UNIVERSITI PUTRA MALAYSIA

WORK-RELATED INJURIES AND ITS ASSOCIATED RISK AMONG STAFF IN A MALAYSIAN PUBLIC UNIVERSITY

SHALAW FARIS AHMED

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By

SHALAW FARIS AHMED

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Partial Fulfilment of the Requirements for the Degree of Master of Science

June 2016

DEDICATION

To:

* The spirit of my late father to his wish and a prayer

* My dear mother symbol of sacrifice and altruism

* My brothers and sisters love and appreciation

* The hero of Peshmarga, who protects us always symbol of freedom and humanity

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in the fulfilment of the requirement for the Degree of Master of Science

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Chairman : Titi Rahmawati Binti Hamedon, PhD
Faculty : Medicine and Health Sciences

Work-related injuries (WRIs) are injuries that occur at the workplace or that occur while commuting. WRI is still one of the occupational issues in the workplace, according to the Department of Occupational Safety and Health Malaysia (DOSH). There is multiple risk factors could cause WRI. WRI is usually studied in the dangerous sectors, but WRI among staff of the university setting in Malaysia is scarce. The main objective of this study was to determine the proportion of work-related injuries and its associated factors among staff of the Faculty of Medicine and Health Sciences (FMHS). A cross-sectional study was conducted on 364 randomly selected Malaysian employees who worked for at least one year in the faculty. The self-administered questionnaire was used to collect information on socio-demographic, employment and individual characteristics, as well as data on work-related injuries, occurred in the past 12 months. Data were analyzed by using the IBM Statistical Package of Social Sciences (SPSS) version 21. The results of the study showed that out of 317 respondents who answered the questionnaire and seventeen of them (5.4%) had experienced WRI, which the most common body parts injured were upper limbs (38.6%). Chi square test showed that factors were significantly associated with WRIs: **job title** (X^2=9.351, df=1, p=0.002), **feeling sleepy at work** (X^2=11. 012, df=1, p=0.001) and **feeling fatigued at work** (X^2=5.903, df=1, p=0.015). Multiple logistic regression test showed the significant risk factors for WRIs were **job title** (OR=8.053, 95% CI: 2.022-32.076), **part-time work** (OR=6.657, 95% CI: 2.129-20.818) and **feeling sleepy at work** (OR=4.519, 95% CI: 1.126-18.137). In conclusion, the proportion of WRI among the university employees is high compared to those in other countries. Based on the findings of this study, future research is needed to find out why the employee in this institution need to do part-time work that will leave them feeling sleepy at work and eventually exposed them to higher risk of getting WRIs.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

KEECEDERAAN DALAM KERJA DAN RISIKO YANG BERKAITAN DENGANNYA DI KALANGAN STAF DI UNIVERSITI AWAM MALAYSIA

Oleh

SHALAW FARIS AHMED

Jun 2016

Pengerusi : Titi Rahmawati Binti Hamedon,PhD
Fakulti : Perubatan dan Sains Kesihatan

