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Prevelance of Occupational Related Injury among Staffs of Higher Institution in Malaysia

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Abstract

Background and objectives: Occupational related injury is a major occupational health problem in the working population. Musculoskeletal discomfort will give negative effect to every person and may affect musculoskeletal structure. Occupational injury may affect worker that working in occupational hazard exposure. The factor of occupational related injury is caused by sudden of prolong exposure such as repetitive movement, force, vibration or poor ergonomic. Therefore, the main purpose of this study is to determine the occupational related injury among staffs in one of the higher institutions. **Methods:** This is a cross-sectional survey, structured question with self-administered questionnaire. The demographic data and Nordic Musculoskeletal Questionnaire (NMQ) were distributed to 213 staffs between the ages of 22 between 60 years old in private university college at Nilai. Subjects are excluded if they have attended any medical treatment either conservative or operative treatment, history of surgery and injury. **Results:** A total of 54 subjects are included in this study. Percentage of the demographic characteristics such as gender, age and body composition were analysed. There is strong correlation between body area discomfort with age and body composition and statistically significant ($p<0.05$). **Conclusion:** Occupational related injury affects the body area discomfort according to gender, age and body composition among staffs in this higher institution.

Keywords: Occupational Related Injury, Musculoskeletal Disorder, Body Composition, Ergonomic, Body Area Discomfort

Introduction

Occupational related injury or musculoskeletal injury is major occupational health problem. It is a general health problem in the working population (Chau et al., 2009). Employee injuries at work can have a significant financial and personal impact. The impairment of work performance and increased sick leave have been linked to musculoskeletal injuries in teachers and staff (Maguire & O'Connell, 2007). In Malaysia, according to the Department of Occupational Safety and Health (DOSH), The Ministry of

Human Resources, the statistics of occupational musculoskeletal disorders are increasing from 178 cases in 1997 to 954 cases in 2009. By 2021, the occupational musculoskeletal disorder has been declined to 201, however this problem still in third ranked according to the categories of occupational diseases. Musculoskeletal discomfort will give negative effect to every person differently. Musculoskeletal discomfort may affect musculoskeletal structure including muscle, tendon and nerve damage (Campos-Serna et al., 2012). It might be work related either by the poor ergonomic or due to working environment. It also caused by precipitated or exacerbated by sudden exertion of prolong exposure to physical factors such as repetitive, force, vibration or poor ergonomic (Shalaw et al., 2016).

According to data from National Institute Occupational Safety and Health, in the United States in 2012, nearly three million workers have workplace injuries and illness due to occupational related injury. Among many cases in occupational related injury, back pain is the highest prevalence in body area discomfort. As mentioned by Global Disease Burden, the statistics of prevalence low back pain in Asia in 1990 until 2013 are Philippines is the highest rate that people get low back pain due to occupational related injury. Malaysian Institute of Occupational Safety and Health Organisation has recorded nine to ten rises in musculoskeletal discomfort cases. In 2012, a total number of cases are increases at 194 cases compared to in 2006 which were only 16 cases in a year. In Malaysia, musculoskeletal discomfort also developing according to statistics in 2017 reported by Social Security Organisation (SOCSO). Therefore, this study is to determine the occupational related injury among higher institution staff.

Method

This study is a cross-sectional survey, structured question with self-administered questionnaire. All staff between 22 to 60 years old has been included in this study. All the participants required in understanding of Malay or English language. Those who attend any medical treatment either conservative treatment or operative treatment and had history of surgery and injury were excluded from this study. Lastly, the questionnaire that were not completed by the participants also excluded in this study.

Procedure

The questionnaire consists of two sections. The first section of the questionnaire is about the subject's demographic data questions. The questions included gender, age, level of education, weight and height to check the body composition or body mass index (BMI) and also the history of surgery and injury. The second section of the questionnaire is using Nordic Musculoskeletal Questionnaire (NMQ) is to determine the human body area discomfort, duration of discomfort as well as level of discomfort. The purpose in this section two is to identify the site of discomfort that workers having. The subject need to tick in the box given for their area of musculoskeletal discomfort. Then, subjects need to tick at the box of duration of discomfort which are 1-3 times in a year, 1-3 times in a month, 1-3 times in a week, or every day. Last, subjects need to tick for level of discomfort. It is either mild discomfort, mild discomfort and not disturb activity daily living, moderate discomfort a limit the movement or severe discomfort and rest.

