



## Relationship between General Health and Musculoskeletal Disorders among Tarbiat Modares University Students

Seyedeh Somayeh Kazemi<sup>1</sup>, Erfan Javanmardi<sup>2\*</sup>, Elaheh Ghazanfari<sup>3</sup>

1. MSc of Health Education, Diseases Unit, Chaloos Health Network, Chaloos, Iran.

2. Biostatistics MSc student, Biostatistics Department, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.

3. Department of Biostatistics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.

**Background:** Students are the most dynamic people in the society and their health is to a great extent a prerequisite for the health of most individuals in the society. Musculoskeletal disorders (MSD) are one of the most important factors that effect on general health. This study was conducted to The Relationship Between General Health and MSD among Tarbiat Modarres University Students.

**Methods and Materials:** This descriptive-analytic study was conducted on 306 college students were enrolled by using nonprobability purposive sampling methods and also availability. Data was obtained based on the demographic data questionnaire, musculoskeletal researcher-made questionnaire and the standard General Health Questionnaire (GHQ-12). After collecting the required data, SPSS software version 23 was used for descriptive and statistical analysis (Spearman/Pearson chi-square, phi Cramer's V).

**Results:** The results showed that 60.6% and 72% of male and female students had desirable general health. Also, the findings showed that general health decreases with age growth ( $P = 0.015$ ). Among the musculoskeletal disorders, only low back pain and neck pain were associated with general health, as students who suffered from low back pain and neck had an unhealthy public health ( $P < 0.05$ ).

**Conclusion:** The results of this study showed a high prevalence of general health disorders and musculoskeletal disorders among students. Musculoskeletal disorders have a profound effect on the general health of students, thus jeopardizing their general health. Therefore, consideration should be given to the factors causing these disorders and the appropriate planning to overcome it.

**Keywords:** General Health, Musculoskeletal disorder, Students

### Introduction

Student life is an exciting and challenging period for students (Zare N, 2007). These students, who will be responsible for providing and improving the health of the community in the future (Ansari H, 2007), they must have more physical, psychological and self-reliance health, so that they can achieve success in their studies and ultimately in their careers

(Zare N, 2007). The World Health Organization (WHO) defined health as a state of complete physical, psychological and social well-being, and not merely sickness (WHO, 2003, WHO, 2001). A recent report by the WHO indicates that mental disorders account for 10% of the adult population (DL, 2004). The major part of the cases that endangers people's physical and mental health is Musculoskeletal Disorders (MSDs) (Choobineh, 2004). One of the most important tools for student work is the use of computers or laptops to be used to learn instructional guidelines and research activities from day to day or week. Failure to pay attention to the principles of ergonomics and hygiene when working with a computer may be associated with long-term illness and anomalies

Corresponding author: Biostatistics MSc student, Biostatistics Department, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Islamic Republic of Iran: Email: E.javan@modares.ac.ir

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in students. In a study done by Kazemi (2016) in students residing in Tarbiat Modarres University, the findings indicated that (30.4%) students suffered from low back pain, (24.8%) knee pain, (16.3%) shoulder pain, (9.6%) heel pain, (21.3%) neck pain, (3.3%) pelvic pain, (16.3%) wrist pain, and (2%) suffering from elbow pain (Kazemi S S, 2016).

These factors affect the students' ability to learn and function (Sreeramareddy et al., 2007; Chew Graham et al., 2003) and may increase the likelihood of depression and alter general health (Read et al., 2002).

This study was conducted to assess the relationship between General Health and MSDs among Tarbiat Modares University Students. To identify these factors and to plan appropriately, the means of improving the health promotion of this group from the society that are the country's future prospects are in a sensitive area.

## Methods

In this cross-sectional (descriptive-analytical) study, the sample size was calculated using the formula for estimating a ratio of 323 people. After collecting the data and deleting questionnaires that were not completed correctly, 306 people were finally enrolled in the study.

The statistical population of this study was students living that in dormitories at Tarbiat Modares University in 1395. Sampling was done randomly with Stratified Sampling. Each dormitory was considered as a class and it was randomly sampled in proportion to the students in each dormitory. The criteria for entering the research was the willingness of students to participate in studying and residing in one of the dormitories covered by Tarbiat Modarres University, and the criteria for withdrawal were reluctance to participate in the study and non-residency in the dormitory. Only those with oral consent were included in the study. If people were dropped out of the study, they would randomly replace them. In order to observe ethical considerations, the purpose of the research was explained to all students and the participation in the research was optional for all students. It was assured that all information requested in the questionnaire would be used confidentially and also did not require the student to write a full name or student's name.

The data collection tool was General Health Questionnaire (GHQ-12) and a researcher-made questionnaire including demographic

characteristics of the student and a list of MSD. These disorders include low back pain, knee pain, shoulder pain, heel pain, neck pain, pelvic pain, wrist pain and elbow pain. The GHQ was developed by Goldberg to identify mental disorders in various centers and environments. The questionnaire is one of the most well-known tools for screening mental disorders, which has had a significant impact on the advancement of research in behavioral and psychiatric sciences (Solhi M, 2013).

The GHQ-12 questionnaire consists of 12 questions from 60 questions of the main questionnaire, which researchers believe that the form 12 questions have a high validity and reliability as well as other forms of the questionnaire (Yaghubi H, 2012). The GHQ-12 questionnaire is graded with the Likert spectrum method (3-2-1-0) and the subject can score a maximum of 36.

