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A comparison between the lecture and self-study methods on female students' awareness and attitudes about text neck syndrome

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Abstract:

BACKGROUND: Text Neck Syndrome (TNS) is a common issue in the neck. The emergence of such issues makes it more pressing to offer ergonomic training to prevent their consequences. The present study aimed to compare training through the lecture and Self-Study methods awareness and attitudes about the TNS.

MATERIALS AND METHODS: The study was conducted on 94 female high-school students in 2021, and a quasi-experimental methodology was implemented. The participants were randomly divided into a lecture method and a self-study group. A researcher-made questionnaire was utilized for data collection to measure the participants' attitudes and awareness. The data were analyzed according to descriptive and inferential statistics.

RESULT: The findings showed that the mean post-test scores of the participants' awareness in the lecture method and self-study groups were 8.74 and 5.83, respectively, and a significant increase was observed in the post-test scores of the lecture method group. However, no significant difference was observed between the pre-test and post-test attitude scores of the two groups.

CONCLUSION: As training by the use of the lecture method in a webinar format has the characteristics of a traditional and online educational simultaneously, it offers an advantage that can be utilized in educational institutions as a complementary (or even an independent) method. Moreover, the experts in medical informational sciences need to accompany training groups as they are responsible to select and prepare credible content materials for audiences.

Keywords:

Attitude, awareness, ergonomics, Isfahan, lecture method, self-study, students, text neck syndrome, TNS

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Introduction

Changes in lifestyles and the advancement of new electronic devices have been among the indispensable factors in human life over the past few decades.[1] The social restrictions imposed during the COVID-19 pandemic and the introduction of quarantines caused many people to stay more at home and rely more than ever on using the internet and electronic devices.[2] Perhaps electronic devices were utilized by schools and universities as peripheral grounds before the coronavirus outbreak, but the pandemic prompted such institutions and, consequently, students to use them more seriously.[3] Statistics show that around 77% of the world's population has personal cell phones.[4] The excessive use of such devices in the long-term perspective results in the emergence of serious issues, particularly in the neck and shoulders, and this can lead to the improper formation of

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the musculoskeletal system and the loss of one's quality of life due to the malleability of youngsters' (children's) bodies.[5,6] The presence of children in social media to carry out the smallest daily affairs and their unawareness of the proper use of electronic devices, particularly cell phones, in various modes make people – more remarkably children – remain in improper conditions for hours, and this quickens the complications like neck pain, backache, and wrist pain.[7-10]

Musculoskeletal ailments and problems are among the commonest health issues that cause pain and uneasiness in people, particularly in their workplaces.[11] Out of the plethora of musculoskeletal issues, neck pain is considered a complicated health problem in modern societies. The origins of neck pains could be any of the building blocks of the area, including ligaments, intervertebral discs, muscles, or joints.[12] has ranked neck pain as the eighth cause of pain and uneasiness in people aged 15-19.[12] TNS is a prevalent issue that emerges due to the inappropriate use of smartphones and can bring about pain and numbness in one's neck.[13,14] The term "Text Neck Syndrome" is used to describe symptoms like neck pain and injured muscles that emerge due to the repeated and excessive use of cell phones in inappropriate postures.[4,15] Various studies have been conducted to investigate the topic, and some of them have found that a significant relationship exists between the long-term and inappropriate use of smartphones and pain in one's neck, body, and wrists.[2,16-18] Moreover, Masoumi found that significant differences existed between the conditions of the upper body and shoulders of the short-term and long-term users of cell phones.[19] The results of other studies showed the prevalence of TNS and the texting thumb among the users of mobile phones, particularly long-term users.[20,21]

Offering training programs to prevent the emergence of issues related to the incorrect ergonomics of the neck is not only important for students and their families, but it is necessary for the health system to reduce healthcare expenditures and can be more convenient than treatments. Numerous studies have compared and investigated the effects of various teaching methods on people's awareness and attitudes. Habibzadeh *et al*.[22] compared the virtual and traditional teaching methods and observed a significant difference between the post-test scores of the two groups. Then, they suggested that virtual education should be utilized as a complementary, or even an alternative, methodology. The results of Najafi Ghezeljeh and Hassanian indicated the effectiveness of virtual education in enhancing the participants' awareness and attitudes.[23,24] Moreover, the findings of Bartlett and Mansouri showed that the effectiveness of the hybrid teaching methodology on people's skills and learning far exceeded other methods.[25,26]

