WORKPLACE STRESS AND MUSCULOSKELETAL DISORDER: THE RELATIVE ROLES OF PSYCHOSOCIAL AND PHYSICAL RISK FACTORS

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ABSTRACT

Work related musculoskeletal disorders (WRMSD) have been reported by many people from all over the world. The direct as well as indirect costs associated with WRMSD as for the compensation purpose is relatively high in value and the effect of it both to the employees and companies are very much significant. Major research studies have only concentrated on the effect of ergonomics to WRMSD. However, more researches have come into surface for the study of the relationship between psychosocial stress factors at workplace with WRMSD. In this research study, there are 6 variables under the psychosocial risk factors which being set and determined as independent variables whereas WRMSD being set as dependent variable. The 6 factors mentioned here are job demand (JD), role expectation (RE), work control (WC), social interaction (SI), leadership influence (LI), as well as organizational culture (OC). A total of 50 sample sizes have been taken and the correspondents comprised of employees working in the shared service companies located in Kuala Lumpur and Selangor. A set of questionnaire which been used as the main tool in this study as has been distributed to all correspondents and explanations on how to answer it have also been given accordingly. Two type of questionnaire being used merged into one are : part 1 (QPS-Nordic questionnaire) and part 2 (Standardized Nordic questionnaire for musculoskeletal symptoms). Quantitative analysis has also been used for this study where out of the 6 factors, 4 risk factors have shown positive relationship with WRMSD. The 4 factors are JD ($\chi 2=15.111$, DF=2, $P<0.05$), RE ($\chi 2=15.130$, DF=2, $P<0.05$), WC ($\chi 2=6.106$, DF=2, $P<0.05$) and OC ($\chi 2=9.051$, DF=2, $P<0.05$). It is believed that by the effectiveness of recommendations given at the end of this studies may help to cope and eventually minimizing WRMSD at the workplace.

ABSTRAK

Macapada ini, ramai pekerja di seluruh dunia telah melaporkan masalah muskuloskeletal yang dialami mereka. Kos baik secara langsung mahupun tidak langsung yang perlu dikeluarkan sebagai pampasan kepada mereka yang menghadapi masalah ini adalah terlalu tinggi dan paling penting, kesan yang diterima oleh pekerja dan syarikat adalah amat signifikan. Kebanyakan kajian yang telah dilakukan sehingga kini hanya lebih menitikberatkan tentang kesan ergonomik kepada masalah musculoskeletal. Walau bagaimanapun, kini semakin ramai yang telah juga melakukan kajian terhadap perhubungan di antara tekanan disebabkan oleh psikososial di tempat kerja dan masalah muskuloskeletal . Di dalam kajian ini, terdapat 6 pembolehubah di bawah topik tekanan psikososial di tempat kerja yang mana telah ditetapkan sebagai pembolehubah bebas. Masalah musculoskeletal pula telah ditetapkan sebagai pembolehubah malar. 6 pembolehubah bebas yang dimaksudkan di sini adalah kehendak pekerjaan, harapan kepada pekerjaan, kawalan terhadap pekerjaan, interaksi sosial, pengaruh pemimpin serta budaya di tempat kerja. Sebanyak 50 sampel telah diambil yang mana terdiri daripada pekerja yang sedang bekerja di syarikat "shared service" terletak di Kuala Lumpur dan Selangor. Satu kajian soal selidik telah diedarkan kepada mereka dan penjelasan bagaimana untuk mengisinya telah diberikan sebelum mereka menjawabnya. Quantitatif analisa juga telah dilaksanakan di dalam kajian ini dan daripada 6 pembolehubah yang dimaksudkan di atas ini, 4 daripadanya telah menunjukan perhubungan dengan masalah muskuloskeletal. 4 pembolehubah tersebut adalah kehendak pekerjaan ($\chi 2=15.111$, DF=2, $P<0.05$), harapan kepada pekerjaan ($\chi 2=15.130$, DF=2, $P<0.05$), kawalan terhadap pekerjaan ($\chi 2=30.379$, DF=2, $P<0.05$), serta budaya di tempat kerja ($\chi 2=9.051$, DF=2, $P<0.05$).Sememangnya dengan cadangan yang telah diberikan di hujung kajian ini adalah diharapkan masalah muskuloskeletal dapat dibendung di semua tempat kerja.

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LIST OF SYMBOLS AND ABBREVIATIONS

MSDs	:	Musculoskeletal Disorders
WRMSD	:	Work-Related Musculoskeletal Disorders
CTS	:	Carpal Tunnel Syndrome
SSC	:	Shared Service Company
MNC	:	Multi-National Company
SLA	:	Service Level Agreement
SPSS	:	Statistical Package For The Social Sciences
JD	:	Job Demand
WC	:	Work Control
RE	:	Role Expectation
SI	:	Social Interaction
LI	:	Leadership Influence
OC	:	Organizational Culture

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CHAPTER 1

INTRODUCTION

1.0 Background of Research

Occupational musculoskeletal disorders (MSDs) is playing a major concern both to the cost and human suffering and even though a lot of efforts has been done to cope the situation, the prevalence is still at an alarming rate. Based on the definition by Kroemer (1989), work-related musculoskeletal disorders (WRMSD) is symptom that is caused by works that lead towards discomfort, impairment or persistent pain in joints, muscles, tendons, and other soft tissues, with or without physical manifestations. Most of the works we are doing in daily basis especially for people at the workplace require for the use of hand and foot and these activities included with frequent and repetitive movements together with awkward postures at time. This then lead towards pain to several parts of bodies which include hands, wrists, elbows, neck and shoulders (International Labor Office, 2012).

Based on (Plaisier et al., 2007) research study, work-related musculoskeletal disorders (WRMSD) is a collective and descriptive symptom in which it can even become worst if no preventive actions are taken earlier. Over time, it can become a great cost issue in order to cope with the situation if to compare with injuries due to sudden incident like slip and fall. This is because higher medical and time loss payments are needed in order to get the employee to get back to work while they are away for the medical leaves. Furthermore, the costs which occurred due to the work-related disorders are indeed obvious and compelling where all parties from individual worker, employer and society are included in this context. When we state about cost here, estimations are generally based on direct and indirect cost. Example for direct costs are medical expenses

(hospitalization, doctors' visits and rehabilitation), legal costs and the cost of hiring a replacement worker. On the other hand, approximately 75 percent of overall costing is categorized under the indirect cost in which not only it included for lost output due to absenteeism but also reduction in both staff morale and their daily productivity together with the administration of the compensation claim made by workers. This cost however, are rarely considered (Amin, Nordin, Fatt, Noah, & Oxley, 2014). In addition, (International Labor Office, 2012) has done a research study where it showed that almost 4% of the world's gross domestic product is lost with several costs. The cost mentioned here are cost for survivor benefit, sickness treatment as well injury, disease and death through absence from work.

In Malaysian workforce scope, work-related musculoskeletal disorders (WRMSD) are actually increasing from year to year at a significant value. Statistic published by Malaysian Security Social Organization have shown an increase of cases reported where from 26 cases in 2007 climbing up to 239 cases in 2010. And it is also recorded that one third of worker's compensation costs in Malaysian private industry are from the incidents related to work-related musculoskeletal disorders (WRMSD) itself. Moreover, it has been found that in Malaysia, a total cost as much as RM 1.2 million for compensation purpose has been paid for one work-related death and RM120,000 is being paid for permanent disability due to the work-related injury. In the year 2010 itself, a total of RM109 millions of disbursement for temporary disablement has been recorded, and RM306 millions and RM205 millions has been paid respectively for permanent disability benefits and dependent benefits (International Labor Organization, 2013).

To date, higher percentage of researches have been carried out on the ergonomics factors at the workplace and the impact of it to the employee health, and example for this statement are poor posture which being held for long time, continuous heavy loads loading and lifting as well as movements which being highly repeated for a long time

frame (Bernard & Putz-Anderson, 1997). However, recently, researchers have also taken into consideration that besides ergonomic factor, psychosocial stress factors at workplace may also be the possible risk factors for WRMSD, especially for industries like services which are blooming rapidly nowadays. Prior studies have found out few elements of psychosocial at workplace that contributes towards this situation and among them are low both in job control and managerial support, high job expectation and demand which is too much for the staff to handle as well as low job satisfaction (Kivimäki, Vahtera, Ferrie, Hemingway, & Pentti, 2001) and (Michael Feuerstein, Harrington, Lopez, & Haufler, 2006). These elements of psychosocial stress factors at workplace are well-known stressors in the field of occupational health psychology (Karasek et al., 1998) and (Plaisier et al., 2007).

Even though there are a number of bodies which has done researches regarding on the association between psychosocial stress factors at workplace and WRMSD especially in well-developed countries, yet there are still limited researches with regards to the companies in developing countries like Malaysia. With that, this research study has been chosen which the objective of it is to have better understanding on the prevalence of work-related musculoskeletal disorders (WRMSD) and to identify its relationship between psychosocial stress factors in the workplace as well as the possible risk that may arise due to sustaining WRMSD among employees in Malaysia. For this research context, the scope is being focus for employees working in the shared service companies (SSC).

1.1 Problem Statement

Musculoskeletal disorders account for a large number of compensation days and disability in most countries. It is generally agreed that musculoskeletal pain is multifactorial in origin. Work-related physical load, such as heavy lifting, frequent twisting and bending, and whole-body vibration, have been identified as important risk

factors for low back pain. Factors such as neck and arm postures, repetitive work, and static workload have been identified as important risk factors for neck pain. Similar physical factors have predicted musculoskeletal pain in other parts of the body.

Numerous studies have also been done recently as to examine on how psychosocial stress factors at workplace are giving impact towards the development of musculoskeletal symptoms. Few examples for such risk factors are high job demands, low work control, low social interactions at the workplace, bad leadership as well as non-effective organizational culture. However, it is generally accepted that individual capacity is the major topic and mainly interpreted as physical capacity (e.g., muscle strength, range of movement) in the epidemiologic research on musculoskeletal disorders, whereas only little attention has been given to relationships between WRMSD and psychosocial factors at workplace and psychological coping capacity. Moreover, there are also limited studies in order to get clear and better understanding on what is the psychosocial stressors' role in the development of work-related musculoskeletal disorders (WRMSD) compared to the studies on impact of ergonomics factor to worker's health. Thus, there is a need and would be very much beneficial to many in reviewing how psychosocial stress factors at workplace causing the occurrence of WRMSD and in this context of research study is among the Malaysian workers whom are working in shared service industry.

In this research study, a set of questionnaire survey is being distributed to a group of people from different shared service companies as to expand our understanding on the relation between WRMSD and psychosocial stress factors at workplace, and to give recommendations for the corresponding associations in the future.

1.2 Aim, Purpose and Objectives of Study

Specifically, the objectives of this study are:

i. To identify what are the psychosocial stress factors at workplace that give influence towards severity of work-related musculoskeletal disorders (WRMSD) and which part of the body WRMSD usually occurred.
ii. To determine the relationship between psychosocial stress factors at workplace and work-related musculoskeletal disorders (WRMSD).
iii. To propose improvements in order to cope the associations of these two aspects in future.

1.3 Scope & Limitation of Study

This study was conducted in a shared service companies in Kuala Lumpur and Selangor in which the main aim of these organizations is to enhance operational excellence by performing transactional activities with standardized processes in-time and cost-effective manner. A total of 50 employees from different shared service companies participated in questionnaire to identify the connection between work-related musculoskeletal disorders (WRMSD) and psychosocial stress factors at workplace.

