International Journal of Engineering & Technology, 7 (3.24) (2018) 28-31

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Knowledge, Attitude and Practices of Musculoskeletal Disorder Injuries from Malaysian Industries Employers' Perspective

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Abstract

This study aims to assess the level of Knowledge, Attitude and Practices (KAP) on Musculoskeletal disorders (MSDs) from employers' perspectives in Malaysia industries. A newly developed KAP questionnaire was distributed and answered by 45 employers. Most employers showed good scores in the majority of items in Knowledge, Attitude and Practices sections. Pearson correlation was used in order to test the relationship between KAP scores and demographic profile and also KAP variables. It was found that knowledge has strong correlation r=0.291, p>0.05 with gender. The attitude component has a strong correlation (r=0.344, p>0.05) with age group. Whereas the practices component has good correlation with education level (r=0.249, p>0.05). However, the KAP variables show only knowledge and practices have a strong correlation (r=0.271, p>0.05). MSDs cases are increasing hence understanding the underlying KAP factors are crucial in order to tackle the problem.

Keywords: *Employer; KAP; Musculoskeletal disorders; Perspective.*

1. Introduction

Musculoskeletal disorders (MSDs) are a disorder of the muscles, tendons, joints, nerves, cartilage, and supporting structures of upper and lower limbs, neck, and lower back which were caused by extended exposure or abrupt exertion to physical factors such as awkward posture or vibration [1]. A study done in the United States indicates 29-35% of all occupational injuries and diseases are due to Musculoskeletal disorders (MSD) [2].

In Malaysia, the number of occupational MSDs cases reported to the Social Security Organization (SOCSO) has increased tremendously, from 10 cases in the year 2005 to 675 cases in the year 2014 [3]. Manufacturing sector shows the highest prevalence in term of death, non-permanent disability and permanent disability. A demographic analysis of MSDs occurrence among industrial workers in Malaysia showed MSDs is highest among manufacturing including electronics (51.72%) and public administration industry workers (20.25%) from the year 2009 to 2014 [4]. Study on the estimation of compensation cost related to MSDs in Malaysia indicated high compensation claims of accidents caused by MSDs factors such as strenuous movement (RM7, 687,846.90), overexertion in lifting objects (RM 1,842,328.66), over exertion pushing or pulling objects (RM 1,047,917.08) and over exertion in throwing objects (RM 30,821.09). Sprain and strain recorded the highest number of cases with total compensation cost about RM 9,933,127.09 [5].

MSDs may be caused by physical exposure and psychosocial factors at work [6]. Numbers of the risk factors could be occupational and non- occupational. Risk varies by age, gender, socioeconomic status, and ethnicity [7]. MSDs risk factors can be generalized into three main categories; knowledge, attitude and practices, work-related factors and external factors [8].

A KAP survey or instrument contains questions which acquire the Knowledge, Attitude and Practices of respondents for a certain case study. Knowledge is a set of understanding, one's capacity to imagine and one's way of perceiving. The level of knowledge assessed by the survey will assist to identify areas where information and education can be improved. Attitude is the tendencies to act. It is an intermediate variable between the situation and the response to the situation. It helps to explain that among the possible practices for a subject submitted to a stimulus, that subject adopts one practice and not another. Meanwhile, practices are the observable individual actions in response to a stimulus. KAP survey provides access to quantitative and qualitative information where questions are predefined and formatted into the standardized questionnaire. KAP questions do not reveal only KAP characteristics trait but also the idea that each person has the problem. These factors are often the source of the misconception that may represent obstacles to interventions [9]. There is limited specific instrument to examine risk factors of MSDs in term of KAP from the employer in Malaysia industries. The objective of this study is to determine the factor that causes MSDs injuries through KAP survey. With a clear picture of KAP-level of MSDs, appropriate improvement or intervention can be provided to increase safety level of working environment.

2. Methodology

To analyze KAP-level on MSDs of Malaysia industries from an employer perspective, an appropriate instrument to collect the data was developed in three stages. The first stage involved searching the database for literature and application of KAP related to MSDs in industries. The findings were reviewed, analyzed and referred to as a guidance in developing items, scale and response option for

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the new instrument. The instrument's wordings and word phrases were rephrased in the Malay language for convenience purpose. The socio-demographic data for employer comprises of gender, age, highest education level, years of experience in current job and years of experience in health and safety related works. Section 2, 3 and 4 include the questions on knowledge, attitude and practices of MSDs from employer perspectives. General aspects of MSDs, law, psychology, risk factors, sign and symptoms and treatment were included in the knowledge section. The attitude section includes general aspects about MSDs, health seeking attitude, prevention, treatment and risk taking attitude. Practices section includes practicing MSDs prevention in the organization.

