Original Research Article

Prevalence of Musculoskeletal Disorders and Their Relationship with Some Work-Related Factors among of faculty members of Shahid Sadoughi university of medical sciences of Yazd in 2015

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ABSTRACT

Introduction: Nowadays, musculoskeletal disorders (MSDs) are one of the most common work-related problems in the world. The aim of this present study was to determine the prevalence of MSDs and their relationship with work-related factors among faculty members at Shahid Sadoughi University of Medical Sciences in Yazd, Iran. **Materials and Methods**: This cross sectional study was conducted on 113 faculty members at the Shahid Sadoughi University of Medical Sciences in 2015. Data were collected by a standard self-administered questionnaire consisting of three major parts: demographic and work-related variables, musculoskeletal symptoms, and a modified version of the Standard Nordic Questionnaire. Data were analyzed by SPSS (version 16) using appropriate statistical tests. P-values less than 0.05 were considered statistically significant. **Results**: Pain in the low back (27.9%) and neck (25%) was the most common complaint among the subjects. Overall, 80 subjects (70.79%) had symptoms of pain in at least one part of the body in the past year. The highest rate of complaints was related to laboratory technicians (94.73%). There was a statistically significant association between prevalence of MSDs and teaching time. **Conclusions**: The prevalence of MSDs among faculty members of the Shahid Sadoughi University of Medical Sciences is high and more than the general population of Iran. The musculoskeletal complaints are significantly associated with teaching time.

KEYWORDS: Work-related complaints, Musculoskeletal disorders, Medical teachers

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INTRODUCTION

Nowadays, following the advances in industry and technology, the prevalence of musculoskeletal disorders (MSDs) has changed [1,2]. MSD is defined as feeling of discomfort, difficulty or pain in the musculoskeletal system (joints, muscles, tendons) or soft tissues of the body, due to repetitive and intermittent movement or long-term poor body postures [3]. Such disorders are among the most common causes of disability and chronic pain that affect millions of people throughout the world. MSDs are also considered as the most important cause of occupational injury and disability in the world [4]. According to the National Institute for Occupational Safety and Health in United States, MSDs are among the most important and common work-related diseases, and the main cause of absenteeism [5].

Every occupation has its own health risks. Healthcare workers are at risk of developing MSDs [6-8]. Statistics show that about one third of healthcare workers sick leaves are related to MSDs [9]. Physical, emotional, and social conditions are some of the risk factors associated with MSDs, but stress is known as the most important risk factor [10]. Physicians are constantly exposed to work-related stressors. Although work-related disorders may vary in physicians depending on their specialty, MSDs can be seen in all medical workers. Faculty members of universities are also at risk for MSDs [11]. According to previous studies, waist, neck, shoulder and knee are the most common areas affected in medical students, dentists and nurses [12-14]. Most of these studies have focused on the prevalence of MSDs among

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dentists, nurses and physiotherapists, and little information is available regarding this issue among faculty members and physicians [14-17]. Therefore, this study aimed to determine the type and frequency of work-related MSDs among faculty members of Shahid Sadoughi University of Medical Sciences in Yazd.

MATERIALS AND METHODS

This cross sectional study was performed on 131 faculty members working at the Shahid Sadoughi University of Medical Sciences in Yazd between spring and summer 2015. The subjects were selected via convenience sampling. Study protocol was approved by the ethics committee of the Shahid Sadoughi University of Medical Sciences, Iran. Inclusion criterion consisted of having at least one year of teaching experience. Exclusion criteria included history of having diseases that affect the musculoskeletal system and musculoskeletal injury caused by accidents. Overall, 122 subjects were enrolled in the study. First, objectives and importance of the study were described for each participant. Then, a questionnaire was provided for each subject after obtaining written consent. All participants completed the questionnaire. The questionnaire used consisted three parts. The first part of the questionnaire assessed demographic characteristics and work-related information including age, gender, body mass index (BMI), marital status, dominant hand, type of work, work experience, working hours, and body posture. The second part of the questionnaire consisted of the Nordic standard questionnaire for assessment of MSDs. The validity and reliability of the questionnaire has been confirmed in Iran (SEM=0.56-1.76, ICC>0.7) [18-19]. The symptoms of disorders were determined and severity of pain was assessed using the verbal scale [20]. In the questionnaire, body has been divided into nine anatomical sites (neck, shoulder, elbow, wrist and hand, back, waist, hips and thighs, knees, feet and ankles). The subjects were questioned if they felt any pain or discomfort in these anatomical sites within the past seven days and 12 months, and whether such inconveniences have caused difficulty in performing their work responsibilities and daily activities. After collecting the completed questionnaires, data were analyzed in SPSS (Version 20) using descriptive statistics, t-test, chi-square test and Fisher's exact test.

