



CHAPTER III

RESEARCH METHODOLOGY

3.1 Study design

- Cross sectional study using developed questionnaire in the part of activities in pesticide use and prevention (association between Knowledge, Attitude, and Practice of using personal protective equipment and pesticide exposure in farmers)

3.2 Study Population and Area

Chainart province is located on the left of the Chao Phraya River. They are on the northern part of Thailand. The approximate area is around 1,595,198 acres. It is far from Bangkok about 195 kilometers and it can separate the people by 8 districts, 51 sub- districts and 505 households. The number of population in 2008 is 335,952 people. Chainart province has 3 importance rivers: Noi River, Tha Chin River and the Chao Phraya River and it also has Chao Phraya dam for catchment the water for use in agriculture.

The most of local people in Chainart province have occupations on farm for a long time. The agricultural area of this province is around 1,265,116 acres or 84 percent of the total area. General area seems wetlands. The main products of this province are rice, cassava, sugarcane, corn, grapefruit, etc. The product which makes high income to this area is rice. Chainart province can farm rice 2-3 times per year. (Chai Nat Agricultural Extension Office, 2011)

3.3 Sampling Technique

- **Step 1 : Area - purposive sampling (Sampling of sub- districts)**

Nang ler sub-district is the importance transplanting in the province. There are 15 villages, 2,375 households and 7,885 people. The most of occupation of people are farmers around 78 % or 6,150 persons.

- **Step 2: Participants – random sampling (Sampling of subjects)**

The subjects will be chosen: one subject per one household by means of simple random sampling in accordance with the criteria.

3.4 Sample & Sample size

Sample & Sample size

The sample size of target population in this phase was calculated by the Yamane (1967:886).

$$n = N / 1 + N (e)^2$$

*A 95% confidence level and P = 0.1

- N = the population size (6,150 farmers)
- n = the sample size (case)
- e = the level of precision (0.1)

$$n = N / 1 + N (e)^2$$

$$= 98 \text{ cases}$$

3.5 Sampling Method

Study area was large proportion of population and purposive sampling was used. The subjects were selected by simple random sampling, and interviews were done accordingly.

Participant

Inclusion criteria

- Subjects who had range of age between 18 years and 65 years (both males and females).
- Subjects who are using pesticide; Spraying and mixing pesticide by themselves (for direct exposed farmers), and subjects who working in farm and no spraying and mixing pesticide by themselves (for indirect exposed farmers) before blood test around 24 hours.
- Subjects who have been working in farm at least 6 months.

Exclusion criteria

- Subjects who child and pregnant women
- The person who has problem about hepatic disease cardiovascular disease, taking anti-malarial drugs or malnutrition, and taking amphetamine.

3.5 Measurement

Questionnaire

- The researcher and research assistances had coordinated with the leader of community before interview farmers. And the research assistances were well trained.
- Use standard questionnaire by face to face interview at their farms or their houses. We interviewing cone time per 1 person; approximately 20 min/1 person.

- The questionnaire was modified from a questionnaire previously used with tangerine farmers in the pesticide safe use (Sinhaseni et al., 1994).
- The questions for the study were checked to be validated by 3 specialist persons and were tested of the value of reliability by 30 representatives of farmer. (Reliability = 0.732)
- The questionnaires were classified to five parts such as :
 - Part1 Socio demographics
 - Part2 Information regarding pesticide use
 - Part3 Knowledge of pesticides use and prevention
 - Part4 Attitude of pesticides use and prevention
 - Part5 Practice towards using pesticides and prevention
- The score level of KAP classified into 3 levels as follow: Bloom's Theory (Bloom et al.,1956) :

Score:

Less than 60%	=	Low levels
60-81%	=	Moderate levels
80-100%	=	High levels

Part 1: Socio demographics: There were 10 questions in this part that included general information.

Part 2: Information regarding pesticide use: There were 8 questions that asking about pesticide use.

Part3: Knowledge of pesticides use and prevention: There were 15 questions that asked for knowledge of using pesticide and PPE including adverse health effect of pesticide. A correct answer was given 1 score and 0 score for wrong answer.

