PERFORMANCES OF VILLAGE HEALTH VOLUNTEERS ON DANGUE HAEMORRHAGIC FEVER PREVENTION AND CONTROL IN THALI DISTRICT, LOEI PROVINCE, THAILAND

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ABSTRACT

This cross-sectional study aimed to assess the performance of village health volunteers (VHVs) and to identify related factors (socio-demographic characteristics, knowledge, perception, source of information and social support).

The study was conducted in 29 villages of 6 sub-districts in Thali district, Loei province. The sample 384 VHVs were systematically selected through multi-stage sampling technique. An interview questionnaire was utilized to collect the data from them. Chi-square test and multiple-regression were employed to analyze the data.

The results revealed that 76.30% of VHVs had high performance and 23.70% had low performance on dengue hemorrhagic fever prevention and control. Most of the VHVs, they were 35-44 years old, female, married and worked in agriculture. On average, they had worked for 10 years and family income ranged from500 to 33,000 Baht per month. The performance of VHVs was significantly associated with knowledge, perception, source of information and social support (p-value <0.05).

To enhance VHVs' capacities on dengue hemorrhagic fever prevention and control, the provincial health office should encourage health center personnel to continuously supervise, motivate and provide seminar workshops and village forums. Also, participatory management with a horizontal command structure must be employed.

KEY WORDS : VILLAGE HEALTH VOLUNTEERS / PERFORMANCES

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LIST OF ABBREVIATIONS

AIDS	:	Acquired Immune Deficiency Syndrome
CFR	:	Case Fatality Rate
CHW	:	Community Health Worker
DHF	:	Dengue Hemorrhagic Fever
DF	:	Dengue Fever
DSS	:	Dengue Shock Syndrome
DEN	:	Dengue
HIV	:	Human Immune Virus
HFA	:	Health For All
HBM	:	Health Believe Model
MOPH	:	Ministry Of Public Health
PHC	:	Primary Health Care
TAO	:	Tambol Administrative Organization
VHV	:	Village Health Volunteer
VHC	:	Village Health Communicator
VHC	:	Volunteer Health's Club
WHO	:	World Health Organization

CHAPTER 1
INTRODUCTION

1.1 Rationale and Justification

Dengue was caused by a virus spread by Aedes (Stegomyia) mosquitoes. Over the past two decades there has been a dramatic global increase in the frequency of dengue fever (DF) dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) and their epidemics, with a concomitant increase in disease incidence (1).

Dengue hemorrhagic fever (DHF) was a mosquito-borne infection, which in recent years has become a major international public health concern. Dengue was found in tropical regions around the world, predominantly in urban and peri-urban area. This disease was now endemic in more than 100 countries in Africa, America, Eastern, Mediterranean, South-East Asia and the Western Pacific (2, 3, 4, 5).

Through the ages, dengue fever (DF) has been a cause of public health concern in South-east Asia Region. After World War II, it was a dramatic increase in the frequency and number of epidemics in the South-east Asia, with the emergence of the severe forms dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). Globally, 2.5 to 3 billion people are estimated to be risk of infection with dengue viruses. Affecting mostly children, the case fatality rates range from less than 1 to 10 % (average 5%) (1).

At present, DHF was leading cause of hospitalization and death among children especially in many South-East Asia countries. For this reason, the prevention and control of DHF is an essential. Nowadays, there was no drugs and no vaccine for DF and DHF available the only method of controlling or preventing DF and DHF was to stop the mosquito-vector, which needs the active participation and performance of village health volunteer in community (2, 3, 5, 6, 9).

The epidemic of DHF in Thailand was first recognized in 1958. Since, it has become one of the major problems in the country. During the years 1995 and 2002, the reported cases were in the range of 80,118 to 147,576 per year and the number of deaths ranged from 0.3 % to 0.65 % deaths per year. (5, 6,7,8). During the year 2002-2004, Thailand achieved an early breakthrough in case management from 147,576 to 15,500 and brought down CFR from0.15 to 0.1 % as shown in Figure 4 Appendix B.

Occurrence of DF fever in Loei province was indicated by the following graph. It was very clear that number of DF cases reducing from the year 2000 up to 2005. Because of high prevalence of DF in 2002, VHVs participated prevention and control activities and controlled the occurrence of disease as shown in Figure 5 Appendix B.

Also in Thali district, DHF had become one of the major health problems for a long period of time. According to the statistic highest prevalence of DF had been recorded in year 2001. Because of successful prevention and control activities done by VHVs they could control DF from 2002 up to now as it was not a major health problem at present as shown in Figure 6 Appendix B.

The Declaration of Alma –Ata in 1978 required the commitment of the Member State of the World Health Organization to the target of Health for All by the year 2000 (WHO, 1979). This target was to be achieved by strategy of primary health care (PHC), which was intended to revolutionize the practice of health care and health development. An important element of this strategy was the promotion of greater and more effective community participation in services and structures designed to bring better health care to the millions of people who lacked even basic access to such facilities.(1)

The definition of PHC embodied term such as "self reliance" and "self determination" and full participation of the community was considered among the

prerequisites of the approach. Participation of people, either individually or collectively, in the planning and implementation process was considered both as a right and a duty.

Since 1978 when the Alma Ata Conference reactivated concern for primary health care (PHC), many countries have renewed their interest in the use of selected villagers to provide PHC services to their own communities. The most realistic solution for attaining total population cover with essential health care was to employ community health workers who can trained in a relatively short time to perform the most important tasks required to respond to people's most pressing health need.(10)

In 1980s, they started to use the term 'community health worker (CHW)', but in many countries still known by other names. Example, in India named 'village health guides (VHGs)', in Indonesia named 'health cadres', in Korea named 'Sanitation Monitor'. In Thailand that CHW was named 'village health communicator' (VHC) and 'village health volunteer' (VHV).(10)

Thailand started PHC activities since 1980 with 14 elements and some period of time they improved the strategy regarding to their health problems. There were 14 elements of PHC activities nowadays. Through the PHC implementation from the 4th Nation Health Development Plan up to now, VHVs were always important person involved on achievement of PHC as show in the coverage of immunization, sanitation, DHF control activities and improvement on child nutrition status. VHVs had been strengthened their capacities and covertly distribute everywhere of the country.

Prevention and promotion were the most important elements of the PHC. Even though the community was self reliance, they should be motivated to prevent and promote their health. At the community level VHVs who representative of their own

community was a assert to motivate the community for better health, there for performance of VHVs and related factors have to be considered and improved for our ultimate goal.

Ministry of Public Health had assigned VHVs to do DHF prevention and control such as to disseminate DHF prevention and control to villagers, to surveillance of mosquito larva, dispose of mosquito larva, to lead to clean village environment and report DHF data to health center. Therefore, we could say that VHVs in Thailand had been assigned DHF prevention and control, and they have done their responsibilities as a result to decrease number of DHF ceases as well as mortality rate.

At the moment, there were only few DHF prevention and control studies; so this study would be very useful to identify their performances and relating factors for policy makers and others relevant authorities to improve the method of DHF prevention and control, and also we could apply the lesson learned from this study to other Asian countries as well.

1.2 Research Questions

1. How do VHVs perform their roles on Dengue Hemorrhagic Fever (DHF) prevention and control in the village?
2. What are the factors predicted and related to VHVs' performance on DHF prevention and control in the village?

1.3 Research Objectives:

1.3.1 General Objective:

To access the performance of VHVs on DHF prevention and control in Thali district, Loei province, Thailand

1.3.2 Specific Objectives:

1. To describe the performance of VHVs and related factors on DHF prevention and control in Thali district, Loei province, Thailand
2. To determine an association between VHVs's performance and related factors
3. To find out predictive factors for VHV's performances.

1.4 Conceptual Framework

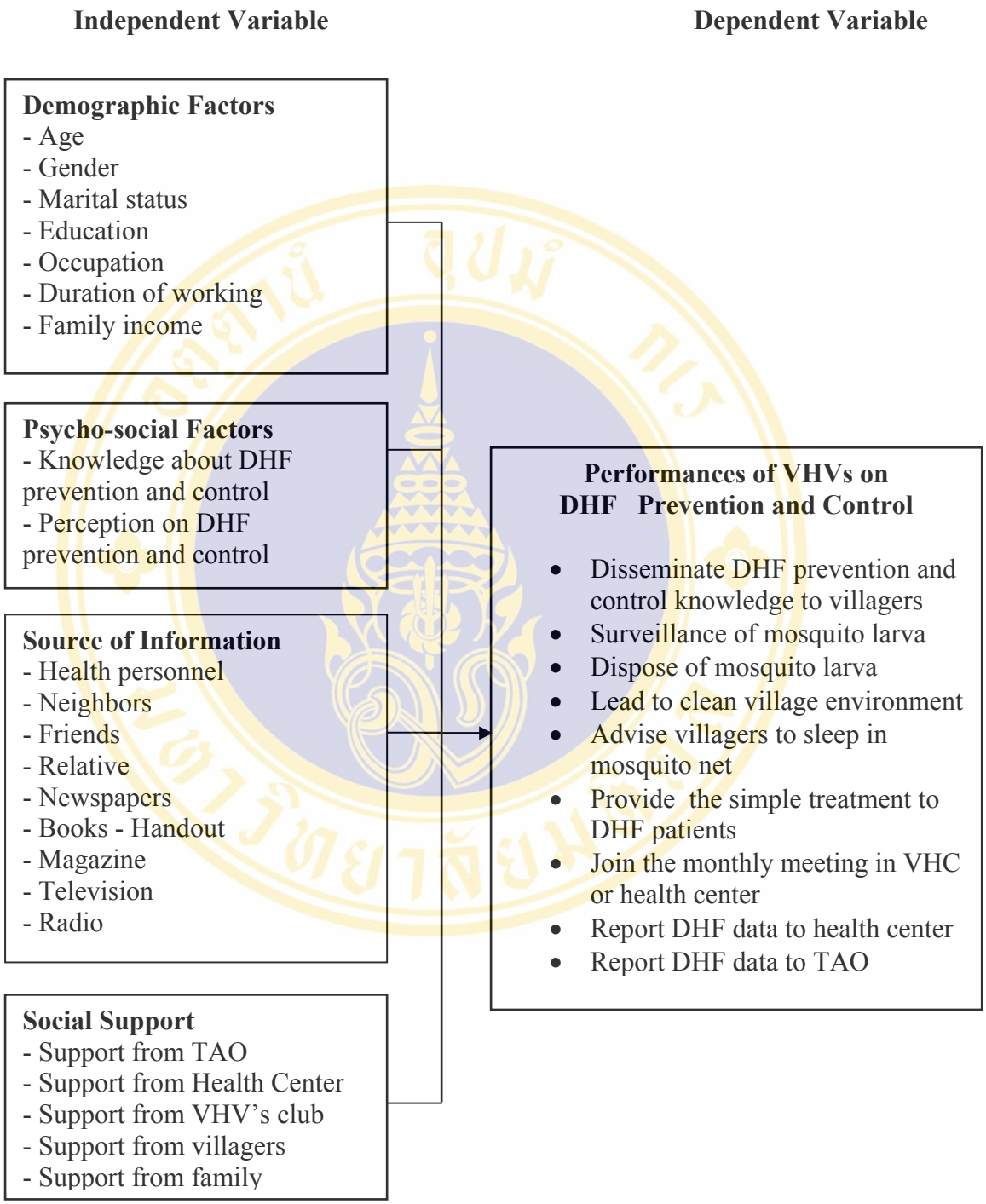


Figure 1 Conceptual framework of the association between independent and dependent variables

1.5 Operational Definition of Study variables

Performance of Village Health Volunteer

In this study, Performance of Village Health Volunteer on DHF prevention and control means that VHVs performed their roles related on DHF prevention and control in the villages such as disseminating the knowledge to villagers who were living in community how to prevent DHF by themselves, collecting the data for DHF situation, cooperating with the villagers in community to prevent DHF by surveillance the mosquito's larva, reporting the DHF information to health personnel, joining the meeting about DHF prevention and control in VHC, Health Center or TAO.

