

ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE ON THE USAGE OF SAFETY HELMET AMONG OIL PALM HARVESTERS

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ABSTRACT

Safety helmet become vital personal protective equipment especially in the plantation in preventing the head from injury. This study evaluate the knowledge, attitude and practice on safety helmet usage among harvesters, the association between knowledge, attitude and practice of safety helmet usage with head injury; and the significant differences of the safety helmet practices before and after the intervention. A cross-sectional study was conducted among 109 harvesters in two oil palm plantation located in Selangor, Malaysia. A set of questionnaire was used to collect the socio demographic background data, knowledge, attitude and practice on the usage of safety helmet. An intervention program through tool box talk on proper usage of safety helmet also was given followed by an observation to look for the differences before and after the tool box promotion on the use of safety helmet. Result from the descriptive analysis showed high score for knowledge, fair score for the attitude and practice among harvesters. There is no association between knowledge ($X^2=2.733$; $p>0.05$), attitude ($X^2=2.546$; $p>0.05$) and practice ($X^2=2.473$; $p>0.05$) with the head injury. The result also gave no significant differences ($p>0.05$) of the practices before and after the intervention. However, the trends showed decrease in number of practices after the intervention. This study reveals that the knowledge, attitude and practice are not a prominent indicator for head injury among harvesters.

Keywords: safety helmet, knowledge, attitude, practice

INTRODUCTION

In Malaysia, accident is defined by the Occupational safety and Health Act as an occurrence that rising out of or in connection with work which result in fatal or non-fatal injuries. In term of occupational accident, the ILO Code of Practice¹ has specifically defined it as any accident that take place while performing the task. In December 2014, according to Malaysian's Department of Occupational Safety and Health (DOSH)², the highest number of accidents is in manufacturing sector (1,415 cases) followed by agriculture, forestry, logging and fishing sector (414 cases) and thirdly construction sector (93 cases). Based on Malaysian's OSH Annual Report by the DOSH shows an average case of 542 cases per year related to occupational accidents in agriculture sector³. It showed that agriculture is among the most risky sector of all other industries on par with other sector such as construction and manufacturing.

The evidence of accident in oil palm plantation had been reported by DOSH Annual Report 2006-2010³, and shows an inconsistent trend with fluctuating cases from the highest cases of 195 cases in 2009 and the lowest in 2008 (66 cases). The major body part involve in accident is the upper limb (145 cases) followed with lower limb (97 cases), head (44 cases), multiple location (23 cases), general injuries/ poisoning/disease (8 cases), and trunk with 7 cases. The statistics indicate that the awareness on safety and health among agricultural/oil palm workers are questionable with the level of knowledge; attitude and practice need to be assessed.

Injury in oil palm plantation or other agricultural plantation, head injury is the main focus and become a concern as it can result severe injury and may lead to fatality⁴. The main cause is the height of the palm tree, the size and weight of the fresh fruit bunches (FFB) that can cause severe bodily injury to oil palm harvesters. In one of a case study where a man sustained a left branchial plexus injury resulted from high energy trauma. It caused by a bunch of palm oil fruit fell from 18 feet high tree and hit his left shoulder. As a consequence, he experienced numbness of the left shoulder and was not able to move his left upper limb⁵. Therefore, the usage of safety helmet is important to prevent any occupational accident in the plantation. Thus, this study is to ponder the knowledge, attitude and practice on the safety helmet use among oil palm harvesters. It assists in presenting the level of knowledge among the worker on the function of safety helmet and advantages using it.

METHODS

This is a cross sectional study with the objective of evaluating the knowledge, attitude and practice on the usage of safety helmet among oil palm harvesters and the effectiveness of training program related to improving the use of hard hat on oil palm plantation. This study was conducted in two oil palm plantations situated in the west coast of Malaysia. A total of 109 participants recruited through a list name provided by the

plantation management. They were selected according to the inclusive criteria such as male and age between 18 to 60 years old. The study shows that 73.4% of the harvesters worked as oil palm cutter, 2.8% worked as pruner and 23.9% collect loose fruit. Approximately 46.8% of them had primary education and 37.6% had secondary education. In term of age, most of them aged from 31 to 39 years old (47.7%) and 1.8% of the aged less than 20 years old. 13.8% aged more than 40 to 60 years old. In term of head injury prevalence, only 10.1% (11 participants) had previous incidence of head injury.

Data was collected using three methods: (1) set of questionnaire to evaluate their knowledge, attitude and practice on the safety helmet use, (2) an intervention program through training on the safety helmet usage especially related to the correct way on wearing helmet and (3) observation in assessing their current practice on the safety helmet usage. The questionnaire consists of four parts, namely socio demographic information, knowledge, attitude and practice of safety helmet usage among the harvesters. Eight questions were designed to test the harvester knowledge and attitude, 7 questions were designed for practice on safety helmet use. The questions were scored and eventually categorized as "high", "fair" and "low" for those three items; knowledge, attitude and practice. High knowledge, attitude and practice are attributes with higher compliance to the safety helmet usage. The data was pre tested in the same location with the same method to gauge its reliability and response level. The result showed high reliability with p value of 0.811. Based on the pre-test, the questionnaire was further improved to increase its reliability and to facilitate its acceptability by the respondents.

