front of electronic devices, neck pain was not deemed as a serious medical issue, though now it is (Cagnie et al., 2007).

*Aim:* Specifically, the aim is to estimate and compare the prevalence of neck pain among UOS students at the time of the COVID-19 online learning period, and to investigate the factors that caused it.

*Methods:* It is an observational quantitative cross sectional study. Between the period of February 16th and March 12th, 2021, an online questionnaire was distributed among the UOS students to different social media platform users. Demographics and neck pain analysis data and the management of pains were collected. The SPSS 22 software was used for univariate and bivariate analysis.

*Results:* The incidence rate, during COVID-19, was about 64.41% and the prevalence of neck pain was 62.7% among 325 UOS students. The mean NDI score was 19.19. The most common pain locus was A: Back of neck (38.77%). Resultantly, prolonged sitting (81.23%) when neck is leaned forward is reported to be the most common cause of neck pain by participants (Al-Hadidi et al., 2019). Hoy et al. (2010) found that the most important factors on the NDI were lifting, personal care, headaches, concentration, sleeping, recreational activities, reading, anxiousness and depression and working. Also, subjects without seeking medical attention had significant NDI scores.

*Conclusion:* This research analyzes how prevalence of neck pain among UOS students, which is used to indicate the prevalence of neck pain because of changes of postures and running time of elearning, fills gaps of limitations in previously published articles. Future studies regarding neck pain and further preventative measures should be catalysed in the UAE (Dieleman et al., 2016).

*Keywords:* Neck pain, COVID-19, Distanced learning, NDI

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## Introduction

Neck pain is very common, and one of the greatest ‘greenhorning’ problems people are faced with. In 2017, its prevalence was 3551.1 per 100,000 population and DALY (disability adjusted life years) of 352.0 per 100,000 population (GBD 2017 Disease and injury incidence and prevalence collaborators, 2018). Chronic neck pain is also a burden to societies all around the world (Vos et al., 2017), which increases sickness absence and reduces productivity (Beaudet et al., 2013). In addition, it may have an impact on the course and treatment of co-existing conditions including migraines (Ashina et al., 2015) as well as altering muscle morphology (Sterling et al., 2010).

For example, in 2013, 500 randomly selected medical students in Jazan University, Saudi Arabia were studied, the prevalence of neck pain 53.5% (Alshagga et al., 2013). Other studies also support that the use of smartphones and laptops aggravate neck pain which is the problem of university students (Xie et al., 2017).

Musculoskeletal problems (MSP) are among the most frequently noted occupational health problems of students in the UAE. According to the study conducted in Ajman University and Ras Al Khaimah College of Dental Sciences in February 2020 of 368 dental students, prevalence of MSP in the previous week was 48.5% and in previous year 68.3% (Al-Mohrej et al., 2016). The majority of past research involving a study of 733 graduated dentists based in Abu Dhabi, Dubai, and Sharjah had found that MSD (68%), and percutaneous injury (42%), were the most common occupational health hazards (Al Mohrej et al., 2016).

In 2017, 80 radiologists of nationalities other than Iran began working in radiology departments, and the prevalence of neck pain in them increased by a skyrocketing rate. The most developed stress injury symptom was neck pain above back pain, knee pain, and vision problems (Szeto and Sham 2006).

Since March 11, 2020 (WHO, 2020), the world comes across multiple challenges and changes due to the occurrence of COVID-19. Infected, hospitalized and put into lockdowns (Spinelli & Pellino, 2020), millions of people were infected by the virus. The lifestyle, habits and daily activities were all burned around that dramatic change. Yet, it was believed to have adverse effects on health in the short term (Wang et al., 2020). Of the affected sectors, education was one of them, as schools and universities switched to online distance learning, causing the physical activity to decrease and study for prolonged periods in front of electronic devices. Consequently, increased musculoskeletal discomforts such as neck pain (Straker et al., 2008) were encountered.