Education: refereed to the level of VHVs formal education and categorized as primary school, secondary school and other.

Marital Status: the marital status of VHVs refers whether they were single, married, divorce, widowed and separate.

Occupation: occupation refereed to the main job or work that VHVs did to earning income such as farmer, civil servant, labor, trader and other.

Duration of Working: duration of work refers that how many years they had been working as health volunteers.

Family Income: family income refereed to the total income per month of the family members earn.

Knowledge: Refereed to VHVs understand about DHF prevention and control such as the disease, cause of DHF, signs and symptoms, about the vector , the breeding sites , transmission of DHF, preventive activities of DHF, seasonal changes of DHF, fist aid for DF patient and how to dispose the mosquito larva.

Perception:

Referred to VHVs' apprehension about four aspects of DHF : **Severity** (DHF often leads to death especially if it was not early treated. There was no specific treatment for DHF); **Susceptibility** (people were easily to get DHF, especially in houses with many mosquito and they did not sleep in mosquito-net even in daytime); **Benefit from DHF prevention** (DHF prevention and control help to avoid expending a lot of money to treat DHF and time to take care ill people); Perception about the **Barrier of DHF control** (DHF was a natural phenomenon that could not be preventable, besides spraying, no way to reduce the density of mosquito that cause DHF)

Sources of Information:

Refereed to where did the information come from such as from health personnel, village health committee, friends, family members, neighbors, mass media and illness experience of family which VHV's get information about DHF disease, cause, sign-symptom severity, prevention, control of DHF).

Social Support

In this study information refereed to the support such as budget, instrument and recommendation from TAO and Health Center, emotional from VHV's club, labors from villagers or villager's participation on DHF prevention and control and mental support from family.

1.6 Limitation of the Study:

This study focused only on the current performance of VHVs, but not the performance for three to five years. During data collection in Thailand started some cases of bird flues that make health personnel and VHVs paid more attention on prevention and control to bird flues and might pay less attention on DHF prevention

and control activities. Besides this, VHVs interviewing on the dry season when most of water containers were nearly dried, the mosquito density was low, so VHVs might not pay more attention on DHF prevention and control activities comparing to interview on rainy season.

1.7 The Expectation of the Study:

The results of the study would show us about the current situation of VHVs participation in Thali district, Loei province, Thailand in term of low and high performance. And we could identify what factors make the VHVs good performance, and what factors were the constraints that made them low performance.

we could strengthen the good points and improve the weak points related to the level of VHVs performance on DHF prevention and control activities in the district. Moreover, this study could be used as a lesson learn for the other places, especially Lao PDR that had a border with, to improve the level of community participation which was the key of success in implementation of primary health care.

The results of this study would give the policymakers and planers update regarding the current performance of the VHV's about prevention and control on DHF. Thus, it helped the policymakers to formulate effective strategy about the improvement of VHVs' performances.

CHAPTER 2

LITERATURE REVIEW

This research focused on job performance of VHVs on Dengue Hemorrhagic Fever (DHF) prevention and control, the discussion in this chapter was divided into 8 parts as the following:

2.1 Overviews of dengue hemorrhagic fever
2.2 Concepts related to DHF prevention and control performance
2.3 Primary Health Care
2.4 PHC in Thailand
2.5 Village Health Volunteer (VHV)
2.6 Village health volunteers' performance
2.7 Theory review
2.8 Previous researches related to this study.

2.1 Overviews of Dengue Hemorrhagic Fever

Dengue epidemics were known to have occurred over the last three centuries in tropical, subtropical and temperate area of the world. The first epidemic of dengue was recorded in 1635 in the French West Indies, although a disease compatible with dengue had been reported in China as 992 Ad during the 18^{th}, 19^{th} and early 20^{th} centuries, epidemics of dengue-like diseases were described globally in the tropic as well as in some temperate regions (1).

The world health report 1996, state that the re-emergence of infectious disease was a warning that progress achieved so far to wards global security in health and prosperity might be wasted. The report further indicate that “infectious deceased range from those occurring in tropical area (such as malaria and DHF which were

most common in developing countries) to disease found worldwide (such as hepatitis and sexual transmitted disease, including HIV / AIDS) and food borne illnesses that affect larges numbers of people in both the richer and poorer nation (10).

Rush (1999) described dengue when he wrote of "break-bone fever" occurring in Philadelphia in 1780. Most of these epidemics were clinical dengue fever, although some were associated with the severe hemorrhagic from of the disease. Effort to control Aedes aegypti and economic development has markedly reduced the threat of epidemic dengue in temperate countries during the past 50 years (1).

The first recorded out break of the dengue disease compatible with DHF occurred in Australia in 1897. A similar hemorrhagic disease was recorded in 1928 during and epidemic in Greece and again in Taiwan in 1931. The first confirmed epidemic of DHF was recorded in the Philippines in 1953-1954 (1).

Since then, major outbreaks of DHF with significant mortality had occurred in most countries of the south-East Asia Region, including India, Indonesia, Maldives, Myanmar, Srilanka, and Thailand, as well as in Singapore, Cambodia, China, Laos, Malaysia, Mew Caledonia, Palau, Philippines, Tahiti and Vietnam in the western Pacific Region. Over the past 20 years, these had been a dramatic increase in the incidence and geographical distribution of DHF, and epidemics now occur each year in some south-East Asia countries (1).

Viral – host Interaction: In order to understand the various epidemiological situations, it was important to recognize the fundamental aspect of virus-host interaction. Dengue infection frequently causes mild illness in children. However, produce very mild illness in both adult and children, which was often not recognized as dengue and circulates silently in the community. Primary as well as secondary dengue infection in adults might result in severe gastrointestinal hemorrhage, as well as cases with increased vascular permeability. For example, many adult with severe hemorrhage associated with DEN-1 in Taiwan in 1988 had underlying peptic ulcer disease (1).

Risk factors for DHF: secondary dengue infection was a risk factor for DHF, including passively acquired antibodies in infants. The strain of virus was also the risk factor for DHF, not all wild type viruses had epidemic potential or cause severe disease. Finally, the age of the patient and host genetics were risk factors of DHF, Although DHF cuold and did occur in adults, most cases were in children less than 15 years of age, and circumstantial evidence suggests that some population groups might be more susceptible to vascular leak syndrome than others (1).

2.2 Concepts Related to DHF Prevention and Control Performance

Prevention and control of DHF currently depended on controlling the mosquito vector in and around the home (10). MOPH provides the dengue prevention and control guidelines (11) for the health workers and health volunteer to apply in dengue control activities. This guideline consists of 5 processes as follows:

2.2.1 Implementation According to DHF Prevention and Control Plan

DHF prevention and control measures targets and activities followed DHF guidelines developed by Department of Communicable Disease Control, MOPH. The target were reducing case rate of DHF to a level of not exceeding 50 per 100,000 populations. The control measures consist of health education, bleeding place control measure without chemical and Temephos sand core granules and insecticide spraying control measure.

The plan was divided into 2 stage, control operation before epidemic period and control operation during epidemic period. In control operation before epidemic period planning, geographic risk area level was determined. Three years incidence rates of DHF had been used to classify risk area level into 3 levels. 1) High risk area was village which incidence rate of DHF had occurred for the last 3 consecutive years. 2) Moderate risk area was village, which incidence rates of DHF had been occurred for 2 of 3 for the last 3 years. 3) Low risk area was village which incidence rate of DHF had not been occurred for the last 3 consecutive years.

After risk area level was determined, proper control measure were chosen. In high risk area, control measure were health education, mosquito breeding place control without chemical , DHF prevention and control by temephos sand core granules and insecticide spraying control before epidemic occurred. Moderate risk area, control measures were health education, mosquito breeding place control without chemical, and mosquito breeding place control by temephos sand core granules. Low risk area, control measures were health education, mosquito breeding place control without chemical. In prevention and control plan health workers ask for chemical substance from public health provincial office according to determine risk area level and number of household in responsible area.

2.2.2 Control Operations before Epidemic Period

It was some measure to protect high-risk person especially children before they became ill. This operation emphasized to mosquito breeding place control or elimination, giving health education, mosquito breeding place control and insecticide spraying.

2.2.3 Control Operations during Epidemic Period (Emergency Control)

The following steps should be immediately taken when outbreak of DHF was suspected. First, a public information campaign should be instituted, stressing the basic epidemiological characteristics of DHF and the measure the individual can take to the risk of infection, e.g. personnel protection measure, the use of household aerosol insecticide, source reduction efforts at home and in neighborhood. Second, the geographic area should be defined in order to determine the extent of the insecticide spraying operation required.

2.2.4 Surveillance of DHF

Looking for incidence of DHF should be completely recorded by VHVs and reported to health center and District public Health Office. Diagnostic result should be followed if refer patient to hospital. Data surveillance was utilized for DIV control i.e. controls operation before epidemic period, defining the geographic area, control operation during epidemic period, defining the geographic area, and to determine the

outbreak area. Data should be analyzed every month before and after epidemic period. For epidemic period, data should be analyzed every week.

2.2.5 Reporting

VHVs should report DHF situation regularly monthly in case of epidemic should report weekly or daily. Health workers made the following reports. The reports consisted of; 1) monthly report on prevention and activities of DHF, which was a monthly report, 2) control of DHF and others disease recording. Health workers in health center reports to district level, district level reports to provincial level and provincial level reports to regional or central level.