Secondly, an intervention on the correct usage of safety helmet was done to the harvester. This intervention in term of briefing regarding safety helmet use was delivered for five minutes during their muster or known as roll-call time early in the morning. During the short talk, they were briefly explained on the right step wearing the helmet, plus the do's and don'ts toward it. For instance, the harvesters are not allowed to make any changes to the helmet, paint it, and attach any adhesive stuff and so on. For instance, the harvesters are not allowed to make any changes to the helmet, paint it, and attach any adhesive stuff and so on. Those actions will shorten the shelf life of the helmet. Finally observation was done after the intervention session to audit their current practice on safety helmet usage. The observation will also evaluate the pattern of practice before and after the intervention. A checklist consist of five items of practices was used in this study.

The data were analyzed using Statistical Package for Social Sciences Software version 22 and the crosstab analysis was used to develop the association between knowledge, attitude, and practice of safety helmet usage with the head injury and the differences of practices before and after the intervention. This study had been approved by the Ethical Committee of Universiti Putra Malaysia.

RESULTS

Knowledge, attitude and practice level

A total of 42.2% harvesters received high score for the knowledge level, followed by 25.7% with fair level and 32.1% were in the low level. This made up the total score were 83.3%, which indicating a good knowledge on safety helmet among them. In term of the attitude level 39.4% obtained high score, 28.4% were fair score and lastly 32.1% of them got low score. The overall score for attitude level were 71.2%. The practice score which reflects the harvester practices with respect to the proper usage of safety helmet. The result showed 52.3% of them were categorized in high practice level followed by 21.1% with fair level of practice. Meanwhile, 26.6% of the respondents were categorized in the low practice level (Table 1).

Table 1: Result of safety helmet usage by knowledge, attitude and practice level

Criteria	Number of respondents (n)	Frequency (%)
Knowledge level:		
High	46	42.2
Fair	28	25.7
Low	35	32.1
Attitude level:		
High	43	39.4
Fair	31	28.4
Low	35	32.1
Practice level :		
High	57	52.3
Fair	23	21.1
Low	29	26.6

Association of knowledge attitude and practice with head injury

The study shows that there was no significant association between the knowledge, attitude and practice with the incidence of head injury as shown in Table 2.

Table 2: Association between knowledge, attitude and practice with the head injury

Criteria	Reported injury; Frequency (%)		χ^2
	Yes	No	
Knowledge level:			2.733
Low	7 (6.4)	32 (29.4)	
Fair	1 (0.9)	27 (24.8)	
High	3 (2.8)	39 (35.7)	
Attitude level:			2.546
Low	9 (8.3)	35 (32.1)	
Fair	2 (1.8)	29 (26.6)	
High	0 (0.0)	34 (31.2)	
Practice level:			2.473
Low	8 (7.3)	28 (25.7)	
Fair	2 (1.8)	21 (19.3)	
High	1 (0.9)	49 (45.0)	

*p-value not significant, $p > 0.05$

Comparison on practices before and after the intervention program

As shown in Table 3, the result indicated that there was no significant change of safety helmet practice after the briefing on the correct use of safety helmet was done.

Table 3: Result of differences on practice before and after the intervention

Practice item	Frequency (%)		χ^2	P value
	Yes	No		
Wearing safety helmet in estate/plantation				
Before	105 (96.3)	4 (3.7)	0.013	0.608
After	79 (72.5)	30 (27.5)		
Wearing the chin strap				
Before	91 (83.5)	18 (16.5)	0.477	0.490
After	38 (34.9)	71 (65.1)		
Adjusting the nape strap to fit one's head				
Before	101 (92.7)	8 (7.3)	0.252	0.616
After	36 (33.0)	73 (67.0)		
Wearing safety helmet reversely				
Before	15 (13.8)	94 (86.2)	0.161	0.688
After	1 (0.9)	108 (99.1)		
Wearing cracked/holed safety helmet				
Before	78 (71.6)	31 (24.8)	0.401	0.818
After	1 (0.9)	108 (99.1)		

DISCUSSIONS

Knowledge, attitude, and practice of safety helmet usage

The level of knowledge among the respondents was obtained from the questionnaire. The level is categorized into three stages which are high, fair and low. By using the descriptive analysis the result showed that 42.2% of the respondents were in the high level, followed by 25.7% in the fair level.

As for the overall result, their score were 83.3% indicating the score for knowledge is good. The result can be related back to their educational background where 87.2% of the respondents received formal education, and only 12.8% did not have any formal education. In addition,

they also could read, write and understood the questionnaire.

