

A Study to Assess the Impact of Stress on Neck Pain in an online session during Covid-19 Pandemic and Lockdown among college students in Sharda University

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ABSTRACT

Background: Neck pain (NP), one of the most reported musculoskeletal disorders, is a major cause of illness and absence from university lessons among students. The COVID-19 pandemic affected higher education from university lessons among students. The COVID-19 pandemic affected higher education institutions worldwide. Academic studies shifted to online-learning, changing students' habits and lifestyle. Data demonstrated that the pandemic and consequent lockdowns can affect people's physical and mental well-being. Thus, the aim of this study is to evaluate the impact of COVID-19 pandemic and lockdown on the level of neck pain and shoulder pain among college students compared to the pre-epidemic period.

Methods: A descriptive study was conducted in the form of an online questionnaire survey that included sociodemographic data, Neck Disability Index (NDI) and Perceived Stress Scale (PSS)

Results: A total of 100 students were recruited. Among them the mean, standard deviation, median and the mean percentage of the stress level regarding neck pain among college students. The findings reveals that the majority of the college students, 49 (49%) had low stress level, 31 (31%) had moderate stress level and 20 (20%) had high stress regarding neck pain. The mean score for the stress level was 12.56 with a mean % of 44.12 whereas a median and standard deviation was 12 and 9.75 respectively. It can be concluded that higher the mean scores mean higher the stress level among the students. It indicates that any changes in stress level will affect the neck pain automatically among college students. Therefore, their online sessions will also get influenced due to neck pain in a given study. It is evidenced that these factors were influenced by stress level regarding their neck pain among college students during their online sessions. It is evidenced that any changes in stress level will also influenced more in the pain Intensity, lifting, concentration, work, sleeping and recreation activities as compared to other factors among college students during their online sessions in a given study.

Conclusion: The purpose of the study was to investigate impact of covid-19 pandemic and lockdown on the level of neck pain and shoulder pain among college students. The statistical results have shown that about 49% had low stress levels, about 31% had moderate stress levels and 20% had high stress regarding neck and shoulder pain among the students. It can be concluded that the higher the mean scores value higher the stress level among the students. It is evidenced in other research that these factors were influenced by stress level regarding their neck pain among college students during their online sessions.

KEYWORDS: Neck pain, NDI, PSS, NPRS, college students, Covid-19, Pandemic & Lockdown.

INTRODUCTION

The coronavirus disease was first identified in the city of Wuhan, Hubei State in China on 31st of December 2019, and has affected more than 213 countries around the world. Chinese Centre for Disease Control and Prevention identified the agent on January 7th 2020, and named it Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2). The World Health Organization named the disease COVID-19 and declared the outbreak as global emergency on 30th January due to the virulence and highly interactivity.

During the lockdown, regular outdoor activities were limited, affecting the daily routine of the individuals. Staying at home restricted the athletes to perform physical activity leading to development of sedentary habits. Home based fitness activities remained the only solution for being active and helped to maintain exercise routine and fitness during the pandemic. A recent study reported that during lockdown period there was markedly reduced physical activity and energy expenditure level. Due to COVID-19, both healthy individuals and patients all around the world have suddenly become inactive which lead to development of several kinds of disease.

Neck Pain & Shoulder Pain is one of the most reported musculoskeletal disorders and is a major cause of illness, reduced educational attainment and absence from university lessons, thus affecting students' future career. A significant positive correlation has been demonstrated between the duration of mobile phone use and the duration and severity of NP. Indeed, musculoskeletal pain in students manifested most often in the neck.

The Data show that, the prevalence of neck pain in the general population ranges from 0.4 to 86.8% in the world. In addition, the Global Burden of Disease Study showed that neck pain is one of the main causes of years lived with disability among adolescents aged 19 to 24. Compared to the other health problems such as asthma, alcohol and drug abuse it has a higher prevalence. Also some studies indicate that shoulder and neck pain is more common among children and teenagers of developing countries. Lifestyle, physical factors, psychological factors, and social factors and improper sitting have been identified as the risk factors associated with neck and shoulder pain among students in different studies.