2.3 Primary Health Care

In 1978 the Declaration of Alma Ata sought the commitment of Member of the World Health Organization to the target of health for all (HFA) by the year 2000 (WHO, 1979). (11) The declaration identified Primary Health Care (PHC) as the key to attaint HFA as part of the global quest for social and economic development, in a spirit of social justice. The heavy burden of sickness, the high cost of health technology and inadequacy of health services coverage called for a bold new approach, PHC offered a rational and practical means for both developing and industrialized nations to work towards the Health for All goal.(12)

The major concepts of PHC approaches consist of community participation, appropriate technology, intersect oral collaboration and the mobilization of local resources. (13) For area of intervention, PHC concentrates on 8 elements: education concerning prevailing health problems and the method of preventing and controlling them; promotion of food supplies and proper nutrition; and adequate supply of safe water and basic sanitation; maternal health child care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; provision of essential drugs. (14)

PHC was people-oriented that it success must therefore rest with the people and it has a four-fold objective on PHC approach, both in developing and industrialized countries: (14)

(1) to enable people to seek better health at home, in schools, in fields and in factories;

(2) to enable people to prevent disease and injury, instead of relying on doctors to repair that damage that could have been avoided;

(3) to enable people to exercise their right and responsibility in shaping the environment and bringing about condition that make it possible, and easier, to live a healthy life;

(4) to enable people to participate and exercise control in managing health and related systems, and to ensure that the basic prerequisites for health and access to health care were available to all people.

2.4 PHC in Thailand

Since the 4th National health plan (1977 – 1981) in Thailand, it had continuously implemented PHC activities ranging from policy and implementation plan formulation, budgets allocation, and responsible organization and supporting factor identification. Thailand had implemented PHC with three majors components: PHC elements, PHC approach and PHC activities, and according to the country's needs such as population migration, change of family size, change of population pattern, increasing ratio teenagers, labor forces, aging and change of diseases pattern from communicable to non-communicable diseases, PHC has had extended areas of intervention to 14 elements of Thailand. (13)

1. education concerning prevailing health problem and the methods of preventing and controlling diseases
2. promotion of food supply and proper notorious food
3. maternal and child health care, including family planning
4. adequacy of safe water supply and basic sanitation
5. immunization against major infectious diseases

6. prevention and control of locally endemic diseases
7. appropriate treatment of common diseases and injuries
8. provision of essential basic household drugs for the community
9. promotion of oral hygiene and correct dental care
10. provision of mental health care and promotion of appropriate community care for people with disabilities, drug addicts and alcoholics
11. consumer protection by encouraging people to consume good with the logo of the Food and Drug Health Administration
12. non-communicable disease control and accidental injury prevention
13. environmental pollution control
14. HIV/AIDS prevention and control.

The concept of PHC in Thailand had been developed from the country's experience in solving the health problems of underserved people in the rural areas. The concept of community participation consisting of the contribution of ideas, manpower, money, and materials by the community is fundamental and provide the key to the success of PHC program. Then, the Ministry of Public Health (MOPH) was aware that the strengthening of a health services delivery system and development of a referral system was essential to support the PHC activities.(12) And the program's objectives were formulated on the basic of various concepts: (15)

(1) to expand the coverage of the health services, particularly among the underserved rural population, and to help the people help themselves.

(2) to utilize community resources and encourage community participation in order to solve individual health problems, and eventually to establish self-help program at the village level.

(3) to promote the dissemination of health information to local people, as well as to integrate all data that would reflect the needs and improve the health of the communities.

(4) to make basic health services available, accessible, and acceptable to the people.

(5) to promote better health for rural people as well as to enhance their awareness of health problems and problem-solving.

2.5 Village Health Volunteer (VHV)

VHV is Community-base health manpower. In order to achieve better health of the population through health promotion and prevention, VHV were selected and trained as a key actor in Community-based Health Development. The word 'volunteer' has two of some kin important concepts in common; they all involve action or work d, and this concept of volunteering was that it was carried out for common good or interest, or the benefit crucially, the work was carried out willingly. The concept of free would be central of volunteering. A further feature of others. (16)

The Government's PHC program in Thailand had been centered on system of VHV and VHC. Both of volunteers were villagers, were selected by villagers and the village committee based a set of criteria. VHCs were given five days training in PHC and then pass this knowledge on to their neighbors (nutrition, hygiene, immunization, prevention of communicable diseases, etc) under the supervision of the Tambon health personnel. Then the VHCs was selected one of their members in each village for further fifteen days training. Then VHVs organize immunization, administer first aid, dispense basic drugs, etc. The government had also introduced drug co-operatives at the village level, which was called Community Primary Health Care Center (CPHCC) and the VHVs supervise them. (17)

By 1994, such local health volunteers in Thailand had been evolved; only VHVs left and charged their roles for greater effectiveness by enhancing capacity with continuing learning techniques. Up to 2001 there were approximately 710,000 VHVs (18), and they were assigned 10 to 15 households per VHV. VHV had no salary or compensation but only allowances while on training course for 50 baths per days per person plus the incentive of free medical services.

Responsibilities of VHVs:

(1) To inform the villagers in his/her respective area about information related to health.
(2) To collect information from the public regarding health and health related matters such as births, deaths, migration, pregnancies, problems and needs.
(3) To disseminate knowledge, advise and stimulate the public in the 8 elements of PHC.
(4) To carry out and coordinate health development activities and joint other inter sectoral development activities.
(5) To weigh pre-school children and distribute supplementary food for malnourished children.
(6) To provide simple symptomatic medical care by using home remedies or other medicines, which the Ministry of Public Health has given permission to use.
(7) To give first aid treatment for fresh wound, fractures, burns, etc.
(8) To distribute birth control pill and condom to the clients who have already examined by the government health staff (19).

2.6 Village Health Volunteers' Performance

Performance of VHVs could be defined as the total behavior of a health worker. It included the whole range of knowledge, skills and attitudes acquired through training as well as their organization and integration in practice Katz, 1980 (20). In Thailand, many performance researchers measured the ability of VHVs in carrying out in term of the VHVs performance. A positive correlation between VHVs' practice on DHF prevention and control and the achievement of health status of Thai people was revealed in the study conducted in Thailand. More health activities were found in the villages where the VHVs had a higher-level performance than in the villages where the VHVs had lower level of performance.(21).

Table 1 Summary of Finding on VHVs Performance.

Studies	Classification by performance of VHVs (%)		
	Low	Median	High
Bayliab K. (10)	31.33	00	68.67
Hongvivatana (11)	76.0	00	24.0
Tiewsuwan B. (24)	43.30	00	56.70
Sulaiman Ratman (27)	37.3	23.9	38.8
Khin Myintzu Han (28)	00	67.4	32.6

Then they tried to determine some aspect of VHVs influencing their performance. The reasons for the problem above had been the subject of many studies, opinion and discussion. (20)

2.7 Theory Review

2.7.1 The Health Believe Model (HBM)

The HBM was initially developed in the 1950s by a group of social psychologists at the US Public Health service. For more than three decades, the model had been one of the most influential and widely used psychological approaches to explaining health behavior. In general, it was believed that individuals wiuold take action to ward off, to screen for or to control ill-health condition

If they regarded themselves as susceptible to the condition (perceived susceptibility), if they believed it to have potentially serious consequences (perceived severity), if they believed that a course of action available to them would beneficial in reducing either their susceptibility to or the severity of the condition (perceived benefits), if they believed that the anticipated barriers to (or cost of) taking the action were outweighed by its benefits (perceived barrier).

Besides these variables, it was believed that diverse demographic, socio-psychological and structural variables might, in any given instance, affect the individual's perception and thus indirectly influence health related behavior. Self-efficacy (the conviction that one can successfully execute the behavior required to produce the out come) had to be added to HBM to increase its explanatory power (22).

2.7.2 The Health Believe Model Modify by Becker

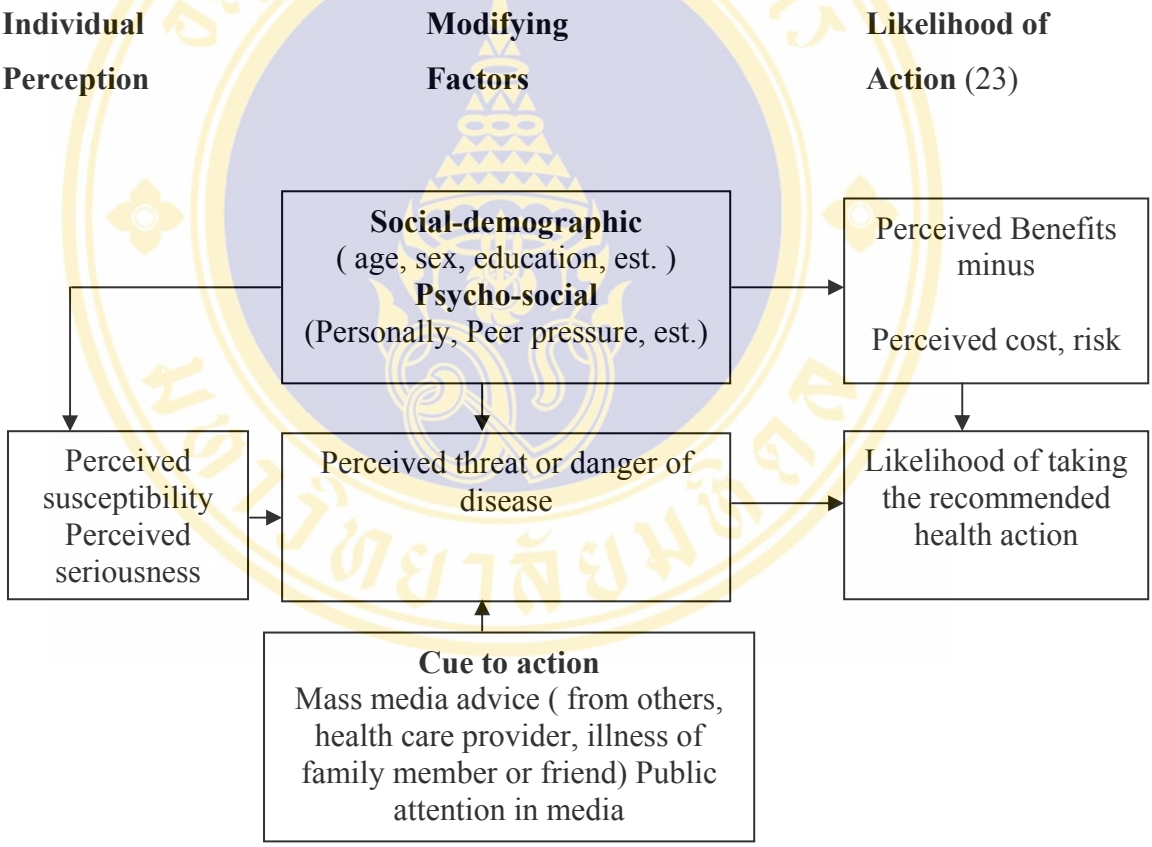


Figure 2 The Health Believe Model Modify by Becker.

2.7.3 Application of Health Belief Model in Influenza Vaccination

In 1979, Larson applied the HBM in the context of obtaining influenza vaccination by the people though to be at risk for serious complication from influenza. They found that self-reported inconvenience was not significantly associated with

vaccination status but all of other HBM dimensions were significantly associated with vaccination behavior.