Categorical responses for knowledge, attitude and practices are distinguished into positive (+ve) and negative (-ve) score. The knowledge includes of true, not sure and false in the questions. For knowledge part, true is categorized as a positive score. Meanwhile, not sure and false is the negative score. In attitude section, the responses were recorded using Likert scale 5 ranging from 1 (strongly disagree) to 5 (strongly agree) and for practices, the response was also recorded using Likert scale 5 ranging from 1 (very low) to 5 (very high). These responses were then converted into positive and negative scoring categorized. To identify the positive and negative score for attitude part, strongly disagree, disagree and neutral are then consider as a negative score. Meanwhile, agree and strongly agree are consider vice versa. The practices part categorized very low, low as negative and others are the positive score. The questionnaire on knowledge, attitude and practices consist of 41 questions; where 16 items for knowledge, 14 items for attitude and 11 items for practices.

In the second stage, a pilot test was done on 24 part-time students from UTM SPACE, which were also workers from various industries. In the third stage, the improvised questionnaires were distributed to experts to be reviewed for its content, clarity, coverage and design. This phase was conducted during International Symposium on Advancements in Ergonomics and Safety 2015 (ERGOSYM2015) at Universiti Malaysia Perlis [10]. Finally, the improved questionnaire was distributed to 20 employer at a seminar for internal consistency test purpose. The Cronbach's alpha of knowledge, attitude and practices section were 0.8, 0.7 and 0.9 respectively.

The process is followed by performing descriptive analysis to describe the frequency and percentage of socio-demographic characteristics. A correlation study was done to see the relationship between KAP scores and demographic profile by using spearmen correlation. All analyses were performed using SPSS version 22. The proportion of respondents who answered correctly of each item in KAP were expressed as the good score and correct percentage.

3. Results and Discussion

All Employers' response rate for this study was 17% as out of 270 questionnaires sent to multiple industries, and only 45 companies were responded. 71.1% of them were male and the remaining is female. Most of the respondent ranged from 25 to 54 years old which shows 31.1% respectively. The majority of employers involved in others sector (33.3%) which included of services and others industries, electronics (17.8%) and automotive (15.6%). 40.0% and 26.7% respondent holds Bachelor's degree and diploma respectively. As for working experience in the current industry, 22.2% have worked more than 15 years and more than 4 to 6 years, while the others respondents show fewer percentage of their working experienced. On the other hand, 24.4% have 1 to 3 years of experience in Health and Safety work while 20.0% experienced for less than 4 to 6 year and less than a year shows 15.6%. The summary of demographic analysis is shown in Table 1 below. In Knowledge section, the respondents' answers were translated into positive and negative score as per summarized in Table 2.

On General part, most of the respondents did not know that MSDs occur when the body physical ability is higher than mechanical workload. This shows for question 8 where the negative score is higher than the positive score (71.1%). The psychology part, the respondents knew 100% that the productivity may decrease due to MSDs. The respondents also clearly knew that severe headaches were not the symptom and sign of MSDs. There were also conclusive rates, where the respondents tend of not sure for the Law and Risk Factor respectively. The majority of them did not know if Malaysia has the law on protecting the worker from having MSDs. The respondent also is being not sure if the prior of history broken bones is the risks factor of getting MSDs on question 12b. The respondents also believe the workers will recover to normal if the workers are not being exposed to MSDs risk factor. Depending on the severity level, the condition might be irreversible. Having this wrong information may lead them to ignore the seriousness caused by MSDs on their health and working capability. For a majority of the item and sub - domain questions, the respondents fared well.

Table 3 shows on attitude scores for the positive and negative answered by the respondents. In this section, the questionnaire consists of the five-part and do and don't being asked in this section.

Table 1: Employers' socio demographic characteristics

Variable	N	(%)
Gender		
Male	32	71.1
Female	13	28.9
Age group		
Less than 25	1	2.2
25 – 34 years	14	31.1
35 – 44 years	14	31.1
45 – 54 years	14	31.1
55 – 64 years	2	4.4
Education level		
SPM	2	4.4
STPM	1	2.2
Technical/Vocational	4	8.9
Diploma	12	26.7
Bachelor's degree	18	40.0
Master's degree	8	17.8
Sectors		
Others	15	33.3
Electronics	8	17.8
Automotive	7	15.6
Metal	4	8.9
Plastics	3	6.7
Wood	2	4.4
Paper	2	4.4
Food and beverages	1	2.2
Clothing and textiles	1	2.2
Chemicals	1	2.2
Experience in current industry		
Less than 1 year	1	2.2
1- 3 years	9	20.0
4 - 6 years	10	22.2
7 - 9 years	8	17.8
10 – years	4	8.9
13 – 15 years	3	6.7
>15 years	10	22.2
Experience in Health in Safety		
< 1 year	7	15.6
1 – 3 years	11	24.4
4 – 6 years	9	20.0
7 – 9 years	6	13.3
10 – 12 years	5	11.1
13 – 15 years	4	8.9
>15 years	3	6.7