RESULTS

Demographic profile and characteristics of the participants are shown in tables 1 and 2. Among the subjects, 84.1% had experienced discomfort or pain. The most common musculoskeletal complaints were related to the waist (27.9%), neck (25%), and wrist and fingers (16.3%). According to the results, MSDs were caused by work-related factors in 55.8% of the participants. The frequency and duration of MSDs in the study population are shown in figures 1 and 2, respectively. We found that 31 (25.4%) faculty members visited a doctor or sought treatment in the past year because of MSDs. Among these individuals, 22.6% went to the hospital and 16.1% underwent physiotherapy for waist and then neck discomfort. Moreover, feelings of discomfort in at least one body area caused by MSDs prevented 20 subjects (22.95%) from performing daily activities during the past year.

Table 1. Characteristics of faculty members at the university

	Number	**Percentage**
Male	91	74.6
Female	31	25.4
Total	**122**	**100**
Single	6	4.9
Married	116	95.1

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Total	**122**	**100**
Right-hander	109	89.3
Left-hander	13	10.7
Total	**122**	**100**
Teaching while standing	74	60.7
Teaching while sitting	4	3.3
Teaching while standing and siting	44	36.1
Total	**122**	**100**
Work at Faculty of Medicine	36	29.5
Work at Faculty of Laboratory Sciences	23	18.9
Work at Faculty of Surgery	26	21.3
Work at Faculty of Non-invasive Medicine	37	30.3
Total	**122**	**100**

Table 2. Characteristics of the study population

	Mean	**Standard Deviation**
Age	45.43	8.38
Height	171.35	7.84
Weight	75.81	12
BMI	25.78	3.12
Work experience	13.96	9.44
Work hours per week in the office / laboratory (hours)	29.03	14.4
Teaching hours per week (hours)	13.65	10.04
Exercise per week (hours)	3.18	1.84