Table 3.1: Levels of knowledge

Scores	Descriptions
0-9 (Less than 60%)	Low levels
10-12 (60-81%)	Moderate levels
13-15 (80-100%)	High levels

Source: Bloom's Theory (Bloom et al., 1956)

Part4: Attitude of pesticides use and prevention: There were 15 questions that included the attitude of the people towards using pesticide and PPE. It was assessed by using Likert's scale. There were 10 statements which include both positive and negative.

Table 3.2: Statement of Liker's scale

Positive Statement		Negative Statement	
Choice	Scores	Choice	Scores
Strongly agree	5	Strongly agree	1
Agree	4	Agree	2
Neural	3	Neural	3
Disagree	2	Disagree	4
Strongly disagree	1	Strongly disagree	5

Table 3.3: Levels of Attitude: The scores were classified in to 3 levels

Scores	Descriptions
Concern Attitude (81%-100%)	61-75 scores
Neutral Attitude (60%-80%)	49-60 scores
Not concern Attitude (Less than 60%)	0-48 scores

Source: Bloom's Theory (Bloom et al., 1956)

Part5: Practice towards using pesticides and prevention: There were 23 questions that asked in general practice of the rice farmers. This part asked about how often they use PPE. There were 6 statements which include both positive and negative. The rating scale is measure as follow:

Table 3.4: Statement of Practice's Score

Positive Statement		Negative Statement	
Choice	Scores	Choice	Scores
Usually	3	Usually	1
Sometime	2	Sometime	2
Never	1	Never	3

Table 3.5: Levels of Practice: The scores were classified in to 3 levels

Scores	Descriptions
Good Practice (81%-100%)	66-69 scores
Fair Practice (60%-80%)	55-65 scores
Poor Practice (Less than 60%)	0-54 scores

Source: Bloom's Theory (Bloom et al., 1956)

The EQM Test-mate Cholinesterase Test System, Model 400

- The equipment and reagents in total that are required for performing 96 tests fit easily within the storage case. Only 10 μ L is required by system for each blood test that is likely to be obtained with ease from a finger stick sample. The whole assay may be finished in less than 4 minutes, making the quick evaluation of poisoning status easy (EQM Research, Inc., 2003).

The result could be interpreted for cholinesterase level by 2 methods:

- The first method level of cholinesterase was interpret followed % N (Occupational and Environmental Association of Thailand, 1993)

More than 50% Normal* = normal
Less than or equal 50%Normal* = abnormal

* (%Normal reference from Test-mate ChE (Model 400)

- The 2nd method, it was interpreted by mean of the continuous scale of cholinesterase level (we tested the data, there was normal distribution.)

AChE

More than 2.92 U/ mL**	=	normal
Less than or equal 2.92 U/mL **	=	abnormal

PChE

More than 1.56 U/mL**	=	normal
Less than or equal 1.56 U/mL **	=	abnormal

** (U/mL reference from Test-mate ChE (Model 400))

3.6 Data Analysis (statistics)

- We used licensed SPSS software version 17.0 for analyze the quantitative data
- Using Spearman's rank correlation for testing the association among age, gender, education year, duration time be farmer, knowledge, attitude, practice, AChE and PChE
- Independent t-test and Mann – WhitneyU for comparing mean of variables (parametric and non-parametric variables).
- Chi – square test for testing odds ratios and 95% confidence intervals for the significant variables (knowledge, attitude and practice) of cholinesterase level in blood

3.7 Ethical consideration

The experimental protocol was approved by the Ethics Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University with the certified code no.071/2013. The objective of the

research clearly informed to the study population. The data was used for the study purpose only. Inform consent was signed by subjects prior to the study.

* The objective of the research was being clearly informed to the study population. The data was used for study's purpose only and after we knew the result, the blood samples were terminated at the primary hospital.

3.8Expected Benefit & Application

Knowing and understanding about the association with KAP on using PPE which can be provided the recommendations and guidelines to the level of cholinesterase in blood in farmers in the farm work.