Then a subsequent related intervention study (Larson 1982) was conducted to improve understanding health related behavior and to find better strategies for improving influenza vaccination compliance. Four options were to 283 high risk patients in the study.

- The first group was received a neutral postcard announcing the availability of vaccine.

- The second group was received a personal card without reference to any of the HBM variables (only the client's name, announcing the availability of vaccine, physician signature).

- The third group was received a HBM card specifically mentioned the target group's increased likelihood of contracting influenza, the seriousness of the disease in such people, the efficacy of the vaccine in reducing the risk with almost no chance of adverse side-effect.

- The fourth group was not received any kind of card after adjusting group for age and prior vaccination experience, the vaccination was found to be significantly higher for the people who received HBM card (51%) than for people who received personal card (41%), neutral card (25%) or no card (20%).

Based on the above evidence, Glanz suggested that in planning program to influenza the behavior of large groups of people for long period of time, the role of HBM including self-efficacy had to be considered in context. However permanent change in behavior could rarely be wrought solely by direct attack on belief systems. Even more, where the behavior of large groups in the target, intervention at societal level (social network, work organization, the physical environment, legislature) along with intervention at the individual level would likely proved more effective than single level intervention (22).

2.7.4 The Health Belief Model (HBM) Modified By Hubbley

- Believe they are ***susceptible***	That the health problem could affect him or her personally rather than other people or society as a whole
- Feel that it was ***serious***	The health problem could lead to death or serious outcome if action was not taken.
- Belief it could be ***prevented***	That taking the action would prevent the health problem and that the benefits of taking action would outweigh the disadvantage.

2.8 Related Study

Age: The study of Tiewsuwan B. 2002 (24) was shown that there was a significant association between performances of VHVs and their age group and those in the high age group had higher performances than the younger. And also the study of Francis Wade Z Gomez 1991 (25) study in 1991 was found that VHVs aged group 45-70 were more active than those who were under 30 year old, while Hongvivatana T. 1988 (11) was found that VHVs aged 40-50 were more active.

The result of Nguyen Thu Huong (26) in 2001 shown that was association between VHVs' performances and age group which those of age less than 30 year old were reported the poor performances. It was observed that 57.4% of tha age group over 30 years old has the highest proportion of good performances compared with the young age group under 30. However, there were other studies, which had contrast result such as the study of Sulaiman Ratman in 1991 (27) and the study of Khim Myyitzu Han 1991 (28) who did not find any significant association between age and the performance of VHVs and their age.

Gender: Havaree V. and Chaoniyom V. 1997 (29) studied in Singburi Province and found that gender of VHVs was not significantly related with VHVs' practice. And also , The study of Phouthonsy K. 1998 (30) was not differently shown that it was not significant relation between VHVs gender and his or her practice and both sexes of VHVs had poor performances.

Education: The study of Surendra Kumar Shestha 1991 (31) was shown that there was shown that there was significant association between educational lavel and job satisfaction. It was recommended that educational background should be considered in selecting VHVs.

Also, there were significant association between education and performances of VHVs in the study of Khim Myyitzu Han (28). But, the study of Tiewsuwan B.(11) was found that there were not significant association between education and performances of VHVs.

Lengrugsa V. 2002 (32) and Chan-amrung S. 2002 (33) reported that difference of education had effect on participation on PHC of VHVs and they concluded that people who were received high education has more participation than those who were obtained lower education.

Occupation: The study of Ratioran S. 2003 (34) was found that their occupation had no effect on participation of VHVs. As for the study of Phouthonsy K. (30) was found that VHVs who were orchard farmer and merchants had good performances.

The relationship between occupation and performances of VHVs was showed in the study of Publio 1993 (18). It was indicated that farmers are more associated with low performances compared to traders/laborers that trened to be in the high performances group. However, the study of Davies et al. 1997 (35) was found that

occupation did not consistently make significant independent contribution to the performances of VHVs.

Marital Status: Tiewsuwan B. (11) reported that there had not significant association between marital status of VHVs and their performances. But, the study of Ratiooran S.(34) was found that marital status had effect on the participation of VHVs.

The study of Haryandi 1993 (36) was revealed that married people had more stable than unmarried and are better able to perform the tasks and responsibilities as VHVs.

Social Roles: he study of Khim Myitzu Han (31) was shown that multiple positions in the village of VHVs were not significantly associated with their performances which was indicated that other responsibilities (multiple positions/roles) were not able to make any significant different between VHVs performances and other responsibilities.

Duration of Working as VHVs: The study of Ratioran S. (34) was found that many of VHVS (66%) served as VHV for about 0.5-6 years and many of them spent 0.5-3 hours per day for VHV working in their community. It was shown that both factors of the VHVs had effect on their performances.

The finding of Jinpeng X.'s study 1993 (43) and Kumar S.(31) was indicated that there was significant different between the period of volunteer and the level of performances and expected those who had longer duration trended to more capable in doing VHV work.

Contrary, the study of Songkhang I.1996 (37) and Admodjo BSK. 1992 (38) studies were indicated that there had not significant different between duration of working as VHVs and their performances.

Family Income: The study of Tiewsuwan B. (11) was found that VHVs who had sufficient income with saving trended to have a higher proportion of satisfactory performances than those who had insufficient income, However, the family income status was not significant associated with their performances. And Phouthonsy K. (30) mentioned that VHVs who had more monthly income they had good performances.

Knowledge: From the result of Tanapiwatanakul N. 1999 (39) was revealed that knowledge of VHVs was not associated with their performances. While the study of Kumnerdmarn K 1998 (40), Rahman M. 1998 (41) and Soongkhang I. (37) was differently indicated that knowledge of VHVs had significant association with their performances.

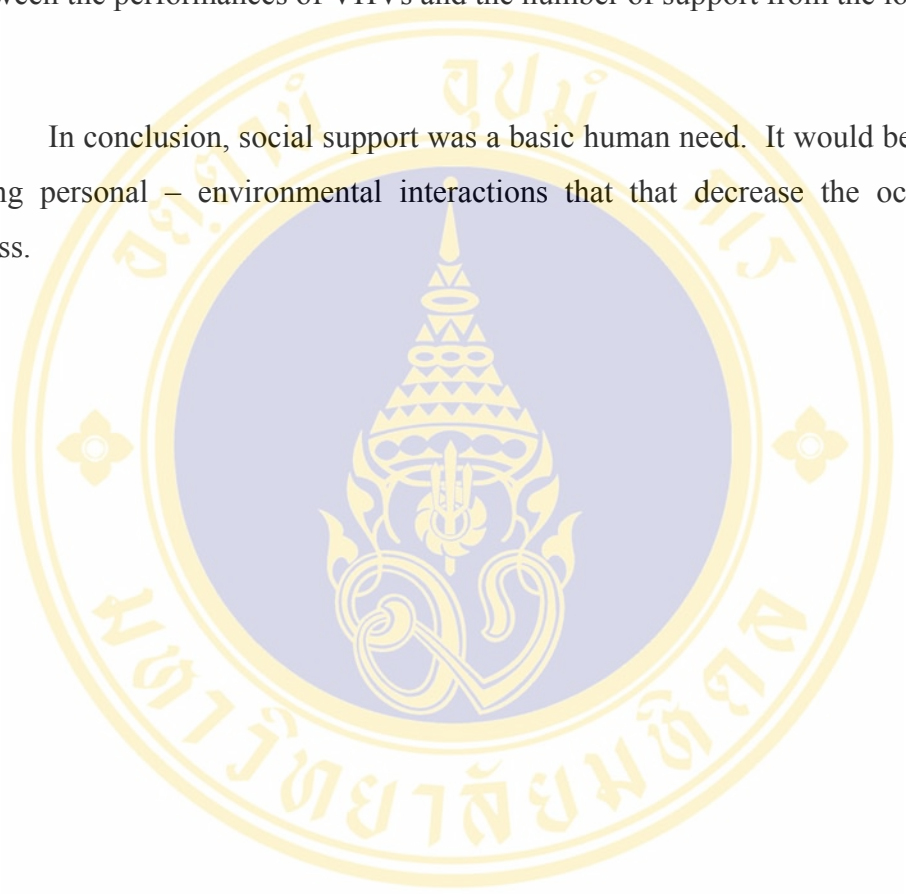
The study of Nguyen Thu Huong (26) found a positive correlation between knowledge and performances of VHVs. It showed that VHVs with good knowledge have a tendency to result in good performances. This finding correspond to the study of Rahman M (41) and Mickhanorn J. 1991 (42)

Information Support: The result of Ratioran S. (34) were found that most of the sources of emotional support, instrument support, and information support were from health officers (86-90%). The respondents indicated that health officers were the first priority of the support. It was shown that only emotional support from health officers had the effects on participation of VHVs.

Social Support: The study of Nguyen Thu Huong (26) was shown that sources and types of motivation support for VHVs were regarded as support from family, local leader, and health officers.

For the family support, the number of VHVs with good performances was found to be higher among those VHVs who were received more support from family. In term of local leader support, this study indicated that there was a light association between the performances of VHVs and the number of support from the local leaders.

In conclusion, social support was a basic human need. It would be considered being personal – environmental interactions that that decrease the occurrence of stress.



CHAPTER 3
METHODOLOGY

3.1 Research Design:

This study was a cross sectional design with descriptive and analysis type that assessed the performance of VHVs and identified factors associated with their performances on Dengue Hemorrhagic Fever Prevention and control in Thali district, Loei province, Thailand.

3.2 Study Population:

The target population in this study were VHVs who have been working as VHVs at least 1 year in Thali district, Loei province, Thailand. The population of VHVs came from 6 sub-district of Thali district, Loei province, Thailand.

3.3 Sample Estimation

Using formula:

$$n = \frac{Z^2_{\alpha/2} \; P \; (1 - P)}{d^2}$$

n = the desirable calculated sample.
$Z_{\alpha/2}$ = 1.96 at 95% confidence interval
P = the proportion of satisfactory performance of VHVs from previous study = 0 .512
d = absolute precision in this study set at 0.05

$$n = \frac{(1.96)^2 * 0.512\ (0.488)}{(0.05)^2} = 384$$

3.4 Sampling Technique

Regarding to the report, Thali district of Loei province had achievement in preventing and controlling DHF, it were very low prevalence and incident happening in the last three years and no death reported. In addition, Thaali district health office assigned VHVs to do DHF prevention and control activities. Therefore, Thaali district was selected purposively to be study area. Every sub-districts were sampled. The simple random sampling was used for selecting VHVs. All VHVs who agreed to participate in this study were included to obtain a sample of 384 persons. Multiple-stage random sampling was employed to draw a sample.

Table 2 Distribution of VHVs in Thali district, Loei Province.

