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Original Article

Work-related musculoskeletal disorders among faculty members of college of Applied Medical Sciences, Majmaah University, Saudi Arabia: A cross-sectional study

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ABSTRACT

Objective: Work-related musculoskeletal disorders (WMSDs) have a significant impact on university faculty members. However, very few studies addressed this issue. The objectives of this study were to determine the prevalence and factors associated with WMSDs among the College of Applied Medical Sciences (CAMS) faculty members of Majmaah University, Saudi Arabia.

Methods: In this cross-sectional study, 60 faculty members were recruited using convenience sampling technique. After obtaining the informed consent, data regarding personal characteristics, workplace factors, and prevalence of WMSDs were collected by a valid, reliable, and self-administered musculoskeletal questionnaire.

Results: The prevalence of WMSDs in anybody region among faculty members in this study was 55 %. The neck complaint was the most prevalent WMSDs (53.5%), followed by lower back (43.3%) and hand regions (31.6%). Computer use and lack of ergonomic training were associated with WMSDs in most of the body regions.

Conclusion: More than half of the study participants were affected with WMSDs. The findings of this study emphasize the essentiality of ergonomic training for the faculty members.

Keywords: Computer use, ergonomics, university faculty members, work-related musculoskeletal disorders

Introduction

"Musculoskeletal disorders (MSDs)" cover a broad spectrum of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves, and supporting blood vessels.[1,2] The symptoms of MSDs include pain, numbness, tingling, aching, stiffness, or burning.[3] Most common body regions affected with MSDs are the low back, neck, shoulder, forearm, and hand.[1] The risk factors associated with MSDs include forceful exertions, repetitive movements, awkward, and/or sustained postures such as prolonged sitting and standing.[2] Globally, MSDs are one of the most common work-related illnesses and causing significant economic burden in terms of lost wages, treatment, and compensation and also responsible for considerable impact on the quality of life.[4,5] MSDs increase sickness absenteeism and early retirement resulting in poor productivity at work.[6,7] According to the Great Britain Labour Force Survey (2016), work-related musculoskeletal disorders (WMSDs) constitute 41% of the total work-related illnesses and are accounted for 34% of absenteeism due to work-related illnesses.[8]

In the current world, it is almost impossible to imagine that someone can live without computers. They have become an electronic device of almost every day use for individuals of every age. There is a steady increase in the computer penetration among residents of Saudi Arabia in the past 3 years from 43% in 2007 to 53% in 2009.[9] Inappropriate use of computer increases the risk of health problems. Working for a prolonged period in an ergonomically deficient workplace can lead to MSDs. Improper workstation design and faulty posture are risk factors related to computer use. Extended period of static sitting postures causes decreased circulation, stiffness, and pain in the joints. Prolonged duration of continuous work increases the risk of MSDs, which may result in long-term disability.[10]

Punnett and Bergqvist in their review on epidemiologic findings suggested that MSD symptoms are associated with the duration of computer use, and risk increases steadily with each hour of daily computer use.[11] The University faculty members use computers for preparing presentations, e-learning activities, research, publication, and so on. University faculty

members are also exposed to issues such as high workload, short pauses for rest, intensive working pace, and high levels of stress. The computer use along with above issues makes the faculty members vulnerable to develop MSDs. Lima Junior and Silva in their study of MSDs among university professors in Brazil reported a prevalence rate of 85.7%, which is very high.[12] University faculty members deserve attention, and studies addressing this population are very important to study the pattern of various MSDs, associated factors, and measures to prevent them. Hence, this study first of its kind in Saudi Arabia was conducted with the objectives of determination of prevalence and factors associated with WMSDs among College of Applied Medical Sciences (CAMS) faculty members of Majmaah University, Saudi Arabia.

Methods

The faculty members working in various departments (e.g., Nursing, Physical Therapy, Medical equipment technology, Medical laboratory, and Radiology) at CAMS, Majmaah University, participated in this study. The faculty members with at least 1 year of experience in current settings or similar settings were included in the study. Subjects with pregnancy, chronic systemic illness, recent fractures, or surgeries were excluded from the study. All participants read and signed the informed consent. The ethical approval was obtained from the Ethics committee of Majmaah University. The data collected were handled confidentially.