Risk factors associated with non-specific neck pain in children, adolescents and adults has been systematically reviewed. However, it has not been investigated for young adults. The factors for neck pain in adults were identified as female gender, old age, current or previous history of lower back pain or neck pain, ex-smokers and psychological factors. This systematic review is being done in order to investigate the risk factors associated with non-specific neck pain in young adults. Up to 67% of world's population may present chronic non-specific neck pain & shoulder pain at least once in their lives. There is a relationship between functional limitation and disability in individuals with chronic pain, and they use health services and medication for pain relief very often. It is considered a public health and it is a frequent cause of job absenteeism which provokes high socioeconomic costs.

Neck pains with no underlying issues or diseases related are termed as non-specific neck pain. It usually goes away on its own within a few days or weeks, but the pain lasts longer in some people or its keeps on coming back. Neck & shoulder pain is considered to be chronic if it lasts longer than three months. Non-specific neck pain is sometimes called simple or mechanical neck pain. The cause and origin of neck pain is not known exactly. They include minor strain and sprain to muscles or ligament in neck pain. Bad posture may also be a contributing factor in some cases. Pain develops in your neck and may spread to the shoulder or base of your skull.

In this cross-sectional study, we designed an online survey with the aim of evaluating the prevalence of NP & SP among college students during the lockdown compared to what they recalled of that during the pre-pandemic period. We also aimed to assess the impact of psychological stress, sociodemographic factors, and lifestyle (such as physical activity and seated hours a day) on NP & SP. Based on previous studies, we hypothesized that, during the COVID-19 pandemic, students' NP & SP symptoms were exacerbated and correlated to psychological stress and various lifestyle factors.

Need of The Study

There is much discussion in the literature as the prevalence of neck pain and shoulder pain in covid-19 among college students during the lockdown compared to what they recalled of that during the pre-pandemic period. Many studies have found use of computer for long working hours in faulty posture may lead to neck and shoulder pain in college student. During COVID-19 pandemic need of online classes has increased all over the world for all the age groups of children and college student.

In Indian education culture online classes is new and it is necessary to find out prevalence and reasons for neck and shoulder pain in college students who are taking online classes to maintain their study and health.

Main Objective of the Study

The main objective is to assess the impact of stress on neck pain in an online session during COVID-19 pandemic.

Review of Literature

Amira Daher, Ofra Halperin et al 2021 conducted a research survey on The impact of COVID-19 Pandemic and lockdown on prevalence of and risk factors for neck pain among college students. The study was conducted in the form of online Questionnaire survey that included sociodemographic data, Visual Analogue Scale (VAS), Neck disability Index (NDI), and Perceived Stress Scale (PSS).

They concluded that the transition from on-campus studies to online learning had negative effects on students. It had exponentially increased stress associated with study and increased the development of NP. Identifying risk factors at an early stage may prevent NP from becoming chronic and affecting students' future careers, thereby improving students' quality of life.

Manali Shah1, Ruchi Desai et al February 2021 conducted a research survey on Prevalence of Neck Pain and Back pain in Computer Users working from Home During COVID-19 pandemic. This survey was conducted in 129 participants to find out prevalence and measure functional disability of neck pain and back pain in computer users working from home. In this study those who had pain were asked to fill NDI Questionnaire and found that 41.9%, 24.8% and 3.1% participants had mild, moderate and severe functional limitation due to neck pain and 67.4%, 31.8% and 0.8% participants had mild, moderate and severe functional limitation due to low back pain.

Changwon Son, Sudeep Hegde, Alec Smith, Xiaomei Wang, Farzan Sasangohar et al September 2020 conducted an interview survey on Effect of COVID-19 on college students mental Health in higher education. This survey was conducted with 195 students at large public university.

