Prevalence of self-reported musculoskeletal symptoms in teachers

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Öğretmenlerin kendi bildirimlerine dayalı kas-iskelet sistemi semptomlarının prevalansı

Özet

Amaç: Bu çalışmanın amacı, Türkiye'deki öğretmenler örnekleminde kas-iskelet sistemi rahatsızlık profilini belirmekti. **Yöntem:** Her bir öğretmenden (n=531) iki parçadan oluşan (demografik ve çalışma pratiği karakteristikleri) kendi kendilerine uygulayacakları anketi doldurmaları istendi. Aynı zamanda, farklı vücut bölgelerine ait kas-iskelet sistemi rahatsızlıkları (ağrı, acı ya da rahatsızlık hissi) ile ilgili veri toplamak için standardize Nordic Anketi'nin genel bölümü kullanıldı. **Sonuçlar:** Öğretmenlerin en fazla kas-iskelet sistemi rahatsızlık semptomları bildirdikleri vücut bölgeleri sırasıyla bel, üst sırt, boyun ve omuz bölgeleriydi. Kadın cinsiyeti ve ilerlemiş yaşın; boyun, bel ve üst ekstremite semptomlarının artmış prevalansı ile ilişkili olduğu bulundu. Meslekteki çalışma yılı artışının bel ve boyun semptomları riskini artırdığı belirlendi. Egzersiz alışkanlığı ile boyun ve üst ekstremite semptomları arasında pozitif bir ilişki bulunurken, haftalık çalışma saati ile herhangi bir bölgedeki ağrı ve rahatsızlık arasında anlamlı bir ilişki bulunmamıştır. **Tartışma:** Bu çalışmanın sonuçları öğretmenler arasında farklı vücut bölgelerine ait ağrı ve rahatsızlık semptomlarının yaygın olduğunu göstermiştir. Uygunsuz postürlerde çalışma ve tahtaya yazı yazma gibi mekanik faktörler tekbaşına veya bu mekanik faktörlerin kişisel faktörleriyle kombinasyonu kas-iskelet sistemi semptomlarından sorumlu olabilir.

Anahtar sözcükler : kas-iskelet sistemi semptomları, öğretmenler, anket

Abstract

Prevalance of self-reported musculoskeletal symptoms in teachers

Objective: The aim of this study was to determine the profile of musculoskeletal disorders (MSD) in a sample of teachers in Turkey. **Methods:** Each teacher (n=531) was asked to complete the self-administered questionnaire, composed of two parts (demographic and work practice characteristics). Also, standardized Nordic questionnaire (NMQ-general section) was used to collect data on musculoskeletal symptoms (ache, pain, or discomfort) from different regions of the body. **Results:** It was defined that the teachers reported respectively MSD symptoms at lower back, upper back, neck and shoulders. Female gender and older age were associated with an increased prevalence of neck, lower back and upper extremity symptoms. A more experience in work practice was found to increase the risk of neck and lower back symptoms. The exercise habits were positively associated with neck and upper extremity symptoms, while weekly

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working hours was not associated with pain or discomfort of all regions. **Discussion:** Our results showed that pain and discomfort symptoms of different body regions appear to be common among teachers. The mechanical factors such as working in awkward posture and writing with the elevated arm on the board alone or in combination with personal factors may be responsible for MSD symptoms.

Key words: musculoskeletal symptoms, teachers, questionnaire

Introduction

Musculoskeletal disorders (MSD) include conditions such as carpal tunnel syndrome, ulnar neuropathy, tendonitis, and neck and low back pain. Such disorders are defined by a distinctive set of diagnostic criteria or by the location of the reported symptoms (1, 2).

MSD represent a significant cause of occupational injury and disability within industrialized nations (3). A large proportion of the working population experiences muscle or joint symptoms, and these clearly affect the individual's quality of life. Also, these disorders have considerable economical consequences for society (4). Contributory factors usually include workplace activities such as strenuous actions, manual handling, repetitive tasks and job strain (5). Demographic characteristics such as age, smoking and sex are also known to be important predictive variables (3).

Teachers who working in primary and high school constitute were a risky occupational group regularly affected by MSD (6). But little is known of the scope and symptoms, their severity, or the implications for affected teachers. To date, there is a lack of epidemiological studies on the prevalence of musculoskeletal symptoms in teachers.

Self-reported surveys represent one of the most cost-effective methods for MSD data collection among large groups, and their validity and accuracy has been demonstrated in various studies (7).

Considering these factors, the aim of this study was to determine the profile of MSD in a sample of teachers in Turkey.

Method

The present study involved a cross-sectional, epidemiological analysis of MSD among teachers with data gathered by means of a self-reported questionnaire. The research population was selected teachers who were employed in a primary schools and high school settings in İzmir, Turkey. All data were collected by a questionnaire. Questionnaires were distributed to all teachers (531 total, 292 females and 239 males). Each teacher was asked to complete the self-administered questionnaire if they had more than 2 years of experience in practice. The questionnaire was composed of two parts, demographic and work practice characteristics. The demographic portion asked about general characteristics, including sex, age, body weight, height, hand dominance, smoking and exercise habits. The work practice portion inquired about duration of employment and weekly working hours.