Even though the study has achieved the objective, it is true that there is a limitation to it. It was found that there are limited previous researches conducted regarding the relationship between work-related musculoskeletal disorders (WRMSD) and psychosocial risk factors in shared service companies and therefore, it limits the critical literature review on the association of these two aspects.

1.4 Report Outline

The report layout of this study has been established as below:

Chapter 1 is the introduction of the report. It consists of the background of the study, problem statement, aim, objectives and scope as well as limitation of study.

Chapter 2 is the literature review include overview of definition of work related musculoskeletal disorders (WRMSD), psychosocial stress factors at work, previous studies that link these two aspects (example of models), shared service introduction as well as measures usually taken to cope psychosocial stress factors at workplace.

Chapter 3 consists of methodology that has been adopted to conduct this project. Several methods that have been identified and conducted in this study are study design, study location, sample size, data collection, and research instruments (type of questionnaires used). It also contains the information regarding the method used to analyze the result gathered.

Chapter 4 is result and discussion which presents and discusses the analysis conducted. SPSS program has been used to analyzed the questionnaires which being distributed to correspondents from the shared service companies and the result is being translated into table and graph form.

Finally, Chapter 5 concludes the report and provide recommendation and improvement for further studies.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter is an overview of literature related to research problem presented in Chapter 1. This part will provide a comprehensive and clearer view on the proposed research objectives as pointed in previous chapter by viewing the articles, standards and past studies on relation between work-related musculoskeletal disorders (WRMSD) and psychosocial work factors.

2.1 Work-Related Musculoskeletal Disorders (WRMSD)

It is true that work-related musculoskeletal disorders (WRMSD) have attracted much attention in recent years, but the phenomenon is not something new to us. This phenomenon has indeed becoming one of the hottest topic being widely discussed in recent researches nowadays especially in the industrialized countries (International Labor Organization, 2013). Certain economic sectors are much more associated with WRMSD mainly due to the repetitive manual and example for such sectors are construction, food sector (slaughterhouses), sewing and clothing, electric and electronic products manufacturing sector and much more (International Labor Office, 2012).It is undeniable a major occupational safety and health issue and most researches including the specialist does not have an optimistic view in this topic. They are expecting the amount for compensation claims due to the WRMSD will keep on increasing from year to year. This is because of the demand of the globalization in which encourages for activities especially in the economic sectors to be carried out at a higher pace, forcing people to work with more repetitive motions, resulting to continuous occasion of WRMSD. Example for

MSDs in which common and usually occurred among the workers are persistent pains, backaches, and discomfort on the body part (neck, shoulders, hands, knees and legs), carpel tunnel syndrome (CTS) and much more (Lim & Carayon, 1993).

Moreover, recent studies have also found out that one of the element under the ergonomics factor which affecting the development of musculoskeletal disorders is due to the psychosocial stress factors at workplace. High psychological demands, low decision latitude and low social support in which related to work stress and diseases are among the many examples of psychosocial work factors (Cooper, Dewe, & O'Driscoll, 2001). A development model of musculoskeletal disorders can be best described by Figure 2.1 and the association between psychosocial stress factors at workplace and WRMSD will be discussed further on following subtopics (Laura, Kari Babski, Tonya Smith, 2007).

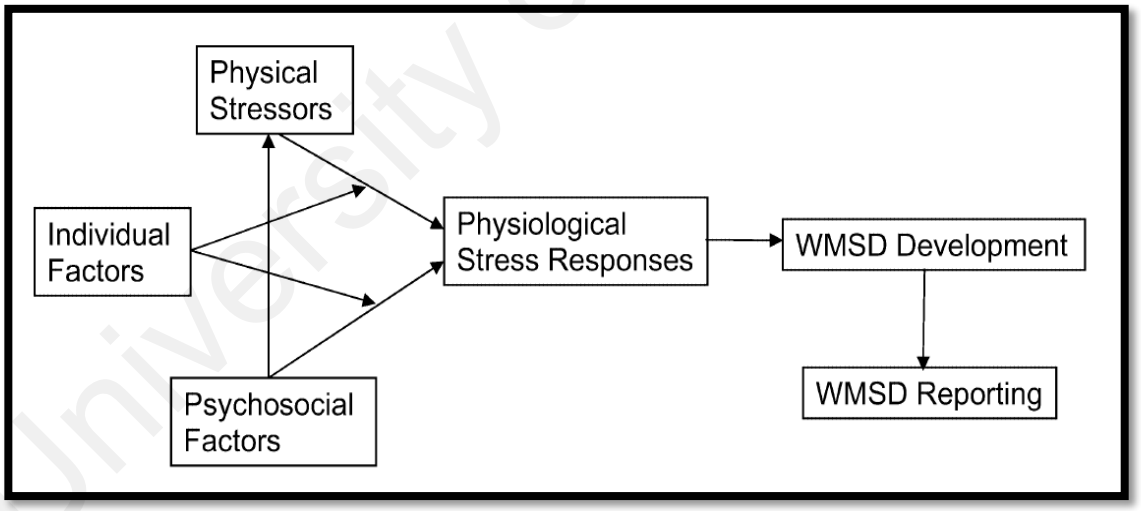

Figure 2.1: (WRMSD) Development Model (2007)

A study has been carried out by (Blanc, Faucett, Kennedy, Cisternas, & Yelin, 1996) and they have found out that carpal tunnel syndrome (CTS) is associated with disability costs, and it is an example among many other musculoskeletal disorders affecting the upper extremities. And based on the research study by (Yelin & Felts, 1990),

United States has reported to has disbursed more than USD 21 billion annually due to the musculoskeletal disorders overall costs and almost 10 million people has been affected due to this phenomenon resulting them to had limited control towards their daily activities as well as the ability to continue working at their chosen jobs. Not only that, effect of such disorder may also causing the workers to have lower morale sentiment in which in a long term aspect, it may create a psychological barrier and continuous mistrust between employer and employee.

Therefore, effective solutions must be carried out as to treat the phenomenon of WRMSD before it become worst. Despite the scale of economic repercussions, the serious and sometimes dramatic consequences of WRMSD on those affected employees must not be overlooked. Compensation difficulties, physical and mental suffering, temporary or permanent limitations in their professional activities are among the aspects of the tragedies that can strike people afflicted with WRMSD. Minimizing this phenomenon required a systematic planning and approach. Awareness from both employer and employee side, support from management, training and competency, work improvement as well as safe working system are needed as to ensure continuous effort to cope with such situation.

2.2 Psychosocial Stress Factors at Workplace

Based on the research study by (Bongers, de Winter, Kompier, & Hildebrandt, 1993), psychosocial risks are elements that give influence towards employees' mental and physical which coherently impacting their psychological responses both to work and work conditions. Due to these elements, there is a high potential that psychological health problems to be occurred among employees. The scope of the psychosocial factors are broad and the examples are the way how work is carried out (deadlines, workload, work methods) as well as the context in what happen around the working surrounding

(including relationships and interactions with managers and supervisors, colleagues and coworkers, and clients or customers). Figure 2.2 portrayed the interactions between psychosocial factors at work and how perceptions and experience, influencing employee's health, work performance and job satisfaction.

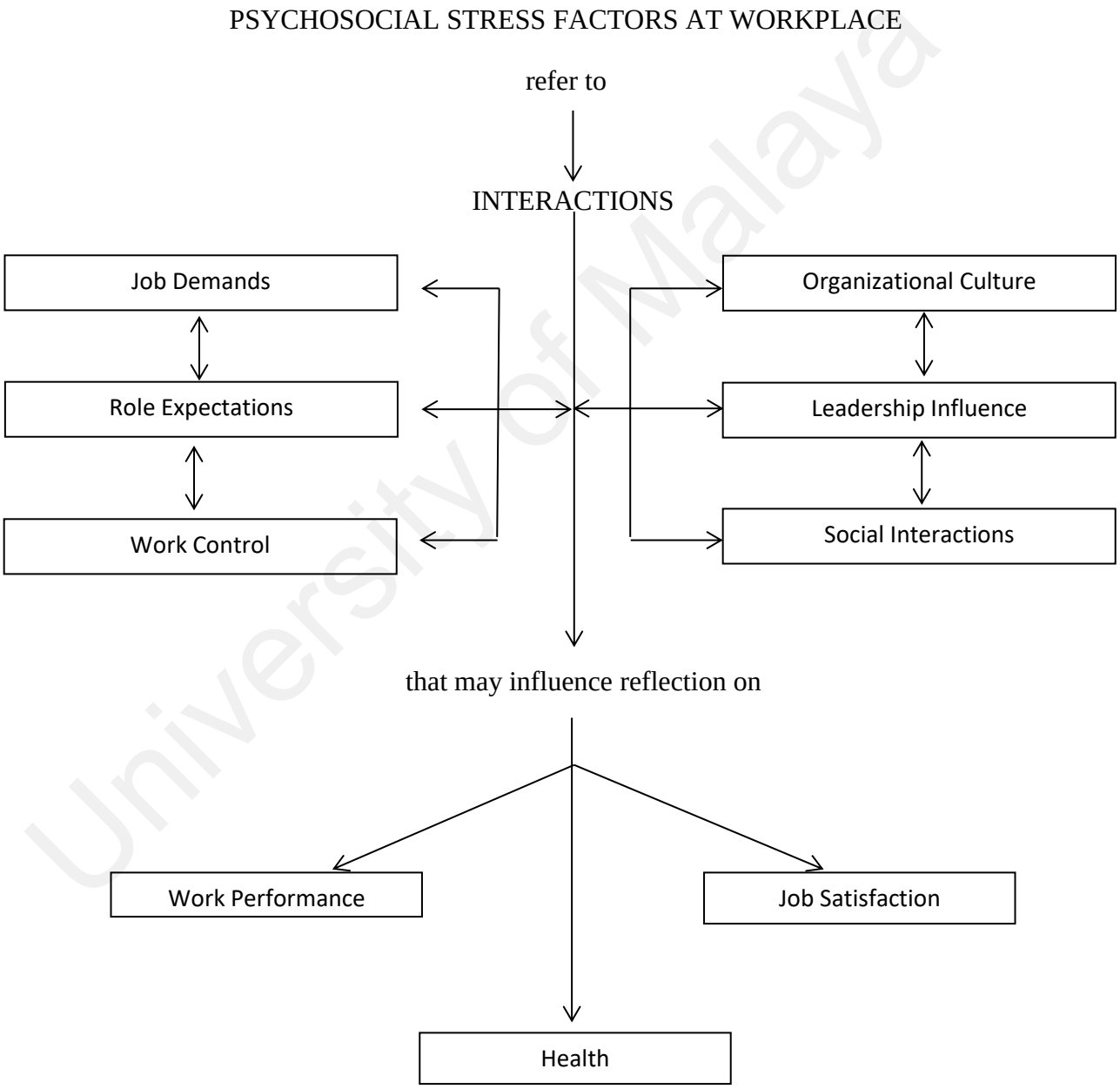

Figure 2.2: Psychosocial Stress Factors at Workplace

Based on the above figure, three elements that represent employees' occupational concerns are job tasks, work environment and organizational culture factors. Workers' reactions to their occupational concerns may differ to one and another, depending on different factors which are expectations, needs, abilities, culture and private life. These human factors however may change over time reflecting adaptation among other influences. A negative interaction between occupational conditions and human factors may lead towards emotional disturbances, behavioral problems and biochemical changes, presenting added risks of mental and physical illness. Adverse effects on job satisfaction and work performance can also be expected. An optimum balance between human factors and occupational conditions would suggest a psychosocial situation at work having a positive influence, particularly as it related to health (International Labor Office, 1984).

