Physical activity levels and prevalence of low back pain in Thai call-center operators

INTRODUCTION

Low back pain (LBP) is a major public health problem all over the industrial countries and is one of the leading causes for sick leave and disability. According to the literature, lack of exercise is a risk factor of LBP.[1,2] Numerous health benefits of physical activity in adults have been extensively documented.[3] In addition, it was recommended that fitness programs and advice to stay active can reduce pain, improve function, and can prevent LBP becoming chronic.[4]

The call center industry is one of the most expansive labor market sectors these days. In Thailand, there are an increasing number of telephone operators at the call centers day-by-day due to the economic growth of the country. There was a high proportion of call‑center operators reported musculoskeletal symptoms, and the call‑center operators were exposed to working conditions that indicated an increased risk of developing musculoskeletal disorders.[5] Nevertheless, there is few literature regarding health and working condition in call-center operators. Thus, this study was designed to investigate the physical activity levels and prevalence of low back pain (LBP) in Thai call-center operators. Materials and Methods: A self-reported questionnaire was distributed to 150 operators at a call center to identify the physical activity levels, prevalence of LBP, personal characteristics, and associated work factors. Results: The questionnaire response rate was 70% (n = 105). The participants' age was 27.8 ± 3.1 years, height was 159.97 ± 6.26 cm, weight was 52.89 ± 12.89 kg, and females 86.7% (n = 91), and males 13.3% (n = 14). Participants worked at least 6 days every week, with an average of 8 hours each day. Sixty-one percent of them worked over time with an average 2 h/day. Forty percent of the participants had no exercise; 34.3% exercised 1–2 times/week. Those who did physical exercise spent less than 30 min/time. The overall self-reported prevalence of LBP was 65.7%, and they reported high severity of LBP for 42.9%. All participants reported that their LBP as recurring, and 62.9% reported that LBP was aggravating by sitting during working hours. Conclusion: The call-center operators had a sedentary work style. The majority of operators in this study had low level of physical activity and suffered from low back pain. The prevalence of low back pain was associated to their level of physical activity and work factors.

Key words: Call center, low back pain, physical activity

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the company for at least 6 month. Operators were excluded if they had fracture, scoliosis, musculoskeletal disease, or injuries within 6 months prior to this study.

The questionnaire
Self-reported questionnaires were distributed to 150 operators at the call center. The questionnaire consisted of three parts;

- Part I: Demographic characteristics and job characteristics of the call-center operators
- Part II: Level of physical activity and exercise intensity. The levels of physical activity were assessed in at five levels; never, 1–2 times/week, 3–4 times/week, and 5–6 times/week everyday. The operational term physical activity was as a personal training exercise or physically exercises beside from work. In addition, based on the time spent on each exercise, the exercise intensity was assessed at 3 levels, light, moderate, and high
- Part III: A standardized Nordic questionnaire for analyzing musculoskeletal discomfort in different body regions.

Pain intensity on a 10-point numerical rating scale. The pain intensity was classified into three levels as mild (pain scale ≤3), moderate (pain scale ranged from 4–6), and severe level (pain scale ≥7).

Statistical analysis
Frequency distribution with percentages was done on all variables. The relationships between LBP and possible confounding factors (nominal level categorical variables) were computed with Spearman’s correlation. All statistical tests were done with a level of significance of 0.05.

RESULTS

Questionnaires response rate
The questionnaires’ response rate was 70% (N = 105).

Characteristics of participants
Anthropometrical data for participants in this study were age 27.8 ± 3.1 years, height 159.97 ± 6.26 cm, weight 52.89 ± 12.89 kg, females 86.7% (n = 91), and males 13.3% (n = 14). Their work years as telephone operators ranged from 1–4 years. Most of them (95%) never had experience as telephone operator prior to this job.