The lecture method (via the webinar format) and the self-study method were selected to be investigated in the present study. The population consisted of female high school students. The reason for selecting them concerned some of the characteristics of women's skeletons, their delicate structures, and issues related to hormones, which increased the probability of musculoskeletal issues in them.[2,27,28] The present study aimed to compare the effects of the lecture and self-study methods on students' awareness and attitudes about TNS.

Materials and Method

Study design and setting

The present study utilized a quasi-experimental methodology to investigate female high school students studying mathematics, empirical sciences, and humanities in Isfahan, Iran, in 2021.

Study participants and sampling

After obtaining the required certificates, 94 students were selected based on literature reviews using the stratified random sampling technique and were randomly divided into a lecture group (47 students) and a self-study group (47 students). Based on similar studies and as the goal was just comparing two types of interventions, the control group hadn't been considered.

Data collection tool and technique

The examinees were briefed about the goals of the study and, then, they participated in the study voluntarily. The data were collected using a researcher-made questionnaire that was filled out by the examinees of the two groups on two occasions. The validity of the questionnaire was confirmed by a panel of experts in the field of physiotherapy, medical information sciences, and occupational health specialist, while its reliability was determined 0.763 using Cronbach's Alpha. The electronic form of the questionnaire was sent to the examinees of the two groups electronically before starting the intervention. After filling out the questionnaire, one group received 2 three-hour training workshops in the form of webinars (in SkyRoom). The lectures were given by one of the researchers and a physiotherapy specialist. The other group received the educational content via WhatsApp. The provided content included educational items like films and images, scientific texts, animations, and GIFs that had a set of information about the anatomy of the musculoskeletal system, relevant ailments, particularly TNS, and methods to prevent and treat them. These items have been extracted from scientific credible content, prepared by experts in this area. The questionnaire was handed over once more to the participants one month after carrying out the intervention, and their levels of awareness and attitudes were measured. The collected data were analyzed in

terms of descriptive and inferential statistics using SPSS26. The spread of the coronavirus and the lack of in-person and complete access to students were two major limitations of the study.

Ethical consideration

The office staff of the school contacted the parents, obtained their consent for the participation of the students in the research, and cooperated with the research team.

Result

The results of the independent-samples *t*-test on the pre-test scores showed that the two groups with two methods had no significant differences in terms of their awareness and attitudes about TNS.

The results of the independent-samples *t*-test to compare the post-test awareness scores of the two groups showed that a significant difference existed between the awareness scores of the two groups ($P < 0.000$), and the awareness scores of the lecture group were significantly above that of the self-study group [Table 1]. Moreover, the results of the independent-samples *t*-test [Table 2] to compare the post-test attitude scores of the two groups showed that no significant difference existed between the attitudes of the two groups after the intervention.

The results of the dependent-samples *t*-test to compare the mean pre-test and post-test scores of the awareness of the lecture group showed that the awareness of the group significantly increased in the post-test [Table 1], but no significant difference was observed between the pre-test and post-test mean scores of the group in terms of attitudes [Table 2]. The results of the paired-sample *t*-test to compare the mean awareness and attitude scores of the self-study group showed that no significant difference could be detected between their pre-test and post-test scores according to their awareness and attitudes [Tables 1 and 2].