Taking a more multidimensional view of stress, (Cooper, Dewe, & O'Driscoll, 2001) argue that sources of stress can be grouped into three broad categories: job-specific sources, organizational sources and individual sources. The first two categories are external to the individual and are frequently referred to as "environmental" sources of stress. On the other hand, (Cartwright & Cooper, 1997) identified six environmental sources as follows:

i. Factors intrinsic to the job itself
ii. Roles in the organization
iii. Relationships at work (with supervisors. colleagues and subordinates)
iv. Career development issues
v. Organizational factors (e.g. organizational structure and climate)
vi. The home-work interface.

2.3 Models Linking Psychosocial Work Stress to Work-Related Musculoskeletal Disorders (WRMSD).

Over the past decade, a number of work-specific models have been proposed to discuss on how psychosocial stress factors at workplace could trigger the musculoskeletal disorders among workers. Four representative models attempted to associate these two aspects and there are:

i. The balance theory of job design and stress

ii. The biopsychosocial model of job stress

iii. The ecological model of musculoskeletal disorders

iv. The workstyle model

2.3.1 The Balance Theory of Job Design and Stress

A framework for examining the relationship and interaction among work organization, ergonomic exposure, job stress and work-related musculoskeletal disorders could be provided by the balance theory of job design and stress. (SMITH & CARAYON, 1996) have conducted a research study where they have identified that three general domains of human stress are bio physiological(emotion), behavioral, and psychological. As with the generic models of stress, this model suggested that psychosocial work factors produce three short-term after affect which are:

i. Emotion (e.g., adverse mood states),

ii. Behavior (e.g., smoking, excessive use of force in work tasks)

iii. Physiological (e.g., increased muscle tension, elevated blood pressure, elevated cortisol and catecholamine levels) reactions.

With regards to above, people whom highly get exposed to such situation would definitely provide an adverse health outcome in which may include work-related musculoskeletal disorders (WRMSD). To add up, this model proposed that individual characteristics, age and existing disease/ illness might also lead towards further adverse mental and physical health outcomes as result of increase stress reactivity. Moreover, it was also found the possibility on how psychosocial risk factors give impact to the body and its related musculoskeletal disorders as a result of it.

Physiological Work Factors	How MSD risk has increased
Increased blood pressure	In joints where space is at a premium (example - carpal tunnel), a consistent increase in blood pressure could lead to increased pressure in the joint specifically on tendons, ligaments, and nerves.
Increased fluid pressure	When fluid pressure is increased for a prolonged period of time, increased pressure may be placed in joints, and on tendons, ligaments, and nerves.
Decreased sensitivity to pain	When pain is not sensed as clearly, workers may work beyond and above their body's physical capacity.
Dilation of pupils	Increased sensitivity to light.
Increase in muscle tension	Causes increase in pressure on and around joints, tendons, ligaments, nerves, and may cause excessive use of force during certain activities and movements.
Body remains at a heightened state of sensitivity	Because of heightened sensitivity and alertness, person may overburden their musculoskeletal system (lift more, work faster, etc.)

Table 2.1: Impact Psychosocial Stress Factors to Body

2.3.2 The Biopsychosocial Model of Psychosocial Work Stress Factors

In this model, psychosocial work stress factors are found to create a condition of over or under stimulation in which may evoke to physiological responses, such as increased in tension of muscle and secretion of both catecholamine and cortisol (Frankenhaeuser & Gardell, 1976). Moreover, this research study managed to determine the possible effect of non-work related demands such as child care and household chores as well as the after effect of recovery from stress that they went through at workplace. People who have high quantity in workload (work and home) is to be expected to have greater risk as they continue to be at superior physiological level factors or undergo very much slow recovery process due to continuous demands of works.

2.3.3 Ecological Model

(Sauter & Swanson, 1996) has done an ecological research study of musculoskeletal disorders in which it determined the relation between psychosocial stress factors at workplace and biomechanical stressors. Figure 2.3 explains this relationship. Based on this research study, any work that related to musculoskeletal disorders may eventually be traced by latest work technology and this includes work and tool systems. Moreover, the research study suggested the outcomes of a direct path among work organization, psychosocial stressors, and musculoskeletal by two routes which are:

i. First hypothesis explained that psychological strain would form muscle tension and autonomic effects which would lead to musculoskeletal disorder.

ii. Second hypothesis explained that psychological strain would lead to moderate the association between biomechanical strain and the presence of symptoms, without literally change physical pathology (i.e., cognitive appraisal or interpretation).

The research study also proposed that stress at work could be influenced by the experience of musculoskeletal disorder symptoms itself.

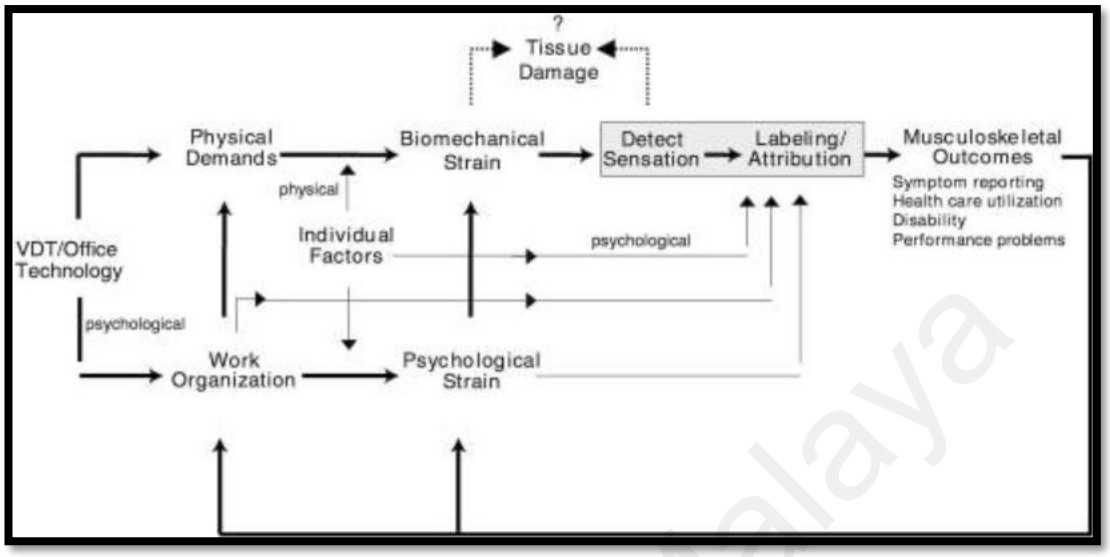

Figure 2.3: Ecological Model of Musculoskeletal Disorders

2.3.4 Workstyle Model

The workstyle model of psychosocial stress factors at workplace and musculoskeletal disorders (Michael Feuerstein, 1996) has suggested on the description of the association between the elements of psychosocial risk factors, ergonomic exposure, and WRMSD. This relationship is being illustrated in Figure 2.4. This research study considered the significance of workstyle, in which how people could perform their work in response to work demands. There are three components of workstyle in this study in which stress response usually reported which are cognitive, behavioral and physiological. The component of behavioral, include movement, posture and activity in which can interact with the exposure in workplace to ergonomic risk factors that can possibly raise the risk of musculoskeletal pain (Macfarlane, Hunt, & Silman, 2000). The component of cognitive are specify as the thoughts, feeling, appraisals and evaluation of the employee's success or failure of their reaction to the work demands. The component of physiological portrays the changes in biological aspect that accompany the behavioral and cognitive

reactions. The changes mentioned here are increased muscle tension, tendon force, catecholamine or cortisol release, and stress-induced changes in immune function (M Feuerstein, Huang, & Pransky, 1999). Employees with "high-risk" workstyle would continuously strive for extra effort to deal with the stressful or demanding work environment and because of this they would be exposed to frequent or chronic physiological, cognitive, and behavioral from the reaction of stress. High risk workstyle is found to be correlated with functional limitations, symptom severity, and work disability in an employee that deal with hand-intensive work (Haufler, Feuerstein, & Huang, 2000).

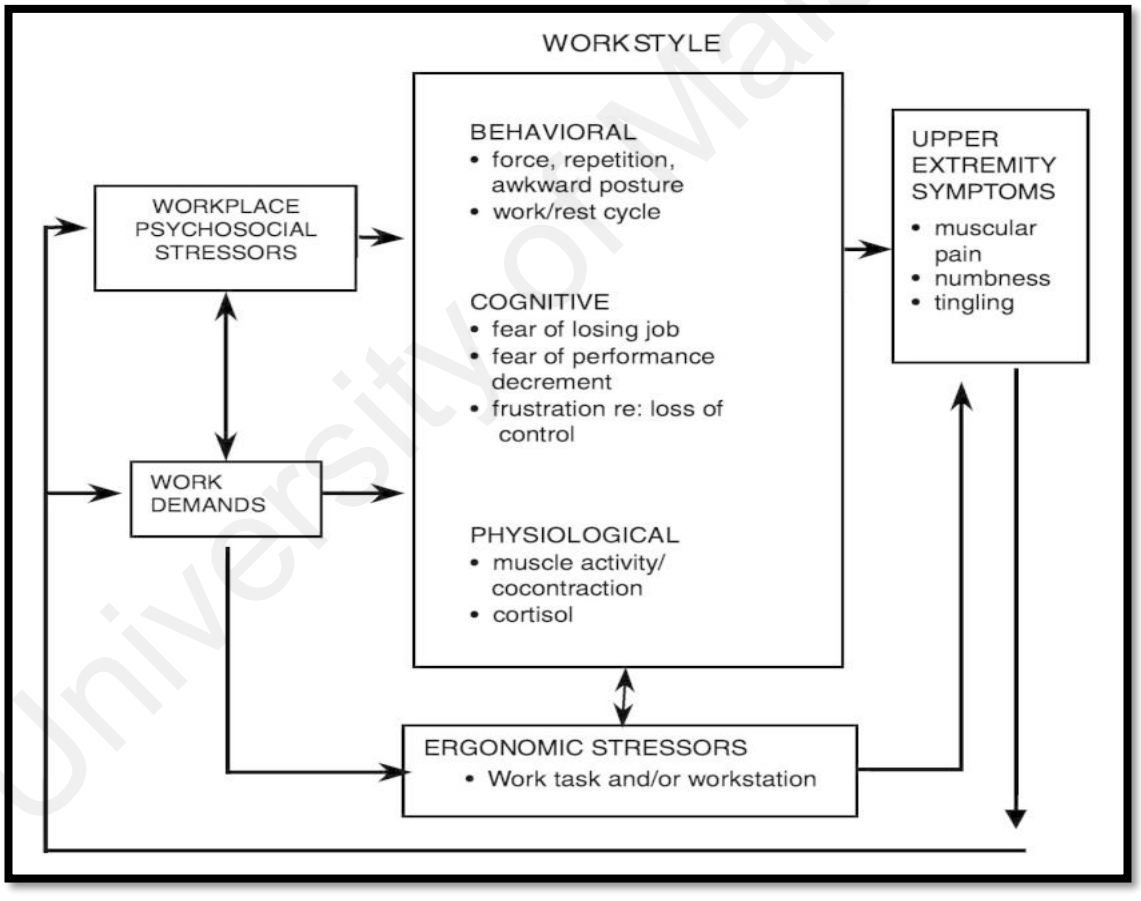

Figure 2.4: Workstyle Model

2.3.5 Summary of Models

Every hypothesizes of each research studies discussed up here is showing that the occupational stress gets to affect to different health results, in a way to describe how psychosocial stress at work could lead to the impact of work-related musculoskeletal disorders. The biological potential relation between psychosocial stress at work and work-related musculoskeletal disorders (WRMSD) are significance component in identifying the validity and credibility of such relationship.

