



Ergonomics Educational Intervention among Healthcare providers who working With Computer: a Protocol Design

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Background: Computers are an integral part of the workplace, especially among the office workplace. The risk of Musculoskeletal Disorders (MSD) among users of computers is high.

The purpose of the present study is to investigating the impact of health education program on applying the ergonomic principles among health care providers who work with computer in the comprehensive health centers which geographically located in the eastern regions of Tehran, Iran.

Methods and Materials: This study will be a semi-experimental (Field Trial) in which a multi-stage sampling method will be used to apply two groups of intervention and control. To do this procedure, among 12 comprehensive health centers in the east region of Tehran, six centers will be selected as the control group and six centers as the intervention group. The data collection tool will include a Nordic questionnaire and a researcher-made questionnaire to assess knowledge, attitude and behavior of the participants regarding ergonomic principles while working with computers. The educational program in the intervention group will be composed of three one-hour sessions. Data will be collected at the beginning of the study and three months after intervention from both groups and will be analyzed through using chi-square, T-test and paired T- test by SPSS version 21.

Keywords: Musculoskeletal Disorders (MSD), Educational Intervention, Ergonomic Principals, Computer Users, Office Employee

Introduction

According to the World Health Organization (WHO), MusculoSkeletal Disorders (MSDs) are related to work while work-related activities noticeably help deteriorate of these disorders. Of course, these activities are not only effective factors in their occurrence (Albert, Currie-Jackson & Duncan, 2008). Today, computers are an integral part of the workplace, especially among the office workplaces (Bathaei, 2005). Scientific reports and published articles indicate that the increased risk of MSDs among users of computers than others (Gerr, Marcus &

Monteilh, 2004). The rate of MSDs has been increased dramatically since 1980 (Desai & Shah, 2004). Symptoms of these disorders include a series of discomfort and pain, blinking, irritation, sensitive to touch, inflammation, and limitation of motion, loss of strength and ability and sensory disturbances in the body.

Inappropriate postures the most important risk factor for Work-related Musculo Skeletal Disorders (WMSDs) (Bathaei, 2005). According to the Health Ministry's Statistics Report, about 36% of employees in Iran are exposed to risk factors during their working. In this way, in near future, more workers will be exposed to labor-induced musculoskeletal discomfort (Andersen et al., 2014). According to the report of the Medical Commission of the Social Security Organization of Tehran Province, 14.4% of the disabling diseases is due to skeletal-muscular diseases (Nasl Saraji, Ghaffari & Shahtaheri, 2006). The results of the research on 1428 computer users showed that the prevalence of MSDs during past 12 months were as

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follows: head and neck disorders 42%, low back pain 34%, upper back pain 24%, wrists and hands disorders 20%, shoulder disorders 16%, ankles and legs disorders 13%, knee disorders 12%, pelvic pain 6% and elbow disorders 5% (Hoogendoorn et al., 2000).

According to the International American Occupational Safety and Health Administration (OSHA), MSDs have ranked as second rank among disease-related illnesses in terms of importance, frequency, severity and probability of progression, so that skeletal disorders are the major factor for the working time loss and also increased cost and human resources damages (Hasanzadeh, 2001). Due to the importance of this issue, a large part of the research in the field of human engineering science has focused on methods for assessing work postures and providing methods for preventing MSDs (Mahmud, Kenny & Rahman, 2012). Therefore, considering these risk factors and this issue that health care providers working at comprehensive health centers are also computer users, the incidence of MSDs for this target group should be paid more attention. The purpose of the present study is to investigate the impact of health education program on applying the ergonomic principles among health care providers in the comprehensive health centers while using computers.

Methods and Materials

This is a semi-experimental study (Field Trial). In this study, a multi-stage sampling method will be used. In the east of Tehran, there are 12 comprehensive health centers under the supervision of Shahid Beheshti University of Medical Sciences in Tehran, Iran. Of all 12 comprehensive health centers, six centers will be selected as the control group and six centers as the intervention group. Approximately 180 individuals work with computer in these health centers. However, according to Morgan's table the sample size will be 118 people. Thus, it is better to consider all computer users as research sample and then be randomly assigned to two groups of control and intervention with 90 individuals in each group.

The data collection tool will be two questionnaires. To determine the amount of musculoskeletal disorders, the Nordic questionnaire with 28 items will be used (Kuorinka et al., 1987). This questionnaire has been divided into two sections: the demographic and main

questions with the yes/no response index for assessing the prevalence of pain, discomfort, weakness or numbness in the two periods of the past 12 months and past 7 weeks.

The second questionnaire is a man-made questionnaire that will cover three constructs of knowledge, attitude, and behavior. The item generation will be based on the review of existing literature and guidelines on maintaining ergonomic principals among computer users. The number of items will be determined after the validity and reliability of the questionnaire. The response index differs according to the nature of each constructs. In another meaning, the item responses in knowledge are a two-value scale, as "yes" with score 1 and a "No" with score 0. The item responses for attitude will be ranged between five-choice likert scale from completely agree with score 5 to completely disagree with score 0. The domain of behavior questions will be responded with two valued-index as "yes" with score 1, and "No" with score 0.

In order to provide the validity and reliability of the questionnaire, using the content validity and split-half form method will be used respectively.

To enter the health care providers into the study, the criteria will be considered which be as following: being health care worker at the comprehensive health centers and working with computers. There are some exclusion criteria as occurrence of any unexpected event like job change and absence from work that prevents from participating in the study, unwilling to taking part in the classes, and not working with computer.

Before the intervention, the objectives of the study will be described for the potential participants. Written and voluntary consent will be obtained from each participant. The training program in the intervention group will be set up in three one-hour sessions. Educational intervention will be conducted through lecture and group discussion forums. Post-test will be performed at interval of three months after the educational program intervention. Determining the demographic information in each group will be obtained using descriptive statistics tests. The Kolmogorov-Smirnov test will be used to measure the normalization of data. Furthermore, a chi-square, t-test, paired t-test and non-parametric tests will be used based on Kolmogorov-Smirnov tests results (Stupar et al., 2008).

Discussion

We expect that the findings of this study will reveal that the educational intervention regarding ergonomic principles be an effective program among computer users in overall. Moreover, we are waiting for significant relationship between knowledge, attitude, and behavior of those who get interventional education rather than the control group.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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Author contribution

SST, FZ will do study design and Jkh will do data collation, data analysis and study implementation.

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