

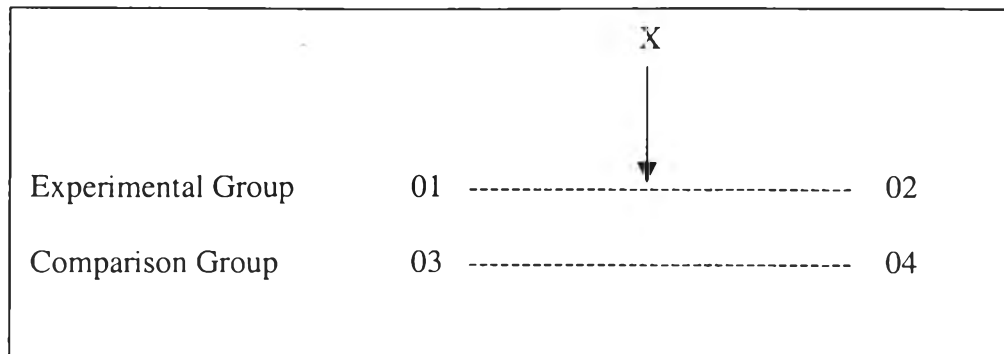
## **CHAPTER III**

### **METHODOLOGY OF THE RESEARCH**

The research project has applied the concept of family health volunteer's participation in planning and implementing a health education program with the aim to change *Aedes aegypti* larvae control behaviors of the family health volunteers, in Muang District, Nakorn Si Thammarat Province.

#### **1. The Study Design**

The research was a quasi – experimental design. The sample two groups; experimental group and comparison group. Data were collected before and after the experimentation in both groups. The experimental group was experimented with health education, follow aspects: (Pretest – Posttest Two Groups Design) pattern of the research is in figure 2



**Figure 2: Flow chart for the research design**

01, 03 : Collecting data before the experimentation

02, 04 : Collecting data after the experimentation

X : A health education program set up by the researcher

The researcher keep the activity follow the health education program in apply the participation of family health volunteers, to change behavior in control of Aedes aegypti larvae of family health volunteers who are the experimental group in, eight weeks.

Experimental group	O1S1	X1	X2	M1	X3	M2		O2S2
Week	1	2	3	4	5	6	7	8

Comparison group	O1S1							O2S2
Week	1							8

**Figure 3 : Experimental chart**

01 refers to the data collection from the experimental group before the experimentation, by interviewing questionnaires of the family health volunteers concerning knowledge of Dengue Haemorrhagic Fever, and the control of *Aedes aegypti* larvae, perceived susceptibility to DHF, perceived severity of Dengue Haemorrhagic Fever, perceived cost – benefits in controlling *Aedes aegypti* larvae, and *Aedes aegypti* larvae control practices.

03 refers to the data collection before the experimentation in comparison group by interviewing questionnaire of the family health volunteers in knowledge of Dengue Haemorrhagic Fever and the control of *Aedes aegypti* larvae, perceived susceptibility to DHF, perceived severity to DHF, perceived cost–benefits in controlling *Aedes aegypti* larvae and *Aedes aegypti* larvae control practices.

02 refers to the data collection after the experimentation in the experimental group by the interviewing questionnaire of the family health volunteers concerning knowledge of Dengue Haemorrhagic Fever and the control of *Aedes aegypti* larvae, perceived susceptibility to DHF, perceived severity to DHF, perceived cost–benefits in controlling *Aedes aegypti* larvae and *Aedes aegypti* larvae control practices.

04 refers to the data collection after the experimentation from the comparison group by the interviewing questionnaire of the family health volunteers concerning the knowledge of Dengue Haemorrhagic Fever and the control of *Aedes aegypti* larvae, perceived susceptibility to DHF, perceived severity of Dengue Haemorrhagic Fever,

perceived cost–benefits in controlling *Aedes aegypti* larvae and *Aedes aegypti* larvae control practices.

S1 refers to the survey of *Aedes aegypti* larvae in the houses of the experimental group before the experimentation.

S3 refers to the survey of *Aedes aegypti* larvae in the houses of the comparison group before the experimentation.

S2 refers to the survey of *Aedes aegypti* larvae in the houses of the experimental group after the experimentation.

S4 refers to the survey of *Aedes aegypti* larvae in the houses of comparison group after the experimentation.

X1 refers to an application on health education with community participation the first health education program for the experimental group in the second week, for they get knowledge of Dengue Haemorrhagic Fever, life cycle of *Aedes aegypti*, perceived susceptibility and severity of Dengue Haemorrhagic Fever.