Based on Sharan et al (2014) the use of electronic devices such as laptops and smartphones is significantly associated with increase incidence and burden of neck pain. Continuous checking of hard copies for long periods of time in inappropriate postures, not only leads to neck pain, physical makeup and work disabilities (Gerr et al., 2002), but also causes a decreased computer user's performance. Indirectly constant use of

electronic devices can generate neck pain and neck discomfort (Xie et al., 2017). Cheung et al. (2013) study in Hong Kong, reported that use of electronic devices is correlated with musculoskeletal problems in the neck and shoulder region.

No study has yet investigated the factors that lead to neck pain in the UAE population - University of Sharjah (UoS) students in particular - regarding electronic device use and posture. The aim of the work is then to identify the prevalence of neck pain among UoS students who are learning on line. The other objectives in this order are to determine the factors of neck pain intensity and the psychosocial impact of it.

This is to assess the impact of distance learning and inactivity on neck pain to see what should be done to make more breaks or neck exercises during class time, that one should be automatically reminded to change postures on Blackboard or another online platform, and common practices used to solve neck pain in order to establish a treatment plan for neck pain sufferers. We hope that with this research, it will encourage more work into seeing the relationship between the amount of time spent online learning and neck pain in young adults and also identify related possible aggravating and alleviating pain factors.

## **Material and Methods**

This study has an observational cross sectional design as data was obtained using questionnaire at a single point of time, without follow up. UoS students of age 18-24 is the target population, as the questionnaire will be made available on social media platforms where the accessible population is students who are on the social media platforms. A non probability volunteer sampling was used for the sampling method. Because at that time. It was difficult to do the study while it had the access of the large amount of UoS students and young adults to conduct the study. Moreover, the online questionnaire was broadcasted on facebook, -twitter, to allow the society to participate or not.

Our sample size (n) is based on the 5% margin of error (ME) and 50% prevalence (P) is 400.

$$n=4P(1-P)/SE^2$$

### **Inclusion Criteria**

The study includes all UoS students who are between 17 and 24 years of age and can take part in the survey while studying in Sharjah campus.

### **Exclusion Criteria**

Based on their answer in the questionnaire, had neck pain before the start of online learning, which was March 7th 2020.

The study disqualifies students who are aware of any neck related events to neck pain other than online learning, people of determination and those suffering with recent trauma or surgery as these may not bring on the neck pain. The reason for this is that, for every thorough search no articles about this subject were found in the UAE which makes the expected prevalence of 50%. In addition, the sample size can attain the minimum value if we employ 50% (maximum value) as the expected prevalence. However to ensure that the questionnaire will be available to the maximum number of the population, the research team will be sure to cover the minimum amount of sample to increase accuracy.

### **Data collection**

Neck Disability Index question data, previously recorded as reliable pain measurement (MacDermid et al., 2009; Vernon & Mior, 1991), was used for the purposes of this research for the questioning of neck pain. Other questions were included to study additional factors that were related to neck pain. The questionnaire was distributed on various social media platforms like WhatsApp, Facebook and Instagram among several other social media platforms, among other things. To develop the questionnaire, it was studied and read several published articles on the research topic and applied the same data collection method. In addition, we attempted to put critical questions pertaining to the research goals in the questionnaire.

There are 27 questions in total split into five sections: demographics, pain history, effect on daily activities and mental health, e learning environment and management. The survey is easy to fill with most of the questions closed ended. On the other hand, the questions in three of the questions were open ended because the participants could answer as they liked in all possible answers.

Prior to data collecting there is a pilot study of 10-15 subjects in the academic year 2020/2021. Once approved, the questionnaire was spread around and distributed from each researcher's respective social media outlets during the spring semester of 2020–2021.

### **Data analysis**

The data was coded, entered and analyzed using SPSS 24 (Statistical Package for Social Sciences). The univariate analyses included summarization measures of data (i.e., frequency and relative frequency), central tendency measures (i.e., mean, median and mode), variability measures (i.e., standard deviation) depending on the type of the data used. We analyzed a bivariate data for relationship among variables. The inferential statistics test, that is Chi square, t test and Pearson product moment correlation as per the type of variables. The significance level was taken as 5%.