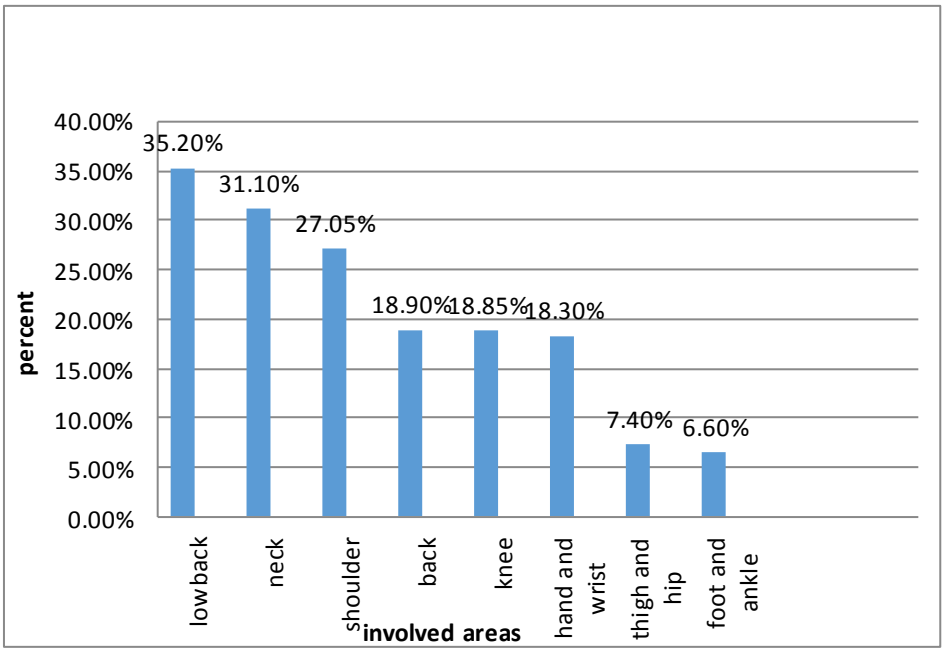

Figure 1. . Ffrequency of MSDs among faculty members during the past year

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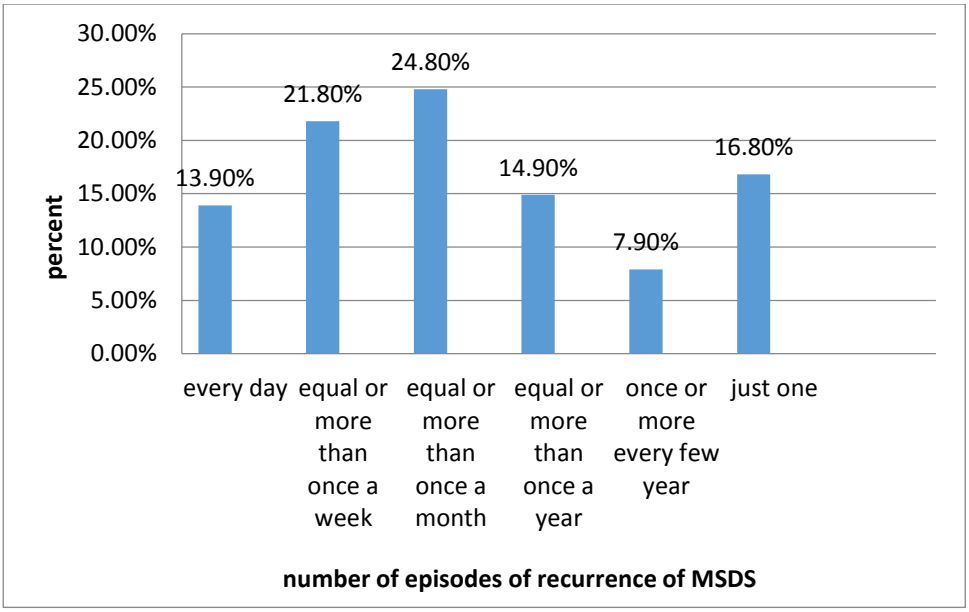

Figure 2. Frequency of repetitive MSDs among faculty members during the past year

Frequency of MSDs in different body areas and its related disabilities are shown in Table 3. Lower back pain was the most common type of MSD with prevalence of 35.2% in the last year, while neck pain was the most common symptom (31.1%). The least common symptom over the past year was pain in wrist and fingers (6.6%) (Figure 1). We also found that 13.9% of the participants constantly experienced pain in over the past year (Figure 2). No statistical relationship was found between MSDs and gender, type of work and body posture during teaching (Table 4). MSDs had no significant correlation with BMI, age, working hours, and duration of weekly exercise (Table 5).

Table3. Frequency of MSDs in different body areas among the study population

	MSDs in the past 12 months				**MSDs in the past seven months**				**Activity in the past 12 months**			
	YES		NO		YES		NO		YES		NO	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Neck	38	%31.1	84	68.9 %	21	17.2 %	101	82.8 %	6	4.9%	116	95.1 %
Shoulder	23	27%	89	73%	17	14%	105	86.1 %	3	2.4%	119	97.5 %
Elbow	12	9.8%	110	90.2 %	6	4.9%	116	95.1 %	2	1.6%	120	98.4 %
Wrist and hand	22	18.1 %	100	82%	15	12.2 %	107	87.7 %	8	6.5%	114	93.4 %
Back	23	18.9 %	99	81.1 %	13	10.7 %	109	89.3 %	6	4.9%	116	95.1 %
Low back	43	35.2 %	79	64.8 %	25	20.5 %	97	79.5 %	14	11.5 %	108	88.5 %
Thigh	9	7.4%	113	92.6	9	7.4%	113	92.6	5	4.1%	117	95.9