Kecederaan berkaitan dengan kerja (WRI) adalah kecederaan yang berlaku di tempat kerja atau berlaku semasa dalam perjalanan ke tempat kerja. WRI masih salah satu daripada isu-isu pekerjaan di tempat kerja, menurut Jabatan Keselamatan dan Kesihatan Pekerjaan Malaysia (DOSH). Terdapat pelbagai faktor risiko boleh menyebabkan WRI. WRI biasanya dikaji dalam sektor berbahaya, tetapi WRI kalangan kakitangan penetapan universiti di Malaysia adalah terhad. Objektif utama kajian ini adalah untuk menentukan bahagian kecederaan yang berkaitan dengan kerja dan faktor-faktor berkaitan di kalangan kakitangan Fakulti Perubatan dan Sains Kesihatan (FMHS). Kajian keratan rentas telah dijalankan ke atas 364 orang pekerja yang telah dipilih secara rawak, di mana mereka ini telah bekerja selama sekurang-kurangnya setahun di Fakulti Perubatan dan Sains Kesihatan di UPM. Soal-selidik yang dikendalikan sendiri telah digunakan untuk mengumpul maklumat ke atas ciri-ciri sosio-demografi, pekerjaan dan individu, begitu juga data tentang kecederaan berkaitan dengan kerja, kerja yang ditanggung dalam masa 12 bulan kebelakangan ini. Data telah dianalisa menggunakan IBM Statistical Package of Social Sciences (SPSS) versi 21. Keputusan kajian menunjukkan bahawa dari 317 orang responden yang menjawab soal-selidik, 17 orang daripadanya (5.4%) telah mengalami WRI, dengan bahagaian badan yang paling kerap cedera ialah bahagian atas tubuh (38.6%). Ujian Chi kuasa-dua menunjukkan bahawa empat faktor dikaitkan secara signifikan dengan WRIs: jawatan kerja (X^2=9.351, df=1, p=0.002), sejarah pekerja rasa mengantuk di tempat kerja (X^2=11.012, df=1, p=0.001), sejarah rasa letih di tempat kerja (X^2=5.903, df=1, p=0.015). Analisis logistik multi-variat menunjukkan bahawa kakitangan sokongan berkecenderungan 8 kali ganda mengalami WRIs (OR=8.053, 95% CI: 2.022-32.076), kerja sambilan (OR=6.657, 95% CI: 2.129-20.818), sejarah rasa mengantuk di tempat kerja (OR=4.519, 95% CI: 1.126-18.137), berbanding dengan kumpulan-kumpulan responden yang lain. Sebagai kesimpulan, sebahagian dari WRI di kalangan pekerja-pekerja badan kerajaan adalah tinggi berbanding dengan pekerja di negara-negara lain. Berdasarkan dapatan kajian ini, kajian masa depan diperlukan untuk mengkaji keperluan pekerja-pekerja dalam institusi ini membuat kerja-kerja sambilan yang mana ini menyebabkan mereka rasa mengantuk semasa bekerja dan seterusnya mendedahkan mereka kepada risiko mendapatkan WRI yang lebih tinggi.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

Titi Rahmawati Binti Hamedon MD MPH
Senior Medical Lecturer
Faculty of Medicine and Health Science
Universiti Putra Malaysia
(Chairman)

Mohd Rafee Bin Baharudin MCIEH, PhD
Senior Lecturer
Faculty of Medicine and Health Science
Universiti Putra Malaysia
(Member)

BUJANG BIN KIM HUAT, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by graduate student

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Signature: _____ Date: _____

Name and Matric No: Shalaw Faris Ahmed, GS38914

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

Signature: _____

Name of Chairman of Supervisory Committee: Dr. Titi Rahmawati Binti Hamedon MD MPH

Signature: _____

Name of Member of Supervisory Committee: Dr. Mohd Rafee Bin Baharudin MCIEH

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LIST OF ABBREVATIONS

BLS	Bureau of Labor Statistics
BMI	Body Mass Index
CFOI	Census of Fatal Occupational Injuries
DHSSS	Duke Health and Safety Surveillance System
DOSH	Department of Occupational Safety and Health
DV	Dependent variable
et al,	And others
FMHS	Faculty of Medicine and Health Sciences
HIRARC	Identification of Hazard, Assessment of Risk and Risk Control
HSE	Health and Safety Executive
ILO	International Labor Organization
IV	Independent Variable
JKEUPM	Ethics Committee for Research Involving Human Subjects of Universiti Putra Malaysia
JSA	Job Safety Analysis
KNHANES	Korea National Health and Nutrition Examination Survey
N	Sample size
NADOPOD	Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease
NIOSH	National Institute for Occupational Safety and Health
NOHSC	National Occupational Health and Safety Commission
OHSMS	Occupational Health and Safety Management System
OIICM	Occupational Injury and Illness Classification Manual
OSHA	Occupational Safety and Health Administration
RM	Ringgit Malaysia
Sd	Standard deviation
SOCSO	Social Security Organization
SOII	Survey of Occupational Injuries and Illnesses
SOP	standard operating procedure
SPSS	Statistical Package for Social Science
U.S DOL	U.S Department of labor
UPM	Universiti Putra Malaysia
UPMFMHS	Universiti Putra Malaysia, Faculty of Medicine and Health Sciences
USA	Unite States of America
WHO	World Health Organization
WRHIs	Work-related Hand Injuries
WRIs	Work-related Injuries
WRULDs	Work Related Upper Disorders
WTPPDC	West Tehran Province Power Distribution Company
X^2	Chi-Square Test