Also, standardized Nordic questionnaire (NMQ-general section) were used to collect data on musculoskeletal symptoms (ache, pain, or discomfort) from different regions of the body, during the last 12 months and the previous 7 days, as well as pain affecting work ability during the past 12 month (8).

Data were analyzed using SPSS 13.0 for Windows. Demographic and work practice characteristics were compared among those who did and did not report symptoms using t and chi-square tests. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to evaluate the association between

demographic and professional work practice characteristics on MSD symptoms using logistic regression. P-values above 0.05 were regarded as statistically insignificant.

Results

Participant's ages ranged from 22 to 59 years, with an average age of 39±8.1 years. The teachers' mean weekly working hours was 27.7±10.9 h and average duration of employment was 15.9 ±7.1 years. Around one-thirds of teachers reported that had an exercise habits (n=131, 24.7%), while the prevalence of smoking was 35.8% (n=190).

A high proportion of teachers reported MSD symptoms at lower back (48.4%) during the previous 12 months. This was followed by MSD symptoms of the upper back (42.6%), neck (41.4%), shoulders (37.1%), wrists/hands (23.9%), knees (18.6%), elbows and hips/thighs (13.2%), ankles/feet (7.3%). The pain and discomfort that the teachers reported in past 7 days was as following: upper back (32.6%), lower back (24.5%), wrists/hands (16.4%), elbows (8.7%), shoulders (6.2%), knees (5.6%), neck (5.1%), ankles/feet (4.3%), and hips/thighs (3.6%).

The teachers, who indicated discomfort and pain during the last 12 months which resulted in an inability to work, showed most frequent pain, ache or discomfort in the low back (25.2%), wrists/hands (13.7%), and neck (10%).

Also, four dependent variables constituted the focus of this study: neck, lower back, upper extremity and lower extremity. Each of these dependent variables was analyzed separately.

A lower back and upper extremity showed a statistically significant difference in MSD symptoms prevalence by gender. MSD symptoms of lower back and upper extremity were significantly more common among females when compared to males in past 7 days and 12 months. They also had fewer weekly working hours. Those reporting upper and lower extremity symptoms were older than those not reporting symptoms. The teachers who reported MSD symptoms in upper and lower extremity had more years in practice. The neck pain and discomfort prevalence in science teachers, lower back pain and discomfort prevalence in social knowledge teachers and lower extremity pain and discomfort prevalence in mathematics teachers was significantly higher in the past 7 days (Table1).

Table 2 presents the ORs (odds ratios) and 95%CI (confidence intervals) for the association between MSD symptoms and demographic and work practice characteristics. Female gender were associated with an increased prevalence of neck, lower back and upper extremity symptoms; older age were also associated with an increased prevalence of neck, lower back and lower extremity symptoms. A more years in practice was found to increase the risk of neck and lower back symptoms. Neck and upper extremity symptoms were positively associated with exercise habits.

Discussion

A cross-sectional group of 531 teachers from a primary and high school in İzmir, Turkey were recruited for the present study. Our study found that pain and discomfort symptoms of different body regions appear to be common among teachers. Older age, female gender and more years in working increased the risk of experiencing symptoms.

In recent years investigations of work-related musculoskeletal disorders has attracted considerable attention because of its importance in assessing ergonomics risk factors involved in industrial workplaces (9). However, a little data of studies regarding prevalence

Table 1: Survey data from respondents for neck, lower back, upper extremity and lower extremity symptoms with in past 7 day / 12 month