2.4 Shared Service Company

Shared service company (SSC) is an entity within a multi-unit organization, in which it functions to supply the business unit, respective divisions and departments with specialized services (finance, HR transactions, IT services, facilities, logistics, procurement). This service comes with a cost charged out on the basis of the service level agreement (SLA) agreed between both parties. People might also think that shared service is similar to the model of outsourcing but the one major point that made these two different is that shared service is set up under the same entity with the organization that they provide services for. Moreover, main objective for organizations to opted for setting up shared service as their subsidiary are because:

i. To reduce costs of decentralization, to increase the quality and professionalism of support processes for the business

ii. To increase cost flexibility for supporting services

iii. To create a higher degree of strategic flexibility

It is also found that shared service get to provide almost 70% of cost reductions in the costs from the original budget, but average is about 50%.

Malaysia has been chosen as one of the most popular countries for multi-national companies (MNC) to set up their shared service center. Management consultancy Everest Group wrote recently that Malaysia has been the emerging Asian tiger for global shared services, based on its thousands advantages which are strong government support, a skilled talent pool, sectoral expertise, first world infrastructure, and ease of travel (Hartung, 2014).

2.5 Psychosocial Stress Factors at Workplace Control Measures

People who work in the shared service type of company possess a very high level of stress due to number of works which only being done by one person whereas originally it is being done by few people back in the respective hubs. As mentioned above in sub-topic 2.4, this is due to the fact that shared service companies are cost saving centers in which there are quite cost-sensitive in terms of their headcount, labor costs and location selection criteria. Therefore, with the workload in which is already high in amount, workers tend to be easily influenced with stress and to top it up, other psychosocial factors at work which may be exist in the companies might even worsen the situation. With that, a thorough control factors are needed as to ensure a safe and conducive kind of working environment and to avoid workers from end up suffering from possibility of musculoskeletal disorder.

2.5.1 Communication and Feedback

Effective communication from both side, management and workers are indeed essential as to ensure issues and problems arise in the office get to be solved earlier before it becomes worst. Communication and feedback from low to high level or the other way around is crucial as inability to convey messages correctly might cause disaster. As per (Laing et al., 2007), it is a prerequisite condition for a dynamic communication improvement in any companies and the improvement must not only comes from the

workers. When they start to feel that their superiors are no longer taking their feedback in a serious term, this will lead towards a situation where workers will no longer give any feedback afterwards. When this happen, psychosocial stress factors at work will start to happen and workers will accumulate stress from there. This is when the musculoskeletal disorder takes place and absenteeism is the situation predicted to happen. Therefore, effective methods in order to minimize the impact of this situation are by having various channels of communications, weekly/monthly team meeting, frequent one to one short-communication as to update current issue between manager and staffs, as well as suggestion box for each department together with survey by HR as to examine the current relationship between manager and staffs. These methods however must be done as a closed loop so that they can easily assess each inputs together with the follow up for progress of action items.

2.5.2 Management Support and Commitment

Management played the vital part in minimizing the risk factor. They are the one who need to set positive and conducive working environment for their employees and this can be best demonstrated by allocating ample resources and time, walk the talk and ready to fully support their staffs at all times. In this context, shared services companies usually need to have a lot of communications with their respective hub from different countries in which they support and sometimes their affiliates or users are too aggressive and sensitive even for a small mistake that they have done. Possible reason here is due to cultural difference we possess between Malaysia and the hub from different countries itself and thus creating miscommunications at times. With that, it is essential for management to show their support and commitment to always be there with them and advise for better solution. As a result, (Eisenberger, Fasolo, & Davis-LaMastro, 1990) through their social exchange study has shown that employees who receive both support and commitment from their management tend to perform better compared to those not.

2.5.3 Reward System

It is indeed a general fact that a well-designed incentive program offers recognition which can boost the workers to even strive better in future. A key characteristic of a successful reward system is that it must be visible to all levels within the organization so that they will know their effort is not only being appreciated to the respective department but also to the whole people in the company. (Halloran, 1996) suggested that through the incentive program, workers would know on how they are being evaluated and would try their best to achieve the goal as to gain reward. This would then bring a healthy competition between workers and give better result to the company as a whole.

2.5.4 Training

In order for the employees to master their field of work, continuous training is indeed important to help them getting the right info and method on how to execute their task accordingly within the stipulate time frame. As discussed earlier, shared service companies act as an internal partner providing services for the different hubs, and to always ensure "right at the first time" which is very important for them is indeed one of the biggest challenge. It is true that people will start to comprehend their task as time goes by but by having all workers to attend the right training, learning process will become much easier and they may start to provide efficient services to their respective hubs and eventually satisfying their affiliates and users. This would definitely bring job satisfaction to all the staffs themselves and thus avoiding unnecessary stress and coherently development of musculoskeletal disorder would get to be prevented.

2.6 Summary of Literature Review

Based on the models mentioned, we can have clear understanding on the relationship between psychosocial stress factors at work place and WRMSD. There are

different factors that may cause WRMSD and each factors might have different impact in different organizations. In this study, the objective is to find on how these stress factors in different shared service companies get to influence the employees. As mentioned under the control measures topic, methods to cope the founding is also necessary as to ensure a conducive and efficient workplace for employees to work in daily basis.

CHAPTER 3

METHODOLOGY

3.0 Introduction

In order to find the correlation between the psychosocial stress factors at work with musculoskeletal disorders, various sources of information and data collection has been conducted which included data type and analysis. Questionnaire has been chosen as to achieve the aim of this research study and it functions as mixed method approach (qualitative and quantitative) whereby after the correspondents completed the given close-ended questionnaire, analysis for both variables was done using SPSS and the result which being translated into data, graph and table form is discussed in the next chapter. This section also explains type of questionnaires being used and rational on using it for this research study.

Operational flowchart is developed to describe a sequential process to accomplish the aim and objective of the research. The flowchart provides outline and give consistency to observe the objectives. Figure 3.1 explains the mention flowchart.

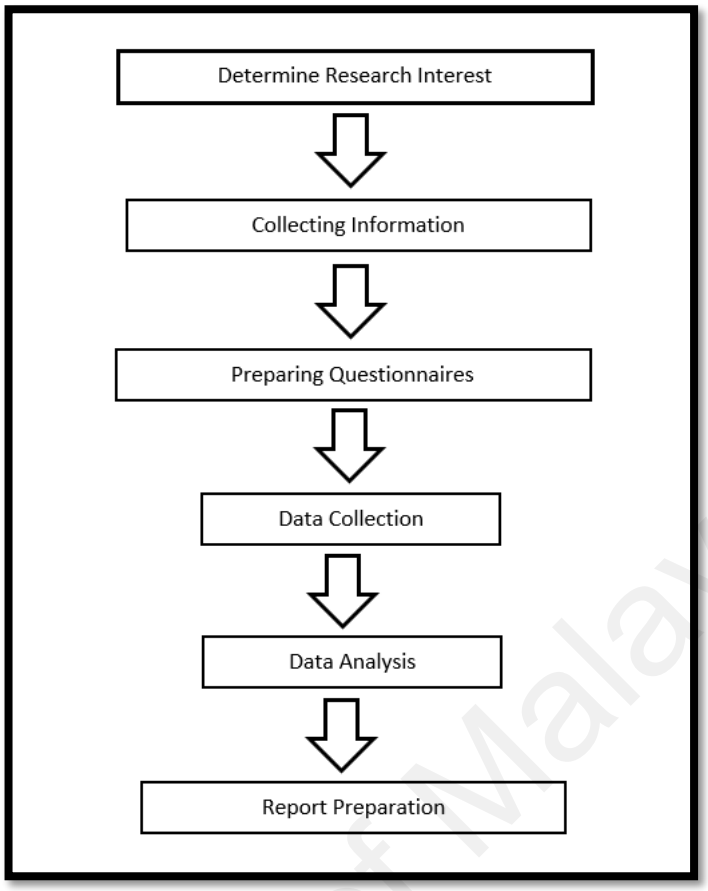

Figure 3.1: Flowchart of Study

3.1 Study Design

This study is based on the one set of questionnaire that has been collected from correspondents during the visit to their respective companies. In this study itself, the quantitative research and analysis is aimed to determine the relationship between the variable of psychosocial stress at workplace and musculoskeletal disorder. The survey in which being translated into the form of itemized questionnaire was being used to evaluate existence of psychosocial factors at workplace and related musculoskeletal disorders in which correspondents has been experienced lately. The survey conducted allowed for an ample information to be gathered from different correspondents in which relatively inexpensive, quick and most importantly anonymous.

In this study, psychosocial work factors are independent variables and in this context, the factors are job demands, role expectation, work control, social interactions, leadership influence as well as organizational culture whereby musculoskeletal disorders are set as the dependent variable. Based on this model, it is clearly get to be seen that the likelihood of the occurrence of musculoskeletal discomforts depends on the extent of these six type of psychosocial work factors. The hypothesis is the greater the extent of these psychosocial factors the higher likelihood of the disorders to occur. The framework of the study in which illustrated above explanation is given as per in Figure 3.2.