A self-administered questionnaire was distributed to all faculty members. One hundred and twenty copies of the questionnaire were distributed among prospective participants who were recruited by convenience sampling. The researchers explained the questionnaire to each participant and provided a contact number in case further explanation would be required. Sixty completed copies of the questionnaire were collected by the same researcher within 3 weeks, and the response rate to the questionnaire was 54.5% (60/110).

A three-part, self-administered questionnaire was used in this study:

- Part one collected the participant's personal characteristics and included details about age, body mass index, education, and exercise habits.
- Part two collected information of workplace factors which includes current work history, Previous experience, duration of employment, average working hours using computer (desktop and laptop), average working hours using keyboard and mouse, using external mouse, breaks, and receiving an ergonomics training.
- Part three assessed prevalence of WMSD complaints using a standardized Nordic musculoskeletal questionnaire (NMQ).[13] The NMQ is a valid and reliable tool and used at a wide range of occupational groups to study the musculoskeletal problems, including computer workers, nurses, and so on. This questionnaire consisted of human body diagram showing clearly marked nine anatomical regions (neck, shoulder, elbow, hand/wrist, upper back, lower back, hip/thigh, knee, and ankle/foot). Participants were asked whether they have had troubles in the indicated areas during the preceding 12 months affecting their normal activity.[14]

Statistical analyses

The data were entered in the Microsoft Excel sheet and analyzed using SPSS (Version 17.0) for Windows. Descriptive statistics were produced for demographic characteristics and work history. The prevalence of WMSDs (for each body region) was calculated by taking the number of subjects affected in that body region and dividing it by the total number of subjects studied. The association between demographic characteristics, work history, and Prevalence of WMSDs was analyzed using the Chi-square test of association. 5% level of probability was used to indicate statistical significance.

Results

The data regarding demographic characteristics of the participants are presented in Table 1. There were more male

Table 1: Personal characteristic of participants

Characteristics	Frequency (%)
Gender	
Male	31 (51.7)
Female	29 (48.3)
Age (years)	
30–39	28 (46.7)
40–49	25 (41.7)
50–59	5 (8.3)
60–69	2 (3.3)
BMI	
Normal weight	22 (36.7)
Overweight	26 (43.3)
Obese	12 (20.0)
Education	
BS	2 (3.3)
MSC	17 (28.3)
Ph.D	41 (68.3)
Light physical activity (hours/week)	
Almost none	14 (23.3)
<2	14 (23.3)
2–4	12 (20.0)
>4	20 (33.3)
Hard physical activity (hours/week)	
Almost none	30 (50.0)
<2	15 (25.0)
2–4	6 (10.0)
>4	9 (15.0)

BMI: Body mass index

than female faculty members who participated in this study; the mean age was 40.5 ± 6.8 years (range = 31–60 years). Most participants (43.3%) were overweight with the body mass index mean 26 (range = 60–115 kg), about 35% of participants performed more than 4 h/week light physical activity, and about 45% of the participants did not perform any hard physical activity.

The data related to workplace are presented in Table 2. The mean CAMS experience was 4.15 ± 2.8 years. Most of the participants (70.3%) reported working 8 h/day and about 46.7% working using computer with an average of 7 h/day. About 48% of participants reported insufficient breaks time. Majority of participants (91.7%) did not undergo any ergonomics training.

The prevalence of WMSDs in any one body region among faculty members in this study was 55% [Figure 1]. The pattern of WMSDs among the participants showed that highest prevalence was neck complaint (53.5%), followed by lower back (43.3%), wrists/hand (31.6%), upper back (28%), shoulders (21.6%), elbow and knee (15%), ankles/feet (13.3%), and hip (11.6%).