X2 refers to an application on health education with community participation the second health education program for the experimental group in the third week, for they perceived cost- benefits to the control of *Aedes aegypti* larvae, gaining skill in control and eradicate of *Aedes aegypti* larvae breeding place. The practice in survey

and the eradication of *Aedes aegypti* larvae breeding place, is to do at the family health volunteer's houses who participate the activity.

X3 refers to an application on health education with community participation the third health education program in the fifth week to monitor, and evaluate the result of operation, in control and eradicate of *Aedes aegypti* larvae breeding place. The family health volunteers share their experiences, problems and the obstacle in control of *Aedes aegypti* larvae, so that improve the operating process in the next.

M1, M2 refers to following the control and eradicate of *Aedes aegypti* breeding place by public health volunteers by the *Aedes aegypti* larvae survey form.

## **2. Populations in This Study**

The population in this study, they are the family health volunteers in Muang District, Nakorn Si Thammarat Province. The experimental group were selected according to the following criterion:

1. The District to be selected must have incidence rate of Dengue Haemorrhagic Fever higher the Ministry of Public Health target for three years in continuity, and also the place where the researcher's office situated.
2. Pho Sadet Sub-District is the place where high in rate of Dengue Haemorrhagic Fever for three years in continuity (2000-2002 ) of Muang District, Nakorn Sri Thammarat Province.

3. The village to be studied is Moo. 4 Ban Yuan Lair, Pho Sadet Sub-District as there are the highest rate of Dengue Haemorrhagic Fever ( 279.38/100,000 ), and select of Moo.1 Ban Pra Mongkut to be the comparison group as there was the second in rate of Dengue Haemorrhagic Fever (251.59/100,000) both of village do not locate in the same area, and long distance from each other.
4. Select of experimental group who are the family health volunteers according to the following criterion:
  - 4.1 Whose house's *Aedes aegypti* larvae index is higher than the standard criteria (C.I) > 10.
  - 4.2 They can be responsibility for eradicate of *Aedes aegypti* larva breeding places, in the area of houses by themselves.
  - 4.3 Are willing to participate in the program and available throughout the study program.
  - 4.4 Be able to understand, talk, read and write.
  - 4.5 They are available in time to study, and participation the activities.
  - 4.6 Have the permanent residence.

In this case the experimental group are 109 samples while the comparison are 99 samples, the total of the study sample are 208 samples.

### 3. Sample

**Experimental group** in this finding was family health volunteers who was Moo 4, Pho Sadej Sub – District, Muang District, Nakhon Si Thammarat Province.

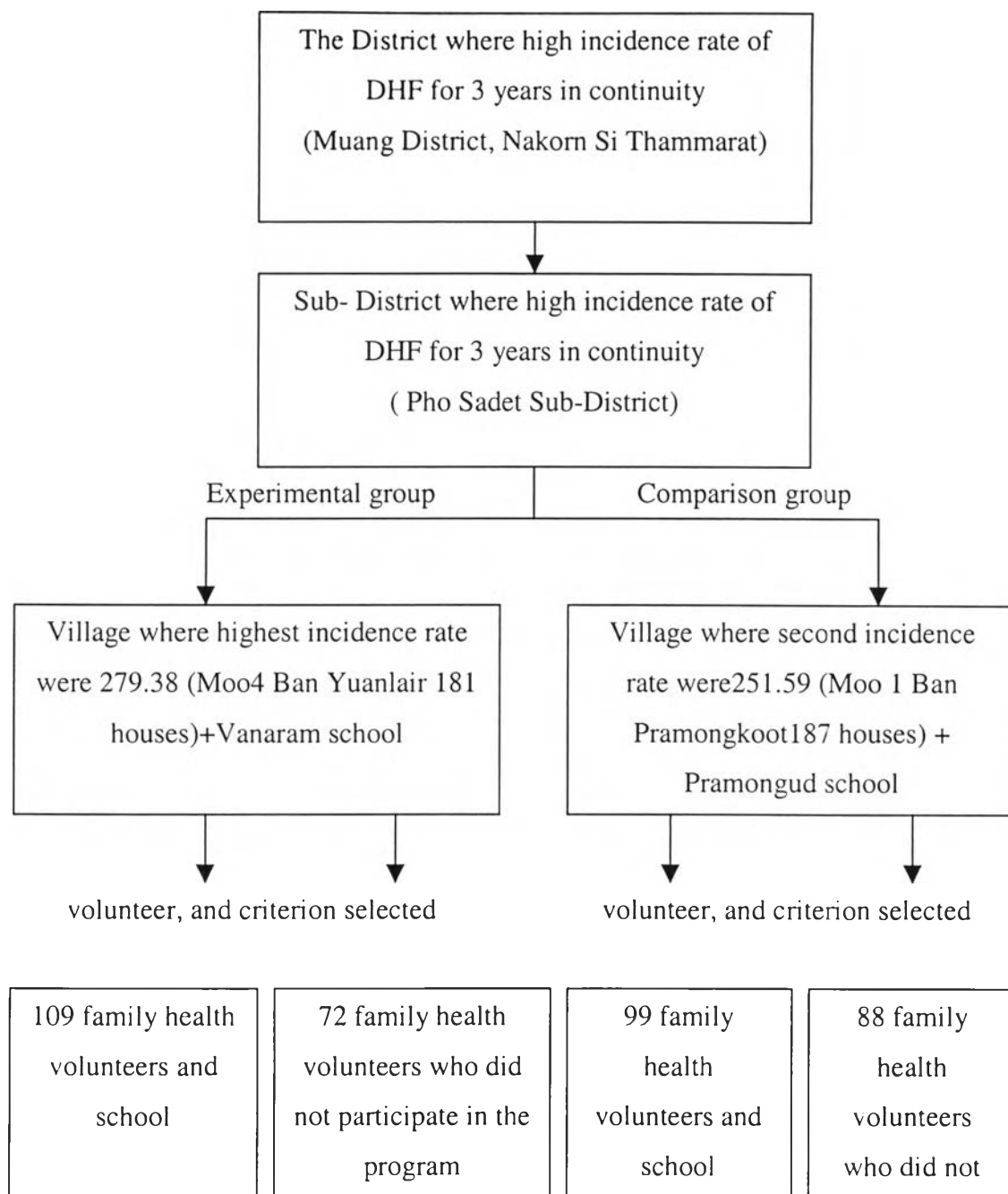
**Comparison group** in this finding was family health volunteers who was Mool, Pho Sadej Sub – District, Muang District, Nakhon Si Thammarat Province.