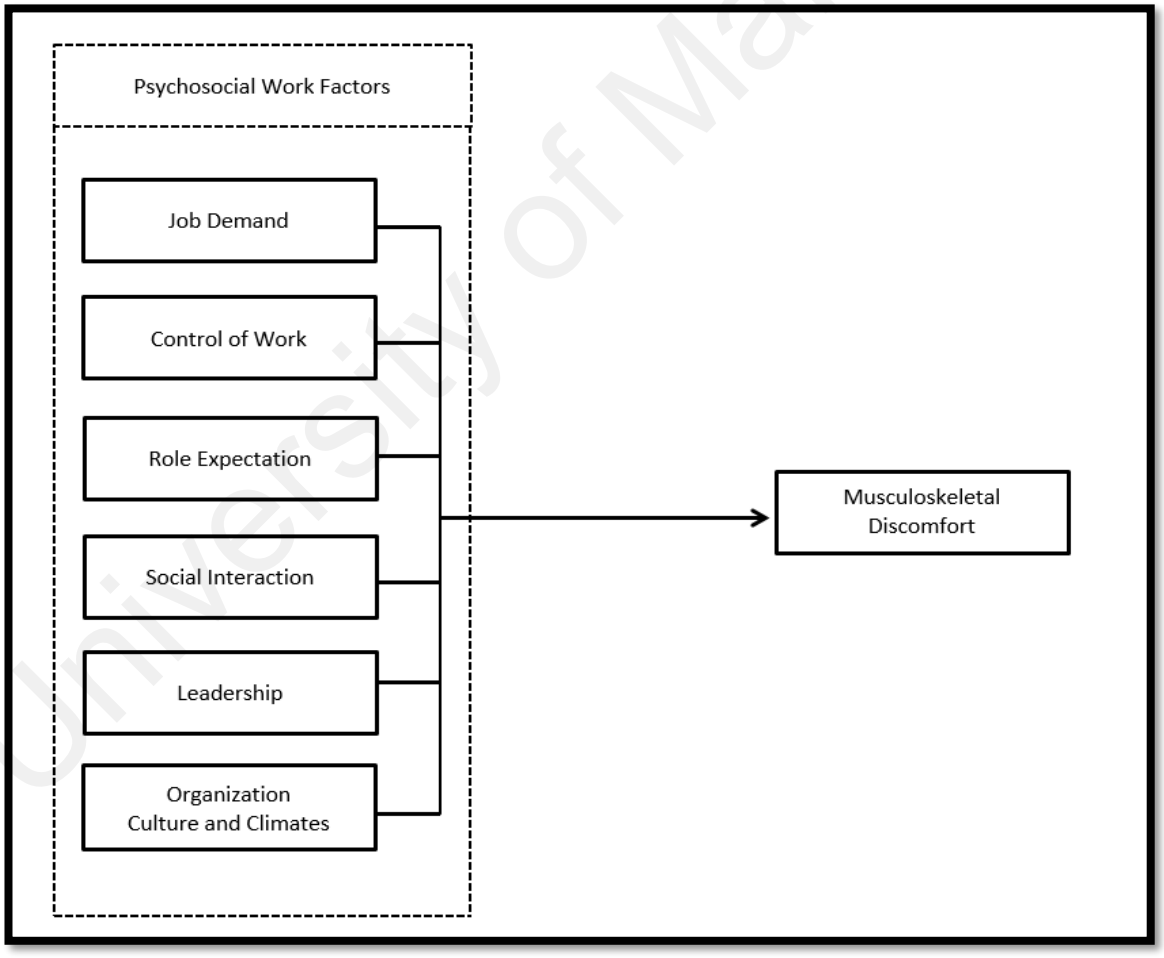

Figure 3.2: Framework of Study

3.2 Study Location/Background

The study has been carried out in few multi-national companies in Kuala Lumpur and Selangor. The companies have different years of establishment, varies from minimum 2 years to 13 years' maximum being established. The total employees for each shared service companies also different in numbers in which minimum total workforce varies from minimum 500 employees to 2000 employees' maximum.

3.3 Correspondents

This cross-sectional study design was employed using a sample of correspondents working in different departments from finance, IT as well as procurement. 50 analysts from the age of 28 to 35 was been selected to answer the questionnaire and main condition that they must have is at least 1 year of experience. This is to ensure that all analysts are well accustomed with the condition and environment of their workplace.

3.4 Procedure

The procedure for the study included obtaining consent from each respondent. All respondents received proper instruction in completing the questionnaires, which they then filled it out during their normal working hours. The questionnaires were collected at the end of the day questionnaire being distributed. By using the Statistic Package for Social Science (SPSS) version 22 for Windows, analysis was done together for both dependent and independent variables. Using SPSS, the chi-square test was used to observe the association between the outcome measures with categorical variables. A null hypothesis has also been created where it states that there is no relationship between the two variables mentioned and if the result comes out as P value below 0.05($P<0.05$), significant associations are considered and null hypothesis is then rejected .

3.5 Survey (Questionnaire)

Based on the definition given by (Check & Schutt, 2011), survey research is information collection from a group of people as sample to analyze their responses to questions on the given topic. This type of research is indeed very useable as it allows for a different kind of methods as to collect data, participant recruitment as well as various methods of instrumentation utilization. By using this medium, both quantitative research strategies (e.g., using questionnaires with numerically rated items) as well as qualitative research strategies (e.g., using open-ended questions), or even both strategies (i.e., mixed methods) get to be used and implemented. To add it up, since it is widely being used in describing human behavior, surveys therefore are definitely the right choice in conducting social and psychological research (Singleton Jr, Straits, Straits, & McAllister, 1988) and because of this, survey has been opted in order to achieve the aim of this study.

The questionnaire in this study comprised of three parts: individual demographics, psychosocial stress factors at work and musculoskeletal complaints. For part one which is individual demographics, questions covered are age, gender, duration and type of employment. Part 2 and 3 which covered on the variable of psychosocial stress factors at work and work related musculoskeletal disorder (WRMSD) respectively, will be discussed on next sub-topic. This set of questionnaire is being attached under the appendix.

3.5.1 Psychosocial Stress Factors at Workplace

In order to assess the psychosocial stress factors at workplace as the baseline, a modified version of the validated single item from the QPS-Nordic questionnaire (Ørhede et al., 2000) was used. The main reason behind choosing this particular questionnaire for this study is because this questionnaire was originally being designed for the assessment of psychosocial, psychological together with organization work

conditions. Furthermore, as stated by (Ørhede et al., 2000), other advantages with this Nordic questionnaire as to compare with others which also discussing about psychosocial stress factors is that it covers and measures topics from task, individual even until to the organizational level.

A total of 25 items was being selected and re-organized from the QPS-Nordic questionnaire full recommended format in which consisted of six subscales: job demand (JD) (9 items); role expectation (RE) (3 items); work control (WC) (4 items); social interactions (SI) (3 items); leadership influence (LI) (2 items); organizational culture (OC) (4 items). By using liker scale, the items were scored ranging from 1 (never) to 5 (always).

3.5.2 Work Related Musculoskeletal Disorders (WRMSD)

In order to evaluate the associations between WRMSD, standardized Nordic questionnaire for musculoskeletal symptoms (Kuorinka et al., 1987), which illustrated anatomical diagram of nine body regions (neck, shoulders, upper and lower back, hands/wrists, arms, knees, thighs, and feet) were appended to facilitate respondents in reporting for any accurate occurrences of discomfort or pain in the previous 12-months period. There is no scale given for this questionnaire but instead correspondents just need to answer either yes or no for any discomforts they experienced for the past 12 months. If the answer given is yes, further questions are being asked whether the discomforts experienced prevented them from doing their routine activities (office and home) and also whether they had any issues for the past 7 days due to the pain, for each part of nine body regions.

Standardized Nordic questionnaire for musculoskeletal symptoms is being used for this research study because it is being widely used to study musculoskeletal symptoms and disorders. Their medium of survey was widely accepted to be useful in term of

evaluation on the various body stressors involved at workplace. Moreover, this general questionnaire was constructed in which nine anatomical regions are being divided as to represent the human body where these regions were selected on two basis of criteria: regions where usual accumulative of symptoms, and regions which are distinguishable from each other both by the respondent and a health surveyor.

CHAPTER 4

RESULT AND ANALYSIS

4.0 Introduction

This chapter was conducted based on the methods in which have been explained in the previous chapter. All of the methods chosen are for the purpose to meet the aims and objectives that we have already set up earlier of the research study. Explanations for the findings based on the feedbacks obtained from the questionnaires are also shared in this chapter. All the data gathered are analyzed using Statistical Package For The Social Sciences (SPSS), Version 22 For Windows. For each research question are discussed in the discussion parts.

4.1 Descriptive Analysis

Descriptive analysis is used as to describe the collected data and summarize it in the simplest and easiest methods such as table, figure, frequency, percentage, mean and standard deviation.

4.1.1 Correspondents Demographic Analysis

Demographic		Frequency	Percentage
Age	Less than 25 years	1	2
	26-30 years	35	70
	More than 30 years	14	28
Gender	Male	20	40
	Female	30	60
Duration Employment	1 year	25	50
	2 years	6	12
	3 years	15	30
	4 years	4	8
Type of Employment	Contract	5	10
	Permanent	45	90

Table 4.1: Background of Respondents based on Demographic

Demographic distribution of the correspondents is one of the element that will also be analyzed together in this study. In this analysis, age, gender, duration of employment as well as type of employment were analyzed. Table 4.1 is the summary of demographic analysis where frequency and percentage (%) method of the correspondents is being used. Based on the result, only 1 correspondent or 2% is less than the age of 25 years old. Next, the correspondents with the age between 26 to 30 years comprised of 35 correspondents or 70% of the overall study population. This is followed by the correspondents with the age more than 30 years with 14 people or 28% from the whole numbers. From here, we can clearly see that the highest number of correspondents are between the age of 26 to 30 years and the lowest allocated by the correspondents with less than 25 years old. Based on gender category, 20 people or 40% of the correspondents are male while a total of 30 people or 60% female are involved in this study. This showed to us that the correspondents by female is higher than male. Moreover, the duration employment is showed as followed ; 25 correspondents or 50% 1 year (highest), 6 correspondents or 12% for 2 years, 15 correspondents or 30% with 3 years and this followed by 4 correspondents or 8% that have 4 years of duration employment(lowest). Finally type of employment showed that almost 45 people or 90% of the study population work as permanent staff while only 5 people or 10% of them currently working as a contract staff.

4.1.2 Result of Psychosocial Stress Factors at Workplace

As mentioned in the previous chapter, six risk factors which are job demand (JD), role expectation (RE), work control (WC), social interaction (SI), leadership influence (LI) and organizational culture (OC) has been evaluated and analysis of each factors are being discussed in the next subtopic. A graph has also been created for the result of this analysis for easier and better and understanding.

4.1.2.1 Job Demand (JD)

Table 4.2 presents the frequencies and percentages for the result of JD. As shown in Table 4.2, a substantial majority of the correspondents has given the highest feedback (5-Always) for the item "Does your work require maximum attention?" (70%). This is followed by the feedback of (5-Always) to the item "Do you have too much work to do" (58%). The correspondents has majority chosen (3-Sometimes) on the item "Do you consider your job highly demanding" (58%) and followed by "Is it necessary to work at a rapid pace" (50%). As seen in Table 4.2, the correspondents showed various reactions towards the job demand. The highest mean showed by the correspondents are on the item "Does your work require maximum attention" (mean 4.52, SD=0.886) while the lowest mean is to the item "Are your work task too difficult for you" (mean 2.74, SD=0.664). The overall mean for job demand is 3.617 and standard deviation is 0.536.

Statement	1	2	3	4	5	Mean	SD
Is your workload irregular so that the works piles up	0 (0%)	9 (18%)	15 (30%)	17 (34%)	9 (18%)	3.52	0.994
Do you have to work overtime	5 (10%)	13 (26%)	6 (12%)	8 (16%)	18 (36%)	3.42	1.458
It is necessary to work at a rapid pace	0 (0%)	0 (05)	13 (26%)	10 (20%)	27 (54%)	4.28	0.858
Does your work require maximum attention	0 (0%)	4 (8%)	1 (2%)	10 (20%)	35 (70%)	4.52	0.886
Are your work task too difficult for you	0 (0%)	19 (38%)	25 (50%)	6 (12%)	0 (0%)	2.74	0.664
Do you have too much work to do	0 (0%)	0 (0%)	9 (18%)	12 (24%)	29 (58%)	4.4	0.782
Is your work monotonous	0 (0%)	1 (2%)	23 (46%)	14 (28%)	12 (24%)	3.74	0.852
Is your work challenging for you	0 (0%)	17 (34%)	20 (40%)	9 (18%)	4 (8%)	3	0.925
Do you consider your job highly demanding	1 (2%)	12 (24%)	29 (58%)	5 (10%)	3 (6%)	2.94	0.818
						3.617	0.536

Table 4.2: Frequencies and Percentages of JD

4.1.2.2 Role Expectation (RE)

Table 4.3 presents the frequencies and percentages for the RE. As shown in Table 4.3, a substantial majority of the correspondents has given the highest feedback (3-Sometimes) to the item "Are you given tasks without adequate resources to complete them" (52%). Majority of the correspondents also choose (4-Very Often) on the item "Do you have to do things which you think should be done differently" (44%) and this is followed by "Do you receive incompatible requests from two or more people" (42%). Moreover, the highest mean being recorded from the correspondents is (mean 4.00, SD=0.755) for the item "Do you have to do things which you think should be done differently" in which we can get to understand here majority of the correspondents have very often think the works they do can actually be done in different methods. On the other hand, the lowest mean showed by the correspondents is on the item of "Are you given tasks without adequate resources to complete them" (mean 3.44, SD=0.812). The overall mean for role expectation is 3.633 and standard deviation is 0.762.