The data related to the association between WMSDs and demographic characteristics and workplace characteristics were presented in Tables 3 and 4, respectively. The neck complaint was the most prevalent WMSDs. WMSDs of neck were significantly associated with participant's working hours per day (P = 0.02) and occurred more often in participants working 6–10 h per day. Similarly, the neck WMSDs were significantly associated with duration of keyboard use (P = 0.02) and hard physical activity (P = 0.04) and occurred more often in participants using keyboard for 1–5 h/day and participants who did not perform any hard-physical activity. However, the prevalence of neck WMSDs was not significantly associated with other attributes.

Lower-back complaint was the second most prevalent WMSDs. The lower-back WMSDs were significantly associated with light physical activity (P = 0.001), occurred more often in participants who did not perform any light-physical activity. However, the prevalence of lower-back WMSDs was not significantly associated with other attributes complaints.

Table 2: Work place characteristics of the participants

Characteristics	Frequency (%)
Current experience (years)	
<1	10 (16.7)
1–5	21 (35.0)
5–10	29 (48.3)
Similar experience (years)	
<10	23 (38.3)
10–20	29 (48.3)
20–30	8 (13.3)
Daily working (hours)	
6–10	43 (71.7)
10–14	15 (25.0)
14–18	2 (3.3)
Daily computer use during work (hours)	
<5	22 (36.7)
5–10	28 (46.7)
10–15	10 (16.7)
Daily keyboard use (hours)	
1–5	37 (61.7)
5–10	17 (28.3)
10–15	6 (10.0)
Daily laptop use (hours)	
<5	32 (53.3)
5–10	18 (30.0)
10–15	10 (16.7)
Use external mouse	
Yes	18 (30.0)
No	42 (70.0)
Breaks sufficient	
Yes	13 (21.7)
Somewhat	24 (40.0)
No	23 (38.3)
Underwent ergonomic training	
Yes	5 (8.3)
No	55 (91.7)