#### **Steps in selecting experimental group was as follows:**

1. Select of experimental group who are the family health volunteers according to the following criterion:
  - 1.1 Whose house's Aedes aegypti larvae index is higher than the standard criteria (C.I) > 10.
  - 1.2 They can be responsibility for eradicate of Aedes aegypti larva breeding places, in the area of houses by themselves.
  - 1.3 Are willing to participate in the program and available throughout the study program.
  - 1.4 Be able to understand, talk, read and write.
  - 1.5 They are available in time to study, and participation the activities.
  - 1.6 Have the permanent residence.

#### **Steps in selecting comparison group was as follows:**

It was similarly conducted selecting in experimental group. As shown the detail in chart 4 selection of sample group



**Figure 4 : Sampling frame**



## 4. Research Instruments

There are 2 types of the research instruments, as follows :

### 4.1 Instruments for data collection

The questionnaire. It was constructed based on the review of related literature, and composed of six parts as follows:

**Part 1:** The questionnaires in socio- demographic data comprised with namely, gender, age, marital status, education level, occupation, income, experience of Dengue Haemorrhagic Fever in family or village, measurement to prevent mosquitoes bite, the experience in survey of the *Aedes aegypti* larvae, which each questions would be filled the blank, and multiple choices in 8 items.

**Part 2:** The questionnaires concerning knowledge of Dengue Haemorrhagic Fever, and the control of *Aedes aegypti* larvae in 16 items, the multiple choices with four choices. Given 1 point to the right answer, and 0 to the wrong answer.

**Part 3:** The questionnaires concerning perceived susceptibility of Dengue Haemorrhagic Fever in 10 items, the type of questions are in rating scale three choices, agree, unsure, and disagree. This applied from Likert scale. The contents are in positive, and negative statements, the possible of range is 10-30 choose only one choice for the answer. The criterion of seeing system were as follows:

### Criterion of given score

Choice	Positive statements	Negative statements
Agree	3	1
Unsure	2	2
Disagree	1	3

**Part 4:** The questionnaire concerning perceived severity of Dengue Haemorrhagic Fever in 10 items the type of content, and the criterion of giving points are the same as part 3.

**Part 5:** The questionnaires concerning perceived cost-benefits in controlling of *Aedes aegypti* larvae in 10 items the type of content, and the criterion of given point are the same as part 3.

**Part 6:** The questionnaires concerning practices in controlling, and eradicate of *Aedes aegypti* larvae breeding place of the family health volunteers. The questions are in 7 momentous groups, there are minor questions in each group. The questions are in measurement of practice, that can be answer in various such as regularly practice (every week), sometime practice (done but not every week), and never practice.