Statement	1	2	3	4	5	Mean	SD
Do you have to do things which you think should be done differently	0 (0%)	0 (0%)	14 (28%)	22 (44%)	14 (28%)	4	0.755
Are you given tasks without adequate resources to complete them	0 (0%)	4 (8%)	26 (52%)	14 (28%)	6 (12%)	3.44	0.812
Do you receive incompatible requests from two or more people?	0 (0%)	14 (28%)	7 (14%)	21 (42%)	8 (16%)	3.46	1.073
						3.633	0.762

Table 4.3: Frequencies and Percentages of RE

4.1.2.3 Work Control (WC)

Table 4.4 presents the frequencies and percentages for the WC. As shown in Table

4.4, a substantial majority of the respondents has given the highest feedback with (5-Always) on the item of "Is your time break already pre-determined for you and limited" (56%). It was then followed by the item "Is it difficult to set your own work pace" (50%). The highest mean for this particular risk factor showed by correspondents is also similar to the highest feedback by correspondents with (mean 4.26, SD=0.985) and in contrast, the lowest mean showed by the correspondents is on the item "Is it difficult to set your own work pace" (mean 3.72, SD=0.809). The overall mean for work control is 3.915 and standard deviation is 0.646.

Statement	1	2	3	4	5	Min	SP
Is it difficult to set your own work pace	0 (0%)	0 (0%)	25 (50%)	14 (28%)	11 (22%)	3.72	0.809
If there are alternative methods for doing your work, are you not allowed to use the method	0 (0%)	5 (10%)	17 (34%)	14 (28%)	14 (28%)	3.74	0.985
Is time for break is already pre-determined for you and limited	0 (0%)	4 (8%)	7 (14%)	11 (22%)	28 (56%)	4.26	0.985
Is your break too short for you	0 (0%)	8 (16%)	5 (10%)	19 (38%)	18 (38%)	3.94	1.057
						3.915	0.646

Table 4.4: Frequencies and Percentages of WC

4.1.2.4 Social Interactions (SI)

Table 4.5 presents the frequencies and percentages for SI. As shown in Table 4.5, correspondents has majority provided feedback as (4-Very Often) on the item of "Have you noticed any disturbing conflicts between co-workers?" (48%). It is then followed with the same feedback for the item "Do you receive little support from your immediate colleague" (40%). However, the correspondents have chosen rarely on the item "Do you receive little support from your immediate manager" (38%). As seen in Table 4.5, the

correspondents once again showed various reactions towards the social interaction. The highest mean showed by the correspondents through their feedback is on the item of "Do you receive little support from your colleague?" (mean 3.96, SD=0.856) while the lowest mean is on the item "Do you receive little support from your immediate manager" (mean 3.3, SD=1.249). The overall mean for social interactions is 3.573 and standard deviation is 0.686.

Statement	1	2	3	4	5	Mean	SD
Do you receive little support from your colleague	0 (0%)	2 (4%)	13 (26%)	20 (40%)	15 (30%)	3.96	0.856
Do you receive little support from your immediate manager	0 (0%)	19 (38%)	11 (22%)	6 (12%)	14 (28%)	3.3	1.249
Have you noticed any disturbing conflicts between co-workers	0 (0%)	9 (18%)	13 (26%)	24 (48%)	4 (8%)	3.46	0.885
						3.573	0.686

Table 4.5: Frequencies and Percentages of SI

4.1.2.5 Leadership Influence (LI)

Table 4.6 presents the frequencies and percentages for the LI. As shown in Table 4.6, a substantial majority of the correspondents have chosen (3-Sometimes) on the item of "Does your immediate superior encourage you to speak up, when you have different opinions?" (52%). This is followed by the feedback of (2- Rarely) on the item of "Does your immediate superior encourage you to participate in important decisions" (34%). For this risk factor, the highest mean showed by the correspondents is on the item "Does your immediate superior encourage you to speak up, when you have different opinions" (mean 3.26, SD=0.985) while the lowest mean showed the respondents is on the item "Does your immediate superior encourage you to participate in important decisions" (mean 2.6, SD=1.124). The overall mean for leadership is 2.93 and standard deviation is 0.851.

Statement	1	2	3	4	5	Mean	SD
Does your immediate superior encourage you to participate in important decisions	8 (16%)	17 (34%)	16 (32%)	5 (10%)	4 (8%)	2.6	1.124
Does your immediate superior encourage you to speak up, when you have different opinions	0 (0%)	10 (20%)	26 (52%)	5 (10%)	9 (18%)	3.26	0.985
						2.93	0.851

Table 4.6: Frequencies and Percentages of LI

4.1.2.6 Organizational Culture (OC)

Table 4.7 presents the frequencies and percentages for the OC. As shown in Table 4.7, (46%) of the correspondents have chosen (4-Very Often) on the item "Is there insufficient communication in your department" and followed by the feedback of (3-Sometimes) for the item of "Do workers take initiative at your workplace" and (4-Very Often) for the item "Are workers well taken care of in your organization" (40%). The highest mean which has been analysed through this survey is on the item "Are workers well taken care of in your organization" (mean 4.12, SD=0.848) while the lowest mean is on the item "Do workers take initiative at your workplace" (mean 3.66, SD=0.847). The overall mean for organizational culture is 3.91 and standard deviation is 0.686.

Statement	1	2	3	4	5	Mean	SD
Is there insufficient communication in your department	0 (0%)	7 (14%)	6 (12%)	23 (46%)	14 (28%)	3.88	0.982
Are workers encouraged to think of ways to do things better at your workplace	0 (0%)	2 (4%)	16 (32%)	13 (26%)	19 (38%)	3.98	0.936
Do workers take initiative at your workplace	0 (0%)	3 (6%)	20 (40%)	18 (36%)	9 (18%)	3.66	0.847

Are workers well taken care of in your organization	0 (0%)	2 (4%)	9 (18%)	20 (40%)	10 (38%)	4.12	0.848
						3.91	0.686

Table 4.7: Frequencies and Percentages of OC

4.1.2.7 Summary of Psychosocial Stress Factors at Workplace

Based on the means result showed above, the highest mean among the 6 factors is WC (mean=3.915) and this is followed by OC (mean =3.91), RE (mean=3.633), JD (mean=3.617), SI (mean=3.573) and lastly LI (mean=2.93). The summary of this result is also being showed in graph form, as showed below:

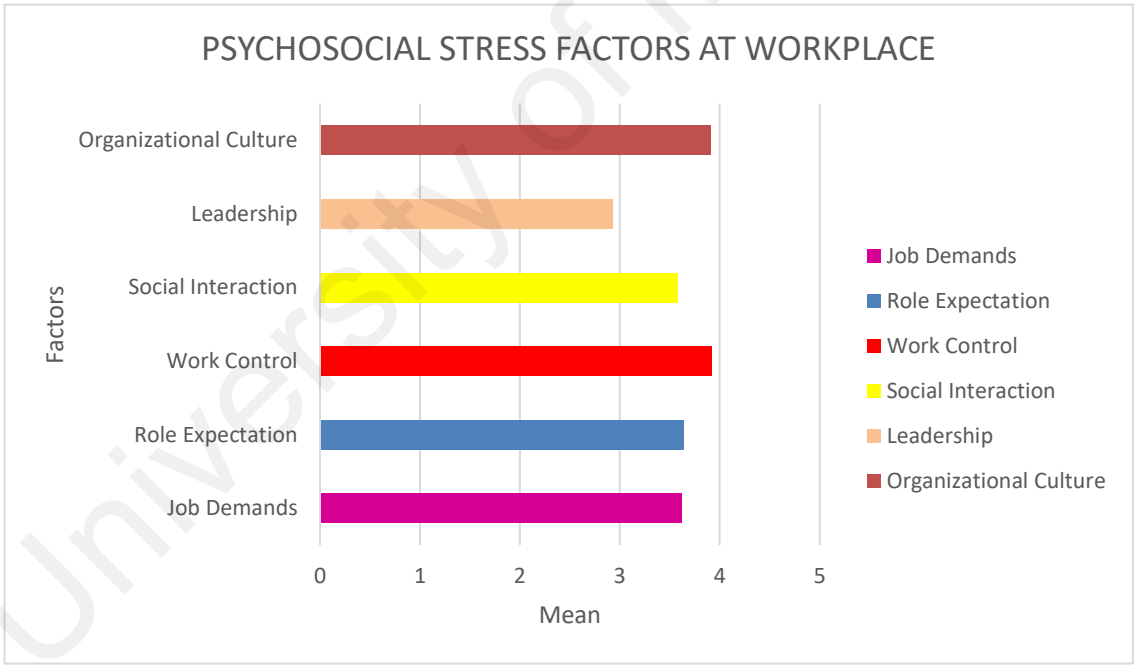

Figure 4.1 : Mean of 6 Psychosocial Stress Factors at Workplace

4.1.3 Result of Musculoskeletal Disorders

Table 4.8 presents the 12 months prevalence rates of musculoskeletal disorders by body region. Based on the result showed, majority of the correspondents had trouble at neck and shoulders by 47 (94%) and 44 (88%) people respectively and this is followed

by upper back with 33 correspondents or 66%. While minority respondents showed, the respondents had trouble with hips by 10 correspondents or 20% and ankles by 10 correspondents (20%). Figure 4.1 is the translation of the data collected into graph form for easier reading and understanding.

Body Region	Yes	No
Neck	47 (94%)	3 (6%)
Shoulders	44 (88%)	6 (12%)
Elbows	16 (32%)	34 (68%)
Wrists/Hands	30 (60%)	20 (40%)
Upper back	33 (66%)	17 (34%)
Low Back	25 (50%)	25 (50%)
Hips	10 (20%)	40 (80%)
Knees	18 (36%)	32 (64%)
Ankles	10 (20%)	40 (80%)

Table 4.8: 12 Months Prevalence MSDs Data Based on Body Region

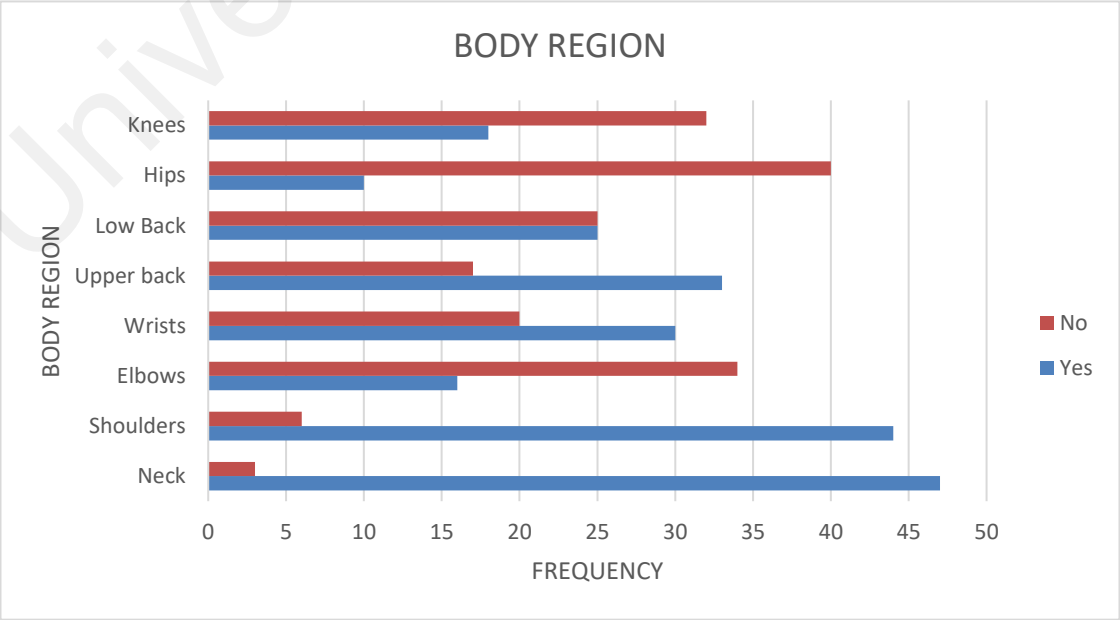

Figure 4.2 : 12 Months Prevalence MSDs Based on Body Region

4.2 Correlation Analysis

Chi square test was being used to find the correlation between demographic factor as well as psychosocial stress factors at workplace with WRMSD. Significant value is at alpha=0.05 and for those correlations which P-value is lower than 0.05 is considered as true relationship between the two variables (independent and dependent).

