

## SHORT REPORT

# Prevalence of self-reported musculoskeletal symptoms among office workers

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<b>Background</b>	To date, no study has investigated the prevalence of self-reported musculoskeletal symptoms in all the body regions in the general population of office workers.
<b>Aims</b>	To estimate the 12-month prevalence of self-reported musculoskeletal symptoms in the head/neck, shoulders, elbows, wrists/hands, upper back, low back, hips, knees and ankles/feet among office workers.
<b>Methods</b>	We conducted a cross-sectional survey using a descriptive questionnaire distributed to 2000 office workers in 54 workplaces.
<b>Results</b>	A total of 1428 subjects (71%) returned the questionnaire, of whom 1185 were eligible for the study. The annual prevalence of self-reported musculoskeletal symptoms attributed to work was 63%. Sites of symptoms, in order of prevalence, were head/neck (42%), low back (34%), upper back (28%), wrists/hands (20%), shoulders (16%), ankles/feet (13%), knees (12%), hips (6%) and elbows (5%). Female office workers were more likely to report symptoms in the head/neck, shoulder, upper back and ankle/foot regions than male counterparts ( $P < 0.05$ ). Office workers younger than 30 years were more likely to have symptoms in the upper back than those older than 49 years ( $P < 0.05$ ).
<b>Conclusion</b>	Musculoskeletal symptoms are common among office workers with a high proportion experiencing symptoms in the spine. The prevalence of musculoskeletal symptoms in some body regions is dependent on gender and age. This indicates a need to develop specific strategies to reduce the occurrence of such symptoms among office workers.
<b>Key words</b>	Musculoskeletal symptoms; occupational diseases; office workers; pain.

## Introduction

Increased computer usage has been linked to a high prevalence of musculoskeletal symptoms in the neck and upper extremities [1]. Office workers are frequently exposed to repetitive movement, awkward postures and manual handling tasks which are risk factors for developing musculoskeletal symptoms [2]. They may also encounter psychosocial problems such as time pressures and stressful work. The role of psychosocial factors in the development and persistence of musculoskeletal symptoms is well recognized [3]. The aims of this study were (i) to determine

the 12-month prevalence of musculoskeletal symptoms in all body regions among a population of office workers and (ii) to examine how the prevalence varies by gender and age.

## Methods

We conducted a cross-sectional survey of 2000 office workers from 54 workplaces in Bangkok, registered at the Social Security Office of Thailand. Subjects received a self-administered questionnaire, developed from the Nordic questionnaire [4], concerning demographics, workplace conditions and psychosocial data as well as musculoskeletal symptoms during the previous 12 months in nine body regions (head/neck, shoulders, elbows, wrists/hands, upper back, low back, hips, knees and ankles/feet). Respondents who reported symptoms were asked to specify what they thought were the causes (e.g. due to work, sport, a hobby, housework or other causes). The study was approved by Chulalongkorn University Human Ethics Committee.

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## Results

A total of 1428 office workers responded to the questionnaire, a response rate of 71%. Of these, 243 were excluded because they did not meet the inclusion criteria of having at least 1 year working experience, leaving 1185 who were included in the study. The mean age and working experience of the sample were 35.2 years (SD 8.4) and 9.4 years (SD 7.8), respectively.

In all, 742 (63%) of subjects reported musculoskeletal symptoms during the previous 12 months which they attributed to work. Body regions most commonly affected were head/neck (42%), low back (34%), upper back (28%), wrists/hands (20%) and shoulders (16%). Respondents reported symptoms less commonly in the ankles/feet (13%), knees (12%), hips (6%) and elbows (5%).

Seventy-one percent of respondents who reported symptoms in the spine rated their workstation ergonomics as poor compared to 59% of those without such symptoms (chi-square;  $P < 0.001$ ).

Chi-square analysis showed that the prevalence of musculoskeletal symptoms in the head/neck, shoulders, upper back and ankles/feet was significantly higher in females than males (Table 1).

One-way analysis of variance revealed that the prevalence of musculoskeletal symptoms in the upper back was dependent on age (Table 1). A Tukey multiple comparison test indicated that workers younger than 30 years were more likely to have symptoms in the upper back than those older than 49 years ( $P < 0.05$ ).