The form to survey *Aedes aegypti* larvae the method of Department of Communicable disease control, Ministry of Public Health. That is to record the number of containers in survey, and the number of containers that found *Aedes aegypti* larvae.

The interpretation (Department of Communicable Disease Control,  
Ministry of Public Health)

$$\text{House Index (H.I. } \leq 10) = \frac{\text{Number of infested houses X 100}}{\text{Number of inspected houses}}$$

$$\text{Container Index (C.I. } \leq 10) = \frac{\text{Number of infested containers X100}}{\text{Number of inspected containers}}$$

$$\text{Breteau Index (B.I. } \leq 50) = \frac{\text{Number of infested containers X100}}{\text{Number of inspected houses}}$$

## 4.2 Questionnaire Development Procedures

4.2.1 Study of documents, theory, and related researches that can be applied to the research to set up the structure and scope of the contents create the questions to cover all the topic that need to be measured in each variation.

4.2.2 Have the thesis committee inspect the instruments so that it cover all the content (content validity) and the reliable in structure (construction validity), also the correct and clear of language, to improve and modify before testing of the tools.

4.2.3 The drafted questionnaire was pretest with 30 family health volunteers in Nakean Sub-District, Muang District, Nakhon Si Thammarat Province. The behavior data in practice bring to analyze the distinctness of language Silpasuwan, P., et al. (1995: 130-137)

4.2.4 The knowledge and perception parts of questionnaire were tested for discrimination power by using Student's t – test.

4.2.5 Reliability was tested by using Cronbach's Alpha Coefficient, the number calculated from Cronbach's Alpha Coefficient are between 0-1. The number close to 1 that mean high reliability of internal harmonious and the interviewing form is unanimity in content that harmonious in measurement in every items. The reliability of the interviewing form are shown below.

- 16 Items of knowledge in Dengue Haemorrhagic Fever, and the control of Aedes aegypti larvae the reliability was 0.92
- 10 Items of perceived susceptibility of Dengue Haemorrhagic Fever the reliability was 0.63
- 10 Items of perceived severity of Dengue Haemorrhagic Fever the reliability was 0.62
- 10 Items of perceived cost - benefits in control of Aedes aegypti larvae the reliability was 0.74

4.2.6 Content and construct validity were recommended by the research advisor and subject experts.

### **4.3 The instruments for carrying out the activities**

4.3.1 The health education program with the apply of family health volunteers participation to readjust behavior of family health volunteers in controlling of Aedes aegypti larvae is to set up the learning activities in three times of group process, and three

hours in each time. The activities was the game for creating participation, group discussion, sharing their experiences, lecture in summarized of Dengue Haemorrhagic Fever and *Aedes aegypti* life cycle, perceived susceptibility to DHF, perceived severity to DHF, perceived cost-benefits in control of *Aedes aegypti* larvae also the practice in survey and eradicate of *Aedes aegypti* larvae breeding place.

4.3.2 Media in adjunct to the health education activities, the chart of Dengue Haemorrhagic Fever patients in Pho Sadet Sub - District analyzed in the villages, a poster set of Dengue Haemorrhagic Fever, manual of the volunteers about Dengue Haemorrhagic Fever (Department of Communicable Disease Control, Ministry of Public Health, 2003: 6-20) media in teaching about mosquitoes repellent herbs such as citronella grass, eucalyptus, sweet flag, garlic, peppermint, citrus hystrix, basil, sweet basil, zingiber cassumunar etc. burnt lime, table salt, detergent, acetic acid and guppies.

4.3.3 The equipment in survey, flash light, the survey form designed by Department of Communicable Disease, Ministry of Public Health.

## **5. Research Procedures**

### **5.1 Preparation Phase**

5.1.1 Coordinating with the Pho Sadet Sub- District Administrative Organization, Muang District Health Office, Nakorn Si Thammarat Province. For the permission in process of program due to the research.

5.1.2 Coordinating with the head of Primary Care Unit Ban YuanLair, Pho Sadet Sub- District to explain the purpose and steps of the research.

5.1.3 Coordinating with Communicable Disease Control Center Zone.11, NakornSi Thammarat Provincial Health Office, to obtain the technical support and personnel.

5.1.4 Meeting team of research to explain and demonstrate various steps of the program activities, and method of data collection, for the good perception and harmonious in the practice.