4.2.1 Demographic Factor and WRMSD

An analysis attempted to find the relationship between demographic factor and WRMSD has also been done and Table 4.9 showed the result of the analysis. Based on the result, all the demographic (age, gender, duration employment and type of employment) has shown no statistical significant association with musculoskeletal disorders as chi square result showed P>0.005.

		WRMSD
Age	Chi-square	2.381
	df	2
	Sig	0.304
Gender	Chi-square	2.128
	df	1
	Sig	0.145
Duration Employment	Chi-square	2.246
	Df	3
	Sig	0.523
Type of Employment	Chi-square	3.55
	df	1
	Sig	0.552

Table 4.9: Relationship Between Demographic Factor and WRMSD.

4.2.2 Psychosocial Stress Factors at Workplace and WRMSD

Table 4.10 presents the relationship between psychosocial stress factors with WRMSD. For this purpose, as per the QPS Nordic questionnaire, a mean score of all questions for the 6 risk factors in which fall between 2.5 and 3.5 has been set as the middle job demand category, while below 2.5 and above 3.5 is low job demand and high job demand respectively. Based on the result, job demands, work control, organizational culture and role expectation has significant association with WRMSD as chi square result is $P<0.05$. On the other hand, social interaction and leadership influence do not show for any relationship or significant association with WRMSD since chi square test result is $P>0.05$.

Factors		WRMSD
Job Demands	Chi-square	15.111
	Df	2
	Sig	0.001*
Role Expectation	Chi-square	15.130
	Df	2
	Sig	0.001*
Work Control	Chi-square	6.106
	Df	2
	Sig	0.047*
Social Interaction	Chi-square	1.502
	df	1
	Sig	0.220
Leadership	Chi-square	4.787
	df	2
	Sig	0.091
Organizational Culture	Chi-square	9.051
	df	2
	Sig	0.011*

Table 4.10: Relationship Between Psychosocial Stress Factors at Workplace with WRMSD.

4.3 Summary

In this chapter, analysis on the submitted questionnaires has been carried out where each part of it (demographic, psychosocial risk factors and WRMDS) were been analyzed through the descriptive analysis. The second part of the analysis has also been carried out through correlation analysis where the objectives are to find possible relationship between demographic factors-WRMDS and psychosocial stress factors at workplace-WRMDS. Shared service industry has been chosen as the main point of study and a total of 50 correspondents have participated in this research study in which the questionnaire were being distributed in their respective companies. As mentioned in Chapter 1, the main objective in this study is to find out whether there is any relationship between the psychosocial stress factors at the work place and WRMDS and based on the result, 4 out of the 6 risk factors haven shown positive correlation with WRMDS. The four risk factors are job demand, work control, organization culture and role expectation. On the other hand, social interactions and leadership influence did not showed for such relationship as chi square test result is higher than 0.05 ($P>0.05$). Nevertheless, result has managed to shown that the aim and objective is achieved and hypothesis can then be accepted. An attempt to find the relationship between demographic factors and WRMDS has also been done but the result has shown negative for all factors (age, gender, duration of employment, type of employment).

CHAPTER 5

DISCUSSION

5.0 Introduction

In this particular chapter, we will discuss further in details based on the finding that we have analyzed in Chapter 4. Also, based on the result itself, we will see here whether the hypotheses discussed by previous research studies are parallel in regards with the aim and objective of this study. This is also followed by the summary of the research study as well as the limitation or barriers encountered throughout the process.

5.1 Recapitulation of Results

As mentioned in previous chapter, Likert scale was being used as the medium to analyze the descriptive QPS Nordic questionnaires that being distributed to the correspondents. Based on the result, all the six factors being categorized that contribute towards stress at workplace showed that all of them have potential influence to the correspondents at work. The mean score for each factors respectively are JD (3.617), RE (3.633), WC (3.915), SI (3.573), LI (2.93) and OC (3.91). Also, the result from the standardized Nordic questionnaire for musculoskeletal symptoms has shown different kind of responds from the correspondents. The parts of the body that correspondents have reported to have MSDs the most for the past 12 months are neck (94%), shoulders (88%), upper back (66%) as well as wrist/hands (60%) while the feedback for the rests are only moderate. From here, it is clearly shown that upper part of the body as well as the wrist and hands does affect the correspondents the most compared to the lower parts. Main reason for this is highly because the long hours spend with static posture in front of the computer doing task which also include much repetitive actions by wrist/hand using keyboard.

We then analyzed for the correlation between psychosocial stress factors at work and WRMSD and in order to achieve this result, Chi-Square test were chosen and based on the result from the test, specific associations has been identified. Square test has been performed in a way that all six psychosocial work factors being tested along with the nine body parts. In this research study, a null hypothesis has also been created where it states that there is no relationship between the two variables mentioned. Moreover, we have found that among the 6 factors, three of them have significant relationship with WRMSD. The Chi-square test is significant at alpha=0.05 and the result of correlation for factors tested are as below:

i. Job Demands (JD) : $\chi 2=15.111$, DF=2, P<0.05 (0.001)

ii. Work Control (WC) : $\chi 2=6.106$, DF=2, P<0.05 (0.047)

iii. Organizational Culture (OC) : $\chi 2=9.051$, DF=2, P<0.05 (0.011)

iv. Role Expectation (RE) : $\chi 2=15.130$, DF=2, P<0.05 (0.001)

Since p-values for these 4 psychosocial stress factors are smaller than the conventionally accepted significance level of 0.05 ($p < 0.05$) individually, we then rejected the null hypothesis and managed to prove that there are significant correlations among these four factors with WRMSD. Possible reasons behind the correlations of the two variables will be discussed further in the next sub-topic.

5.2 Correlation Between Risk Factors and WRMSD

Based on the finding through the Chi Square Test result, we will discuss further below on how exactly the 4 risk factors would have given influence towards the occurrence of WRMSD, in the context of employees working in the shared service industry. The four risk factors are job demand, work control, organization culture and role expectation.

5.2.1 Job Demand and WRMSD

As shown in the result given previously, job demands has come out with result of significant correlation with the occurrence of WRMSD among the correspondents. The hypothesis made earlier is then accepted and (Karasek & Theorell, 1990) has also agreed to this statement. Moreover, three questions which are under job demand category have shown to prove this situation. Referring to the result Table 4.2, majority number of correspondents have answered either “very often” or “always” to the questions “Do you have too much works to do?”, “Does your work require maximum attention?” and “Is it necessary to work at a rapid pace?” and based on the feedback to the questions itself, we can already get to understand that correspondents are very much influenced with the job demands that they possessed. Also, if we try to recap back on the definition of the shared service company itself, due to the cost-constrain that they have, management has no other choice rather than fully utilizing their limited source of employees with high workload. This result is indeed very much expected due to the mentioned reason and the work demands that the correspondents encounter are just to challenging and also unbearable at times. Furthermore, on top of the high quantity of workloads they have on daily basis, not only they need to complete it within the time frame given based on the agreed SLA, but they also need to ensure that they are doing it right at the first time. This is to ensure that they are satisfying their respective hubs with the quality of works they are providing. Thus, these very intense situation lead the employees to become more stress and causing them to be affected with MSDs.

5.2.2 Work Control and WRMSD

With such high workload that these employees from shared service possesses, do they have control over the work they are doing? The answer to the question is no. Based on the result given above, correspondents can’t really have much control over their work

probably due to the high workload that they have. Due to this reason, majority number of them can't really get to set their work pace as well as deciding the length of their break. When it comes to work pace, it is true that time and experiences are needed as to master the work and eventually have control out of it. However this is different with shared service industry as the nature of the business itself is different where there will be times that workloads will be irregular and forcing them to even work harder at times. This is also the reason why it is difficult for shared service companies to employ fresh graduate students to work with them as experience people are more preferable since they are more likely to have higher endurance for such tough situation. Still, if we try to see the mean of the year of experiences of the correspondents with respective companies which is 2.1 years, even though most of them are considered as employees with experiences, yet they do still feel that they have less control over their work. On top of this, they also can't really get to decide their length of break in which is the most important factor as to release stress especially when you have such demanding tasks to do. Due to less control over these mentioned elements, again occurrence of MSDs definitely predicted among employees and further initiatives are needed as to overcome this situation.

5.2.3 Organizational Culture and WRMSD

Hypothesis made by previous study (Thompson, Stradling, Murphy, & O'Neill, 1996) where there is a correlation between organizational culture and stress may once again be proven through the result of this research study. Result of feedback for one of the question given in the questionnaire which is "Is there less communication in your department?" showed that majority number of correspondents has chosen "Very Often" as the answer. This can be clearly shown to us that effective communication among the colleagues, team leaders as well as managers are indeed vital as to ensure a conducive state of working condition for everyone. With such situation where employees tend not to have dialogues with the others, miscommunications may arise as the after effect of it.

When this happens, disputes among the team members can also occur in which can make things even worst. Moreover, a number of correspondents have also provided feedback that their respective organization rarely or only at times encouraged them to think of ways to do things better at workplace. With such elements, again stress may triggered within the employees and thus affecting them towards MSDs.

5.2.4 Role Expectation and WRMSD

As mentioned above, employees are having too much workload and responsibilities at their end. As time passed by, they tend to come out with alternatives method in order to execute the tasks given. However, it is not a common thing where the hub they are providing service for will accept their new way of doing works. This is because sometimes from hub side, they would prefer employees in shared service to execute the task as per how they have done it previously as to ensure all steps are being followed while completing it. To convince them with new methods are quite difficult at times and would need a lot of discussions and proven track records that it will works. There are also times when they are receiving instructions not only from one party but may even from multiple persons from hub. For instance, procurement analyst tasks which need to do sourcing and negotiations activities for things requested from multiple users from hub would definitely bring high challenges to the staff. To top it up, additional requests for ad-hoc reports, urgent requests and others would definitely bring additional stress to the employees. With all communications being made only through email, phone and chatting applications, cases for mistakes to happen is highly expected. Thus, due to the reasons mentioned above, the high expectation in their current role to these employees would let them towards the possibility of WRMSD as an effect.

