



## Status of Musculoskeletal Pains and Disorders among Computer Users

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### ABSTRACT

**Aims** Nowadays, with the advancement of life and more use of computers, musculoskeletal pains and disorders in computer users have also increased. Therefore, the aim of this study was to evaluate the status of musculoskeletal pains and disorders of computer users in health care providers working in comprehensive health centers of Sirjan.

**Instruments & Methods** In this descriptive-analytical study, 110 health care providers working in comprehensive health centers of Sirjan were selected through simple random sampling. In order to evaluate musculoskeletal discomfort and pains, a Nordic questionnaire was used and a body map was used to determine the location of pain. Data analysis was performed, using SPSS software.

**Findings** According to the findings, the highest pain and discomfort in neck was observed in 46.4% and, then, the pain in the shoulder region was 12.7%. In the lower limb, the most pain was reported in the waist with 18.2% and the least pain was reported in left wrist, both elbows and ankle.

**Conclusion** Musculoskeletal discomforts are clearly seen in computer users; more discomforts and pains are observed in the upper body, especially in the neck and shoulders, and in most cases, this pain does not come from a particular illness or discomfort. Further studies are suggested to determine the status and non-ergonomic points of work in these individuals.

**Keywords** Pain; Musculoskeletal Disorders; Health Care Providers

### CITATION LINKS

[1] Survey of musculoskeletal disorders among bank staff in Yazd [2] Study of musculoskeletal disorders and pain prevalence in computer operators in Bojnourd [3] Occupational exposures in the oil and gas extraction industry: State of the science and research recommendations [4] Importance and effects of altered workplace ergonomics in modern radiology suites [5] CTD in view of ergonomics occupational medicine [6] Diseases due to computer work, work and environment center [7] Epidemiology of musculoskeletal disorders among computer users: Lesson learned from the role of posture and keyboard use [8] Systematic review of psychosocial factors at work and private life as risk factors for back pain. Spine (Phila Pa 1976) [9] Nonspecific back pain in children, a search for associated factors in 14-year-old schoolchildren [10] Musculoskeletal symptoms assessment among midwives, Hamedan, 2002 [11] Clinical signs and physical function in neck and upper extremities among elderly female computer users: The new study [12] Cherng, Musculoskeletal symptoms and associated risk factors among office workers with high workload computer use [13] Symptoms of neck, shoulder, forearms, and hands: A cohort study among computer office workers in Sudan [14] Prevalence and impact of musculoskeletal disorders in New Zealand nurses, postal workers and office workers [15] Work-related complaints of arm, neck and shoulder among computer office workers in an Asian country: Prevalence and validation of a risk-factor questionnaire [16] A prospective study of computer users: I. Study design and incidence of musculoskeletal symptoms and disorders [17] Neck and shoulder symptoms and disorders among Danish computer workers

**Introduction**

Musculoskeletal disorders are one of the most important ergonomic problems encountered in work environments in the world [1]. Musculoskeletal disorders are referred to any tissue damage to the musculoskeletal and nervous systems, which affect organ function [2].

Musculoskeletal disorders are one of the most common diseases caused by work worldwide, and according to information recorded by the Statistics Organization of the United States in 2014, about 32% of all occupational patients are assigned to these disorders [3]. According to statistics of Iran Occupational Health, Ministry of Health, about 36% of the country's employees are in bad working condition during work. Thus, in the near future, more employees will be exposed to musculoskeletal discomforts [4]. According to the International Institute of Occupational Safety and Health, musculoskeletal disorders rank second among labor-induced illnesses in terms of importance, frequency, severity, and probability of progression, so that musculoskeletal disorders caused by work are the major factor in the loss of working time, increased costs, and human damage to the workforce [5].

Today, computers are an integral part of working environments, especially office environments [6]. Scientific reports and published articles show that the risk of musculoskeletal disorders in computer users is high compared to other occupations [7]. The result of the study on 1428 computer users showed the prevalence of musculoskeletal disorders in 12 months as follow: head and neck 42%, lower back 34%, upper back 24%, wrists and hands 20%, shoulders 16%, ankles and feet 13%, knees 12%, and hip 6% and elbows 5% [8].

Therefore, due to the high frequency of occupational risk factors among computer users and, ultimately, the high frequency of musculoskeletal disorders in this work group, as well as the high number of computer users, and the importance of preventing these disorders in workplaces, health care providers working in comprehensive health centers are also one of the computer users, who are at risk for musculoskeletal disorders. Therefore, we will try to prevent the adverse effects of these disorders through the investigation of their musculoskeletal disorders in order to improve their health.

**Instruments and Methods**

**Study design and eligibility:** This cross sectional descriptive-analytical study was conducted on 110 health care providers working in comprehensive health centers of Sirjan in 2018. The inclusion criteria of the study included health care worker at the comprehensive health centers of Sirjan, working with computers, and being volunteer. The samples

were excluded if they were not interested in participating in the study.