CHAPTER 1

INTRODUCTION

1.1 Background of the study

1.1.1 Work-related injuries (WRIs)

Occupational health is a multidisciplinary area which deals with a wide range of issues associated with the diagnosis, treatment, prevention, proportion and control of work-related disorders, illnesses and injuries. Work-related injuries (WRIs) are still a serious problem in developing and developed countries and some employees are still unprotected from various hazards (Hämäläinen, Takala & Saarela, 2006). There are huge numbers of institutes, colleges and universities around the world as well as there have been an increasing number of universities, colleges and institutes set up in Malaysia to sustenance the role of tertiary education. This sector is still growing and both staff and students are exposed to various risks and hazards in this seemingly safe setting. Education setting is committed to keeping up a safe and healthy environment, where contact with chemical, biological, and physical health risks is preserved to minimum stakes.

Occupational safety and health is important because it is mainly concerned with occupational injuries, which may occur during employment. WRIs have been a thing of interest to both employees and employers globally and it is still the same now (Ou & Thygerson, 2012). Generally, injury can be defined as damage caused to the body by an exchange of energy and severe exposure. For example, Castillo, Pizatella and Stout (2010) state that work-related injuries are injuries, which are instinctively out of severe exposure to physical agents, such as electricity, chemical and ionizing radiation, mechanical energy, or from lack of basic agents, such as oxygen at the work place. There are a number of events that can be responsible for worker's injury which include, but are not limited to falls, assaults, motor vehicle crashes, being struck by objects and tools, electrocutions, being stuck in between machinery parts, which results in injuries such as burns, poisoning, internal damage, fractures, amputations, abrasions and lacerations.

Incidence rates of work-related injuries can be defined in different ways. For example in Turkey, it is defined as “the number of injuries per 200,000 employees” (Sari, Selcuk, Karpuz & Duzgun, 2009). In Australia, Ural and Demirkol (2008) proposed another definition: “the number of accidents at work per 100,000 persons in employment”, while in Spian, Carnero and Pedregal's (2013) defined it as “the number of accidents at work with more than three days’ absence that occurred during the year divided by the number of persons in employment as the reference population”. In Malaysia, WRI is also defined as “the number of injuries per 1,000 employees” according to the Occupational Health Unit in the Ministry of Health in 2005 (Bhardwaj et al., 2014). These different definitions of WRIs, suggest that the rate of incidence can be defined in different ways based on the type of injury, the magnitude of the injury and the number of workers or employees involved in an occupation. Occupational injury is still a problem in

developed countries with a considerable cost because many employees are still at risk of getting injured, from slight to severe injuries due to their occupation. For example, in the United States, the Bureau of Labour Statistics reports that 3.1 million non-fatal workplace injuries occurred in private industries in 2010. The annual report also showed an incidence rate of 3.5 cases per 100 full-time employees (BLS, 2010).

According to Malaysia's Social Security Organization, PERKESO, the number of non-fatal injuries decreased in Malaysia between 2002 and 2006 (Abas, Said, Mohammed & Sathiakumar, 2013). The study revealed that the highest incidence of non-fatal injuries among non-governmental workers occurred in the agricultural sector, manufacturing sector, and non-metallic industries. In the case of WRIs within university contexts, some researchers have focused on the university students rather than university staff (Ndetan, Rupert, Bae & Singh, 2009; Lauer et al., 2014; Sieloff, Shendell, Marshall & Ohman-Strickland, 2013; Yao et al., 2010).

WRI not only causes suffering and economic problems to the injured person, but also the entire community because it decreases the person's ability to deliver services to the society, which could effect to the growth and development of that society. According to the International Labor Organization (ILO) every year, approximately five million people suffer from work-related accidents in the European Union in 2003. Likewise, social suffering, these accidents has a substantial financial impact on occupants, as 150 million days are lost from work and the insurance costs to be borne by industry tally up to 20 billion Euro (ILO, 2003).

Workers' compensation organization compiled most of the data on work-related injuries. However, it is impossible to have a precise estimate of economic suffering, physical and mental burden of WRIs, rather it can be only roughly estimated. This is due to some factors such as employees receiving only a portion of wages via compensation, work-related injuries are not often compensated, and lack of data (Goldsmith & Blakely, 2010).

