

WORK-RELATED WMSDs ASSESSMENT AMONG VIDEO DISPLAY  
TERMINAL USERS

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*To my beloved family*

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## **ABSTRACT**

The goal of this research was to assess the prevalence of musculoskeletal disorders as well as psychosocial work factors among the Staffs of Universiti Teknologi Malaysia. Furthermore the association between psychosocial work factors and WMSDs were investigated. This research was based on questionnaire survey. The questionnaire were extracted from the standard version of QPS Nordic questionnaire for the assessing the psychosocial work factors. For assessing the WMSDs the standard Nordic questionnaire were utilized. The questionnaires were translated into Bahasa Melayu, and a pilot study was performed to ensure the reliability of the questionnaires. The prevalence of musculoskeletal disorders was investigated using standard Nordic questionnaire. The WMSDs symptoms of shoulder, neck, upper back and lower back were found to be significant among the staffs. According to the recent research the psychosocial risk factors found to be a significant contribution to the development of musculoskeletal disorders were also considered in this research.

## **ABSTRAK**

Matlamat kajian ini adalah untuk menilai kelaziman gangguan muskuloskeletal serta faktor-faktor kerja psikososial di kalangan Staf Universiti Teknologi Malaysia. Tambahan pula hubungan antara faktor-faktor kerja psikososial dan WMSDs telah disiasat . Kajian ini berdasarkan kajian soal selidik. Soal selidik ini dipetik daripada versi standard QPS Nordic soal selidik untuk menilai faktor-faktor kerja psikososial. Untuk menilai WMSDs soal selidik Nordic standard telah digunakan. Soal selidik yang telah diterjemahkan ke dalam Bahasa Melayu , dan kajian rintis telah dijalankan untuk memastikan kebolehpercayaan soal selidik. Kelaziman gangguan muskuloskeletal telah dikaji dengan menggunakan soal selidik Nordic standard. Yang WMSDs gejala bahu , leher, belakang atas dan bawah belakang didapati ketara di kalangan kakitangan. Menurut kajian baru-baru ini faktor-faktor risiko psikososial didapati sumbangan penting kepada pembangunan gangguan muskuloskeletal telah juga diambil kira dalam kajian ini.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

WMSDs (WMSDs) represent a significant threat to employees' health and wellbeing across a wide range of industries and occupation. One line of work in this area has focused on the physical demands of work that employees must perform in using video display units (VDU) (Choobineh *et al.*, 2011).

There are two main types of musculoskeletal injuries, injuries associated with Manual Materials Handling (MMH), low back injuries often due to MMH that includes the results of force and amount of weight lifted. Cumulative trauma disorders (CTD), are physical injuries due to repeated biomechanical or physiological stresses on a specific body part. CTD is a collective name for discomfort, disability, impairment, persistent pain in muscles, tendons and other soft tissues. The economic loss due to such disorders affects not only the individual but also the organization and the society as a whole (Kemmlert, 1994).

The physical demands on different works create various injuries and illnesses related to WMSDs. The predictors for the risk of developing MSDs can be divided into individual (Ekman *et al.*, 2000, Spyropoulos *et al.*, 2007, Johnston *et al.*, 2008), ergonomic (Demure *et al.*, 2000) (Palmer *et al.*, 2001) (Nakazawa *et al.*, 2002, Ortiz-Hernández *et al.*, 2003) and psychosocial factors (Faucett and Rempel, 1994) (Polanyi *et al.*, 1997) (Haufler *et al.*, 2000, Hanse, 2002). In office users, the risk of developing MSDs is higher among users who have a high work strain, continuous

mouse and keyboard use, high muscle tension, and previous MSDs in the neck and shoulder (Kryger *et al.*, 2003) (Brandt *et al.*, 2004) (Juul-Kristensen *et al.*, 2004) (Nicholas *et al.*, 2005) (Werner *et al.*, 2005) (Hush *et al.*, 2009).

Previous studies have shown that these recommendations have little effect on reducing the prevalence of musculoskeletal symptoms (Torp *et al.*, 1999). Ergonomic interventions are expressed as a means to improve working conditions (Motamedzade *et al.*, 2002). There is evidence that ergonomic interventions are not solely sufficient to control WMSDs, but psychosocial conditions should also be considered. This study carried out to identify the prevalence of WMSDs among the UTM staff and the spread of psychosocial risk factors were examined and the ranking severity was established. Finally, the relationships between the psychosocial risk factors and the development of WMSDs among office users were investigated.

