



PRESENCE OF MUSCULOSKELETAL PAIN IN HEALTH EDUCATION TEACHERS DUE TO ONLINE TEACHING DURING COVID 19 PANDEMIC

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Abstract

Introduction: Due to COVID-19 pandemic, in late March 2020, all schools and universities stopped face-to-face teaching and started using internet platforms to deliver online learning. This required more usage of laptop computers which can lead to many musculoskeletal disorders due to involving in awkward postures. So, the present study aims to find out the presence of musculoskeletal pain in health education teachers who are involved in online teaching since lockdown. **Materials & Methods:** In the present survey, health education teachers were approached to fill up the Self developed questionnaire online via Google form to collect the information regarding the working pattern of health education teachers and the Nordic Musculoskeletal Questionnaire was used to identify the presence of musculoskeletal pain and its distribution. **Result:** Total 53 teachers were included in the study. Total 83% teachers had felt pain in any body region while 17 % didn't have any pain in past 12 months. The pain felt was most common in Neck (66%), lower back (56.6%), upper back (54.7%), shoulder (28.3 %), knee (9.4%) and elbow, wrist and hip had 1.9% each while involved in online teaching during COVID 19 pandemic. However, the acute pain in past 7 days was felt by all the teachers and the distribution was neck 56.6%, upper and lower back 35.9%, shoulder 30.2%, knee 7.54%, wrist 5.6%, hip 3.7% and elbow 1.88%. **Conclusion:** Present study shows that many health education teachers were involved in online teaching during COVID 19 pandemic which lead to many musculoskeletal related pain in them. Out of which, neck and upper back was the commonest musculoskeletal pain.

Keywords: Musculoskeletal pain, COVID 19, teachers, health education teachers

INTRODUCTION

The outbreak of COVID-19 started spreading in Wuhan China in December 2019 and then was declared as the Public Health Emergency of International Concern by the World Health Organization (WHO) on 30 January 2020. Preschools, schools, and universities have been closed either on a nationwide or local basis in 172 countries, affecting approximately 98.5% of the world's student population (UNESCO, 2020). India is no exception. As an urgent response to the COVID-19 pandemic, in late March 2020, the Ministry of Education of India mandated that all schools and universities stop face-to-face teaching and use internet platforms to deliver online learning. [1]

Teachers might have encountered many difficulties, problems, obstacles in this online mode of teaching.[1] The activities of a teacher not just involved teaching students, but also construction of lessons, evaluating students' work during this online mode.[2] This required more usage of laptop computers which can lead to many musculoskeletal disorders due to involving in awkward postures. Many studies explained that people who work predominately on computer with poor postures including forward head position, protracted shoulder, and scapular winging and tipping where keyboard and mouse were the main culprit for upper limb disorders. Some studies found that the most complained problems are low back pain, neck pain and wrist pain. Foot and knee pain are the least complained pain when operating on computers for more than 6 hours. [3-6]

Since COVID 19 pandemic started, many health care institutes are also working online for teaching. So, the present study aims to find out the presence of musculoskeletal pain in health education teachers who are involved in online teaching since lockdown.

MATERIALS AND METHODS

Research Design: Survey

Study Population: Health education teachers

Source of Data: Teachers working in different Health education institutes

Inclusion criteria:

- Teachers working in health education institutes and involved in online teaching using any gadget for at least 6 months

Exclusion criteria:

- Teachers with any recent injury
- Having musculoskeletal or neurological pain before involving into online teaching
- History of low back pain in last 6 months

Outcome measure:

- Self developed questionnaire to identify working pattern of health education teachers

- The Nordic Musculoskeletal Questionnaire for identifying musculoskeletal pain in health education teachers

Procedure

The study was forwarded to Sumandeep Vidyapeeth Institutional Ethical Committee (SVIEC) for approval. In the present study, Self developed questionnaire was used to collect the information regarding the working pattern of health education teachers and the Nordic Musculoskeletal Questionnaire [9] was used to identify the presence of musculoskeletal pain and its distribution. The questionnaire was distributed to the teachers of different health education institutes via Google form. It was a self administered questionnaire consisting of 3 sections; Section I included the recruitment of the participants according to the inclusion criteria and informed consent form. Section II contained information about their working pattern (A. preparation of lecture & B. delivery of lecture) and section III had Nordic Musculoskeletal questionnaire.

Total 71 teachers of different health education institutes participated in the study. Out of them, 2 subjects didn't give consent to collect the data. Out of 69 subjects, 15 were not involved in online teaching for at least 6 months so they were excluded from the study. 1 teacher took part in the study but didn't provide relevant data so was excluded. So, total 53 teachers were included in the study.