1.2 WRIs Among University Workers

The Faculty of Medicine and Health Science (FMHS) is made up of employees with distinct job descriptions which include (support staff, lecturers, drivers, administrative staff and tutor); their activities are often daily routines which are monotonous in nature. They often work for long hours in a fixed and odd position where the work takes longer than the usual time thereby affecting most body parts. University workers depending on the office occupied by each person carry out various duties and the responsibilities attached to those positions. For example, a lecturer does not only teach students, but he/she prepares lesson notes, sets exam questions, assess students' coursework, marks examinations, contributes to the research profile of the institution, engages in conducting personal research and projects, supervises research carried out by student's, carries out other administrative duties connected to the department (such as processing students' admission and sometimes given the role to head the department; that is for lecturers at higher levels) (Karwan et al., 2015).

The administrative staffs of FMHS are exposed to many risks which can have adverse effects on their health and general well-being. They may sustain physical injuries or psychosocial hazards due to the long hours spent on a very demanding task, various menial office duties such as photocopying, receiving official calls, entering data and filing, which expose workers to prolonged static sitting and monotonous hand and finger movement, especially while using the mouse and keyboard this is because of the daily use of computers in most tasks especially in Malaysian government offices (Mansor, Zakaria & Dawal, 2013).

It is essential to include not only the drivers' employers in support of safety procedures, but also employers' customers for enhancement of the physical environment, in which drivers collect, deliver goods, load and unload goods. Thus, professional drivers may be defined as workers whose major duty is to operate a motor vehicle in traffic conditions. This includes taxi, ambulance, chauffeurs and bus, tram, trolley, truck drivers (Kang & Jeon, 2014). FMHS has 10 male drivers that start driving from 7:30 am until 11:00 pm at an interval of 2 to 3 hours every day. FMHS bus drivers have to strike a balance between UPM operating regulations, timing and students' safety, thus drivers are exposed to many risk factors, which include little or not enough rest and sitting as well as driving for long hours, tight duty schedules, congestion on the road and the stationary nature of the job.

Furthermore, the supporting staffs play relevant roles in all institutions because they enhance public health and general well-being. Most support staff, from psychiatry, gynaecology, imaging, orthopaedic, biomedical, pathology, family medicine, surgery, pediatrics, medicine, nutrition, community health, human anatomy, nursing, microbiology, environmental and occupational health departments are at risk of sustaining injuries because they often engage in practical activities and some laboratory experiments. Most of the support staff work in different laboratories of the FMHS in UPM (UPMFMHS, 2015). People that work or study in chemical, biological or other laboratories are exposed to various kinds of hazards. In general, laboratories expose people to more variety of possible hazards than other workplaces: many agents are highly inflammable and explosive, and also their careless handling and storage may result in fire outbreaks, explosions and other risks (Pantusa, Stock, Morandi, Harrist & Afshar, 2002; EU-OSHA, 2006). Biological agents, toxic gases, fumes and many kinds of liquids may be produced as well as cause poisoning or infections. A different hazard occurs when laboratories deal with different or unfamiliar biological agents or chemical substances (EU-OSHA, 2006). Therefore the staffs are vulnerable to injuries which can be physical or psychiatric due to long working hours, exposure to harmful chemicals, infections and contagious diseases (OSHA, 2013).

Personal Tutorial System plays a major role in enhancing students' personal and academic development and it ensures that university students make the best use of their study period and time. The role of the tutor is divided into pastoral care and academic development. It helps students to look deep into their experience and skills both within and outside the curriculum. We can use this academic reflection by the student to formulate an action plan for the student. Tutors are usually the most important contact in the academic discipline because they play a vital role in helping students take full advantage of academic opportunities. The tutor is usually exposed to a lot of risks which can lead to injury and eventually affect their general well-being because they spend long

hours at work and are exposed to contagious diseases and harmful chemicals. Therefore, physical injuries may be inevitable (OSHA, 2013). When FMHS staffs are exposed to such activities, their health and general well-being are threatened because there is a high risk of them developing work-related injuries because of pressurizing monotonous work in odd postures. Findings of previous studies have also shown that WRIs are significantly associated with socio-demographic occupational and individual factors in different sectors.