	Total	Neck (7d/12m)			Lower back (7d/12m)			Upper extremity (7d/12m)			Lower extremity (7d/12m)		
		No	Yes	P value	No	Yes	P value	No	Yes	P value	No	Yes	P value
	(n=531)	(n=504/311)	(n=77/220)		(n=401/274)	(n=130/257)		(n=401/253)	(n=129/278)		(n=467/394)	(n=64/137)	
Age, mean	39	39.1/38.8	36.1/39.1	.062/.690	38.9/38.5	39.1/39.5	.841/.175	38.1/38.4	41.5/39.4	.000/.155	38.5/38.2	42.0/41.1	.001/.000
Gender, %				.463/.076			.011/.000			.001/.000			.749/.259
Male	45	44.6/48.2	51.9/40.5		48.1/54.4	35.4/35		49.6/54.2	30.8/36.7		44.8/46.4	46.9/40.9	
female	55	55.4/51.8	48.1/59.5		51.9/45.6	64.6/65		50.4/45.8	69.2/63.3		55.2/53.6	53.1/59.1	
Years in practice, mean	15.9	16/16	13.7/15.8	.110/.746	15.8/15.7	16/16.1	.827/.481	15.4/15.8	17.4/15.9	.003/.909	15.6/15.3	18.1/17.6	.009/.001
Weekly working hours, mean	27.7	27.6/27.4	28.7/28.1	.615/.445	27.9/29.1	27.2/26.2	.568/.003	28.2/29.1	26.1/26.5	.056/.011	27.5/27.3	29.4/28.8	.191/.183
Branches, %				.017/.073			.000/.889			.712/.126			.016/.458
Science	25.2	24.8/25.4	33.3/25		29.9/25.5	10.8/24.9		24.7/25.3	26.9/25.2		25.3/26.4	25/21.9	
Primary school	19.8	20.2/18.6	11.1/21.4		17.4/21.2	26.2/18.3		20.9/17	16.2/22.3		20.3/19.3	15.6/21.2	
Mathematics	17.5	17.1/17	25.9/18.2		18.7/19.3	13.8/15.6		17.5/15.4	17.7/19.4		15.8/18.5	29.7/14.6	
Turkish Literature	16.0	15.7/14.5	22.2/18.3		19.2/12.8	6.2/19.5		15.7/16.6	6.9/15.5		16.1/14.7	15.6/19.7	
Social Science	14.3	14.7/14.8	7.4/13.6		9.2/13.5	30/15.2		13.7/17.4	16.2/11.5		15.4/14.7	6.3/13.1	
Physical education	7.2	7.5/9.6	-/3.6		5.2/7.7	13.1/6.6		7.5/8.3	6.2/6.1		7.1/6.3	7.8/9.5	

7d: prevalence of symptoms in previous 7 days12m: prevalence of symptoms in last 12 months

Table 2: Risk factors associated with musculoskeletal disorders of the body site.

Risk factor	Neck Logistic OR	Neck Regression (95%-CI)	Lower Back Logistic OR	Lower Back Regression (95%-CI)	Upper Extremity Logistic OR	Upper Extremity Regression (95%-CI)	Lower Extremity Logistic OR	Lower Extremity Regression (95%-CI)
Smoking	1.38	(.993-2.04)	1.11	(.757-1.64)	1.49	(1.01-2.19)*	1.71	(1.12-2.63)*
Exercise habits	.350	(.219-.558)*	.660	(.431-1.01)	.507	(.332-.775)*	.809	(.50-1.3)
Female gender	1.54	(1.03-2.311)*	2.501	(1.67-3.72)*	1.74	(1.18-2.56)*	1.07	(.693-1.65)
Age								
<40	Reference		Reference		Reference		Reference	
≥40	.551	(.365-.831)*	.659	(.438-.992)*	1.37	(.917-2.06)	2.75	(1.70-4.44)*
BMI								
<25	Reference		Reference		Reference		Reference	
≥25	.976	(.640-1.48)	1.05	(.693-1.60)	.670	(.445-1.00)	.721	(.451-1.15)
Years in practice								
<10	Reference		Reference		Reference		Reference	
≥10	2.70	(1.63-4.47)*	2.78	(1.705-4.562)*	.728	(.453-1.16)	.939	(.518-1.70)
Weekly working hours								
<25	Reference		Reference		Reference		Reference	
≥25	1.09	(.758-1.59)	.839	(.583-1.208)	.946	(.659-1.35)	2.06	(1.34-3.17)

*p<0.05

in the teachers is available. These studies showed that increased risk of low back pain in primary schools teacher , female teachers and older teachers were prone to develop upper limb and neck pain (10,11)

Teachers are at increased risk of developing musculoskeletal symptoms as they are exposed to various physical factors which have been associated with the development of musculoskeletal symptoms. Prolonged standing or sitting, working in awkward posture, writing with the elevated arm on the board, hand activities such as writing and typing are common in a teacher's work; these mechanical factors alone or in combination with other factors may be responsible for MSD symptoms (12).

Nevertheless, according to the 'Third European Survey on Working Conditions 2000 (ESWC)', across all sectors, education has the lowest exposure to repetitive hand or arm movements (20%). Just 15% of workers in education are exposed to working in painful positions. The data shows that the education sector has one of the lowest percentages of workers exposed to the risk factors associated with MSD symptoms. It also has one of the lowest percentages of workers who consider their health at risk from muscular pain in the lower or upper limbs, shoulder and neck (13).

There are some limitations of the present study. Fist, since no data on the physical risk factors of musculoskeletal symptoms were collected in the study, it was no possible to explore whether the changes of the working conditions studied here, directly, or through interaction with the physical risk factors, influenced the development of musculoskeletal symptoms. Another limitation included the fact that we did no identify reported musculoskeletal symptoms which could have been attributed to non-work causes as houseworks. Also, the current study only collected self-reported data with a risk of an overestimation of the outcome.

Conclusion

Health is essential to efficiency of the highest attainable level in almost any line of work. It is peculiarly important for teachers, not only because of the strenuous demands of the classroom on their strength and energies but also because teacher health is the corner-stone of any effective school health program (14). For this reason, preventive actions are needed to focus on identifying and reducing stresses imposed on the musculoskeletal system.

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