Sub-district	No. of Village	No. of VHVs	No. of sample
Kokyai	5	68	53
Thali	9	143	79
Namtul	5	40	53
Arhi	6	108	53
Nong Pue	10	166	93
Namkem	6	102	53
Total	41	627	384

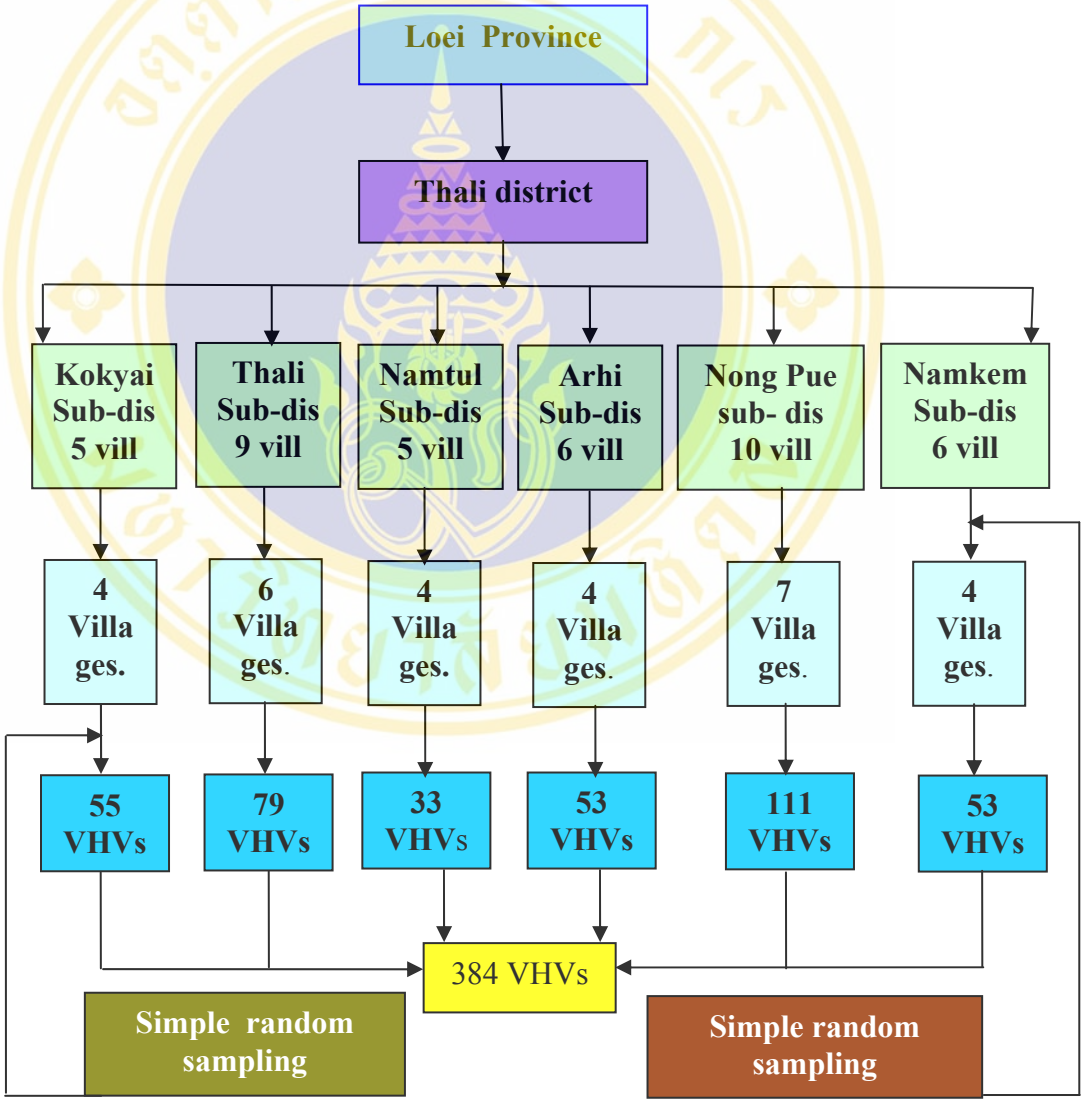


Figure 3 Diagrammatic of Sampling Technique

3.5 Instrument Development

According to conceptual framework, researcher identified the study variables and constructed a questionnaire which followed the concept of health believe model theory. Researcher consulted with professors how to construct the questionnaire properly. Questionnaire was used for assessing the performances of VHVs and VHVs were interviewed by interviewers in Thali district of Loei province.

The primary tool has been being used for data collection is a structured information form for individual interview in Thali district of Loei province. These information forms were interviewed by interviewers. The interviewers were trained by the researcher.

The questionnaires will include 6 parts following:

Part I	Demographic factors
Part II	Psycho-social factors
Part III	Perception
Part IV	Sources Information factors
Part V	Social support factors
Part VI	Performance of VHVs

Part I: Demographic Factors

There were 7 questions to obtain information about age, sex, marital status, education, occupation, duration of working and family income of VHVs.

Part II: Psycho-social Factors

Knowledge

There were 15 questions to measure performance of VHVs on DHF prevention and control such as the cause of DHF, about the vector , the breeding sites , transmission of DHF, preventive activities of DHF, seasonal changes of DHF and how to dispose the mosquito larva.

To measure knowledge, the score was given 1 point for correct answer, 0 point for incorrect answer. After summing up the total knowledge scores of respondents on the basis of percentage, the knowledge level was classify into three groups according to Bloom's criteria (44) as follow:

Good knowledge	12-15 scores or	= > 80% of total scores
Moderate knowledge	9-11 scores or	= 60 - 80% of total scores
Poor knowledge	< 9 scores or	= < 60% of total scores

Part III : Perception

There were 26 questionnaires to measure perception of VHVs on DHF prevention and control such as severity, susceptibility, benefit from DHF prevention and Barrier of DHF control.

The respondents were asked about their perception by using a 3 rating scale of choice for questionnaire construction. A 3-rating response format consists: agree = 3, not sure = 2 and disagree = 1. The total scores of perception classify into 3 levels according to Best's Group Rating Criteria (45) as follow:

Class interval was equal to 17 (Maximum score 78 minus minimum score26 and divided by level of perception)

High perception	62-78 scores
Moderate perception	44-61 scores
Low perception	26-43 scores

Part IV : Sources Information Factors

VHVs got in formations about cause, sign and symptoms, severity, prevention, control of DHF.

The respondents were asked about the source of information to support their performance 9 questions by using a 2 response scale of choice for questionnaire construction. A -point response format consists: Yes = 1 score, No = 0, the total scores of information were summed for Correlation testing and Multiple regression testing to find out the relationship between sources of information and VHVs' performances. Each sources of information were calculated for find out number and percentage and Chi-square test was used for find out relation between each sources of information.

Part V: Social Support Factors

VHVs got support such as budget, instrument and recommendation from TAO and Health Center, emotional from VHV's club, labors from villagers or villager's participation on DHF prevention and control and mental support from family. The respondents were asked about the social support their performance (9 questions) by using a 2 choice for questionnaire construction. A point response format consists: Yes = 1 score, No = 0, the total social supports were summed for Correlation testing and Multiple regression testing to find out the relationship between sources of information and VHVs' performances. Each social supports were calculated for find out number and percentage and Chi-square test was used for find out relation between each sources of information.

Part VI: Performance of VHVs

Performance of VHVs on DHF prevention and control was VHVs such as disseminating the DHF knowledge to villagers how to prevent DHF, collecting the data for DHF situation, cooperating with the villagers in community to prevent DHF by surveillance the mosquito's larva, reporting the DHF information to health personnel, joining the meeting about DHF prevention and control in VHC, Health Center.

The respondents were asked about their performance 12 questions by using a 3 rating scale of choice for questionnaire construction. A 3-point response format consists: always = 2 scores, sometimes =1 scores, never =0 score. The total scores of performance classify into 2 levels according to Best's Group Rating Criteria (45) as follow:

Class interval was equal to 12 (maximum score 24 minus minimum score 0 and divided by level of perception).

High perception	13 - 24 scores
Low perception	0 - 12 scores

3.6 Pre - testing of the Questionnaire.

Prior to data collection, a pre-test with 30 VHVs was carried out in Mahasawad sub-district, Phuthamonthon district, Nakhon Pathom province. Thereafter, the reliability and validity of questionnaire among knowledge and perception toward performance on DHF prevention and control were done. The questionnaires were pre-tested by using Cronbach's alpha method for perception part and performance part, and Kuder Richardson (KR20) for Knowledge part as follow:

Knowledge ;	Reliability of KR-20 coefficient	= 0.692561
Perception ;	Reliability of Cronbach's alpha	= 0.959048
Performance ;	Reliability of Cronbach's alpha	= 0.807799

After pre-testing and tested the reliability and validity of questionnaire, the researcher discussed with specialists for improving the quality of questionnaire. Some parts of questionnaire were changed by followed specialists' comment. Then, questionnaire was used for data collection in study area.

3.7 Data Analysis

Data was collected from people who had been VHVs. Data cleaning up were done by MINITAB and Epi Info 2002 for checking frequency distribution. Outliers and errors were considered and cleaned in frequency table.

Correlation analysis and chi-square test for association were done by MINITAB version 13. The level of significance was set at 0.05. Multiple regressions were performed to predict VHVs' performance score.

CHAPTER 4
RESULTS

This chapter shows the result of analysis of the responses collected from 384 VHVs who had been working in 29 villages of 6 sub-districts in Thali district, Loei province, Thailand during 20th January to 25th February 2006. The results initially describe the socio-demographic characteristics of VHVs knowledge about Dengue Hemorrhagic Fever (DHF), perceived severity, susceptibility, benefit from prevention and difficulty of prevention of DHF. The relationship between each independent variable and performance of VHVs on DHF prevention and control which were examined independently using Chi-square test with $\alpha = 0.05$. There were seven parts as follow:

Part one	Socio-demographic Characteristics of VHVs
Part two	Knowledge of VHVs on DHF
Part three	Perception of VHVs on DHF Prevention and Control
Part four	Information support VHVs' performance on DHF activities
Part five	Social support VHVs' performance on DHF activities
Part six	Performance of VHVs on DHF prevention and control
Part seven	Relationship between the performances of VHVs and socio-demographic characteristics, knowledge, perception, information support and social support.

4.1 Socio-demographic Characteristics

From the results shown in Table 3, half of the respondents (50.00%) were concentrated in the age group of 35 to 44 years old, more than four- tenth of the respondents (41.67%) was male and 58.33 percent was female. A large majority of them (84.38%) was married. The educational attainments of the respondents were indicated that, 65.36% and 28.13% of them graduated at primary and secondary school level.

Regarding their occupation, farmer was comprised the largest percentage of occupation distribution among the total respondents (78.56%) were farmers, traders were 15.10 %and other occupation (including labors and housewife) accounted to only 6.25%.

For the duration of working as VHVs, 30.21% and 30.99 of them had duration working ranged from 6 to 10 and 11 to15years. Majority of them (59.64%) had average monthly family income between 1,000 to 5,000 Baht per month. More details of these were shown in Table 3.