Validity and reliability of the questionnaire were reviewed by Montazeri et al. The reliability of the questionnaire, the internal consistency of the instrument (questionnaire), was estimated using Cronbach's alpha coefficient, which was calculated as 0.87, and the best cut point was 14.5 with a sensitivity of 89% and a characteristic of 63% (Montazeri A., et al., 2003). Score of over 14.5% in the whole test indicates a poor health and a score of less than or equal to 14.5 indicates a general health. Data were entered into SPSS software version 23 and analyzed through descriptive and analytical statistics (spearman/Pearson chi-square, phi Cramer's V).

## Findings

In this study, 306 students, including 188 (61.4%) female and 118 (38.6%) male, were studied. The mean age of participants was  $27.67 \pm 3.83$  years and 80.7% were in the age group under 30 years old.

In terms of general health status of students, 199 (65%) had desirable general health. The results showed that 60.6% and 72% of male and female students had desirable general health. Also, the relationship between gender variables ( $P = 0.042$ ) and age ( $P = 0.015$ ) was significant with general health.

In this study, the relationship between economic level and general health status was significant ( $P = 0.003$ ). The level of economic relationship was such that students with a higher economic level were in a better position.

The results showed that 78.7% of girls (148) and 59.3% of boys (70) suffered from musculoskeletal disorders (Table 1). The variable of musculoskeletal disorders was one of the important variables in this study which showed a significant relationship with general health ( $P < 0.001$ ). There was a significant relationship between back pain and knee pain

with general health ( $P = 0.006$  and  $P = 0.039$ ). This means that students suffering from low back pain and knee joint were suspected of having a general health impairment. However, there was no significant relationship between shoulder pain, neck pain, heel pain, pelvic pain, wrist pain and elbow pain with general health ( $P > 0.097$ ).

**Table 1. General Health and Musculoskeletal Disorders based on gender and age of the studied participants**

Demographic		General Health				Musculoskeletal Disorder			
		Desirable		Undesirable		Desirable		Undesirable	
		N	(%)	N	(%)	N	(%)	N	(%)
Gender	Male	85	72	33	28	48	40.7	70	59.3
	Female	114	60.6	74	39.4	40	21.3	148	78.7
Age	> 30	169	85.4	77	72.0	172	69.6	75	30.4
	30-39	28	14.1	28	26.2	13	23.2	43	76.8
	> = 40	1	0.5	2	1.9	0	0	3	100

**Table 2. Correlation between demographic characteristics and General Health.**

correlation	Age		Gender		Income	
	Correlation Coefficient	p-value	Correlation Coefficient	p-value	Correlation Coefficient	p-value
General Health	0.16	0.015	0.12	0.042	0.15	0.003

## Discussion

The results of the study showed that the prevalence of general health disorders in female was more common than male and there was a significant difference between the two sexes. The prevalence of general health disorders was reported in 33.6% of the students of Kerman University of Medical Sciences, and there was no significant relationship with gender, which is not consistent with the results of the present study (Maghsoudi A et al., 2014).

Considering that in these two studies, relatively high percentage of students suffered from physical and psychological problems, it is necessary to pay special attention to this group of people in the future of society.

Comparison of general health status of students based on economic status showed that the prevalence of physical and mental disorders is significantly higher in students with economic problems. Providing travel expenses, tuition (overnight students), buying books and managing a life independently of the family has additional pressure on family expenses. This can lead to an increase in student stress. The results of the economic status variable were consistent

with the results of the Birjand and Ardebil studies (Maghsoudi A et al., 2014;).

In the study of Akman et al., Karlqvist et al., Alix and Bates, the prevalence of musculoskeletal complications among females was higher than that of men, which is confirmed by the results of this study (Ekman A et al., 2000, Alix ME and DK, 1999, Karlqvist L et al., 2002).

Considering the psychological support of students on their general health, student counseling centers have improved their relationship with Dan Shajouan in order to identify students' problems and to support them emotionally during their education. Their educational trends and mental health are sufficiently monitored. Entry into the university is associated with new expectations and roles for people, and being in such a situation is associated with concern and pressure and affects the performance and efficiency of individuals. Although the general health questionnaire cannot definitely prove students' physical or psychological problems, it does, in part, identify those at risk. Identifying these students and holding counseling classes with psychologists and psychiatrists and with the help of authorities can be used to reduce the risk factors in the students.

There is a limitation in this study that needs to be addressed; this study was a self-reported study, so the accuracy of the results cannot be ensured. It is recommended that further researches to be carried out in order to identify other risk factors associated with musculoskeletal disorders in the students, to gain additional information and to promote general health, to provide appropriate intervention strategies.

## Conclusion

The results of this study showed a high prevalence of general health disorders and musculoskeletal disorders among students. MSDs have a profound effect on the general health of students, thus jeopardizing their general health. Determining the prevalence and patterns of musculoskeletal pain is the first step in the prevention, diagnosis and treatment of such problems. Therefore, consideration should be given to the factors causing these disorders and the appropriate planning to overcome it.

## Conflict of Interest

The authors declare that they have no conflicts of interest.

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## Authors ' contribution

SSK: Conducting whole study and had full access to all of the data for analysis. Also, she was involved in drafting the article. She assessed the patients and confirmed their eligibility for the study. She took responsibility for conducting the study, integrity of the data and the accuracy of the data collection.

EJ: Analyzing data. He took responsibility for conducting the study, integrity of the data and accuracy of the data collection.

EGH: Doing some statistical analysis.

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