5.3 Limitation of Study

There are few limitations or challenges that we faced throughout the process of this study. List of the limitations are given as below:

i. There were no initial examinations among the correspondents being done as to check whether they have any existing diseases in which may be the potential reasons for them to get affected with MSDs.

ii. The questionnaires given are descriptive type in which the answers of it may be influenced by the personal emotions of the correspondents on the day they answered it. Therefore, a further method like a follow up interviews would be suggested as to provide better understanding and making comparison with the result of the questionnaires.

iii. The different responses that this research study received are from employees from different shared service companies. The biggest different between these companies is in term of age of organization itself. Newly set up organization might have less stress among the employees compared to those well-established one as the majority number of works have already being transferred from the respective hubs, thus affecting the outcome of the study. Therefore, it would be better to have correspondents from similar age of organization as to get more precise result.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 Introduction

In this chapter, a conclusion based on the result of the research study is made. Following to this, suitable recommendations are also drafted for the shared service companies to take and execute them for the purpose of minimizing the WRMSD in their respective organizations.

6.2 Conclusion

In this research study, analysis have been carried out as to identify and understand the relationship between psychosocial stress factors at workplace among the employees in shared service companies. A total number of 50 correspondents from different shared service companies in Kuala Lumpur and Selangor have participated in this research study by using two types of qualitative questionnaires as main tool of the research. Background of job for each correspondent varies from finance, procurement and IT divisions.

Moreover, it has been found out from this study that stress serves as a mediator between psychosocial risk factors and musculoskeletal discomforts. As we have already well understood, traditional ergonomic risk factors such as monotonous work, repetitive actions static posture are among the examples of major contributor towards WRMSD. This study however has managed to show to us that psychosocial risk factors can also be the caused for musculoskeletal discomforts and work stress. And based on the findings of this research study, result has managed to demonstrate that there is a positive correlation between psychosocial stress factors at workplace and WRMSD. Even though not all of the six factors managed to be proved true for such relationship, but four of them

which are work control, job demands organizational culture as well as role expectation has shown that the hypothesis in this study are parallel with the aim and objective and thus hypothesis may then be accepted. The affected employees with MSDs due to these risk factors would definitely bring a lot of disadvantages not only to the employees individually but to the organization as a whole.

In a nutshell, as the saying goes prevention is better than cure, it is also believed that proactive solutions are needed and necessary before the situation become worst. Absenteeism, compensation for medical treatment, physical and mental suffering as well as temporary or permanent limitations in their daily life activities are among the few examples of affect which may occurred among the employees if the prevention methods are not being taken earlier to tackle the issue of psychosocial stress factors at workplace. As recommended, continuous feedback and communication, reward system as well as automation alternatives are among the example of continuous efforts for the companies to opt in order to cope with such situation and hopefully, MSDs occurrence due to psychosocial work factors get to be minimized especially among the workers in the shared service companies.

6.3 Recommendation

As to overcome the issues of WRMSD occurred due to the psychosocial stress factors at workplace, there are few recommendations for the shared service companies to try and implement it at their respective organizations. The recommendations are :

i. Management need to have constant feedback and communication with their employees as to know on areas that can be helped with. In order to achieve this, weekly or monthly meetings need to be planned and carried out as the medium of constant communication between them. Simple survey through email may also be distributed among employees as to better grasp their

current condition at the workplace. But what is most important is the follow up action plans for each concerns given by the them. A team consists of both managers and staffs can get to be set up and the main aim of this team is to ensure all issues should be solved within time frame that has been agreed and result of the action plans need to be documented and shared with employees. This is essential as to ensure transparency for all parties within the organization.

ii. As with the high workload that employees possess on daily basis, the best solution for this issue is by converting some non-added value tasks with automation activities in which system will complete those tasks automatically rather than doing it manually by the employees. This will not only let the whole work process to become much more effective, but may even allow the employees to have ample time for both enough break as well as time for them to think in improving their current processes to a better one. This is also essential as to allow the employees to grow to be more efficient worker and most importantly showing to their respective hubs that they are having continuous improvements in a lot of aspects and thus satisfying them with a high quality services provided.

iii. Reward system does also play a positive contributor towards coping the issues of WRMSD due to psychosocial risk factors. Different kind of rewards be it from the managers or even colleagues may get to be introduced as to appreciate one's effort and excellent performance. Managers or colleagues do not have to wait for special event to be held for this rewards to be given to those eligible employees. Instead, a system may get to be introduced where colleagues or managers can give star recognitions whenever they think appropriate to give to the deserved

staff/employees, for their hard work and positive contributions. At the end of the year, those employees that have received the stars can return it back to the HR and will then receive some amount of cash as in return based on quantity of stars awarded. Also, HR may also list down and make an announcement to all employees in the organization regarding on stars receivers as an act of appreciation to them as well as to create a positive and healthy competition, encouraging them to even be more enthusiastic with the current job they are doing.

REFERENCES

Amin, N. A., Nordin, R., Fatt, Q. K., Noah, R. M., & Oxley, J. (2014). Relationship between psychosocial risk factors and work-related musculoskeletal disorders among public hospital nurses in Malaysia. *Annals of occupational and environmental medicine, 26*(1), 23.

Bernard, B. P., & Putz-Anderson, V. (1997). Musculoskeletal disorders and workplace factors; a critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back.

Blanc, P. D., Faucett, J., Kennedy, J. J., Cisternas, M., & Yelin, E. (1996). Self-reported carpal tunnel syndrome: Predictors of work disability from the National Health Interview Survey Occupational Health Supplement. *American journal of industrial medicine, 30*(3), 362-368.

Bongers, P. M., de Winter, C. R., Kompier, M. A., & Hildebrandt, V. H. (1993). Psychosocial factors at work and musculoskeletal disease. *Scandinavian journal of work, environment & health*, 297-312.

Cartwright, S., & Cooper, C. L. (1997). *Managing workplace stress* (Vol. 1): Sage.

Check, J., & Schutt, R. K. (2011). *Research methods in education*: Sage Publications.

Cooper, C. L., Dewe, P. J., & O'Driscoll, M. P. (2001). *Organizational stress: A review and critique of theory, research, and applications*: Sage.

Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of applied psychology, 75*(1), 51.

Feuerstein, M. (1996). Definition, Empirical Support, and Implications for Prevention, Evaluation, and Rehabilitation of Occupational Upper-Extremity Disorders. *Beyond biomechanics: Psychosocial aspects of musculoskeletal disorders in office work, 177*.

Feuerstein, M., Harrington, C. B., Lopez, M., & Haufler, A. (2006). How do job stress and ergonomic factors impact clinic visits in acute low back pain? A prospective study. *Journal of occupational and environmental medicine, 48*(6), 607-614.

Feuerstein, M., Huang, G., & Pransky, G. (1999). Workstyle and work-related upper extremity disorders. *Psychosocial Factors in Pain. New York: Guilford*, 175-192.

Frankenhaeuser, M., & Gardell, B. (1976). Underload and overload in working life: Outline of a multidisciplinary approach. *Journal of Human Stress, 2*(3), 35-46.

Halloran, A. (1996). Incentives benefit safety programs. *Occupational Health & Safety, 65*(6), 60-61.

Hartung, R. (2014). Malaysia Moves up with Shared Service Centres. April 07, 2018, from https://www.theglobaltreasurer.com/2014/07/15/malaysia-moves-up-with-shared-service-centres/)

Haufler, A. J., Feuerstein, M., & Huang, G. D. (2000). Job stress, upper extremity pain and functional limitations in symptomatic computer users. *American journal of industrial medicine, 38*(5), 507-515.

International Labor Office. (1984). PSYCHOSOCIAL FACTORS AT WORK: Recognition and control

International Labor Office. (2012). International Labour Organizational: Estimating the Economic Costs of Occupational Injuries and Illnesses in Developing Countries: Essential Information for Decision-Makers., 66.

International Labor Organization. (2013). ILO International Financial and Actuarial Service ; ILO Regional Office for Asia and the Pacific ; Social Security Organization: Malaysia : report to the Social Security Organization on the ninth actuarial valuation. Geneva,Switzerland: International Labour Organization.

Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The Job Content Questionnaire (JCQ): an instrument for internationally comparative assessments of psychosocial job characteristics. *Journal of occupational health psychology, 3*(4), 322.

Karasek, R., & Theorell, T. (1990). *Healthy Work: Stress, productivity and the the reconstruction of working life*: Basic books.

Kivimäki, M., Vahtera, J., Ferrie, J. E., Hemingway, H., & Pentti, J. (2001). Organisational downsizing and musculoskeletal problems in employees: a prospective study. *Occupational and Environmental Medicine, 58*(12), 811-817.

Kuorinka, I., Jonsson, B., Kilbom, A., Vinterberg, H., Biering-Sørensen, F., Andersson, G., & Jørgensen, K. (1987). Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms. *Applied ergonomics, 18*(3), 233-237.

Laura E. Hughes , Kari Babski-Reeves & Tonya Smith-Jackson (2007) Effects of psychosocial and individual factors on physiological risk factors for upper extremity musculoskeletal disorders while typing, Ergonomics, 50:2, 261-274

Laing, A., Cole, D., Theberge, N., Wells, R., Kerr, M., & Frazer, M. (2007). Effectiveness of a participatory ergonomics intervention in improving communication and psychosocial exposures. *Ergonomics, 50*(7), 1092-1109.

Lim, S.-Y., & Carayon, P. (1993). An integrated approach to cumulative trauma disorders in computerized offices: the role of psychosocial work factors, psychological stress and ergonomic risk factors. *ADVANCES IN HUMAN FACTORS ERGONOMICS, 19*, 880-880.

Macfarlane, G. J., Hunt, I. M., & Silman, A. J. (2000). Role of mechanical and psychosocial factors in the onset of forearm pain: prospective population based study. *Bmj, 321*(7262), 676.

Ørhede, E., Hottinen, V., Skogstad, A., Knardahl, S., Elo, A.-L., Dallner, M., & Gamberale, F. (2000). *User's guide for the QPSNordic: General Nordic Questionnaire for psychological and social factors at work*: Nordic Council of Ministers.

Plaisier, I., de Bruijn, J. G., de Graaf, R., ten Have, M., Beekman, A. T., & Penninx, B. W. (2007). The contribution of working conditions and social support to the onset of depressive and anxiety disorders among male and female employees. *Social science & medicine, 64*(2), 401-410.

Sauter, S., & Swanson, N. (1996). Psychological aspects of musculoskeletal disorders in office work. *Psychosocial factors and musculoskeletal disorders. London, England: Taylor and Francis*.

Singleton Jr, R., Straits, B. C., Straits, M. M., & McAllister, R. J. (1988). *Approaches to social research*: Oxford University Press.

SMITH, M. J., & CARAYON, P. (1996). Work organization, stress, and. *Beyond biomechanics: Psychosocial aspects of musculoskeletal disorders in office work*, 23.

Thompson, N., Stradling, S., Murphy, M., & O'Neill, P. (1996). Stress and Organizational Culture. *The British Journal of Social Work, 26*(5), 647-665. doi: 10.1093/oxfordjournals.bjsw.a011139

Yelin, E. H., & Felts, W. R. (1990). A summary of the impact of musculoskeletal conditions in the United States. *Arthritis & Rheumatology, 33*(5), 750-755.