Table 3 Number and Percentage of Respondents Classified by Socio-demographic Characteristics

Socio – demographic Characteristics N= 384	**Number**	**%**
Age group (year)		
< 35	95	24.74
35-44	192	50.00
45-54	73	19.01
> 54	24	6.25
$\overline{X}$ = 40.20, SD = 7.425, Min=23, Max =57, Q1 =35, Q3 = 45		
Gender		
Male	160	41.67
Female	244	58.33
Marital status		
Single	27	7.03
Married	324	84.38
Others	33	8.59

Table 3 Number and Percentage of Respondents Classified by Socio-demographic Characteristics (Cont.)

Socio – demographic Characteristics N= 384	Number	%
Education		
Primary school	251	**65.36**
Secondary school	108	28.13
Others	25	6.51
Occupation		
Farmer	302	**78.65**
Trader	58	15.10
others	24	6.25
Duration of work as VHV (year)		
5 and lower	84	21.88
6-10years	116	**30.21**
11-15years	119	**30.99**
16-20	38	9.90
>20	27	7.03
$\overline{X}$ = 10.76, SD = 6.05, Min=1, Max =30 , Q1 =6, Q3 =14		
Family income(Baht per month)		
<1000	27	7.03
1000-5000	229	**59.64**
5001-10000	66	17.19
>10000	62	16.15
$\overline{X}$ = 6148, SD=5949, Min=500, Max =33000,Q1=2500, Q3=7000		

4.2 Knowledge of VHVs on DHF Prevention and Control

The study of knowledge about VHVs on DHF prevention and control examined the disease, cause of DHF, signs and symptoms, about the vector, the breeding sites, and transmission of DHF, preventive activities of DHF, seasonal changes of DHF, fist aid for DF patients and how to dispose the mosquito larva. The findings in Table 4 indicated that nearly six-tenth (59.90%) of the respondents had a moderate knowledge while 22.66 percent and 17.45 percent of the respondents had a low and high knowledge level respectively.

Table 4 Number and Percentage of Respondents by Level of Knowledge about DHF Prevention and Control.

Knowledge of DHF N= 384	**Number**	**Percent**
High	67	17.45
Moderate	230	**59.90**
Low	87	22.66

Score : Low 0-8, Moderate = 9-12, High 13-15

Considering to details of VHVs' knowledge on DHF prevention and control it was found that, most of them know about DHF prevention and control such as the disease, cause of DHF, signs and symptoms, about the vector , the breeding sites , transmission of DHF, preventive activities of DHF, seasonal changes of DHF, first aid for DF patients and how to dispose the mosquito larva. However, only 30.73% of them knew the serotypes of dengue virus that cause of DHF and 25.00% of them know the DHF can reinfect in the same person, more detail were shown in Table 5.

Table 5 Number and Percentage of Correct Answer of Knowledge about DHF Prevention and Control by Item Analysis.

Statements / Items	Cor-rect	Ans-wer	Com-ment
	N	(%)	
1. How many serotypes of dengue virus that cause of DHF?	118	**30.73**	Low
2. Can DHF reinfect in the same person ?	96	**25.00**	Low
3. Where do vector of DHFs not lay their eggs?	329	85.68	High
4. What are the typical signs and symptoms of DHF?	318	82.81	High
5. How does DHF transmit from one to another person?	346	**90.10**	High
6. What kind of method should do for DHF patient before referring to health centers or hospitals?	315	82.03	High
7. What kind of medicine should DHF patients not take?	298	77.60	Mode-rate
8. What is the best way to prevent from DHF?	363	**94.53**	
9. What is the epidemic season of DHF ?	273	71.09	Mode-rate
10. Which is best method to reduce the number of the mosquito?	278	72.40	Mode-rate
11. What is the most effective measures to control DHF epidemic nowadays?	326	84.90	High
12. Which group of people is highest risk to get DHF?	119	**30.99**	Low
13. Survey mosquito larva usually doing every week.	346	**90.10**	High

Table 5 Number and Percentage of Correct Answer of Knowledge about DHF Prevention and Control by Item Analysis.(Cont.)

Statements / Items	Cor-rect	Ans-wer	Com-ment
	N	(%)	
14. What is control measures of DHF regularly which are use all area?	202	**52.60**	Low
15. How often do the house owners have to clean water containers and other containers that contain water in their households?	321	83.59	High

4.3 Perception of VHVs on DHF Prevention and Control

The study of VHV's perception on DHF prevention and control in four aspects such as severity, susceptibility, benefit, and barrier. The finding in Table 6 showed that more than half of them (60.68%) had a high position perception while 19.79% and 19.53% of respondents had a moderate and low position perception respectively.

Table 6 Number and Percentage of Respondents Classified by Perception of DHF Prevention and Control.

Perception of DHF N= 384	Number	Percent
High	233	**60.68**
Moderate	76	19.79
Low	75	19.53

Score : Low = 26-43, Moderate = 44-61, High = 62-78

Considering to the perception of VHVs on benefit and barrier of DHF prevention and control in addition to their perception on benefit and barrier of practice under

DHF prevention and control, it was found that majority of VHVs agreed to the benefits of DHF prevention and control in terms of the enhancement of villagers' capacities to solve thier health problems.

However, there were quite a lot of them agree with the barriers of DHF prevention and control such as they think that people now no need to take care their health because they can easily come to health center, or many health policies that directed or proposed from MOPH. More detial were illustrated in Table 7.

Table 7 Number, Percentage, Mean, Standard Deviation, and Comment Related to perception of VHVs towards DHF Prevention and Control by Items.

Statements/Items	Agree N (%)	Not sure N (%)	Dis agree N (%)	$\overline{X}$	SD	Com-ment
1. DHF is not very dangerous disease for human	88 22.92	54 14.06	242 63.02	2.40	.84	High
2. Children got DHF is difficult to be treated	206 53.65	125 32.55	53 13.80	2.40	.72	High
3. DHF leads to death to children only	106 27.60	54 14.06	224 58.33	1.69	.88	Mode-rate
4. DHF causes death if it is not treated in time and properly.	246 64.06	103 26.82	35 9.11	2.55	.66	High
5. DHF cost a lot of money to treat it	190 49.49	58 15.10	136 35.42	2.14	.91	Mode-rate
6. Children and adult are easier to get DHF	226 58.85	55 14.32	103 26.82	2.32	.87	Mode-rate
7. People sleep in mosquito net, they have same chance to get DHF with those do not sleep in mosquito net	113 29.43	61 15.89	210 54.69	2.25	.88	Mode-rate
8. Living or staying in the places that have many mosquitoes can easily get DHF infection	211 54.95	56 14.58	117 30.47	2.24	.89	Mode-rate
9. Adults also get DHF infection easily if do not protect.	221 57.55	79 20.57	84 21.88	2.36	.81	High
10. Watching TV with many mosquitoes in day time people have less chance to get DHF.	49 12.76	109 28.39	226 58.85	2.46	.71	High

Table 7 Number, Percentage, Mean, Standard Deviation, and Comment Related to perception of VHVs towards DHF prevention and control by Items. (Cont.)

Statements/Items	Agree N (%)	Not sure N (%)	Dis agree N (%)	$\overline{X}$	SD	Comment
11. Getting DHF infection is duty for family to take care	233 60.68	49 12.76	102 26.56	2.34	.87	High
12. DHF can not reinfect in the same person	105 51.04	83 21.61	196 51.04	2.24	.85	Mode-rate
13. Getting DHF infection make family member lost times in taking care	227 59.11	48 12.50	109 28.39	2.31	.88	Mode-rate
14. Getting DHF infection make him or her can not do his or her job continuously.	202 52.60	65 16.93	117 30.47	2.22	.89	Mode-rate
15. Doing DHF prevention and control activities can effect community has a clean environment	236 61.46	46 11.98	102 26.56	2.35	.87	High
16. Doing DHF prevention and control activities cann't reduce DHF infection rate in community	67 17.45	109 28.39	208 54.17	2.37	.76	High
17. Doing DHF prevention and control activities can save money from DHF treatment	212 55.21	127 33.07	45 11.72	2.43	.69	High
18. Doing DHF prevention and control activities can reduce DHF infection rate.	242 63.02	61 15.89	81 21.09	2.42	.82	High

Table 7 Number, Percentage, Mean, Standard Deviation, and Comment Related to perception of VHVs towards DHF prevention and control by Items. (Cont.)

Statements/Items	Agree N (%)	Not sure N (%)	Dis agree N (%)	$\overline{X}$	SD	Com ment
19. Doing DHF prevention and control activities can reduce death rate of the community	237 61.72	71 18.49	76 19.79	2.42	.80	High
20. DHF infection is a natural phenomenon, there are no way to prevent it	47 12.24	108 28.13	229 59.64	2.47	.70	High
21. DHF is cause by mosquitoes, it is difficult to prevent and control it	127 33.07	69 17.97	188 48.96	2.16	.89	Mode-rate
22. It is difficult to convince villagers to destroy the bleeding place of mosquito larva	182 47.40	61 15.89	141 36.72	1.89	.91	Mode-rate
23. Villagers always pay less attention to cooperate DHF prevention and control activities	159 41.41	66 17.19	159 41.41	2.00	.91	Mode-rate
24. Sleeping without mosquito nets in night time do not get DHF	165 42.97	98 25.52	121 31.51	2.11	.68	Mode-rate
25. Children with DHF are not needed to refer to hospitals.	79 20.57	85 22.14	220 57.29	2.37	.80	High
26. People who has more of DHF knowledge can not protect DHF infection if their practices are not suitable	216 56.25	66 17.19	102 26.56	2.30	.86	Mode-rate

4.4 Source of informational to VHVs' Performances

Regarding to sources of information, the result in Table 8 shown that, a great majority of the respondents (91.67) received the information from health personnel, followed by from books or handouts 89.58 percent and from televisions 79.17 percent, while 58.85 percent of them got the information from radio and from magazines only 55.99 percent. More details were shown in Table 8.

Table 8 Number and Percentage of the Respondents by Sources of Information.

Source of Informational N = 384	Number	Percent
1. Information from health personnel	352	**91.67**
2. Information from neighbors	270	70.31
3. Information from friends	268	69.79
4. Information from relative	283	73.70
5. Information from newspapers	299	77.86
6. Information from books or handouts	344	**89.58**
7. Information from magazines	215	**55.99**
8. Information from TVs	304	**79.17**
9. Information from radio	226	**58.85**

4.5 Social support to VHVs' Performances

According to the result in Table 9 showed that, a great majority of the respondents got social support such as they got the emotional support from health center(93.75%), the emotional support from VHV's club(92.45%) and they also got the instrument support from health center(93.23%), while only 58.85 percent of VHVs got the emotional support from family. More details were shown in Table 9.

Table 9 Number and Percentage of Respondents by Social Support.