Table 2: Knowledge section response

Items	Description	Score (%) +Ve	Score (%) -Ve
	General		
Q7	MSDs is a disorder that affects body movement or musculoskeletal system	86.7	13.3

Q8	MSDs occur when the body physical ability is higher than mechanical workload	28.9	71.1
	Law		
Q9	There is a law in Malaysia to protect workers from MSDs in the workplace	48.9	51.1
	Psychology		
Q10	Productivity may decrease due to MSDs	100	0
Q11	MSDs may affect morale and work ethic	88.9	11.1
	Risk Factors		
Q12a	Repetitive motion	95.6	4.4
Q12b	Prior history of broken bones	55.6	42.2
Q12c	Inadequate break time	80	20
Q12d	Awkward body posture	93.3	6.7
Q13	Employee will recover to normal if no longer exposed to MSDs risk factors	48.9	51.1
	Signs and symptoms		
Q14a	Severe headaches	26.7	71.1
Q14b	Tingling or vibration on whole body, hands, or legs	82.2	17.8
Q14c	Stiff or strain of muscle on the whole body, hands, or legs	93.3	6.7
	Treatment		
Q15a	Anti-flammatory medications	62.2	35.6
Q15b	Muscle strengthening and stretching exercise	88.9	8.9
Q15c	Occupational or physical therapy	97.8	2.2

The prevention part shows numerous of the respondents were very concern about MSDs early treatment this statement is shown for the question 20 where don't being asked in the questionnaire and it scores 97.8% on the negative answer. At the meantime, they are agreeing on needs to change the way employee work due to MSDs injuries. The respondents also rely that training and education on MSDs could reduce the number of MSDs reported on the prevention side. The risk taking sub-domain, the respondent belief that MSDs prevention and safety are as important as production works. The respondents also agreed on needs to follow some health and safety rules and procedure in order to get the job done safely in their working place environment. The respondent tends to be perplexed for the questions 18 and 26. Those questions were fairly rates for the statement good communication about MSDs and safety issues could influence the workers and the respondents sure that only a matter of time before employee develop MSDs from work.

In Practice section, each question answered with 'high' or 'very high' are considered as a positive score or good practice. Table 4 shows a summary of good Practice score.

The Practices scores include of prevention on sub-dominant only. The scores show the respondent practice 100% on encouraging to report the unsafe condition at the workplace. Contradict to question 38 that scored 100% on positive score, but question 31 shows 31.1% for the positive vibe. They admitted low practicing on body health and system screening being done for the employee. In addition, there are also a fewer seminar, courses or talk being conducted in their workplace. Besides, from the questions, 37, adopted light exercises in the working hour have fewer responses for the positive practice. There is a body of literature that suggests that an exercise program can be an effective prevention and treatment modality. The benefits associated with a general exercise program include an improved general attitude, decreased depression, reduced stress, and muscular tension as well as decrease in new back problems, which work together towards prevention and/or reduction of lower back pain [11]. The rest, high score for positive value has been determined on practicing good practices in the workplace.

Table 3: Employers' good attitude scores

Items	Description	Score (%)	
		+Ve	-Ve
	General		
Q16	Employee is responsible for knowing MSDs risks and symptoms by himself	66.7	33.3
Q17	I assign work to employee according to their physical abilities	88.9	11.1
	Health seeking attitude		
Q18	There is good communication here about MSDs and safety issues which influence works	46.7	53.3
	Prevention		
Q19	Changes aimed to reduce MSDs are probably to be successful	80	20
Q20	I am not concerned about MSDs early treatment because it may cure by itself	2.2	97.8
Q21	I don't need to change the way employee work due to MSDs injuries	4.4	95.6
Q22	Some health and safety rules are not really effective	17.8	82.2
Q23	My knowledge regarding the prevention and detection of MSDs is current and sufficient	31.1	68.9
Q24	Training and education on minimizing MSDs risk should be done regularly	95.6	4.4
	Treatment		
Q25	Advantage of actions to reduce MSDs are likely to exceed the costs	66.7	33.3
	Risk taking attitude		
Q26	I'm sure it's only a matter of time before employee develop MSDs from work	46.7	53.3
Q27	I consider MSDs prevention and safety are as important as production works	93.3	6.7
Q28	Some health and safety rules and procedures don't need to be obeyed to get the job done safely	2.2	97.8
Q29	I always give sufficient time to get the job done safely	84.1	15.9