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and hip				%				%				%
Knee	23	18.9 %	99	81.1 %	14	11.4 %	108	89.5 %	6	4.9%	116	95.1 %
Ankle and foot	8	6.6%	114	93.4 %	6	5%	116	95.1 %	1	0.8	121	99.2 %

Table 4. The relationship between frequency of MSDs and study variables based on results of the Chi-Square test

MSDs		**+**		**-**		**Total**		**P-value**
		Number	percent	number	percent	number	percent	
Gender	Male	67	81.7	15	18.3	82	100	
	Female	28	90.32	3	9.68	31	100	0.56
Body posture while teaching	Standing	59	86.76	9	13.24	68	100	
	Sitting	3	75	1	25	4	100	
	Sitting/Standing	33	80.49	8	19.51	41	100	0.43
Occupation	Basic Sciences	29	90.63	3	9.38	32	100	
	Laboratory Sciences	18	94.74	1	5.26	19	100	
	Surgeon	20	76.92	6	23.08	26	100	0.2
	Clinician	28	77.78	8	22.22	36	100	

Table 3. Association of MSDs with work-related factors based on results of the iindependent sample t-test

Variable	**Age**	**BMI**	**Work hours spent in clinic/laboratory**	**Weekly exercise hours**	**Weekly teaching hours**
MSDs	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Yes	45.05±8.53	25.62±3.9	27.78±14.18	3.08±1.67	14.12±9.64
No	47.22±7.21	26.67±3.9	34.14±15.15	2.77±1.54	8.72±7.83
P-value	0.31	0.2	0.15	0.61	0.02

DISCUSSION

This study aimed to determine the prevalence of MSDs among faculty members of a medical university. Due to increased prevalence of work-related disorders, there is a need for identification of high-risk individuals and better planning to reduce or prevent the incidence of such disorders. According to the study, 55.8% of the faculty members studied stated that MSDs are caused by work-related factors. The results showed that 84.1% of the faculty members experienced pain and discomfort in their body. However, the type of work had no significant association with the prevalence of MSDs. Study of Mehrdad et al. on 405 Iranian physicians working in teaching hospitals revealed that 41.7% of the participants suffered from MSDs in at least one body area within the past few years. However, the prevalence of these disorders in the mentioned study is lower than that in our study [21]. In another study, 72.4% of laboratory technicians experienced MSDs in at least one body, which is similar to our findings [22]. We found that back pain (35.2%) and neck pain (31.1%) were the most common MSDs among the faculty members of the university. Discomfort in the ankles and

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toes had the lowest prevalence rate (6.6%) in our study.

Study of Cromie et al. in Australia and Adegoke et al. in Nigeria reported that majority of MSDs were related to waist [23-24]. In a study on nurses in Japan, the prevalence of MSDs in the waist area was reported to be 82.6%, which was mainly due to high physical activity required for this profession [25]. Back pain was reported as the most common complaint among ophthalmologists in the Northeastern United States [26]. In a study by Leggat et al. on Australian dentists, neck was the most commonly affected body area with prevalence of 24.6% [27].

The prevalence of MSDs in our subjects is more than that of Iran's general population. In study of Noorbala et al., the prevalence of back pain and neck pain was reported to be 18% and 7%, respectively. However, we found that the prevalence of back pain and neck pain was 27.9% and 25%, respectively [28].

We found a significant relationship between weekly teaching duration and frequency of MSDs. Poor body posture while teaching could be another factor that influences the prevalence of such disorders among faculty members. According to our study, only 3.5% of professors teach while in a sitting position, whereas 60.2% of them teach while standing. However, we found no significant association between body posture during teaching and the prevalence of MSDs.

In office workers and laboratory technicians, there was a significant relationship between duration of work hours and the frequency of back pain, which could be due to long sitting periods. Moreover, the prevalence of lower back pain was significantly higher in subjects who exercised more frequently. This could be due to the lack of knowledge on how to exercise properly since heavy and inappropriate exercises can increase the incidence of back pain.

CONCLUSION

We found that waist and neck are the most common body areas affected in MSDs among the faculty members of the university. The prevalence of these disorders is higher than the general population of Iran. In addition, there is a significant relationship between weekly teaching time and the frequency of MSDs.

CONFLICT OF INTEREST

There is no conflict of interest

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