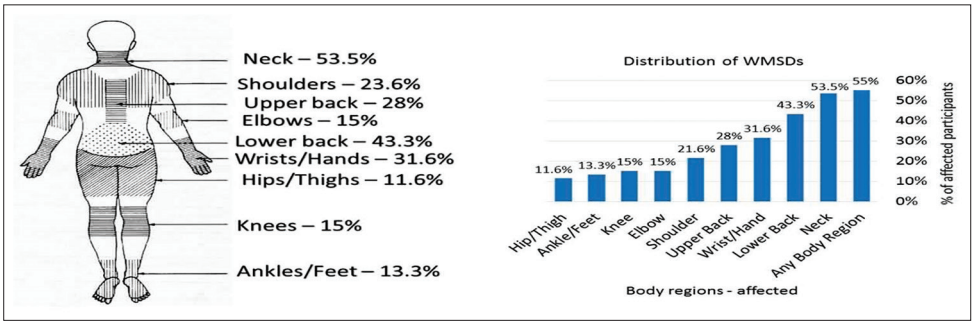

Figure 1: Distribution of work-related musculoskeletal disorders

Table 3: Association between personal characteristics and prevalence of WMSDs

Characteristics	Neck		Shoulder		Elbow		Wrist/hand		Upper back		Lower back		Hip		Knee		Ankle/feet	
	N (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	N (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*
Gender																		
Male	13 (22)	0.07	7 (12)	0.17	5 (8)	0.80	6 (10)	0.04*	6 (10)	0.45	10 (17)	0.15	0 (0)	0.01*	1 (2)	0.049*	2 (3)	0.15
Female	19 (32)		6 (10)		4 (7)		13 (22)		8 (13)		16 (27)		7 (12)		8 (13)		6 (10)	
Age (years)																		
30–39	14 (23)	0.32	5 (8)	0.68	4 (7)	0.63	7 (12)	0.13	7 (12)	0.87	10 (17)	0.88	1 (2)	0.13	2 (3)	0.24	2 (3)	0.29
40–49	16 (27)		6 (10)		5 (8)		11 (18)		6 (10)		13 (22)		5 (8)		6 (10)		5 (8)	
50–59	1 (2)		1 (2)		0 (0)		0 (0)		1 (2)		2 (3)		0 (0)		0 (0)		0 (0)	
60–69	1 (2)		1 (2)		0 (0)		1 (2)		0 (0)		1 (2)		1 (2)		1 (2)		1 (2)	
BMI																		
Normal weight	9 (15)	0.16	1 (2)	0.02*	2 (3)	0.61	4 (7)	0.19	4 (7)	0.60	8 (13)	0.7	2 (3)	0.86	2 (3)	0.87	1 (2)	0.30
Over weight	14 (23)		10 (17)		5 (8)		10 (17)		6 (10)		12 (20)		4 (7)		5 (8)		6 (1)	
Obese	9 (15)		2 (3)		2 (3)		5 (8)		4 (7)		6 (10)		1 (2)		2 (3)		1 (2)	
Light physical activity (hours/week)																		
Almost none	11 (18)	0.19	6 (10)	0.14	2 (3)	0.78	8 (13)	0.01*	7 (12)	0.06	12 (20)	0.01*	6 (10)	0.01*	6 (10)	0.04*	4 (7)	0.34
<2	6 (10)		1 (2)		1 (2)		2 (3)		2 (3)		2 (3)		1 (2)		1 (2)		2 (3)	
2–4	6 (10)		2 (3)		2 (3)		4 (7)		2 (3)		6 (10)		0 (0)		1 (2)		0 (0)	
>4	9 (15)		4 (7)		4 (7)		5 (8)		3 (5)		6 (10)		0 (0)		1 (2)		2 (3)	
Hard physical activity (hours/week)																		
Almost none	16 (27)	0.03*	7 (12)	0.53	2 (3)	0.02*	11 (18)	0.17	9 (15)	0.44	14 (23)	0.12	7 (12)	0.24	8 (13)	0.10	6 (10)	0.51
<2	4 (7)		2 (3)		1 (2)		2 (3)		2 (3)		4 (7)		0 (0)		0 (0)		0 (0)	
2–4	5 (8)		1 (2)		2 (3)		3 (5)		2 (3)		5 (8)		0 (0)		0 (0)		0 (0)	
>4	7 (12)		3 (5)		4 (7)		3 (5)		1 (2)		3 (5)		0 (0)		1 (2)		2 (3)	

N: Number of participants, %: Percentage of participants, *P*: Chi-square test, **P*<0.05, WMSDs: Work-related musculoskeletal disorders