RESULT

Total 53 teachers were included in the study. In the study, presence of musculoskeletal pain in teachers who were involved in online teaching for past 12 months were analyzed using Microsoft excel 2007 and SPSS version 23.

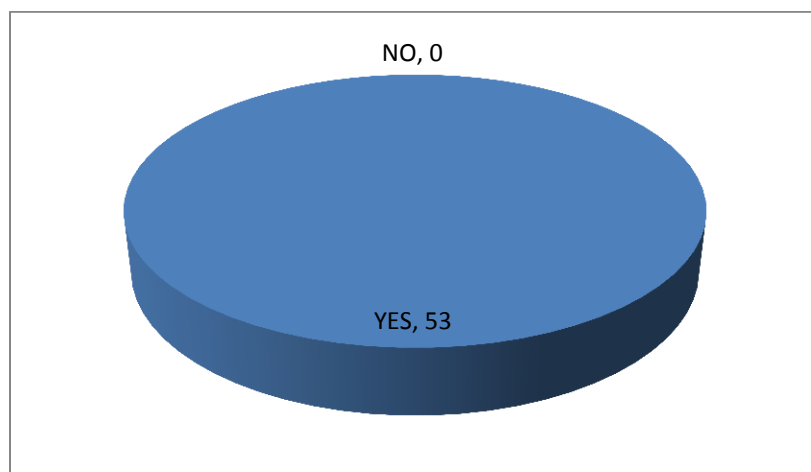


Figure 1: Presence of musculoskeletal pain in past 7 days

Table 1: distribution and frequency of musculoskeletal pain in last 7 days

Area of pain	Number of teachers having pain	%
Neck	30	56.6
Shoulder	16	30.28

Elbow	1	1.88
Wrist	3	5.66
Upper back	19	35.9
Lower back	19	35.9
Hip	2	3.77
Knee	4	7.54
Ankle	0	0

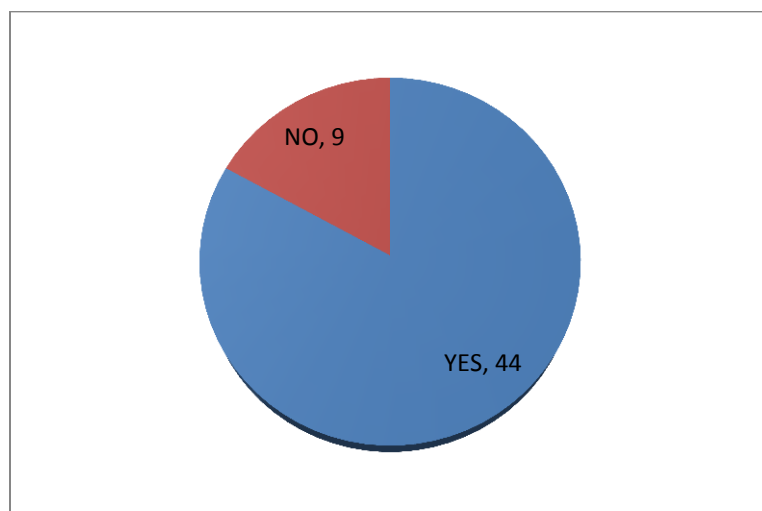


Figure 2: Presence of musculoskeletal pain in last 12 months

Table 2: distribution and frequency of musculoskeletal pain in last 12 months

Area of pain	Number of teachers	%
Neck	35	66
Shoulder	15	28.3
Elbow	3	1.9
Wrist	3	1.9
Upper back	29	54.7
Lower back	30	56.6
Hip	3	1.9
Knee	5	9.4
Ankle	0	0

DISCUSSION

The purpose of the study was to find out the presence and distribution of musculoskeletal pain in teachers who were involved in online teaching during COVID 19 pandemic.

Teacher's job is not an easy one. They have to spend long hours for imparting quality education to the students. The activities of a teacher not just involve teaching students, but also construction of lessons, evaluating students' work and being involved in the other works. It may cause teachers to suffer psychological and bodily health issues [1]

Musculoskeletal disorders (MSD) are one of the common work-related health complications in working people including teachers. It is responsible for a considerable impact on quality of life and affecting a major financial burden in compensation costs and lost salaries. [2]

During pandemic, teachers had to conduct lectures on online mode which required more usage of laptop, desktop computers and mobile phones which led to many musculoskeletal disorders due to involving in awkward postures. [3] The present study showed that most common gadget used by teachers was laptop to prepare the lecture as well as to conduct the session. A study done by Hyekyoung Shin Concluded that Laptop users had more discomfort and musculoskeletal symptoms than the desktop computer operators because of their awkward posture. In addition, laptop is dissimilar than desktop computer in view of the interaction between design characteristics and biomechanical aspects of the human body.