1.3 Problem Statement

It is important for employees to remain healthy while working because their general performance can be affected by injuries. Severe physical injuries are likely to be accompanied by many problems such as depression, personal suffering, economic loss, and loss of self-confidence and self-esteem (Goldsmith & Blakely, 2010; Harnois, Gabriel, & WHO, 2000). The International Labor Organization (ILO, 2009) estimated that, globally, every 15 seconds, 153 workers have a work-related accident and 317 million accidents occur on the job annually; many of these resulting in extended absences from work. In Malaysia, for the years 2002 to 2006, the SOCSO data contained reports on 249,904 non-fatal occupational injury, according data source from Malaysia's Social Security organization (Abas et al., 2013). The Department of Occupational Safety and Health (DOSH) of Malaysia has mandated that any occupational accident or dangerous occurrences be reported to them using the form Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease (NADOPOD) 2015.

The study has been performed among education sector by Suarez-Cebador et al. (2015) indicates 931 accidents have occurred over the last decade (2003–2012) to teachers, researchers and administrative personnel in public universities in Andalusia. Most of the relationships between the variables (age, gender, type of job, job experience) were statistically significant (Suarez-Cebador et al., 2015).

Researchers have shown that different factors contribute to increasing the risk of WRIs (Loisel et al., 2014; Reid et al., 2014; Zhang, 2012). For example, working conditions, relationship with colleagues, workload, earnings and realistic expectations from superiors as well as socio-demographic characteristics, e.g., gender, age, teaching level and length of work experience have been investigated in relation to occupational injuries (Bogler, 2002; Yezzi & Lester, 2000). University population comprises people in different jobs that include lectures, office and administrative workers, physical plant employees, clinicians, and research and teaching assistants. Given such diversity within the academic setting in terms of the type of work, it can be assumed that the full range of occupational hazards exists in university settings. Malaysia has 20 public universities and around 450 private higher learning institutions, including 25 universities, 22 university colleges, as well as five branch campuses (Yen et al., 2015).

In Malaysia, a considerable number of studies have focused on different occupational sectors, including agriculture (Abas, Mohammed & Sathiakumar, 2011) mining (Rahman, Ismail & Mansor 2013), industry (Said, Said & Halim, 2012) and construction (Chong & Low, 2014), but the literature for WRI among staff of the university setting in

Malaysia is scarce. Therefore, it is essential to determine the factors that contribute to injuries as well as the incidence of injuries among Malaysian university staff. It is important to consider how individual, social-demographic, and occupational factors are linked to the proportion of injuries among academic, administrative and support staff of universities.

1.4 Purpose of the Study

1.4.1 General objective

The main purpose of this study is to determine the proportion of work-related injuries and its associated factors among the staff of the FMHS at UPM

1.4.2 Specific objectives

The specific objectives of this study are as follows:

1. To describe the socio-demographic, occupational and individual characteristics of the respondents
2. To calculate the proportion of work-related injuries among the respondents.
3. To describe the socio-demographic, occupational and individual characteristics among those affected by WRIs.
4. To describe the characteristics of work-related injury, such (nature of the injury, body part injured, mechanism of injury, agent of injury) among those affected by WRIs.
5. To determine the association between WRIs and socio-demographic, occupational and individual factors among the respondents.
6. To determine the predictors of WRI among the respondents.

1.5 Hypotheses

The research hypotheses for this study are as follows:

1. There is a significant association between socio-demographic factors and WRI.
2. There is a significant association between occupational factors and WRI.
3. There is a significant association between individual factors and WRI.

1.6 Significance of the Study

Universiti Putra Malaysia as an outstanding and a major leading Malaysian research university has a labor force consisting of employees in different categories that specialize in various areas such as lecturers, tutors, drivers, support staff and administrative staff who are exposed to psychosocial and personal factors that can lead to WRIs. Research on WRIs among university staff in Malaysia is scant. It is hoped that this study will provide an insight into the magnitude and nature of occupational injuries of staff working in the Faculty of Medicine and Health Sciences in UPM, paying

particular attention to identifying the types, body locations, mechanisms, and the factors associated with injuries. This study is necessary as it will shed light on issues related to WRIs among the academic staff and non-academic staff of universities. This research is in accordance with the government policy to improve occupational safety and health in Malaysia, which is in accordance with the Occupational Safety and Health Act 1994 (Masilamani, 2010). According to OSHA, both employees and employers are responsible for the health, well-being and safety of employees. The results of this study will show the essential features of WRI and how it relates to other factors among the study location, staff, which will help to increase awareness an WRIs among staff and other high risk group.

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