## Discussion

We found that musculoskeletal symptoms are common in the general population of office workers, in common with a previous study [1]. Office workers were most likely to report musculoskeletal symptoms in their spine. Workers experiencing such symptoms were more likely to rate their workstation ergonomics as poor. Office work is often associated with prolonged sitting, which has been shown to be a risk factor for neck pain [5]. Prolonged sitting, particularly with poor workstation ergonomics, may cause prolonged static contraction of muscles; increased pressure on the intervertebral discs and tension on ligaments and muscles; decreased tissue flexibility; altered spinal curvature and weakened paravertebral muscles, and such changes may lead to, or increase the risk of, musculoskeletal injury in the spine [3,5].

We also found that musculoskeletal symptoms in the head/neck, shoulders, upper back and ankles/feet were more common among women than men, which is consistent with a previous report [6]. Malchaire *et al.* [7] hypothesized that gender difference in the prevalence of musculoskeletal symptoms may result from women's exposure to physical household work, but this may be offset by men's exposure to other physically demanding activities outside the workplace, such as gardening. Consequently, this hypothesis is unlikely to explain the observed difference between genders. Another hypothesis is that gender differences in anthropometrics may put women at a disadvantage as they work in more extreme postures or use relatively greater muscle force than men [8]. Also, in Thai culture, it is more likely to be

**Table 1.** Prevalence of self-reported musculoskeletal symptoms attributed to work in office workers during the previous 12 months according to gender and age

Body regions	Gender			Age (years)				P
	Female (n = 807)	Male (n = 378)	P	<30 (n = 346)	30–39 (n = 494)	40–49 (n = 262)	>49 (n = 83)	
	Prevalence n (%)	Prevalence n (%)		Prevalence n (%)	Prevalence n (%)	Prevalence n (%)	Prevalence n (%)	
Head/neck	367 (45)	125 (33)	<0.001***	147 (42)	210 (43)	106 (40)	29 (35)	ns
Shoulders	143 (18)	46 (12)	<0.05*	57 (16)	71 (14)	49 (19)	12 (14)	ns
Elbows	36 (4)	23 (6)	ns	20 (6)	24 (5)	9 (3)	6 (7)	ns
Wrists/hands	169 (21)	65 (17)	ns	83 (24)	91 (18)	45 (17)	15 (18)	ns
Upper back	250 (31)	82 (22)	<0.001***	123 (36)	130 (26)	66 (25)	13 (16)	<0.01**
Low back	273 (34)	131 (35)	ns	133 (38)	163 (33)	89 (34)	19 (23)	ns
Hips	46 (6)	28 (7)	ns	25 (7)	27 (5)	16 (6)	6 (7)	ns
Knees	103 (13)	37 (10)	ns	38 (11)	59 (12)	36 (14)	7 (8)	ns
Ankles/feet	118 (15)	35 (9)	<0.05*	58 (17)	57 (12)	28 (11)	10 (12)	ns

Statistical differences in the prevalences according to gender and age,  $n = 1185$ ; ns = not significant.

\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

socially acceptable for women to complain about symptoms than men.

There was no association between age and prevalence of musculoskeletal symptoms, except for upper back symptoms: office workers younger than 30 were more likely to report such symptoms than those older than 49. It is possible that older workers have developed strategies for coping with the physical and psychosocial demands of the job while younger workers may lack this experience [9]. Another possible reason could be that young office workers use computers for longer periods than their senior counterparts, resulting in more musculoskeletal symptoms [10].

Although office workers perform predominantly sedentary work, musculoskeletal symptoms were very prevalent in our study population. This suggests the need to give further attention to developing specific measures to reduce or prevent musculoskeletal symptoms among employees in the office environment. Further studies should focus on identifying personal, physical, psychological and social factors associated with musculoskeletal symptoms, and thereby developing programs to prevent or reduce the occurrence of musculoskeletal symptoms in office workers.

### Key points

- Musculoskeletal symptoms are common among office workers, with the highest prevalence in the spine.
- The prevalence of musculoskeletal symptoms in the head/neck, shoulders, upper back and ankles/feet was higher in females than males.
- Apart from a higher prevalence of upper back symptoms in younger workers, age has no effect on the prevalence of musculoskeletal symptoms in most body regions.

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### Conflicts of interest

None declared.

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