HEALTH RISK PERCEPTION OF OCCUPATIONAL HAZARDS AMONG RICE FARMERS IN NAKHON NAYOK PROVINCE, THAILAND

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ABSTRACT: Rice farmers in Thailand poses to unacceptable levels of occupational risks. Understanding of health risk perception to which rice farmers are exposed is important to preventive health. The study objectives were to investigate occupational risk perception and factors affecting occupational risk perception among rice farmers in Nakhon Nayok province, Thailand. A cross-sectional study was carried out in two communities in Nakhon Nayok province, Thailand. Multistage random sampling was employed, selected one person per each rice farmer household. Data collected from 145 rice farmers using a structured face - to - face interview questionnaire. Rice farmers were interviewed to evaluate 36 items in terms of the potential health risks of occupational hazards in four sides: equipment use, pesticide use, ergonomics, and working condition. Analysis of the items, on a Likert scale from 0 (no risk) to 10 (high risk), showed that rice farmers perceived health risk of occupational hazards on moderate level ($\bar{x}=$ 6.90). The pesticide risk perception was high level ($\bar{x}=$ 8.07), ranking it as the first of health risk perception. The health risk perception of equipment use, ergonomics, and working condition were also moderate level ($\bar{x}=$ 6.85, 6.19, and 6.54, respectively). The result from simple linear regression analysis reveals that two variables affect health risk perception at the 0.05 significance level. Variables that were negatively influence occupational health risk perception included length of current occupation and farm size. Understanding of potential health risk perception is a first step in developing program to minimize occupational hazards. This study suggested that the different levels of health risk perception of each hazard should be integrated to intervention program and risk management strategies.

Keywords: Health risk perception, Occupational hazards, Rice farmers, Thailand

INTRODUCTION

Occupational health and safety issues in Thailand, a country in Southeast Asia, are becoming increasingly significant. High risk occupations are in both agricultural and industrial sectors [1]. Rice farmer is a main occupation of Thai agriculturists for the past until present. Nowadays farmers have rice cultivation methods that are different from those in the past. Technologies are implemented to find ways to replace people and animal labor with machines. In response to higher competition and a different environment, larger volumes of pesticide are used. These factors cause health risk to rice farmers. Previous study on health conditions and safety at work found that rice farmers were exposed to four types of health hazards: physical, biological, chemical and ergonomic hazards [2]. Moreover, paddy fields filled with holes, ponds, flooded areas

and mud make rice farmers more prone to accidents and injuries. Additionally, long-hour work in the sun can cause health-related problems such as weakness and stress. In a study conducted in Pathumthani province, Thailand. The evaluation of knowledges, attitudes, and practice of farmers in Klong 7 sub-district regarding to occupational agricultural health and safety showed that farmers had averaged to high level of knowledges both before and after model implementation. However, their knowledges did not reflect their behavior. Their behavior still showed high risk both before and after the implementation [3]. Occupational risk perception should play an important role to encourage rice farmers aware of their occupational hazards. Nakhon Nayok is one of the central provinces of Thailand. In 2010, Nakhon Nayok province has the total of 61,874 households. Of this number, 26,656 (43.1%) are agricultural households and most of them are rice farmers [4]. Moreover, the agricultural area is in the irrigation area which

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Table 1 Frequency and percentage of health risk perception level

Health risk perception level*	Frequency (n = 145)	Percentage
Low	7	4.8
Moderate	69	47.6
High	69	47.6

* Health risk perception level (Low; x̄ = 0.01 - 3.99, Moderate; x̄ = 4.00 - 6.99, High; x̄ = 7.00-10.00)

Table 2 Mean and health risk perception level

Occupational hazards	Mean	Health risk perception level*
Equipment use	6.85	Moderate
Pesticide	8.07	High
Ergonomics	6.19	Moderate
Working condition	6.54	Moderate
Occupational hazards	6.90	Moderate

* Health risk perception level (Low; x̄ = 0.01 - 3.99, Moderate; x̄ = 4.00 - 6.99, High; x̄ = 7.00 -10.00)

receives water from the various water projects which enables it to grow rice all year long [5]. With few studies completed that focus on health risk perception among rice farmers. The study objectives were to investigate occupational risk perception and factors affecting occupational risk perception among rice farmers in order to emphasize the actions to prevent injury and illness at work.

MATERIALS AND METHODS

This cross-sectional study was conducted during June and July, 2012. The respondents were rice farmers in two communities in Nakhon Nayok province, Thailand. The inclusion criteria were rice farmers who growing rice all processes included: (1) land–preparing process, (2) seed–soaking and scattering/fertilizer –applying process, (3) pesticides –mixing and spraying process, (4) sowing fertilizer, and (5) rice harvesting process), living in the study area and willing to participate in this research through informed consent. Total of 145 samples were calculated by the Power and Sample Size Calculations [6] and developed form a previous study [7], increased 10% for dropout rates. Multistage random sampling was employed, selected one person per each rice farmer household. Data collected from 145 rice farmers using a structured face - to - face interview questionnaire. The questionnaire was developed by the literature review and analyzed from the injury and illness incident of health promoting hospital in the community. A structured face - to - face interview questionnaire in use had a reliability value with Cronbach's Alpha Coefficient at 0.91 and the content was validated by three experts. All respondents were interviewed to express their perception about the potential health risks present in

their work. Four sides of occupational hazards; equipment use, pesticide use, ergonomics, and working condition, 36 items, specific to determine on a Likert scale from 0 (no risk) to 10 (high risk) [8, 9]. SPSS for Windows version 17 was used to statistical analysis. The descriptive statistics; frequency, percentage, mean, and standard deviation were analyzed for general information. The inferential statistics including Pearson correlation and linear regression were used to test the associations between variables. This study was approved by the Institutional Review Boards (IRBs) of Ethical Committee of Chulalongkorn University, Thailand.