They concluded that of the 195 students, 138 (71%) indicated increased stress and anxiety due to COVID-19 outbreak. Multiple stressors were identified that contributed to the increased level of stress, anxiety, and depressive thoughts among students, these included fear and worry about their own health and of their loved ones (177/195, 91% reported negative impacts of the pandemic), difficulty in concentrating (173/195, 89%), disruptions to sleeping patterns (168/195, 86%), and increased concerns on academic performances (159/195, 82%). To cope with stress and anxiety, participants have sought support from others and helped themselves by adopting either negative or positive coping mechanism [3].

Elham Gheysvandi, Iman Dianat, Rashid Heidarimoghadam, Leili Tapak, Akram Krimi shahanjarini & Forouzan Rezapur-Shahkolai et al 2021 conducted a cross sectional survey on Neck pain And Shoulder pain among elementary school students. This study was carried out to assess the prevalence of neck and shoulder pain among elementary school students and to investigate the relationship between the pain and its risk factors. This survey was conducted with 693 elementary school students and data were collected through Interviews and Questionnaire.

They concluded that elementary school students reported a high prevalence of shoulder and neck pain. This study found that improper sitting positions, as well as physical factors were associated with pain.

Research Methodology

Study design

A descriptive study was conducted in the form of an online Questionnaire survey posted at the college during the COVID-19 lockdown. College students were invited to participate in the study. An online survey was circulated to students through Google form link. Informed consent was obtained for experimentation. Participants recorded their responses online and data were collected.

Participants

College students were invited to participate in the study. The study had no exclusion criteria. We used the google platform to administer the survey Questionnaire in the form of an online survey circulated to students recruited through google form links.

Control variable

Sociodemographic data & clinical Questionnaire: The questionnaire includes demographic data such as name, age, Gender, weight, height. Participants were also asked about pain intensity by NDI questionnaire. Participants were also asked about to rate their stress related issue to their studies on a scale ranging from 1 (none) to 4 (a lot).

Assessment tools

- 1.) Neck Disability Index (NDI)
- 2.) Perceived Stress Scale (PSS)

Duration of study: - 6-month study

Study setting: - The study was conducted in Sharda university, Greater Noida.

Sampling Criteria: - Random Sampling.

Subjects: - College Students with Neck Pain and Shoulder Pain.

Inclusion Criteria: - Both sexes were selected, Age group between 19-25 years old, Subjects with neck and shoulder pain during online classes and subjects willing to participate in study.

Exclusion Criteria: - Depression, Feeling, Thoughts, Mental illness, Postural abnormalities.

Procedure

100 volunteers with an average age of 19- 25 years were taken to participate in this survey. The volunteers were patients of Neck Pain between the age of 19 to 25 years of age of our college. All patients were first filled the informed consent form prior to their enrolment in the study. All students were screened for eligibility using exact inclusion and exclusion criteria. The students underwent a standardized pain and Disability assessment (Format affixed in appendix). Demographic information was collected including Name, Age, Gender, Weight & Height.

Disability Measurement

❖ **Neck Disability Index (NDI) Questionnaire**

Neck Disability Index is a self-report questionnaire used to determine how neck pain affects a daily life and to assess the self-rated disability of patients with neck pain.

The participants in this study answered the NDI questionnaire which consisted of ten questions. These questions were answerable on a Likert scale ranging from 0 = “painless” to 5 = “worst pain imaginable”. The maximum score as per this scale turns to be as high as 50. This high score indicates high disability rating (NDI), with Cronbach alpha α value 0.87. The cut-off value of the NDI for detecting NP associated with disability was determined to be 15, such that 0–14 indicated no disability, while a score of 15 and up pointed to disability.

❖ **Perceived Stress Scale (PSS) Questionnaire**

The Perceived Stress Scale (PSS) is the most widely used for psychological instrument for measuring the perception of stress. It is a measure of the degree to which situation in one’s life are appraised as stressful.