Discussion

The present study aimed to compare the effects of lecture teaching and self-study methods on female high school students' awareness and attitudes about TNS. The results showed that no significant difference existed between the awareness and attitudes of the two groups in their pre-test scores. The findings of the study indicated that a significant difference existed between the post-test awareness scores of the two groups after carrying out the intervention, and the lecture group showed more awareness compared to the self-study group. This was in line with Hemmatipour, Nikjou, and Lak who found a significant increase in the awareness of experimental groups after carrying out interventions.[29-31] Moreover, the finding was in line with the findings of Najafi Ghezeljeh *et al*.[23] who observed the significant influence of the use of virtual social networks on their examinees' awareness. In a study conducted by Mottaghi and Najimi[32] the significant influence of computer-assisted teaching over the lecture (traditional) method was illustrated. The present study used the lecture method in a webinar format to combine the advantages of computer-assisted teaching and the lecture method; in other words, the electronic content materials were presented on the internet, and it was possible for the learners and trainers to communicate with each other and ask/answer questions (instructiveness). This was the strength of the present study and, somehow, made it similar to the study by Mottaghi. In another study, Khoshnoudifar observed that the effectiveness and satisfaction rates of flipped classes significantly exceeded that of traditional ones.[33] But the results of Hakami showed no significant differences between the knowledge and the skills of the participants being trained by the traditional and virtual methods, and the two methods were introduced as alternatives.[34] The findings of the present study were in line with the findings of Lee *et al*.[35] who found no significant differences between the beliefs of the participants being trained by mobile applications and the ones receiving

Table 1: A comparison of the mean awareness scores of the students before and after the intervention

Result	Self-study method		Lecture method		Group Time
	Standard deviation	Average	Standard deviation	Average	
t=0.31, *P*=0/75	2.08	6.46	1.82	6.34	Before intervention
t=4.94, *P*<0/000	2.33	5.83	2.75	8.74	After intervention
	t=1.3, *P*=0/19		*t*=4/67, *P*<0/000		Result

Table 2: A comparison of the mean attitude scores of the students before and after the intervention

Result	Self-study method		Lecture method		Group Time
	Standard deviation	Average	Standard deviation	Average	
t=0.4, *P*=0/69	0.48	3.73	0.71	3.68	Before intervention
t=1.11, *P*=0/27	0.51	3.90	0.34	3.79	After intervention
	t=1.49, *P*=0/13		*t*=0.87, *P*=0/38		Result

traditional education. On the other hand, the study by Alaa and Younis[36] indicated the significant influence of ergonomic intervention on dentistry students' attitudes. In addition, in the study by Najafi Ghezeljeh *et al*.,[23] attitude scores increased after holding 34 sessions in a messaging application (Telegram), and this contradicted the findings of the present study. The lengthier duration of the study compared to the present study, the deep-rootedness of attitudes and the inclusion of cognitive and emotional components in attitudes could justify the observed incongruence. In general, attitudes are late-yielding, resist changes, and can be modified only under pressure. Thus, it can be argued that changing attitudes is a very complicated matter.[37] Unlike the findings of the present study, Komasi compared the in-person method and teaching via social networks in the field of social studies and found significant differences between the pre-test and post-test scores of the participants' attitudes.[38] It seems that the field of medical sciences, in comparison with social sciences, has a more empirical and practical nature, and consolidating its educational materials needs more practice. Perhaps this is the reason for the different in observations above.

Limitation and recommendation

The limitation of this research was mainly COVID-19, If there was no pandemic limit and the training was done face-to-face, the comparison results could be stronger. It is recommended for future studies to compare more methods of training students, and also more healthy subjects.

Conclusion

The findings of the present study and the significance of students' knowledge, attitudes, and performance concerning TNS emphasized the necessity of holding training courses in the field. Moreover, the lecture method (in a webinar format) can be used to present educational materials more conveniently and easily due to the characteristics of the method and the examinees' favorable attitudes toward it. The lecture method (webinar) can be utilized as an independent educational method and have a significant impact on students' learning and academic achievement. On the other hand, specialists in the field of medical information sciences need to offer credible and up-to-date information under the supervision of health specialists to play a remarkable role in enhancing the quality of students' health and, consequently, improving the quality of teaching in educational environments such as schools. It is recommended that educational institutions have a close relationships with these teams to train students and inform their parents to prevent health problems and improve their lifestyle.

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Conflicts of interest

There are no conflicts of interest.

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