**Sampling:** The statistical population of this study was selected through simple random sampling.

**Instrument:** To determine the location of musculoskeletal discomfort and pains in the subjects, body map and Nordic musculoskeletal system questionnaire were used [9]. The Nordic questionnaire consists of two parts: the first part consists of demographic questions, and the second part contains questions about determining the complications and discomforts of body, in which the respondents have to determine in which part of the 9 parts of their body (neck, shoulder, elbow, arm, back, lumbar region, thigh, knee, and feet) have had pain or discomfort over the past year [10].

**Procedure:** Initially, the purpose of the study was explained to all the personnel participating in the study, but the individuals were also assured that their personal information would remain confidential; then, they were given the questionnaire containing demographic information, as well as information on musculoskeletal disorders.

**Analysis:** At the end, the collected data from 110 questionnaires were analyzed by descriptive tests via SPSS 16.

**Findings**

In this research, 110 health care providers were studied. All the participants were women. The most common subjects were between the ages of 22 and 49 with an average age of 36.03%.

According to Table 1, 81.8% of the respondents are married and 94.5% have no activity outside of their working hours. For the demographic characteristics of the type of activity, 85% of the respondents refuse to respond, and in the case of the item, 99.1% of those, who answered the question, have 8 hours of work per day. Also, 86% of the participants in the study did not do any exercise activities, and only 14 of them performed walking, swimming, fitness, and Pilates activities, respectively. That walking was very popular among the participants in this study.

**Table 1)** Demographic characteristics of the subjects

Demographic characteristics	Frequency (Percentage)
<b>Marital status</b>	
Single	20 (18.20)
Married	90 (81.8)
<b>Working activities outside of work hours</b>	
I have	6 (5.45)
I do not have	104 (94.55)
<b>Working time</b>	
8 hours	99.10
Over 10 hours	0.9
<b>Sports activities</b>	
I have	14 (13)
I do not have	94 (86)

According to Table 2, the highest percentage of feeling pain in the last 12 months for those who participated in this study was pain in the neck and

lower back was 46.4% and 18.2% respectively, as well as the lowest percentage of feeling pain associated with both elbows, ankle, and left wrist.

**Table 2)** The rate of skeletal-muscular disorders in the subjects

Pain area (qualitative variables)	Feeling pain in the last 12 months		Feeling pain in the last 7 months		Feeling pain in the last 12 months	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Neck pain	51	46.4	44	40	7	6.4
Upper back pain	8	7.3	5	4.5	3	2.7
Lower back pain	20	18.2	18	16.4	5	4.5
Pain in hip and thigh	4	3.6	2	1.8	1	0.9
Knee pain	9	8.2	7	6.4	0	0
Ankle pain	1	0.9	0	0	0	0
<b>Shoulder pain</b>						
Right	16	14.5	7	12.7	0	0.9
Left	3	2.8	3	12.7	2	1.8
Both	3	2.7	2	1.8	0	0
<b>Elbow pain</b>						
Right	4	3.6	3	2.7	2	1.8
Left	1	0.9	1	0.9	0	0
Both	1	0.9	1	0.9	0	0
<b>Wrist pain</b>						
Right	6	5.5	4	3.6	1	0.9
Left	1	0.9	1	0.9	0	0
Both	2	1.8	0	0	0	0.9

## Discussion

The aim of this study was to evaluate statuses of musculoskeletal pain and disorders among computer users as health providers working in comprehensive health centers of Sirjan. Determining the prevalence and pattern of musculoskeletal disorders and pain is the first step in the prevention, diagnosis, and treatment of these disorders.

In this study, the most complaints about pain and discomfort in the neck (46.4) and lower back (18.2) were reported, respectively. A lot of research has been carried out on musculoskeletal disorders of computer users across Iran and the world. For example, in a study conducted by Juul-Kristensen *et al.* on computer users, it was determined that the highest prevalence of musculoskeletal disorders in the shoulder region is 73% and in the neck region is 71%, which is consistent with the current study [11, 12]. This study is consistent with the study of Eltayeb *et al.* on computer users of an office in Sudanese, which also reported the most common musculoskeletal discomfort in neck 63% and shoulder 56% [13]. Studies have shown that physical risk factors, such as static status of head and neck during work, work with up shoulders, poor design of the work station, are involved in development of the disorders [14-17].

## Conclusion

In general, according to the findings of this study and its comparison with other studies, it can be concluded that the high prevalence of musculoskeletal disorders in the health personnel, who are health forces, can be a serious warning that

in case of not preventing and more prevalence of musculoskeletal disorders, they can lead to more problems and complications for people in the coming years, resulting in reduced performance, efficiency, and also decreased self-esteem.

Also, a solution should be thought in order for the users not to use computers for a long time and to do stretching as much as possible in their workplaces, because muscular weakness can also be effective in the development of these disorders and to use ergonomic equipment appropriate to the work environment, so that we do not see uneven shoulder, kyphosis and neck problems, and other musculoskeletal disorders anymore. However, more extensive and varied studies seem necessary to better understand these disorders as well as prevention strategies, and it is suggested in future studies to examine the effectiveness of a combination of engineering and management control programs in the correction of computer users' physical postures.

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