Various work related MSD can occur in teachers who work on laptops for prolong period of time.[1] In the present study, Average time taken for preparation of lecture was 149 minutes and for conducting class was 197 minutes. Teachers employed for more than 66 months were more likely to acquire WMSDs compared with their colleagues who worked for a shorter period. [8]

In the present study, total 83% teachers had felt pain in any body region while 17 % didn't have any pain in past 12 months. The pain felt was most common in Neck (66%), lower back (56.6%), upper back (54.7%), shoulder (28.3 %), knee (9.4%) and elbow, wrist and hip had 1.9% each while involved in online teaching during COVID 19 pandemic. However, the acute pain in past 7 days was felt by all the teachers and the distribution was neck 56.6%, upper and lower back 35.9%, shoulder 30.2%, knee 7.54%, wrist 5.6%, hip 3.7% and elbow 1.88%. A study among computer users in a Nigerian University community found that, the most common areas of complaints are the back, neck, eyes and wrist.[10] In the teachers, high prevalence MSD was observed due to change in daily activities during covid-19 pandemic.[11]

Just like the present study, highest prevalence of musculoskeletal pain in the cervical spine(74.84%),lumbar spine (67.68%), followed by thoracic spine(29.12%) was observed in the research conducted between December 2020 and January 2021 due to working in prolong sitting on computer or laptop users.[12] A study conducted in Dhaka to find out MSD in laptop operators revealed that neck and upper back pain has the highest prevalence of 75% followed by lower back 48%, shoulder 30%, wrist and fingers 20%. The pain in lower limb was very minimal.[5]

Laptop operators generally work in posture such as increase neck flexion more than 20°,shoulder flexion more than 35°,ulnar deviation more than 2°,radial deviation more than 5°,and wrist extension more than 15°.[13] Neck flexion and head tilt increase in laptop worker compared to desktop computer users was the main reason for having neck and upper back pain as stated in a study done by Shin H .[3] The cause behind this posture consider as lower lap top monitor screen and small keypad a forward head position, slouched shoulders, and winged and sloping shoulder blades is considered a reason for having shoulder and girdle pain in laptop users.[3,14] Moreover, those who use desktop computer are prone to develop carpal tunnel syndrome because of increased ulnar deviation greater than 20°, wrist extension/flexion and forearm deviation greater than 45° of pronation.[3]

It is often noticed in many working situations (in schools) that teachers are forced to assume bad working postures due to poor design of work, workplace and tools. The teacher is forced to adjust in their existing work environment while teaching. The poorly designed work environment of the classroom might have a direct impact on the productivity of the teacher resulting in their poor health and quality of teaching.[8] The present study also shows improper workplace environment to be one of the reason to develop MSD. Study shows 57% people uses screen level monitor to work online. The height of the chair is nonadjustable for most of the subjects. Leg support was properly taken by 47% of the subjects. 75% subjects had proper light in the room. A study done by carole james shows leaning forward to look in the low level monitor screen and sitting on the front edge of the chair can causes rise discomfort and pain in upper back region. Factors related to the design of the office like no footrest can cause knee pain; no adjustable height can lead to person lean forward which can cause upper back problems. Also lighting, the computer screen and its contrast, the distance from the screen and its angle have an impact on the development of musculoskeletal symptoms, psychiatric factors are also important in the development of these symptoms.[5,7]

Present study also shows other complications than MSD. 54% people showed headache in last 12 months of online teaching. In the year 2008, a study conducted by Mohammad Ghassemi reported that the most common ophthalmologic complication due to use of screen was ocular pain (41%), while the least common was blurred near vision (5.1%). Headache was reported by 38.1%. Disorders of accommodation and binocular vision, diplopia and retarded focusing are, more common in computer users in comparison with normal population. The main cause of ophthalmic complications is fatigue of the ciliary and extra ocular muscles. The other contributory cause of these complications is dry eyes due to prolonged eye opening and central focus.[7]

Because of the reasons stated above, many teachers had to consult a doctor for their symptoms of headache. A study done in 2012 also states that the disorders reduce efficiency at job cause of sick leave, nonattendance and giving up work and are also costly in terms of treatment and separate pain.[2]

This study also has limitations. Study only focuses on teachers who are working in health education. The study doesn't focus on onset, duration and progression of pain and its severity. In future, larger population can be targeted with teachers working in different areas. Also assessment of the symptoms and modification of posture can be analyzed in future.

CONCLUSION

Present study shows that many health education teachers were involved in online teaching during COVID 19 pandemic which lead to many musculoskeletal related pain in them. Out of which, neck and upper back was the commonest musculoskeletal pain. The study also suggests that non-adjustable height of the chair and using laptop for more than 140 minutes was associated with musculoskeletal pain and also led to other symptoms like headache and ocular pain in teachers.

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