RESULTS

The respondents were female (51.7%) and male (48.3%). The mean age was 50.2 years, the majority were married (82.8%). Most of them graduated in primary school (77.9%). The mean monthly family income was US\$ 416.8, and mean length of current occupation was 26.6 years. The mean work duration per day was 7.5 hours, and had a 15.3-acres farm size. Health risk perception was a dependent variable in this study, analyzed from 36 questions on a Likert scale from 0 (no risk) to 10 (high risk). The results showed that the mean scores was 6.9. The respondents perceived occupational health risk at moderate level and high level in the same number (46.7%) and 4.8% perceived health risk at the low level (Table 1). Analysis of the items, on a Likert scale from 0 (no risk) to 10 (high risk), showed that respondents perceived health risk of occupational hazards on moderate level (x̄= 6.90). The pesticide risk perception was high level (x̄= 8.07), ranking it as the first of health risk perception. The health risk perception of equipment use, ergonomics, and working condition were also moderate level

Table 3 Simple linear regress analysis of socio-demographics for health risk perception (n = 145)

Variable	B	*P-value*
Sex	7.212	0.479
Age	- 0.522	0.234
Marital status	8.875	0.510
Education	12.543	0.312
Monthly family income	- 9.254	0.797
Length of current occupation (year)	- 0.793	0.035*
Work duration per day (hour)	- 2.285	0.309
Farm size	- 0.499	0.035*

* Significant at the 0.05 level

($\bar{x}$= 6.85, 6.19, and 6.54, respectively), Table 2. Some risk perception items should be raised because a large proportion of respondents perceived that some actions did not cause damages to their health or cause moderate or low risks to them. This perception should be corrected because it might be the cause of injury and illness at work e.g. jump of the tractor before complete standstill, never maintain machines, not check sharp equipment carefully before working, mixing pesticide more than one kind, after mixing pesticides, not keep in its original package, not changing clothes after coming home, and mixing work clothes with other clothes.

Simple linear regression analysis revealed that variables that were negatively influence occupational health risk perception at the 0.05 significance level included length of current occupation and farm size (Table 3).

DISCUSSTION
The pesticide risk perception was high level, ranking it as the first of health risk perception, similar to the previous study reported pesticides were described by the highest proportion as harmful or very harmful [10]. The study revealed that length of current occupation and farm size were negatively influence occupational health risk perception. This finding contradicted with the theories of accident causation and previous study [11, 12]. It was possible that the persons who had been rice farmers for a long time thought that they understood the nature of their work and ignored the risks involved in their work. Those who had shorter length of current occupation might have been well aware that they lacked experience. As a result, they worked more carefully and cautiously to the point that their risk perception was higher. Rice farmers with longer length of current occupation did not care about personal health resulting in a lack of safety perception opportunities. Furthermore, farm size was found to be one of the factors that negatively affecting health risk perception. Because they had to work longer hours per day due to large number of

farms, work overload occurs whenever they had limited time for too much work and had no time to aware about their health. However, in multivariate analysis two variables were no statistically significant affected health risk perception. For some independent variables such as sex was not significantly affected health risk perception, this probably both men and women must be careful and work with caution or comply with safety rules. Hence, even though different sex indicated different physical conditions, sexual difference did not influence risk perception. This study age also was not significantly affected health risk perception. This probably old and young rice farmers have an equal chance to learn to work safety i.e. safety training, safety information. Thus, age difference did not affect risk perception. Marital status was not influence health risk perception because risk perception directly affects individual person. Thus, even though person do not family obligations, they should think about their safety. Also, when a single person experiences an occupational hazard, his/her family is affected. Based on this, people try to be more aware of possible hazards in their workplaces and have appropriate safety perception. In summary, different marital status was not affect health risk perception. Even though educational levels indicate knowledge and understanding of a person to some level, without insight consideration process and knowledge implementation, each person's educational level will not affect their perception. For people with higher income are more able to choose their workload, if they do not pay attention to safety while working, they still have high chances of experiencing occupational hazards. On the other hand, people with low income may not be able to choose their work and have to work overload. They are well aware of the nature of their work and that they have to work overtime so they try to work carefully. Therefore, different income was not affected health risk perception. Understanding of potential health risk perception is a first step in developing program to minimize occupational

hazards. This study suggested that the different levels of health risk perception of each hazard should be integrated to intervention program and risk management strategies. The majority of respondents had a moderate health risk perception level. Therefore, some safety information should be reinforced to prevent health risks, especially in rice farmers who had long length of current occupation and had the large farm size.

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