WRMP AND ASSOCIATED RISK FACTOR AMONG RUBBER TAPPER: A COMMUNITY BASED STUDY AT KAMPUNG PONG, PENGKALAN HULU, PERAK

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Report submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Occupational Safety and Health

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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for award of the degree of Bachelor of Occupational Safety and Health.

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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LIST OF SYMBOLS

%	Percentage
&	And
<	Less than
>	Greater than
χ^2	Chi-square
α	Alpha level

LIST OF ABBREVIATIONS

CI	Confidence Interval
FELDA	Federal Land Development Authority
HR	Heart Rate
JCQ	Job Content Questionnaire
KP	Knee Pain
LBP	Lower Back Pain
Max.	Maximum value
Min.	Minimum value
MSCs	Musculoskeletal Complaints
MSDs	Musculoskeletal Disorders
MSS	Musculoskeletal Symptoms
NINDS	National Institute of Neurological Disorders and Stroke
NMQ	Nordic Musculoskeletal Questionnaire
NSAP	Neck, Shoulder, and Arm Pain
NSP	Neck and Shoulder Pain
RULA	Rapid Upper Limb Assessment Tools
SEA	Southeast Asia
SOCSO	Social Security Organization
SPSS	Statistical Package for Social Sciences
WRMP	Work-Related Musculoskeletal Problems.

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ABSTRACT

Rubber tapping activities exposes workers too many risk factor for work related musculoskeletal problems (WRMP). Rubber tapping involves repetitive and high paced work, static muscle loading, non-neutral body postures, forceful physical exertion, and all potential risk factor for development of WRMP. In this study, a cross sectional study was carried out 1) to determine the prevalence of WRMP among rubber tapper, 2) to determine the psychosocial factors that can contribute to WRMP, 3) to assess postural problem, 4) to identify whether there is a mismatched between rubber tapper tools and rubber tapper hand and 5) to identify the relationship between psychosocial factors and physical factors among rubber tapper. Data collection was done using four instruments, namely Nordic Musculoskeletal Questionnaire (NMQ), Job Content Questionnaire (JCQ), Rapid Upper Limb Assessment Tools (RULA) and Anthropometry Measurement. Questionnaire were administered to (n=70) rubber tappers to measure WRMP and psychosocial factors using NMQ and JCQ. Ergonomic risk exposure levels were measured for the tappers using RULA. Mismatch between rubber tappers hand and tools were measure using anthropometry measurement. Based on the results obtained, 64.3% of the rubber tappers suffer from lower back pain. The study also found that MSCs and psychosocial factors are significant. In conclusions, WRMP among rubber tappers are well known and can be prevented or controlled by the education programs, training and administrative short working time. Tools used by rubber tappers also can be improved.

ABSTRAK

Aktiviti menoreh getah memberi perdedahan kepada penoreh getah terhadap risiko masalah otot rangka berkaitan kerja (WRMP). Aktiviti menoreh getah melibatkan perkejaan berulang, beban statik otot, postur badan yang canggung, aktiviti fizikal yang membebankan otot rangka dan faktor risiko semua potensi pembangunan WRMP. Dalam kajian ini, satu kajian kerata rentas telah dijalankan untuk mengkaji kelaziman masalah otot rangka berkaitan kerja antara penoreh getah, menentukan faktor psikososial yang boleh menyumbang kepada masalah otot rangka berkaitan kerja, menilai masalah postur, mengenal pasti sama ada terdapat yang salah padan antara pisau penoreh getah dan tapak tangan penoreh getah dan untuk mengenal pasti hubungan antara faktor psikososial dan faktor fizikal antara penoreh. Pengumpulan data dilakukan menggunakan empat kaedah iaitu soal selidik Nordic (NMQ), soal selidik kandungan kerja (JCQ), *"Rapid Upper Limb Assessment"* (RULA) dan ukuran antropometri. Borang soal selidik telah diberikan kepada (n =70) penoreh getah untuk mengukur WRMP dan faktor-faktor psikososial menggunakan kaedah NMQ dan JCQ. Tahap pendedahan risiko ergonomi diukur bagi penoreh yang menggunakan kaedah RULA. Salah-padan antara tangan penoreh getah dan alatan diukur menggunakan ukuran antropometri. Berdasarkan keputusan yang diperolehi, sebanyak 64.3% penoreh getah mengalami sakit belakang. Kajian ini juga menjumpai bahawa hubungan diantara aduan sakit otot dan faktor psikososial didapati mempunyai hubung kait antara satu sama lain. Kesimpulannya, WRMP kalangan penoreh getah terkenal dan boleh dicegah atau dikawal oleh program-program pendidikan, latihan dan masa bekerja yang pendek. Alat yang digunakan oleh penoreh getah boleh juga di perbaiki.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter mainly emphasize on the general idea of this study along with the background of the study, problems statement, objective, research questions, the hypothesis of this study, the significance of study, scope of study, the study limitations face in this study, the operational definitions of this study and the framework of this study.