Table 4: Association between work place characteristics and prevalence of WMSDs

Characteristics	Neck		Shoulder		Elbow		Hand/Wrist		Upper back		Lower back		Hip/Thigh		Knee		Ankle/feet	
	N (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	N (%)	*P*
Current experience (years)																		
<1	7 (12)	0.07	2 (3)	0.78	3 (5)	0.32	1 (2)	0.03*	1 (2)	0.03*	3 (5)	0.24	0 (0)	0.19	1 (2)	0.43	0 (0)	0.41
1–5	14 (23)		3 (5)		2 (3)		11 (18)		9 (15)		13 (22)		5 (8)		5 (8)		3 (5)	
5–10	11 (18)		8 (13)		4 (7)		7 (12)		4 (7)		10 (17)		2 (3)		3 (5)		5 (8)	
Similar experience (years)																		
<10	11 (18)	0.73	6 (10)	0.21	4 (7)	0.92	4 (7)	0.09	6 (10)	0.24	7 (12)	0.19	1 (2)	0.01*	2 (3)	0.07	3 (5)	0.07
10–20	17 (28)		7 (12)		4 (7)		12 (20)		8 (13)		16 (27)		4 (7)		5 (8)		3 (5)	
20–30	5 (8)		0 (0)		1 (2)		3 (5)		0 (0)		3 (5)		2 (3)		2 (3)		2 (3)	
Daily working (hours)																		
6–10	18 (30)	0.02*	10 (17)	0.33	6 (10)	0.37	7 (12)	0.00*	8 (13)	0.18	15 (25)	0.22	2 (3)	0.01*	3 (5)	0.01*	4 (7)	0.11
10–14	12 (20)		2 (3)		2 (3)		10 (17)		6 (10)		9 (15)		4 (7)		5 (8)		3 (5)	
14–18	2 (3)		1 (2)		1 (2)		2 (3)		0 (0)		2 (3)		1 (2)		1 (2)		1 (2)	
Daily computer use during work (hours)																		
<5	9 (15)	0.12	1 (2)	0.05*	4 (7)	0.68	5 (8)	0.01*	8 (13)	0.4	9 (15)	0.16	0 (0)	0.01*	0 (0)	0.01*	1 (2)	0.14
5–10	15 (25)		9 (15)		3 (5)		7 (12)		3 (5)		10 (17)		3 (5)		4 (7)		4 (7)	
10–15	8 (13)		3 (5)		2 (3)		7 (12)		3 (5)		7 (12)		4 (7)		5 (8)		3 (5)	
Weekly computer use during work (hours)																		
<20	3 (5)	0.58	0 (0)	0.18	3 (5)	0.25	1 (2)	0.01*	1 (2)	0.35	4 (7)	0.29	0 (0)	0.00*	0 (0)	0.00*	0 (0)	0.01*
20–40	15 (25)		4 (7)		3 (5)		7 (12)		7 (12)		9 (15)		0 (0)		1 (2)		2 (3)	
40–60	7 (12)		6 (10)		2 (3)		5 (8)		2 (3)		7 (12)		3 (5)		3 (5)		4 (7)	
60–80	2 (3)		0 (0)		0 (0)		2 (3)		2 (3)		2 (3)		2 (3)		2 (3)		0 (0)	
80–100	5 (8)		3 (5)		1 (2)		4 (7)		2 (3)		4 (7)		2 (3)		3 (5)		2 (3)	
Daily key board use (hours)																		
1–5	15 (25)	0.04*	4 (7)	0.14	4 (7)	0.11	9 (15)	0.28	6 (10)	0.15	12 (20)	0.09	1 (2)	0.00*	1 (2)	0.01*	2 (3)	0.01*
5–10	12 (20)		7 (12)		5 (8)		6 (10)		5 (8)		10 (17)		2 (3)		4 (7)		4 (7)	
10–15	5 (8)		2 (3)		0 (0)		4 (7)		3 (5)		4 (7)		4 (7)		4 (7)		2 (3)	
Daily mouse use (hours)																		
<3	13 (22)	0.33	2 (3)	0.03*	6 (10)	0.21	6 (10)	0.33	2 (3)	0.01*	9 (15)	0.63	2 (3)	0.01*	2 (3)	0.01*	2 (3)	0.1
3–6	10 (17)		4 (7)		2 (3)		7 (12)		5 (8)		10 (17)		1 (2)		2 (3)		2 (3)	
6–10	9 (15)		7 (12)		1 (2)		6 (10)		7 (12)		7 (12)		4 (7)		5 (8)		4 (7)	
Daily laptop use (hours)																		
<5	19 (32)	0.11	5 (8)	0.37	6 (10)	0.4	10 (17)	0.41	8 (13)	0.21	12 (20)	0.18	1 (2)	0.01*	2 (3)	0.09	3 (5)	0.08
5–10	6 (10)		5 (8)		1 (2)		4 (7)		2 (3)		7 (12)		2 (3)		3 (5)		3 (5)	

(Contd...)