Participants answered questions about their feelings and thoughts over the past month on a 4-point scale (1 = never; 4 = often), with a high score reflecting a high level of stress. The questionnaire score is calculated by averaging the items. 9. The questionnaire includes eight positively worded items [4, 5, 6, 7, 8, 9, 10, 13] and six negatively worded items (items 1,2,3,11,12,14). Higher scores indicate higher levels of perceived stress.

Results

To assess the effect of stress level on neck pain during their online sessions.

TABLE 1: STRESS LEVEL

Frequency and percentage distribution of level of stress regarding neck and shoulder pain during covid-19 pandemic and lockdown among college students.

N=100

S.NO	SCORE	LEVEL OF STRESS	NO. OF FREQUENCY (N)	Percentage (%)
1.	0-13	LOW	49	49.0
2.	14-26	MODERATE	31	31.0
3.	27-40	HIGH	20	20.0

Table 1 reveals that majority of the college students, 49 (49%) had low stress level, 31 (31%) had moderate stress level and 20 (20%) had high stress regarding neck and shoulder pain.

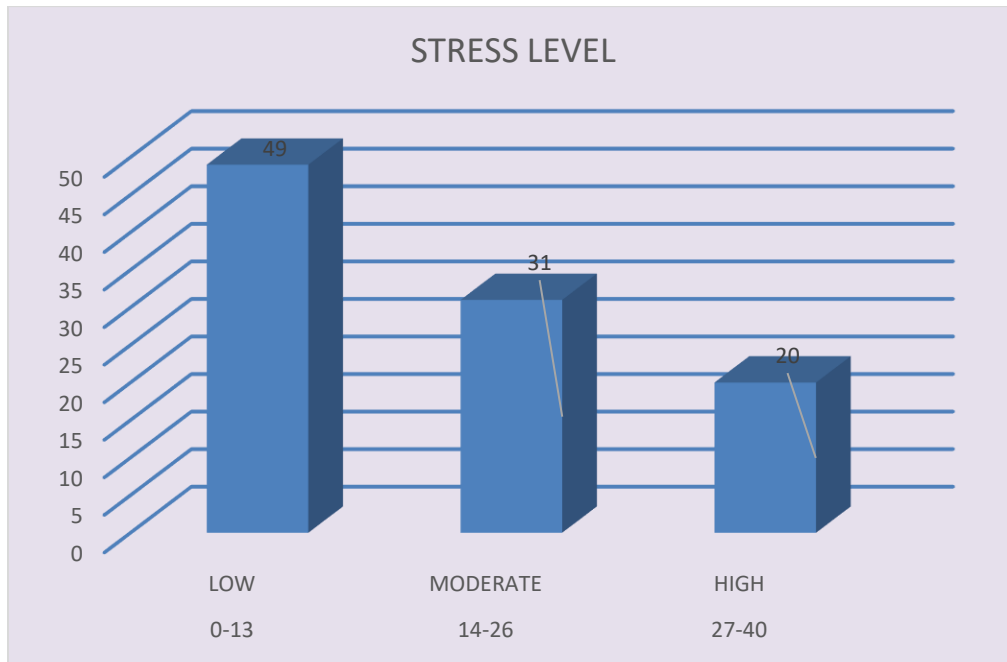
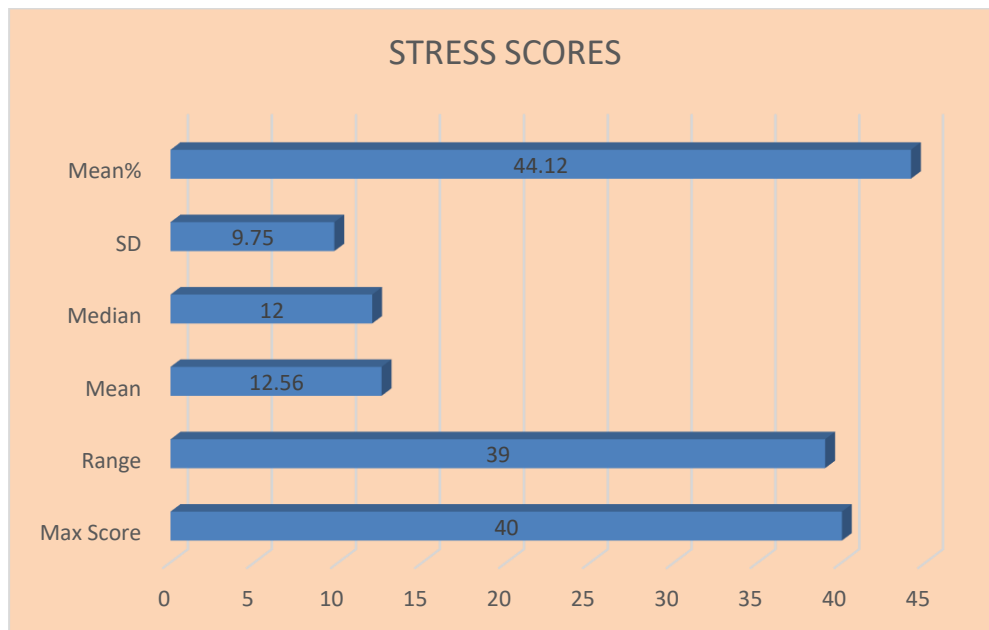