The questionnaire was translated and validated to dual languages which are Malay and English language. In Nordic Musculoskeletal Questionnaire (NMQ), the validity, reliability, sensitivity is researcher stated that comparing pain in the last 7 days found that the sensitivity ranged between 66% and 92% and specificity between 71% and 88%. In further study stated that the sensitivity for cervical spondylosis is 0.90, shoulder capsulitis is 1.00, 0.90 for lateral epicondylitis, carpal tunnel syndrome is 1.00 and Raynaud's phenomenon is 0.78. Validity for NMQ in surveillance of upper-limb work- related musculoskeletal disorder, the kappa=0.22 (0.19-0.23) in survey to 0.77 and the sensitivity was excellent in all situation with percentage 82.3% to 100%. NMQ is repeatable, sensitive and useful screening and surveillance tool (Crawford, 2007).

Data Analysis

The data of this research is analysing using statistical Package for Social Science (IBM SPSS) software version 20. The *p* values less than 0.05 is statistically significant. The demographic data is using descriptive analysis to calculate the frequency and percentage of response in each item in the survey questionnaire. The correlation between body area discomfort with age, gender and body composition is using Pearson correlation. Cross-tabulation analysis is used to determine the percentage and thus generating relationship between two variables.

Results

Participant Demographics

From the 54 valid sample size collected, there are 31 female subjects compare to 23 male subjects. In this study, Table 1 showed that female subjects (57.4%) participate more than male subjects (42.6%). They are various in age range, 50% among them are in the range of 31-40 years old, 33.3% between 20-30 years old and the remaining 9.3% and 7.4% between the range of 41-50 years old and 51-60 years old respectively. Among all 54 subjects, 50% is normal body composition, with 25.9% is obesity, 16.7% is overweight and 7.4% is underweight of body composition.

Relationship between body area discomfort with age, gender and body composition

Table 2 showed that strong correlation between body area discomfort with age (r = 0.788, p <0.05) and body composition (r = 0.982, p < 0.05). There is moderate correlation between body area discomfort with gender and not significant, (r = 0.543, p > 0.05).

Table 1
Characteristic of participants

Characteristics	Categories	Number of subjects (n)	Percentage (%)
Gender	Male	23	42.6
	Female	31	57.4
Age	20-30	18	33.3
	31-40	27	50.0
	41-50	5	9.3
	51-60	4	7.4
Body composition	Underweight	4	7.4
	Normal	27	50.0
	Overweight	9	16.7
	Obesity	14	25.9

Table 2
Relationship between body area discomfort with age, gender and body composition

variable	Subjects (n)	r value	*p* value
Age	54	0.788	0.037*
Gender	54	0.543	0.085
Body composition	54	0.982	0.003*
* p < 0.05 is significant correlation			

Discussion

This study showed that there is moderate correlation and no significant between body area discomfort and gender. It shows that female and male had experienced body area discomfort at different area of body. The gender differences related to the self-perceived physical health and musculoskeletal symptoms may also be influenced by a certain biological difference between women and men, which make women more susceptible than men to suffering musculoskeletal problems. Wjinhoven (2006) stated, showed that men have greater muscle mass and women have more fatty tissue. Despite the dramatic increase of women in the labour market in recent decades, there have been no significant changes in the distribution of domestic work, even when both partners are working full time. Domestic tasks are still unequally distributed, with most of them, for example, caring for children, the elderly and disabled people remaining women's responsibility. This fact reduces women's recovery time after a day of work compared to men, a situation previous studies have associated with increased musculoskeletal symptoms (Astazcoz et al., 2007).

According to this study, the correlation between body area discomforts with age is strong and significant. The result showed that the age range of 20-30 and 31-40 years old had more discomfort than the age range of 41-50 and 51-60 years old. The result shows that young workers high risk get occupational related injury than aging workers. However, contrary to this thesis hypothesis found that a negative relationship observed between older workers were more likely to report musculoskeletal discomfort compared to younger workers. Same goes to this previous study by Smith et al (2013) mentioned that their study had a contra hypothesis which is young worker had easy to get injury than older workers.