Table 4: *(Continued)*

Characteristics	Neck		Shoulder		Elbow		Hand/Wrist		Upper back		Lower back		Hip/Thigh		Knee		Ankle/feet	
	N (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	N (%)	*P*
10–15	7 (12)		3 (50		2 (3)		5 (8)		4 (7)		7 (12)		4 (7)		4 (7)		2 (3)	
Use external mouse																		
Yes	9 (15)	0.73	4 (7)	0.92	1 (2)	0.18	5 (8)	0.49	4 (7)	0.89	7 (12)	0.65	0 (0)	0.18	1 (2)	0.11	1 (2)	0.31
No	23 (38)		9 (15)		8 (13)		14 (23)		10 (17)		19 (32)		7 (12)		8 (13)		7 (12)	
Breaks sufficient																		
Yes	5 (8)	0.37	1 (2)	0.36	0 (0)	0.12	3 (5)	0.13	3 (5)	0.91	4 (7)	0.53	2 (3)	0.02*	3 (5)	0.01*	2 (3)	0.22
Some what	15 (25)		7 (12)		6 (10)		8 (13)		5 (8)		12 (20)		1 (2)		2 (3)		4 (7)	
No	12 (20)		5 (8)		3 (5)		8 (13)		6 (10)		10 (17)		4 (7)		4 (7)		2 (3)	
Underwent ergonomic training																		
Yes	3 (5)	0.75	4 (7)	0.01*	0 (0)	0.33	2 (3)	0.14	2 (3)	0.36	4 (7)	0.08	2 (3)	0.03*	2 (3)	0.06	2 (3)	0.03*
No	29 (48)		9 (15)		9 (15)		17 (28)		12 (20)		22 (37)		5 (8)		7 (12)		6 (10)	

N: Number of participants, %: Percentage of participants, *P*: Chi-square test, *P<0.05, WMSDs: Work-related musculoskeletal disorders

Hand/wrist was the third most prevalence of WMSDs. The prevalence of hand/wrist WMSDs was significantly associated with: Gender ($P = 0.04$) with more female than male reporting hand/wrist complaints, current CAMS experience ($P = 0.03$) more occured by participants with 1–5 year experience, working hours per day ($P = 0.001$) more commonly occurring in participants working 10–14 h/day, and daily computer use ($P = 0.01$) more commonly experienced by participants using computers for 5–10 h/day. The wrist/hand WMSDs were also significantly associated with the light physical activity ($P = 0.01$) occurred more often in participants who did not perform any light-physical activity.

Upper back was the fourth most prevalent of WMSDs. The prevalence of upper-back WMSDs was significantly associated with: Current CAMS experience ($P = 0.03$) more experienced by participants with 1–5-year experience and duration of mouse use ($P = 0.01$) more commonly experienced by participants using mouse for 6–10 h/day. The shoulder was the fifth most prevalent WMSD. The prevalence of shoulder WMSDs was significantly associated current with: Body mass index ($P = 0.02$) more often experienced by overweight participants, daily computer use ($P = 0.01$) more commonly experienced by participants using computers for 5–10 h/day, and duration of mouse use ($P = 0.01$) more commonly experienced by participants using mouse for 6–10 h/day.

The duration of laptop use was significantly associated with ($P < 0.05$) MSDs of hip, more commonly experienced by participants using laptop for 10–15 h/day. Insufficient breaks were significantly associated ($P < 0.05$) with MSDs of the hip and knee regions, and lack of ergonomic training was significantly associated ($P < 0.05$) with MSDs of the shoulder, hip, and ankle/feet regions.

Discussion

The current study is the first in Saudi Arabia conducted with an aim to assess the prevalence of WMSDs among University faculty members. In this study, the 12-month prevalence of WMSDs in any one body region among CAMS faculty members was 55%. The 12 months prevalence rate reported by the faculty members in our study is lesser than the prevalence reported by university professors in Brazil (85.7%) and female school teachers in Saudi Arabian city Al–Khobar (79.17%).[12,15] A possible explanation for the decreased rate reported in our study may be due to the difference in the work setting. The neck complaint was the most prevalent WMSDs (53.5%) reported by our participants, whereas low back pain was the most prevalent WMSDs reported by university professors in Brazil (54.8%), female school teachers in Saudi Arabian city Al–Khobar (63.8%), and from 5 regions in Saudi Arabia (38.1%).[12,15,16] The prevalence of neck WMSDs reported in the current study is consistent with the findings of a study (neck WMSDs – 53.5%) among bank employees in Kuwait.[17] A possible explanation regarding the agreement of findings of

the two studies may be due to extent of computer use in their work settings.