Table 2. Mean, Median, SD and Mean % of stress level regarding neck and shoulder pain among college students.

Domain	Max Score	Range	Mean	Median	SD	Mean%
Stress Score level	40	39	12.56	12	9.75	44.12

In the present study, the mean, standard deviation, median and the mean percentage was calculated on the stress level scores regarding neck and shoulder pain among college students. The mean score for the stress level was 12.56 with a mean % of 44.12 whereas a median and standard deviation was 12 and 9.75 respectively.



DISCUSSION

The purpose of the study was to investigate impact of covid-19 pandemic and lockdown on the level of neck pain among college students as many researchers have found use of computer for long working hours in faulty posture may lead to neck pain in college student. During COVID-19 pandemic, the need of online classes has increased all over the world for all the

age groups of children and college student. In the present study we tried to find out prevalence and reasons for neck pain in college students who are taking online classes to maintain their study and health (**Shan Z, Deng G, Li J, Li Y, Zhang Y, Zhao Q (2014)**).

In our present study we first investigated the effect of stress level on neck pain during their online sessions. According to our results given in **Table 1** it can be concluded that 49% had low stress level, about 31% had moderate stress level and about 20% had high stress regarding neck and shoulder pain among college students. This result has been shown in many researches (**Changwon Son, Sudeep Hegde, Alec Smith, Xiaomei Wang, Farzan Sasangohar, 2020**). Furthermore, it has been investigated in **Table 2** that the mean, standard deviation, median and the mean percentage of the stress level regarding neck and shoulder pain among college students. The mean score for the stress level was 12.56 with a mean % of 44.12 whereas a median and standard deviation was 12 and 9.75 respectively. It can be concluded that higher the mean scores means higher the stress level among the students.

According to one systematic review conducted by **Amira Daher, Ofra Halperin et al (2021)** reported that transition from on-campus studies to online learning had negative effects on students. Notably this increased study-related stress and growth of NP. It also stated the risk factors which can be combatted at an early stage in order to prevent NP. If combatted successfully it would avert the NP from becoming chronic, thereby improving the quality of life for the students and eventually betterment of their future careers. **Manali Shah1, Ruchi Desai et al (2021)**, has also supported our study which concluded that the In this study those who had pain were asked to fill NDI Questionnaire and found that 41.9%, 24.8% and 3.1% participants had mild, moderate and severe functional limitation due to neck pain and 67.4%, 31.8% and 0.8% participants had mild, moderate and severe functional limitation due to low back pain.