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## Ethical consideration

This study received ethical approval from the University of Sharjah Research Ethics Committee. This study was voluntary in that participation in this study was only after the participant had provided informed consent on the first page of the online survey. Per the informed consent, participants were informed details about the study, ensured that they were informed their participation was voluntary, anonymous and no individual information would be collected. It also indicated there are no direct risks and benefits in completing the survey. Data collected were to be kept confidential and used only for research purposes, which is something participant were told.

## Results

Results revealed that 98.15% of the participants were students living at the University of Sharjah (UoS) as well as outside at different countries and more than 96.31% (325 participant) were in the age range targeted by our study (18 to 24 years). In general, 62.7% of UoS students suffer neck pain.

With respect to the participants' answers, the most common causes of neck pain were sitting in the wrong position and prolonged sitting.

Almost half of the participants with neck pain thought that the pain was the worst imaginable pain they ever experienced (47.43%), 38.77% considered location A (back of the neck) and 32.92% location F (right lower trapezius), representing the region in which they did feel the pain in. The results of Neck Disability Index (NDI) show that over half of the participants could not lift weight only between 59.83 percent, required help in personal care 85.71 percent and having headaches all the time 47.52 percent. They were slightly anxious (47.51%) because of their neck pain, but not depressed (50.84%), 54.92% of subjects are not able to work, 51.00% cannot concentrate on their daily tasks and 58.09% cannot drive, thus their driving did not change. Sleep problem (54.92%), no ability to do recreational activity (55.77%) and no ability to read are disturbed (51.00%) among the participants. All these results point to the gravity of the subjects' neck pain and its effect on daily activities and work tasks. About 39.56% of the participants mentioned on the time spent on e learning, where most (39.56%) spend their time on between 11 and 20 hours per week online learning, and they mostly used laptop. Position 2, chosen by the most people, represents leaning forward onto the device and position 4, people leaning forward and not supporting the back with the chair, were equally the most prevalent. Of these, only 32.77% tried to manage the pain by either taking medications or exercises (7.38% or 6.77, respectively). One of the indicators of the aforementioned in accepting cervical pain as irrelevant is that 91.48% of study participants failed to proceed to the medical clinic to address their neck pain and 26.14% of participants who did were advised to use medication in managing it.

In the case of the Neck Disability Index (NDI), ascending order from that of highest to lowest influence by lifestyle factors on the NDI according to the Kruskal Wallis test was found to be lifting ( $p>0.005$ ), personal care ( $p>0.005$ ), headaches ( $p>0.005$ ), anxiousness and depression ( $p>0.005$ ), work ( $p>0.005$ ), concentration ( $p>0.005$ ), sleeping ( $p>0.005$ ) scenic activity ( $p>0.005$ ), and reading ( $p>0.005$ ). The NDI score of the subjects ( $p=0.186$ ) while driving did not differ significantly from the other values, since most of them (58.09%) were non drivers. In addition, subjects without medical attention or medical treatment had significant scores in the NDI ( $p=0.002$ ).

## Discussion

The research findings are consistent with the hypothesis in that more than 60% of University of Sharjah students reported neck pain symptoms. It confirms the fact that in prolonging sitting (11–20 hours per week in front of electronic devices) is a main cause of neck pain during the edge to on the web learning (Xie et al., 2017; Straker et al., 2008). This is based on existing evidence which has shown an association between increased musculoskeletal pain severity and screen time (Gerr et al., 2002), and with head posture (Sharan et al., 2014). That being said, this specific study is devoted to neck pain and investigates other variables like psychosocial factors and the effect on daily task in the Covid-19 quarantine period.

This research fills in gaps left by previous studies which have mostly investigated broad musculoskeletal or back pain; seeing this research, the difference in the role of ergonomic variables like posture, study period and psychosocial influences (Hoy et al., 2010). In addition, the findings reveal that interventions including scheduled breaks and neck exercises during the duration of online classes, automated posture reminders in digital learning platforms, and current management of neck pain should be developed.

Recall bias may affect the study's reliability despite these insights. However, this research highlights the fact that in identifying that UoS students have neck pain that prevalence also shows that study and posture also has an effect on the severity of neck pain. In addition, it sets the precedent for further research in the UAE and globally to explore future preventive means and ergonomic techniques aimed at reducing neck pain in academic settings.

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