The neck WMSD in our study was associated with the duration of keyboard use. Earlier studies also reported keyboard use as an important risk factor for neck symptoms. In a study among computer operators and data processors, Rossignol *et al*. observed a 4-fold increase in the risk of neck pain due to keyboard use.[18] The failure to support the forearm while typing in the keyboard increases the load on the trapezius muscle, resulting in neck pain.[19] Low back is the next most prevalent WMSD (43.3%) which is slightly lower when compared to the rate reported by Kuwait bank employees (51.1%).[17] In our study, low back MSD was associated with sedentary lifestyle. Nourbaksh *et al*. hypothesized that prolonged sitting and sedentary lifestyle might alter degree of lumbar lordosis, resulting in low back pain.[20] The participants of our study also perform a significant proportion of the work in sitting posture.

Hand/wrist complaints were the third most prevalent WMSD (31.6%). In our study, hand/wrist WMSD was associated with female gender. This finding is in agreement with the prospective study among computer users by Gerr *et al*., where 40% of the female participants experienced hand symptoms compared to 25% of males. Gerr *et al*. also postulated that symptoms were more common in females because of increased biological vulnerability and lower threshold to reporting symptoms than males.[21] In the current study, hand/wrist WMSD was associated with the duration of computer use. This finding is similar to that of the study by Jensen among employees using a computer at work, where computer use predicted hand and wrist symptoms (odds ratio - 2.3 and 95% confidence interval). Jensen also hypothesized that the repetitive hand and wrist movements involved in using keyboard and mouse could explain the association between the hand symptoms and the duration of computer use.[22]

In the current study, shoulder WMSD was associated with overweight. In a study to investigate the association between body mass index (BMI) and musculoskeletal symptoms, Viester *et al*. reported an association between shoulder complaints and high BMI.[23] Earlier studies also demonstrated a link between high BMI and rheumatic diseases.[24] Hooper *et al*. suggested that overweight and obese individuals use their upper limb to transfer a part of body weight when arising from a seated position, resulting in upper extremity symptoms. The author reported a decrease in upper extremity symptoms among his study participants with weight loss.[25]

In our study, upper back and shoulder WMSD were associated with duration of mouse use. Mouse use has been associated with risk factors for MSDs such as high levels of static muscle activity and awkward postures of upper limb such as shoulder abduction, wrist extension, and ulnar deviation.[26-28] Onyebeke *et al*. reported that the forearm supports during mouse use lowered the shoulder muscle activity and torque, and the palm supports reduced the wrist extension, thereby reducing the risk of development of MSDs associated with mouse use.[29]

In the present study, laptop use was associated with WMSD of Hip. Pfister *et al*. reported the occurrence of Meralgia paresthetica among laptop users.[30] The symptoms of Meralgia paresthetica include pain and burning sensation in the anterolateral thigh. In the current study, WMSD of the hip and knee was associated with insufficient breaks. Several researchers have proposed that insufficient rest breaks increased the risk of MSD among computer users.[31,32] Rest breaks relieve the computer user from issues arising from continuous computer work such as fatigue, poor blood circulation and inflammation of musculoskeletal structures.[33] Earlier researchers reported that frequent and short rest breaks were beneficial to restore the ability to continue working.[34]

Lack of ergonomic training was associated with WMSDs of shoulder, hip, and ankle/foot regions. Ergonomics is the science of designing the job to fit the worker rather than physically forcing the worker's body to fit the job. The practice of ergonomics improves working efficiency, comfort, and easiness to use without compromising health and safety. A workplace, which is ergonomically deficient, may not cause immediate pain because the human body can adapt to a poorly designed workplace to some extent. However, in long-term, the workplace deficiencies will surpass the body's coping mechanisms, resulting in pain, mental stress, decreased performance, and poor quality of work.[35] Neglecting these issues can result in disabling injuries urging one to change one's profession.

Conclusion

This research focused on the prevalence of WMSDs among faculty members of CAMS, Majmaah University. More than half of the study participants were affected with WMSDs. Neck complaint was the most prevalent WMSD. Computer use and lack of ergonomic training were associated with WMSDs in most of body regions. The findings of this study emphasize the essentiality of Ergonomic Training for the faculty members to improve the awareness about musculoskeletal disorders and healthy postures and develop a positive attitude toward the importance of the Ergonomic Computer Workstation Setup and Exercises.

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