## **1.2 Background of the Study**

In the recent world, industries are faced with enormous challenge that one of main them are respect to work-related WMSDs (Silverstein and Clark, 2004). In fact, owners of factories need to ensure safety for both users, as their worth assets, and increase their productivity. It is now considered that some of the common factors with regard to WMSDs have been realised by ergonomists. These factors lead to some WMSDs such as the repetitive work, work in extreme and static postures, and work including forceful arm and hand movements.

On the other hand, they have realized psychological factors which are associated with WMSDs such as poor social support at work, the opportunity to influence decisions, work pressure and lack of variety and work satisfaction (Fredriksson *et al.*, 2001).

According to (Erez *et al.*, 2008), the weight of evidence over the years suggests that the development of WMSDs has increasingly been influenced by psychological work factors (Erez *et al.*, 2008). In this respect, it appears increasingly

clear that psychological work factor helps to intensified workload, monotonous work, limited job control, low job clarity, and low social support (Erez *et al.*, 2008). Although there has been many studies to show relationships between psychological work factor and MSDs, but the concern over the problems have been poorly perceived among management.

Generally, there are concerns that WMSDs have dramatically increased among video display terminal users due to inappropriate design of work desk, hence the need to carry this investigation is justified.

### **1.3 Problem Statement**

The video display terminal users have been influenced by high level of WMSDs mainly due to nature of the job for prolonged sitting. However several other factors are influencing the development of WMSDs among VDT users, therefore the risk factors of WMSD are still yet to be determined. The physical risk factors of WMSDs were investigated in previous studies; however the psychological aspect of work is another risk factors that may contribute to the development of WMSDs and needs to be investigated. Therefore, this research aims to investigate and uncover the psychological aspect of mental demands in offices on which causes the work pressure that persists among VDT users. The results of this research provide insights for future intervention plans in order to mitigate WMSDs symptoms among the VDT users.

### **1.4 Scope of the Study**

The research will covers a certain scopes that include the prevalent WMSDs among VDT users in UTM offices and to provide recommendation and the ways to overcome the problem.

## **1.5 Objectives of the Study**

As mentioned previously, this research will focus on WMSDs assessment among video display terminal users. Thus, the following objectives was planned to achieve the aim of research:

- I. To identify the spread of WMSDs among video display terminal users using standard Nordic questionnaire.
- II. To determine the spread of psychological work-factors among the video display terminal users using the modified version of standard QRS Nordic questionnaire.
- III. To establish the ranking severity of the WMSDS among video display terminal users using associations.

## **1.6 Significance of the Study**

This study is set up to provide the ranking severity of the WMSDS among video display terminal users. In fact, video display terminal users are facing several WMSDS in their working environment, which can be divided into two categories: physical and psychological. This study is going to recognize both physical and psychological factors in WMSDS among video display terminal users. The significance of the study can be seen in two parts;

First, from a view of theoretical aspect, discussion of WMSDS and their prevention is the most common issue on the workplace rules in the different job including video display terminal users. In fact, WMSDs include injuries and illnesses involving soft tissues or bones. They can occur suddenly or develop gradually over time. WMSDs may involve backs and arms accounted for 36 percent of Labour and Industries' users' compensation claims between 1989 and 1996 and cost \$2.7 billion, according to a Labour and Industries study released in January. The WMSDs kept employees off work 24½ million days during the eight years studied. The lost work time had the same effect as removing 12,250 employees from the workforce each



year (Labor & Industries Website, 2013). Moreover, they mentioned that "We must do more to prevent these costly injuries and illnesses. They represent a huge toll of pain, suffering and lost productivity," said Gary Moore, director of Labor & Industries. "We need everyone's help to draft a fair and effective rule for Washington's users and employers" (Labor & Industries Website, 2013).

Second, in practice, the application of the study can inform planners and designers in the industries to consider different physical and psychological elements that will influence on WMSDS among of video display terminal users in offices.

## **1.7 Organization of thesis**

This study consists of six chapters, which are summarized below:

Chapter 1 provides introduction of work related WMSDs assessment among video display terminal users, scope of work and the expected outcome for the whole research.

Chapter 2 provides literature review to of previous Work-related WMSDs (WMSDS) and psychological work-factors among the video display terminal users.

Chapter 3 discusses on the methodology that will be carried out in this study in order to obtain sufficient information for analyzing and decision making for achieving the objective in Chapter one.

Chapter 4 shows and explains briefly the outcome for each experiment.

Chapter 5 discusses in details the outcome of the experiment, such as how the result being analyzed, benefits and problems encountered.

Chapter 6 provides the conclusion to the whole research and future work.

## **1.8 Conclusion**

Generally this chapter explained the introduction, background of the problem; scope and objective of this research. Next chapter discussed the literature review of past research in this area.

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