1.2 BACKGROUND OF STUDY

Work-related musculoskeletal problems (WRMP) refer to conditions where the workers have experienced discomfort in one or multiple body parts such as neck, shoulder, back, elbow, hand, hip and knee. According to the OSHA Association, WRMP is defined as the disorder of muscles, skeleton and related tissue which have been empirically showed or suspected to have caused by workplace activity. It is commonly reported that rubber tapper received massive amounts of physical and mental workload which caused them to develop WRMP. Recent evidence showed that rubber tapper are exposed to the risk of musculoskeletal disorders not only in the lower back area, but also in other region of the body such as neck, shoulder, upper back, knee, hip and thighs, legs, wrist, ankles or feet (Meksawi et al., 2012; Shan et al., 2011).

Researchers had been done in order to study the most prevalent WRMP among rubber tapping. A research by Meksawi et al. (2012) which was conducted in Southern Thailand among 427 participants showed that the low back is the most prevalent with 52.9% of body region for WRMP development. Same finding was also found in a study by Shan et al.(2011) conducted among 419 rubber workers in FELDA's Scheme Malaysia, had shown the results of 12 months MSDs prevalence were commonly reported at the neck (59.9%) . A different research that conducted by Reddy et al., (2012) and Nair et al.,(2015) among 343 and 154 of rubber tappers in Kerala found that the results of 12 months MSDs prevalence also found higher at the neck .

Low back area is the most susceptible for WRMP among farmer (Asyraf et al., 2007; Vasanth et al., 2015) but, for study among 195 tea pluckers in Tamil Nadu, India, Vasanth et al., (2015) had revealed that neck area and shoulder are have highest prevalence of WRMP.

1.3 PROBLEM STATEMENT

Rubber tapping activity is considered as an hazard for a musculoskeletal disorder, unusual ergonomic factors in rubber tapping process increased the risk for low back pain (Meksawi et al., 2012). Rubber tapping is the process by which the latex is collected from a rubber tree. When the circumference of the tree trunk reaches 50 cm, the tapping can be begun. Normally, the rubber tree will be divided into two or three sections circumferentially depend on the size of the tree. One section can be cut for about 5 to 7 years and then the next section is begun. The tapping level is usually started at a height of 150 cm above the ground and then moves down nearly to ground level and then the next part of the tree trunk is started at a level of 150 cm again. A special sharp tapping knife is used to cut the tree bark downward at a 30º angle a left to right oblique curve that cuts through the latex vessels. In performing rubber tapping the rubber tapper's forearm, lower arms, and wrists must maintain a degree of flexion, while the

trunk posture is in a degree of forward bending and laterally twisted which depends on the height of the tapping level. Overall tasks of rubber tapping would expose rubber tappers to ergonomics risk factors such as repetitiveness which is often repeated hundreds of times per day in awkward postures of the upper limbs, neck, trunk, and legs, awkward postures, static muscle loading and forceful exertion. These ergonomic problems may be a cause of MSDs among rubber tappers. Among the ergonomic risk factors present in rubber tapping process include age of the trees, height of tapping areas, number of area being tapped, uneven ground surface and technique of performing the tapping. Moreover, psychosocial hazards such as low job dissatisfaction, supervisor rating, psychological demands, decision latitudes and social support were the factors to cause sick leaves or disability due to MSDs (Hartman et al., 2005). Ergonomic risk factors caused wide range of occupationally related diseases among agriculture workers especially rubber plantation population and need extensive exploration in Malaysia. In view of limited studied on the prevalence of WRMP among rubber workers in Malaysia, this studied was attempted to determine the prevalence of WRMP and its association risk factors.

1.4 RESEARCH OBJECTIVE

The objectives of this research are:

1.4.1 To determine the prevalence of WRMP among rubber tapper by using NMQ.

1.4.2 To determine the psychosocial factor that can contribute to WRMP using JCQ.

1.4.3 To assess postural problem using RULA tools.

1.4.4 To identify whether there is a mismatched between rubber tapper tools and rubber tapper.

1.4.5 To identify the association between psychosocial factors and physical factors among rubber tapper.

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