Table 4: Employers' good practice scores

Item	Description	Score%	
		+Ve	-Ve
	Prevention		
Q30	Regular workplace safety inspection	86.7	13.3
Q31	Regular body and musculoskeletal system health screening	31.1	68.9
Q32	Employer check, advice, and correct employee are bad posture	77.8	22.2
Q33	Often study on MSDs related information	46.7	53.3
Q34	Seminars, courses or talks on MSDs at workplace	33.3	66.7
Q35	Training on health and safety related issues for employee	80.0	20.0
Q36	Short breaks from work	84.4	15.6
Q37	Light exercise session during working hours	40.0	60.0
Q38	Encourage to report unsafe conditions at workplace	100	0
Q39	Notify upper management on important MSDs and safety issues	88.9	11.1
Q40	Involved in ongoing evaluation of MSDs and safety issues	64.4	35.6

In order to determine the underlying factors which might affect KAP-level of employers, statistical analysis was done using Spearman correlation to know the correlation between socio-demographic and KAP scores. Besides, this statistic analysis also is done to know the underlying of the KAP variables in this study.

Table 5 shows the correlation between KAP scores and respondents' socio-demographic. Gender, age group, sectors, education level, years of working experience and experience in safety and health are the parameter being tested with KAP scores.

Finding on socio-demographic shows the knowledge component, gender factors are highly correlated with high scores ($r=0.291$, $p>0.05$). For example, women are more concerned about safety and may report unsafe or disturbing work conditions than men. The study found that the situation correlate with women seeking

medical care more often than men [12]. The individual factor of gender has frequently been treated as a potential confounder or effect modifier in ergonomic epidemiological studies [13]. While the attitudes component is highly correlated with age group with r=0.344 and p>0.05.Attitude is developed from the adequate knowledge as the age increase cultivating on attitude also increase and there are about 73% felt the need to improve their knowledge [14]. Whereas, the practices component shows a good correlation with education level which r value equal to 0.249 and p more than 0.05.

Table 5: Employers' good practice scores

Variables	Knowledge		Attitude		Practice	
	r	p	r	p	r	p
Gender	**0.291**	0.026	-0.057	0.355	-0.011	0.471
Age group	-0.122	0.213	**0.344**	0.01	-0.071	0.321
Sectors	-0.124	0.212	-0.089	0.283	-0.068	0.331
Education level	0.153	0.158	0.167	0.137	**0.249**	0.05
Years of work	-0.122	0.212	0.076	0.31	0.001	0.497
Years in Safety	-0.224	0.069	0.092	0.273	0.14	0.179

*p>0.05

Table 6 shows the spearman correlation on the employer KAP-level. The test is being done for the KAP variables.

Table 6: Employer KAP-level

Variables	Knowledge		Attitude		Practice	
	r	p	r	p	r	p
Knowledge	1	0	-0.174	0.127	**0.290**	0.027
Attitude	0.174	0.127	1	0	0.210	0.083
Practice	**0.290**	0.027	210	0.083	1	0

As shown in Table 6, there is a relationship between knowledge and practice ($r = 0.290$, $p < 0.05$) from an employer perspective. The relation between good knowledge and good practice are similar to the previous findings where good knowledge has a positive effect on appropriate practice on printing workers in Hong Kong (Yu, 2005).

4. Conclusion

The objective of this study was to determine the factor that causes MSDs injuries through KAP survey. Even though there are limitation on getting the responses, one to one approach can be done in order to have the high response rate and data is validate. Besides, the number of respondents also needs to be increased. This study also will provide references for future studies in KAP of MSDs related injuries especially for various industries in Malaysia, be it manufacturing or non-manufacturing. Other than that, it may assist top-management, employers and others organization to focus on necessary initiatives and interventions to minimize MSDs problem respect to KAP issues.

Acknowledgement

This study is a collaboration between UTM and National Institute Occupational Health and Safety (NIOSH). Many thanks to all parties who helped and gave the ideas in making the KAP questionnaire especially to expert review. We would like also to thank NIOSH for giving the chances on the joint ventures and monetary support. This paper will not complete without the respondents, therefore, their cooperation is much appreciated.

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