In term of their attitude, the total score indicated medium level of manner showed by the respondents. With the total score of 72.1%, 39.4% portrayed excellent attitude, then 28.4% of them were in sensible attitude while the rest of 32.1% was categorized under low level of attitude. This data is supported by a study from Fernandez⁶ where he stated that the workers take for granted of the usage of safety helmet. They felt it is not masculine and unfashionable wearing the safety helmet. Thus, it became one of the reasons for inappropriate attitude.

In other hand, the practice level of safety helmet usage also been and the input gained signifies their practice level with total score of 76.8%. Referring to the total score, half of the respondents (52.3%) achieve high score. Meanwhile, 21.1% attained fair score and 26.6% of them with the low score. Respondents were asked about their practice regarding safety helmet usage, and most of them said they often wore the helmet while in the estate. However, 38.5% of them occasionally wore it. This action might be due discomforted of safety helmet in term of it weight. Thus, comfort factor also can lead to unsafe practice of safety. The result of this study demonstrated that data showed that 70 of the respondents felt inconvenient while wearing the helmet because of the ventilation aspect. Study from China found that it is not always comfortable to wear helmet as it is a bit heavy and hot⁷.

Although the respondents wore safety helmet in the estate, this study demonstrate that a part of them (37.5%) still did not fasten the chin strap. It is important as chin strap will hold the helmet in place. In fact, about 34% of respondents did not adjust the chin strap to fit themselves. According to Edmonds⁸, friction is said to be cause of helmet rash. Friction can occur to the skin whenever the head is moved if the helmet is loose. Thus, this is an example of unsafe practice where the use of safety helmet can cause head injury to the user.

Association between KAP and head injury

Although, the study suggests that there is association between knowledge, attitude and practice of safety helmet with the head injury. The finding found contradictive association between those two variables. This is supported by the small number of head injury experienced by the respondent for the past two years. From the questionnaire, only 11 cases were reported. The reported injury also caused by other factors such as pinched by the thorn, stung by bee and road accident. Research showed that falling of the fresh fruit bunch is not a strong indicator for head injury.

Differences before and after the safety helmet intervention

When comparing the practices on safety helmet before and after the intervention. All the five practices showed no significant differences between before and after the intervention. However, the statistic showed decreasing in number of practices among harvester especially regarding compliance of wearing safety helmet in plantation, wearing chin strap and adjusting the nape strap.

During pre-test, the number of respondent who wore the safety helmet was 105, but the number decreased to 79 for the post test. The same trend applied to the practice of wearing the chin strap, where the number of respondent declined from 91 to 38. In term of adjusting the nape strap, about 101 of them fitted the strap in the pre-test, yet during the observation only 36 of them performed the practice for the post test.

Although wearing safety helmet in this plantation is mandatory and can be enforced to a degree through supervision, most agricultural workers such as reported among forest workers are likely to remove the helmet during uncomfortably hot weather if they experience discomfort such as heat stress⁹.

Throughout the questionnaire session, about 70 of the respondents agreed that they felt hot wearing safety helmet mainly at noon (12 to 1 pm). This evident is supported by Davis et al.¹⁰, where he compared the workers perception between standard, passively ventilated and actively ventilated helmet. Passively ventilated helmet was the most preferable helmet as it is least hot and more comfortable. It is due to the presence of holes that added to allow heat escape from the dome space. Moreover, the weight of the helmet also is one of the factors that lead to reduce in number of the practices. This is also supported by Davis et al.¹⁰, more than half the respondent said they disliked the actively ventilated helmet because it was too heavy. The ventilated helmet was designed with a battery-powered and dust filtering fan to promote cooling effect. Meanwhile, in this study 74 of the respondents claimed that the safety helmet was too heavy, thus lead to inconvenient while wearing it.

Another reason for high percentage of them stated using safety helmet pre intervention due to the requirement of the organization, where it is a major directive specifies that head protection must be worn by all employees as there is potential for head injury from falling or flying object. Therefore, the respondent tends to comply with it by stating that they wore it in the pre-test but lack of

using the helmet in the field as nobody will observe them while working.

CONCLUSION

The study shows that the knowledge, attitude and practice on the use of safety helmet were considered as moderately high among harvesters in Malaysia. No association between head injury with the harvester's knowledge, attitude and practices on the use of the safety helmet. Although there was no significant different among those using safety helmet before and after intervention, the intervention program through emphasizing the harvester's on correct use of safety helmet was found to be ineffective in maintaining the harvesters in correct way of using safety helmet. The main issue on the use of safety helmet in oil palm is the discomfort of using safety helmet due to the heat and also the weight of the helmet. Therefore there is a need to improve the safety helmet based on issues experienced by the harvesters. This will ensure that the harvester will better position to use the safety helmet properly for a long period of time. In addition, regular briefing should be maintained in order to ensure that the harvester will sustain the importance of the safety helmet

ACKNOWLEDGEMENT

We would like to give our full gratitude to SIME DARBY Plantations for giving us the opportunity to conduct this study. Without their full support, the study will not be able to be conducted smoothly.

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