Qais B.Yaseen & Heba Salah et al (2020) is also support our study and found that using desktop/laptop or tablets among students was associated with increased neck and pain and the pain gets more severe as the duration increases. Furthermore, the daily activities of the people such as sleeping, bending over and walking long distances, could be affected by the pain. During working on desktops/laptops the students tend to sit on chairs with supine slopping forward. This pain can be severe in some students and it affects their ability to perform some of their normal life activities. The results indicated that there is significant positive relationship between server neck pain and demographic variables namely age, gender and weight.

Kim, M. S. et al. (2020) is also support our study and concluded that individuals with mild neck pain adopt a posture of greater neck flexion than individuals without mild neck pain when using a smartphone. Our findings suggest that young adults with mild neck pain must be aware of their posture and modify their non-neutral cervical alignment when using a smartphone. Clinicians may instruct smartphone users to maintain a neck posture which is correct in order to reduce the risk of developing severe neck pain. **Zhi Shan, Guoying Deng, Jipeng Li, Yangyang Li, Yongxing Zhang, Qinghua Zhao et al (2020)** concluded that there is a high prevalence of Neck and shoulder pain that were closely related to multiple factors. Appropriate interventions should be implemented to reduce the occurrences of neck and shoulder pain.

CONCLUSION

The purpose of the study was to investigate impact of covid-19 pandemic and lockdown on the level of neck pain and shoulder pain among college students. The statistical results have shown that about 49% had low stress levels, about 31% had moderate stress levels and 20% had high stress regarding neck pain among the students. It can be concluded that the higher the mean scores value higher the stress level among the students. It is evidenced in other research that these factors were influenced by stress level regarding their neck pain among college students during their online sessions.

On other hand, high neck pain among students were found under the age group of below 20 and above 22, more females were faced more neck pain as compared to males and college students were having large weight under the group of below 45 and above 55. It has been found in other researches that there is a significant relationship between the stress level and shoulder pain and its associated factors.

It has been found that there is strong need to create awareness about taking immediate precautions for maintaining stable health conditions during Covid-19 among college students. The college students should also take care of their health conditions while at home doing online studies and physical activities regularly. The educational institutions, NGOs and government health department officials can also take a lead role in coordinating awareness programmes for maintaining stable health conditions for students while at home during Covid-19 lockdown. The suggestions for further research and limitations have been detailed in the study.