Item of Social Support N = 384	Number	Percent
1. Instrument support from TAO	254	66.15
2. Financial support from TAO	241	62.76
3. Emotional support from TAO	222	57.81
4. Instrument support from health center	358	**93.23**
5. Financial support from health center	291	75.78
6. Emotional support from health center	360	**93.75**
7. Emotional support from VHV's club	355	**92.45**
8. Labor support from villagers	237	61.72
9. Emotional support from family	226	**58.85**

4.6 Performances of VHVs on DHF Prevention and Control

The total scores (12 points) of VHVs' performances were divided into 2 level of high, and low. Majority of respondents (76.30%) belonged to high performances group, and almost one-forth of VHVs (23.70%) were in low performances group as shown in the Table 10.

Table 10 Number and Percentage of the Respondents Classified by Level of Performances on DHF Prevention and Control.

Performance of VHVs N= 384	Number	%
High	293	76.30
Low	91	23.70
$\overline{X}$ = 1.39, SD = 4.22, Min = 0.58, Max = 2, Q1 = 1.08 , Q3 = 1.66		

Score: Low ≤ 1, High > 1

Considering to the detail of VHVs' performances (Table 13), it was shown that, 48.44 percent and 44.01 percent of the respondents always and sometimes disseminated the knowledge about DHF for their villagers.

In term of discussing with villagers about DHF prevention and control that is one role of VHVs needed to perform, More than a half of VHVs (51.04%) replied that always discussed with villagers about DHF prevention and control and 42.45 percent of them sometimes did.

One important activity that VHVs have to do was surveillance of mosquito larva, it was shown that more than six-tenth (65.10%) of them always surveyed of mosquito larva.

For destroying the mosquito larva when VHVs found, they replied that more than a half of respondents (53.13%) always destroyed the mosquito larva when VHVs found the mosquito larva.

Regarding to joint the mosquito larva control activities like provided chemical substance, chemical spraying, the respondents replied that, more than a half of VHVs (56.51%) always jointed those mosquito larva control activities.

Considering to campaigning the mosquito net use among the villagers, almost six-tenth of the respondents (57.55%) answered that they always campaigned the mosquito net use among the villagers.

In term of advising villagers to use the mosquito net, they answered that, more than a half of VHVs (58.07%) always advised villagers to use the mosquito net.

One activity that is very important for being VHVs is leading to do the big cleaning day in your village; VHVs replied that, almost a half of them (48.18%) always leaded to do the big cleaning day in your village.

For doing the DHF control activities in VHVs' houses, almost seven-tenth of the respondents (66.67%) always did the DHF control activities as the pilot house in the village.

Regarding to do the first aid for DHF patient, almost a half of the respondents (44.79 %) and (46.35%) always and some time did the first aid for DHF patient then advise them go to health centers or hospitals.

Concerning to report of DHF data in your village to health personnel and TAO, they replied that, almost a half of VHVs (43.49 %) always reported DHF data to health personnel and only 14.32 percent of them always reported DHF data to TAO. More detail of this information was shown in table 11.

Table 11 Number and Percentage of the Respondents Related to Performance on DHF Prevention and Control by Items.

	Statements/Items	Ne-ver N (%)	Some time N (%)	Al ways N (%)	$\overline{X}$	SD	Com-ment
1.	Have you ever disseminated the knowledge about DHF to villagers?	29 7.55	169 44.01	186 48.44	1.41	.63	**High**
2.	Have you ever discussed with villagers about DHF prevention and control?	25 6.51	163 42.45	196 51.04	1.45	.62	**High**
3.	Have you ever survey the mosquito larva in your responsibility area?	35 9.11	99 25.78	250 65.10	1.56	.66	**High**
4.	Have you ever destroy the mosquito larva when yo found ?	39 10.16	141 36.72	204 53.13	1.43	.67	**High**
5.	Have you ever joint the mosquito larva control activities like provided chemical substance, spraying.	37 9.64	130 33.85	217 56.51	1.47	.67	**High**
6.	Have you ever campaigned the mosquito net use to villagers?	65 16.93	98 25.52	221 57.55	1.41	.76	**High**
7.	Have you ever advised villagers to use the mosquito net?	73 19.01	88 22.92	223 58.07	1.39	.79	**High**
8.	Have you ever leaded to do the big cleaning day in your village?	42 10.94	157 40.89	185 48.18	1.37	.67	**High**
9.	Have you ever done the DHF control activities in your house?	36 9.38	92 23.96	256 66.67	1.57	.67	**High**

Table 11 Number and Percentage of the Respondents Related to Performance on DHF Prevention and Control by Items (Cont.).

Statements/Items	Ne-ver N (%)	Some time N (%)	Al ways N (%)	$\overline{X}$	SD	Com-Ment
10. Have you ever done the first aid for DHF patient then advise them refer to health centers or hospitals?	34 8.85	178 46.35	172 44.79	1.36	.64	**High**
11. Have you ever reported DHF data in your village to health personnel?	30 7.81	187 48.70	167 43.49	1.36	.62	**High**
12. Have you ever reported DHF data in your village to TAO?	102 26.56	227 59.11	55 14.32	.88	.63	**Low**

4.7 The Relationship between the VHVs' Performances on DHF Prevention and Control and Socio-demographic Characteristics, Knowledge, Perception, Information Support and Social Support.

4.7.1 The Relationship between the VHVs' Performances of on DHF Prevention and Control and Socio-demographic Characteristics.

For the relationship between the socio-demographic characteristics the performances of VHVs on DHF prevention and control. It was found that there were four variables of the socio-demographic characteristics such as age group, marital status, duration of work and family income were significantly associated with the performances of VHVs on DHF prevention and control with. More detail was shown in Table 12- Table18.

With regard to the marital status, a large majority of the respondents (73.15%) were married which had higher proportion of performances compared with those who were not married such as single, widow, divorce and separate.

According to duration of work groups, in Table 17 showed that, the 16-20 years old had higher proportion of high performances (86.84%). While 11-15 years old group and more than 20 years old had proportion of high performance 84.03% and 77.78%.

Regarding to Family income, the result in Table 18 reviewed that, VHVs had family income more than 10,000 baht per month had higher proportion of high performances (98.39%) and follow by 5,001-10,000 group which had proportion of high performances 89.39%.

However, VHVs had family income lower than 1,000 baht per month had higher proportion of high performances (70.37%) as well.

4.7.1.1 The Relationship between the VHVs' Performances and Age Group.

Table 12 The Relationship between VHVs 'Performances and Age Group.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Age group							
< 35	62	65.26	33	34.74	95	9.799	0.020*
35-44	156	81.25	36	18.75	192	(3)	
45-54	58	79.45	15	20.55	73		
> 54	17	70.83	7	29.17	24		

*Significant at p-value < 0.05

4.7.1.2 The Relationship between VHVs' Performances and Gender.

Table 13 The relationship between VHVs 'Performances and Gender.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Gender							
Male	124	77.50	36	22.50	160	0.218	0.641
Female	169	75.45	55	24.55	224	(1)	

4.7.1.3 The Relationship between VHVs' Performances and marital status.

Table 14 The Relationship between VHVs 'Performances and Marital Status.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Marital status							
Single	24	88.89	3	11.11	27	11.944	0.003*
Married	237	73.15	87	26.85	324	(2)	
Others	32	96.97	1	3.03	33		

*Significant at p-value < 0.01

4.7.1.4 The relationship between VHVs' Performances and Education.

Table 15 The Relationship between VHVs 'Performances and Education.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Education							
Primary school	183	72.91	68	27.09	251	4.644	0.098
Secondary school	89	82.41	19	17.59	108	(2)	
Others	21	84.00	4	16.00	25		

4.7.1.5 The Relationship between VHVs' Performances and Occupation.

Table 16 The Relationship between VHVs' Performances and Occupation.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Occupation							
Farmer	224	74.17	78	25.83	302	4.031	0.134
Trader	50	86.21	8	13.79	58	(2)	
others	19	79.17	5	20.83	24		

4.7.1.6 The Relationship between VHVs' Performances and Duration of Work.

Table 17 The Relationship between VHVs 'Performances and Duration of Work.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Duration of work							
5 and lower	64	76.19	20	23.81	84	15.00	0.005*
6-10years	75	64.66	41	35.34	116	(4)	
11-15years	100	84.03	19	15.97	119		
16-20	33	86.84	5	13.16	38		
>20	21	77.78	6	22.22	27		

*Significant at p-value < 0.01

4.7.1.7 The Relationship between VHVs' Performances and Family Income.

Table 18 The Relationship between VHVs' Performances and Family Income.

Socio-demographic factors	Performances				Total	X^2 (df)	p-value
	High		Low				
	N	(%)	N	(%)			
Family income							
<1000	19	70.37	8	29.63	27	33.885	0.000*
1000-5000	154	67.25	75	32.75	229	(3)	
5001-10000	59	89.39	7	10.61	66		
>10000	61	98.39	1	1.61	62		

*Significant at p-value < 0.001

4.7.2 The Relationship between VHVs' Performances and Control and Knowledge.

For the relationship between knowledge on DHF prevention and control and performances of VHVs, The result showed that VHVs who had high knowledge had higher proportion performances (100.00%). For those VHVs with moderate knowledge had higher proportion of high performances (91.30%) and for those who had low knowledge had higher proportion of low performance (81.61%). It can be concluded that, the VHVs' knowledge on DHF prevention and control was significantly associated with their performances with p-value< 0.001 as shown in the table 19.

Table 19 The Relationship between VHVs' Performances and Knowledge.

Knowledge	Performances		Total	X^2 (df)	P-value
	High	Low			
	N (%)	N (%)			
High	67 (100.00)	00 (00.00)	67	210.798 (2)	0.000*
Moderate	210 (91.30)	20 (8.70)	230		
Low	16 (18.39)	71 (81.61)	87		

*Significant at p-value < 0.001

4.7.3 The Relationship between the VHVs' Performances of and Perception.

In term of comparison between VHVs' performances and their perception, it was found that, VHVs who had high perception had higher proportion performances (93.56%). For those VHVs with moderate perception had higher proportion of high performances (88.16%) and for those who had low perception had higher proportion of low performance (89.33%). It can be concluded that, the VHVs' perception on DHF prevention and control was significantly associated with their performances (p-value< 0.001). More detail was shown in Table 20.

Table 20 The Relationship between VHVs 'Performances and Perception.

Perception	Performances		Total	X^2 (df)	P-value
	High	Low			
	N (%)	N (%)			
High	218 (93.56)	15 (6.44)	233	222.982 (2)	0.000*
Moderate	67 (88.16)	9 (11.84)	76		
Low	8 (10.67)	67 (89.33)	75		

*Significant at p-value < 0.001

4.7.4 The Relationship between VHVs' Performances and Source of Information.

The result was shown that, the relation between some source of informations such as from neighbors, friends, relatives, newspapers, magazines and radio were significantly associated with VHVs' performances p-value < 0.001, while others source of information such as from health personnel and television were not significantly associated with VHVs' performances. More detail as shown in Table 21.

Table 21 Relationship between VHVs' Performances and Source of Informations.