5.1.5 Providing of equipment and accessories, which are used in the activity.

### **5.2 Period of the research**

The investigator gathered data and experiment, it took eight weeks (8<sup>th</sup> June –31 July 2003) as follows:

**First week**

1. Collecting of the data before the experimentation, in experimental group and comparison group by the interviewing form those are knowledge in Dengue Haemorrhagic Fever, perceived severity, perceived susceptibility of Dengue Haemorrhagic Fever, perceived cost-benefits in control of *Aedes aegypti* larvae and behavior in control *Aedes aegypti* larvae. Carried out by the researcher and 3 assistants.
2. Survey of *Aedes aegypti* larvae before the experimentation, to find H.I., C.I. and B.I. by the surveying form of *Aedes aegypti* larvae in both study group and comparison group.

**The second week**

The health education program begin with the expert in processing invited from Nakorn Si Thammarat Provincial Health Office. To give the lecture to family health volunteers of the experimental group in 109 samples. Divided to four groups to make 27 in each group. Each group participated the activity for three times, with in three hours for each participation, in the second, third, and fifth week.

The first activity for knowledge in group process by the process expert invited from the Provincial Health Office. To present the situation of Dengue Haemorrhagic Fever in community, by the chart showing the number of patient ill with Dengue Haemorrhagic Fever in Pho Sadet Sub- District. The explanation is in separate, by each village. In group discussion among family health volunteers, they find out the causes of problems, and the additive comments from instructor in point of Dengue Haemorrhagic

Fever and *Aedes aegypti* life cycle, perceived susceptibility to DHF, perceived severity of DHF. The manual in topic of Dengue Haemorrhagic Fever for community volunteers are distributed.

### **The third week**

Second health education program in revise of the topics got from the first activity. They participate together in group discussion, Formulate the role and guideline to practice in community, share their experience, set co- mission, hoping that the community is without *Aedes aegypti* larvae and Dengue Haemorrhagic Fever. In order to let family health volunteers know perceived cost - benefits in control *Aedes aegypti* larvae and eradicate of *Aedes aegypti* larvae breeding place, there need to explain how to use the survey form also demonstrate to survey *Aedes aegypti* larvae in the houses which are belong to the family health volunteers who participate the activity. The later, participants practice in survey the *Aedes aegypti* larvae together with the control and eradicate of *Aedes aegypti* breeding place, in houses of family health volunteers as a sample for family health volunteers in community. The results in practice are to be summarized and set up the guideline for survey, and eradicate of *Aedes aegypti* breeding place, so that the community free from Dengue Haemorrhagic Fever. Together with the assign for roles and duties of the family health volunteers, who join the activity to take care of their houses, and the public health volunteers will monitor the assigned job in next week.



**The fourth week**

The public health volunteers monitor the control and eradicate of *Aedes aegypti* breeding place in the houses belong to family health volunteers of experimental group, by survey form.

**The fifth week**

The Arrangement for the third activity, in revise the second week activity, about perceived cost - benefits in control of *Aedes aegypti* larvae, and eradicate of *Aedes aegypti* breeding place by explaining the survey form to the experimental group. Holding the group discussion in debate to the problems, an obstacles, in survey and eradicate the *Aedes aegypti* larvae breeding place. Arrange for the monitor of health volunteers to the family health volunteers in control of *Aedes aegypti* larvae every two weeks.

**The sixth week**

Health volunteers Monitor the procedure of the experimental group family health volunteers in control of *Aedes aegypti* larvae, by the *Aedes aegypti* larvae survey form every two weeks.

**The eighth week**

Using of the same interviewing form, to collect the data after the experiment from both experimental and comparison group.

Survey of *Aedes aegypti* larvae after the experiment, in order to find *Aedes aegypti* index (H.I., C.I. and B.I.) by the *Aedes aegypti* larvae survey form developed by (Department of Communicable Disease Control, Ministry of Public Health).

## 6. Data Analysis

The data were analyzed by SPSS for Windows software, with the level of statistic reliability 0.05 to be the criterion in hypothesis acceptability. The statistic following statistics were used:

- 6.1 The data regarding socio-demographic characteristics were analyzed by using frequency distribution, percentage, mean score and standard deviation.
- 6.2 Student's t- test was used to compare the difference of mean scores, before and after the experimentation, between the experimental group and the comparison group, regarding knowledge of Dengue Haemorrhagic Fever, perceived susceptibility to DHF, perceived severity to DHF, perceived cost-benefits in control of *Aedes aegypti* larvae.
- 6.3 Paired Sample t - test was computed to test the difference of mean scores within the experimental group and comparison group, before and after the experimentation, in concerning knowledge of Dengue Haemorrhagic Fever, perceived susceptibility to DHF, perceived severity to DHF, and perceived cost – benefits in control of *Aedes aegypti* larvae.
- 6.4 Comparison of difference of *Aedes aegypti* larvae indices of the house in the experimental group and the comparison group, Z- test was computed.