REFERENCES

- [1] H. Lu, C.W. Stratton, Y.W. Tang, Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle, *J. Med. Virol.* 92 (4) (2020) 401–402.
- [2] J. Lai, S. Ma, Y. Wang, Z. Cai, J. Hu, N. Wei, et al., Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019, *JAMA Netw. open* 3 (3) (2020), e203976.
- [3] C. Sohrabi, Z. Alsafi, N. O’Neill, M. Khan, A. Kerwan, A. Al-Jabir, et al., World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19), *Int. J. Surg.* 76 (February) (2020) 71–76.
- [4] P. Pulla, Covid-19: India imposes lockdown for 21 days and cases rise, *BMJ* 368 (2020).
- [5] S. Ravalli, G. Musumeci, Coronavirus outbreak in Italy: physiological benefits of home-based exercise during pandemic, *J. Funct. Morphol. Kinesiol.* [Internet] 5 (2) (2020 May 7) 31.
- [6] A.K. Srivastav, N. Sharma, A.J. Samuel, Impact of Coronavirus disease-19 (COVID19) lockdown on physical activity and energy expenditure among physiotherapy professionals and students using web-based open E-survey sent through WhatsApp, Facebook and Instagram messengers, *Clin. Epidemiol. Glob. Health* 9 (2021) 78–84.
- [7] P. Chen, L. Mao, G.P. Nassis, P. Harmer, B.E. Ainsworth, F. Li, Coronavirus disease (COVID-19): the need to maintain regular physical activity while taking precautions, *J. Sport Health Sci.* [Internet] 9 (2) (2020 Mar) 103–104, 2020/02/04.
- [8] J. de Seze, C. Lebrun-Frenay, Covid-19, the pandemic war: implication for neurologists, *Rev. Neurol. (Paris)* [Internet] 176 (4) (2020 May) 223–224
- [9] T.P. Velavan, C.G. Meyer, The COVID-19 epidemic, in: *Tropical Medicine & International Health*, 25, TM & IH, 2020, pp. 278–280
- [10] Al-Hadidi F, Bsisu I, AlRyalat SA, et al. Association between mobile phone use and neck pain in university students: A cross-sectional study using numeric rating scale for evaluation of neck pain. *PLoS ONE* 2019;14: e0217231.
- [11] Alshagga MA, Nimer AR, Yan LP, et al. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. *BMC Res Notes* 2013;6:244.
- [12] Hoy D, Protani M, De R, Buchbinder R. The epidemiology of neck pain. *Best Pract Res Clin Rheumatol.* 2010;24(6):783–92.
- [13] Institute for Health Metrics and Evaluation. GBD compare. 2015. [http:// vizhub.healthdata.org/gbd-compare/](http://vizhub.healthdata.org/gbd-compare/). Accessed 12 Oct 2019
- [14] Fares J, Fares MY, Fares Y. Musculoskeletal neck pain in children and adolescents: risk factors and complications. *Surg Neurol Int.* 2017;8:72.
- [15] Shan Z, Deng G, Li J, Li Y, Zhang Y, Zhao Q. How schooling and lifestyle factors effect neck and shoulder pain? A cross-sectional survey of adolescents in China. *Spine.* 2014;39(4):E276–E83
- [16] Shan Z, Deng G, Li J, Li Y, Zhang Y, Zhao Q. Correlational analysis of neck/ shoulder pain and low back pain with the use of digital products, physical activity and psychological status among adolescents in Shanghai. *PLoS One.* 2013;8(10):e78109.
- [17] Fallon N., Brown C., Twiddy H., Brian E., Frank B., Nurmikko T., Stancak A. Adverse effects of COVID-19-related lockdown on pain, physical activity and psychological well-being in people with chronic pain. *Br. J. Pain.* 2020;15:357–368. doi: 10.1177/2049463720973703
- [18] Shah M, Desai R. Prevalence of neck pain and back pain in computer users working from home during COVID-19 pandemic: a web-based survey. *Int J Health Sci Res.* 2021; 11(2): 26-31.
- [19] Amira Daher^{2,*} and Ofra Halperin² The Impact of the COVID-19 Pandemic and Lockdown on Prevalence of and Risk Factors for Neck Pain Among College Students: a Cross-sectional Study | Meta PMID: PMC8617778
- [20] Changwon Son, Sudeep Hegde, Alec Smith, Xiaomei Wang, Farzan Sasangohar Effects of COVID-19 on College Students’ Mental Health in the United States: Interview Survey Study doi: 10.2196/21279, PMID: PMC7473764.
- [21] Elham Gheysvandi, Iman Dianat, Rashid Heidarimoghadam, Leili Tapak, Akram Karimi-Shahanjarini & Forouzan Rezapur-Shahkolai. Neck and shoulder pain among elementary school students: prevalence and its risk factors.1299 (2019)
- [22] Qais B.Yaseen 1 & Heba Salah et al The impact of e-learning during COVID-19 pandemic on students’ body aches in Palestine
- [23] El-Metwally, A., Salminen, J. J., Auvinen, A., Kautiainen, H. & Mikkelsen, M. Prognosis of non-specific musculoskeletal pain in preadolescents: A prospective 4-year follow-up study till adolescence. *Pain* 110, 550–559
- [24] Leiros-Rodriguez, R. et al. Musculoskeletal pain and non-classroom teaching in times of the COVID-19 pandemic: Analysis of the impact on students from two Spanish universities. *J. Clin. Med.*
- [25] Kim, M. S. Influence of neck pain on cervical movement in the sagittal plane during smartphone use. *J. Phys. Ther. Sci.* 27
- [26] Chinna, K. et al. Psychological impact of COVID-19 and lock down measures: An online cross-sectional multicounty study on Asian university students. *PLoS One* 16,e0253059