Job characteristics as a call-center operator
The call-center operators had sedentary workstyle; most of the time they were sitting in front of the computers at their desk in a confined space and wearing headsets, answering the phone calls, and searching the telephone number for the clients. They worked at least 6 days/week, with an average of 8 hours/day. Sixty-one percent worked over time with an average of 2 h/day. Most of them had to receive calls ranged from 500–600 calls/person/day, and spent time on each calls approximately 45 seconds. Nearly all participants felt physically fatigue after a 6-hour work shift.

Levels of physical activity
Majority of participants had low level of personal training physical activity; 40% of the participants had never exercised, 34.3% exercised 1–2 times/week, only 10.4% of the participants exercised everyday [Figure 1]. However, most who did physical exercise spent less than 30 min/time [Figure 2]. Based on the time spent on each exercise, their exercise intensity was classified to low (49.2%), moderate (46%) level, and high (4.8%) level [Figure 3].

Incidence of low back pain
The overall self-reported prevalence of LBP was 65.7% (N = 69). Figure 4 shows that majority of LBP operators reported high level of LBP pain severity (score ≥7 on a 10-point pain numerical rating scale [Figure 4]. All of them reported their LBP as recurring episodes.

Correlation between low back pain and work factors
There was significant correlation between low level of physical activity and low back pain, we observed that Spearman’s correlation coefficient, r_s, was 0.9, which is statistically significant (P = 0.001). In addition, 58.1% of participants stated that their low back pain caused by their job characteristic. Remarkably, there was 62.9% of them reported that LBP was aggravated by sitting during a 6-hour working shift. Furthermore, there were correlation between working period, and working space with the occurrence of low back pain (P < 0.05)

DISCUSSION

The main findings in this study were that a majority of the call-center operators reported low level of physical activity, there was a prevalence of LBP at 65.7%, and there was significant association between LBP and low level of physical activity, job characteristics, and work space. Remarkably, all of the operators experienced that LBP was recurrent.

The prevalence of LBP in call-center operators in this study was 65.7%, which is found to be high as in those who work as
office workers.\cite{8,9} In contrast, it was higher than that of taxi and truck drivers.\cite{10,11}

It was suggested that work-related factors were associated with the occurrence of musculoskeletal symptoms.\cite{12} As seen in this present study, there were association between LBP and work factor, i.e., sitting continuous for long periods of working hours and working in a confined space. In the present study, the participants working as telephone operators and spent long continuous time sitting in front of the computer than other sedentary job. This result agreed with the study on call-center operators working condition in Sweden.\cite{5}

A hypothesis has been proposed that low level of physical activity may be a risk factor in experiencing LBP.\cite{4} The fact that in the present study we found the same results as the recommended one. The report of US Department of Health and Human Services (1996) suggested that significant health benefits can be obtained by including a moderate amount of physical activity (e.g., 30 minutes of brisk walking or raking leaves, 15 minutes of running, or 45 minutes of playing volleyball) on most, if not all, days of the week.

Recently, it was suggested that strenuous physical activity at least once a week is protective for incidence of LBP.\cite{13} Therefore, through a modest increase in daily physical activity, the call-center operators can improve their health and quality of life. The validity of the concept of LBP is difficult to establish because of the subjectivity of pain.

However, Goodman and McGrath\cite{14} claimed that any measure of pain which is not based on self-report will likely yield inaccurate results. Thus, the questions on LBP were fairly good, in that we investigated the severity and frequency of pain. Further, the current physical activity itself is important in the evaluation of the impact of activity level on LBP. Therefore, the present study asked the operators him/herself about their LBP, and physical activity level.

Strengths of this study are the use of a randomized sample, validated questionnaire, and high response rate (70%). It is, however, a first study in Thailand, these results may be not representative for all call-center operators.

Further research in this area should focus upon a broader approach when investigating adolescent LBP associated with physical activity, including type of activities performed, technical skill, and body awareness through long-term, clinical, cross-sectional studies.

**CONCLUSION**

Call-center operators have a sedentary work style. The majority of operators in this study had low level of physical activity and suffered from LBP. The incidence of low back pain was associated to their level of physical activity and work factors.

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**Conflicts of interest**

There are no conflicts of interest.
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