In addition, unlike a recent study, the researcher did not find that older age was associated with greater risk of musculoskeletal discomfort instead researcher found that the risk of injury related to both trauma to muscles and non-traumatic musculoskeletal diseases and disorders was greatest for the 35 to 44 years age group in both male and female (Okunribido, 2012). The lack of a significant correlation in the older workers may possibly be explained by factors such as workers in older age group being more experienced about health issues compared to younger age group.

The older age of workers in this institution experienced more occupational related injury at lower back and upper limb area. The injury at that area might be due to the muscles and bone property for older people as well as their aging process. For example, fracture injuries among older people due to reduce in bone mineral density and other changes in bone microarchitecture that occur with age (Kenny et al., 2008). These findings were expected that as older workers have decrease physical strength and a markedly increased prevalence of various physical and mental impairments in the age over 45 years old (Chau et al., 2009). In a nutshell, occupational related injury may occur to all age of group but with different factor of it. For example, younger and middle age experienced body area discomfort due to ergonomic position during working or workload and work capacity while for the older age experienced body area discomfort due to their aging process and physiological changes.

According to the correlation between body area discomfort and body composition, the result is strong and significant. This shows that normal BMI for staffs in Private University College had experiences body area discomfort more than abnormal BMI workers. But according to the total percentage of body area discomfort for normal BMI workers and abnormal BMI workers, it shows that they have same experience of occupational related injury but with different factor of it. The total percentage of overweight group for body area discomfort is 55.2% while for the obesity group is 101.9%. Among various risk factor of occupational related injury, such as heavy lifting and high job demand has been high risk for the overweight an obesity group for musculoskeletal injury (Viestar et al., 2013).

The first factor might be due to anatomical and physiological factors. Multiple hypotheses might explain the link between overweight and obesity and musculoskeletal symptoms including increased mechanical demands and metabolic factors associated with obesity (Wearing et al., 2006). Berry et al (2010) reported increased forces across the joints are likely to play a larger role in the relationship between a high BMI and weight-bearing joints especially lower limb and lower back. This statement is related to the staffs in private university college which is overweight group of staffs experience more discomfort at the back while for the obesity group of staffs' experiences more at the lower limb with the percentage 27.3% and 42.9% respectively. For the upper limb body area discomfort, the percentage for both groups are same (20.8%). So, worker with the upper limb injury might be due to the structure or adipose tissue in the upper limb structure. For example, workers easily get carpal tunnel syndrome due to work related injury. This is because carpal tunnel syndrome (CTS) an increase in upper extremity musculoskeletal symptoms associated with high BMI group has been attributed to increased adipose tissue in the carpal tunnel causing median nerve compression (Georgehagen et al., 2004).

Among mechanical factors, adjustment for physical workload could affect the relationship between BMI and occupational related injury. Every group of BMIs will be having body area discomfort due to workload at working area. Awkward posture and lifting heavy things such as books, laptop will increase the musculoskeletal discomfort. For example, in private university college, the normal BMI staffs mostly having lower back discomfort due to physical workload during working. Might be their nature of work such as prolong sitting or carrying heavy objects for event at the college or student's assignment books. In terms of the nature of the work injury or illness, sprain or strain, contusion or bruise, and pain or inflammation were the strongest drivers of the BMI effect the blood or body fluid exposure was significantly inversely related to BMI category (Truls, 2007).

High BMI workers mostly having back and lower limb discomfort due to greater loads on their joint. Based on study by Viester et al (2013), workers with high physical workload, the association in weight bearing joints will be increased, through additional physical strain. In this study it was suggested that many obese subjects use their upper extremities as weight bearing limbs when arising from a seated position, which may account for the increased upper extremity symptoms in high BMI subjects (Kim et al., 2010).

In conclusion, from these findings emphasize that efficient body weight programs are highly relevant as health promotion for this sector. Thus, this study may overcome this event by increase awareness on health promotion related with occupational related injury and body weight programs for all higher institutions.

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