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Ergonomic risk assessment among call center workers

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Abstract

Musculoskeletal disorders (MSDs) have been common complaints among workers involved in static work or tasks requiring the repetitive motion of the upper limbs and prolonged computer work. Call center workers are the one group which may impact on chronic musculoskeletal health problems. Therefore, the aim of this study was to assess ergonomics risk for MSDs in work environment among call center workers. This was a survey study conducted among 216 call center workers in Khon Kaen province, Thailand. Call center workers who had experience jobs more than 6 months, working time at least 32 hours per week with computer at least 4 hours per days. Data were collected by the Rapid Office Strain Assessment (ROSA) which measured the sitting posture, workstation (chair height, pan depth, armrests, and back support), computer (monitor, mouse and keyboard), telephone and duration of spending time for each posture or activity. From ROSA, there were 4 levels of ergonomics risk classification (low, medium, high, very high). The results of this study showed that the call center workers were only at 2 level of risk (high and medium). The majority of the call center workers were at high risk level (score 5-7 points) for 52.3% (mean score 5.3, 95%CI: 5.2-5.4). The medium risk level (score 3-4 points) was 47.7% (mean score 3.6, 95%CI: 3.5-3.7). The top three highest frequencies of score of ergonomics risk were 5 points, followed by 4 points and 3 points which were at 37.5%, 28.2% and 19.4%, respectively. The mean score of that risk was 4.5 (95% CI: 4.4-4.6). By using the ROSA, this study showed that most of the call center workers were exposed to the high ergonomics risk for MSDs development. For prevention of MSDs, there should be ergonomics training for workers to be aware of ergonomics factors in the office. The personal working behaviors and the design of the workstations should be improved based on the ergonomics principles.

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1. Introduction

The call center was an organization that was used for receiving or transmitting a large volume of requests by telephone and email, searching database and recording information of the customer through a computer. The company was available for service 24 hours, 7 days a week. Thus, management of shift work and interactive voice response (IVR) were used. Workers spent the most time working in a workspace that included a computer desk and chair. They may also have eye, ear, and throat related health problems [1] along with musculoskeletal disorders (MSDs). MSDs were caused by awkward posture (e.g. use fingers, wrists and arms in repetitive posture and always looking screen for working with computer) [2] or inappropriate workstation (e.g. insufficient working space and lack of forearm support) [3].

MSDs are almost caused by static work (i.e. workers who prolong working by sitting or standing postures). Several studies have reported high prevalence of MSDs among call center workers who sit daily for a prolonged length of time. Rocha et al. [4] had been occupied by MSDs at the prevalence of neck/shoulder symptoms was 43.0% and of wrist/hand was 39.0%. Likewise, the study of Chalardlon [5] had the top three prevalence in last 12 months were neck pain for 61.1%, followed by upper and lower back pain which were 55.7% and 53.1%, respectively.

This problem can be controlled by analysing risk factors among workers under working environment [6]. Therefore, the aim of this study was to assess ergonomics risk for MSDs in work environment among call center workers. It was the way to prevent the development of severe symptoms by surveillance program.

2. Methods

This was a survey study conducted among 216 call center workers in Khon Kaen province, Thailand. The survey was based on call center workers who had experienced their jobs for more than 6 months, working time at least 32 hours per week with a computer at least 4 hours per day. Exclusion criteria were workers who had musculoskeletal disorder at the present time.

2.1. Research tools

Data were collected by using 1) a structured interview questionnaire discussing the characteristic of the call center workers and 2) the rapid office strain assessment (ROSA) that applied from Sonne et al. [7] which measured the sitting posture, work station (Chair height, pan depth, armrest and back support), computer (Monitor, mouse and keyboard), telephone and duration of spending time for each posture or activities. ROSA had been designed for assessment of office workers and can help identified factors relating to discomfort from computer jobs. High inter and intra-observer reliability was 0.84 and 0.86, respectively.

From ROSA, there were 4 risk levels that were low, medium, high and very high. In each risk level, the definition and score were; low risk level = score 1-2 points, medium risk level = score 3-4 points, high risk level = score 5-7 points and very high risk level = score 8-10 points. Ergonomics risk level showed that ROSA scores more than 5 points was at least high risk level. Thus, the workplace should be improved and strictly assessed. For very high risk level there should be a sudden improvement.

2.2. Data collection

Ergonomics risk assessment was through an observation technique by ROSA. Posture and work environment were checked step by step and included sitting on chair, monitor and telephone used, mouse and keyboard, respectively. Also considered was the duration of work for using the integral parts of the computer. A structured interview questionnaire was used to collect general data and work characteristics to analyze with ergonomics risk assessment.

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