Source of Information	Performances		Total	X^2 (df)	P-value
	High	Low			
	N (%)	N (%)			
Health personnel					
No	26 (81.250)	6 (18.75)	32	0.473	0.492
Yes	267 (75.85)	85 (24.15)	352	(1)	
Neighbors					
No	41 (35.96)	73 (64.04)	114	145.894	0.000*
Yes	252 (93.33)	18 (6.67)	270	(1)	
Friends					
No	41 (35.96)	74 (64.04)	114	145.897	0.000*
Yes	252 (93.330	18 (6.67)	270	(1)	
Relative					
No	35 (34.65)	66 (65.35)	101	131.468	0.000*
Yes	258 (91.17)	25 (8.83)	283	(1)	
Newspaper					
No	52 (61.18)	33 (38.82)	85	13.812	0.000*
Yes	241 (80.60)	58 (19.40)	299	(1)	
Handout or book					
No	26 (65.00)	14 (35.00)	40	3.154	0.076
Yes	267 (77.62)	77 (22.38)	344	(1)	
Magazine					
No	92 (54.44)	77 (45.56)	169	79.800	0.000*
Yes	201 (93.49)	14 (6.51)	215	(1)	
Television					
No	65 (81.25)	15 (18.75)	80	1.368	0.242
Yes	228 (75.00)	76 25.00)	304	(1)	

Table 21 Relationship between VHVs' Performances and Sources of Information (Cont.)

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Source of Information	Performances		Total	X^2	P-value
	High	Low			
	N (%)	N (%)		(df)	
Radio					
No	100 (63.29)	58 (36.71)	158	25.133	0.000*
Yes	193 (85.40)	33 (14.60)		(1)	

* Significant at p-value < 0.001,

4.7.5 The Relationship between the Performances of VHVs on DHF Prevention and Control and Social Support.

According to social support, the result was shown that, the relationship between some of social supports such as financial support from TAO, emotional support from TAO, financial support from Health Center, emotional support from Health Center, labor support from villagers, and emotional support from family were significantly associated with VHVs' performances, while instrument support from TAO and instrument support from Health Center were not significantly associated with VHVs' performances. More detail as shown in Table 22.

Table 22 Relationship between VHVs' Performances and Social Support.

Social Support	Performances		Total	X^2	P-value
	High	Low			
	N (%)	N (%)		(df)	
Instrument Support from TAO					
No	105 (80.77)	25(19.23)	130	2.169	0.141
Yes	188 (74.02)	66 (25.98)	254	(1)	
Financial Support From TAO					
No	66 (46.15)	227 (94.19)	143	114.532	0.000**
Yes	227 (94.19)	14 (5.18)	241	(1)	
Emotional Support From TAO					
No	87 (53.70)	75 (46.30)	162	79.141	0.000**
Yes	206 (92.79)	16 (7.21)	222	(1)	
Instrument Support from Health Center					
No	17 (65.38)	9 (34.62)	26	1.838	0.175
Yes	276 (77.09)	82 (22.91)	358	(1)	
Financial Support From Health Center					
No	31 (33.33)	62 (66.67)	93	125.308	0.000**
Yes	262(90.03)	29 (9.97)	291	(1)	

Table 22 Relationship between VHVs' Performances and Social Support (cont.)

Social Support	Performances		Total	X^2 (df)	P-value
	High	Low			
	N (%)	N (%)			
Emotional Support From Health Center					
No	14 (58.33)	10 (41.61)	24	4.571	0.033*
Yes	279 (77.50)	81 (22.50)	360	(1)	
Emotional Support From VHVs' Club					
No	18 (62.07)	11 (37.93)	29	3.514	0.061
Yes	275 (77.46)	80 (22.54)	355	(1)	
Labor Support From Villagers					
No	72 (48.98)	75 (51.02)	147	98.332	0.000**
Yes	221 (93.25)	16 (6.75)	237	(1)	
Emotional Support From Family					
No	25 (69.44)	11 (30.56)	36	43.701	0.000**
Yes	220 (85.94)	36 (14.06)	256	(1)	

* Significant at p-value < 0.05

** Significant at p-value < 0.001

4.7.6 The Prediction of Related Factors Toward VHVs' Performances on DHF Prevention and Control.

Table 23 Correlation Coefficients between Performances with Income, Knowledge, Perception, Sources of Information, Social Support and Age.

	Performance	Income	Knowled.	Percept.	S.inform.	Social S.
Income	0.163**					
Knowledge	0.697***	0.067				
Perception	0.732***	0.015	0.782***			
Sources of information	0.683***	0.094	0.666***.	0.717***		
Social support	0.663***	0.140**	0.555***	0.715***	0.643***	
Age	0.081	0.143**	0.054	0.118*	0.123*	0.088

* Significant at p-value < 0.05

** Significant at p-value < 0.01

*** Significant at p-value < 0.001

The result showed that**,** income, knowledge, perception, sources of information and social support were statistically significant related to performance.

Some of among independent variables also were significant associated with each other such as knowledge and perception, knowledge and sources of information, knowledge and social support, perception and sources of information, perception and social support, perception and age, sources of information and social support, sources of information and age.

Table 24 Prediction Factors Related to VHVs' Performances on DHF Prevention and Control.

Predictor	Coeffic. (b)	SE Coeff.	Standardize (B)	T	P-value
Income (per 1,000 Baht)	0.05614	0.02464	0.079	2.28	0.023*
Knowledge	0.4858	0.1023	0.246	4.75	0.000**
Perception	0.07489	0.01995	0.237	3.75	0.000**
Sources of information	0.4524	0.1021	0.215	4.43	0.000**
Social support	0.4902	0.1116	0.208	4.39	0.000**

R-Sq = 64.8% , R-Sq (adj) = 63.7%

* Significant p-value<0.05

** Significant p-value<0.001

This study showed that, significant factors related to VHVs' performances on DHF prevention and control were income, knowledge, perception, information support and social support. But the most important factors were knowledge and social support which adjusted for gender, age, marital status, education, occupation and duration of work.

If the VHV's knowledge increase 1 score, his or her performance will increase 0.5 score after adjusting for other factors. In this study, multiple regressions could explain the association between independent and dependent variables 64 %.

CHAPTER 5
DISCUSSION

This study was base on the primary data, collected from VHVs who were working in Thali District. The data was collected from 6 sub-districts, 384 VHVs in Thali District, Loei Prvince, Thailand.

The main objective of the study was to describe the performance of VHVs on DHF prevention and control and to describe related factors to subjects, like socio-demographic characteristic, knowledge, perception, source of information and social support.

The research result shown the factors associated with the performance of VHVs in Thali District, Loei Province. It shown the relationship between performance of VHVs and socio-demographic characteristic, knowledge, perception, source of information and social support. This chapter presents a discussion on the research finding as well as the implication of the finding.

5.1 Performances of VHVs on DHF Prevention and Control

The study depicted that 76.30% of VHVs performed highly on DHF prevention and control. The performances of this study were higher than previous studies of Bayliab K. (10), Tiewsuwan, B (24) and Khin Myitzu Han (28) Which found VHVs who performed their duties at high level accounted to 68.67% , 56.70% and 32.6%. respectively.

The deference between this study and the previous studies is due to different research methodology and study area. Bayliab K. (10), Tiewsuwan, B (24) and Khin Myitzu Han (28) classified the performances level of VHVs by using median at cut of point and mean at cut of point. Due to the data in this study does not normal

distribution, this study, and performances level of VHVs was classified by Best's Rating criteria (45).

This finding indicated that, majority of VHVs highly performed (76.30%) and almost one quarter of them (23.70%) had low performances which mean that VHVs can play their duties effectively. It might be due to they have public consciousness and willingness to do public activities. They know that the person who wants to be VHV must volunteer and donate so much time to perform many activities for public benefits. They also recognize well that a person who wants to do this work has to have much intention and enthusiasm. All of these yield to their high performances significantly.

5.2 Socio-Demographic Characteristics of VHVs

In this study, it found that age was significantly associated with their performances ($P<0.05$). This finding was supported by the study of Tiewsuwan, B (24) and Songklang I (37). However, the study of Bayliab K. (10) and Khin Myitzu Han (28) were not found any association between age and their performances.

The results showed that, those VHVs who had more incomes had higher performances than those who had fewer incomes. There was significant associated with their performances and incomes ($P<0.001$).

This finding was not supported by the study of Bayliab K. (10) and Tiewsuwan, B (24) who found that the incomes of VHVs were not shown any significantly associated with the performances.

To find out those who VHVs had more incomes in the village could perform their tasks higher than those who had fewer incomes. It might be due to they could play more intention to DHF prevention and control. When VHVs' families had enough money they did not worry about their living conditions. In opposite way, for

those VHVs who had fewer incomes, they always worried about their economic situation.

5.3 Knowledge of VHVs on DHF Prevention and Control

Concerning the knowledge of VHVs on DHF prevention and control, it was found that of VHVs who had high Knowledge level had higher proportion of high performances (100%) than those VHVs who had moderate (91.30%) and for those who had a low Knowledge level had higher proportion of low performances (81.61%). There was significantly associated between their performances and Knowledge level ($p<0.001$).

This finding agreed favorably with the study of Bayliab K. (10), Songklang I (37), Kumnerdkarn D (40), and Raman M (41) who also found to the significant associated between knowledge of VHVs and their performances too.

However, there were other studies that found the knowledge of VHVs was not significantly associated with their performances as indicated from the study of Tiewsuwan, B (24) and Thanatipwattanakul N (39).

Considering in details of VHV's knowledge, it was found that, majority of them had knowledge about the important issues in DHF prevention and control, how did DHF transmit from one to another person, what was the best way to prevent from DHF, where did vector of DHFs lay their eggs, what are the typical signs and symptoms of DHF , what kind of method should do for DHF patient before referring to health centers or hospitals , what is the most effective measures to control DHF epidemic nowadays and the timing for surveillance mosquito larva.

However, there were some VHVs had less knew about How many serotypes of dengue virus that cause of DHF, can DHF reinfect in the same person, and which group of people is highest risk to get DHF. The reason may be due to some of them did not join the training and two-fifth of them working as VHVs lower than 5 years

5.4 Perception of VHVs on DHF Prevention and Control

The finding showed that, 60.68% of respondents had high perception, 19.79% of them had its moderate and the rest 19.53% had its low perception. VHVs had high perception level had the high performances, and there was significant difference the perception level between 3 groups of high, and low performances. This was similar to the study of Songklang I (37).

The finding also indicated that, VHVs had perception on benefit and barrier of DHF prevention and control activities. Most of them realized that they would get more benefits from it. As they believed to play their roles on these activities it could build capacities to solve health problem in the village. It could make them get respect from villagers, community leaders and health personnel. In addition, it could make villagers get better health status. These their perceptions make them did their work attentively; even they know that they had to face some difficulty. This was the reason support that VHVs who had high perception level had high performances.

To consider the perception towards barriers, there were some of VHVs believed that they have some problems when they worked as VHVs, such as many activities of DHF prevention and control were difficulty task for them to practice, they had so many busy works to participate on health activities or present incentive interest for VHVs did not motivate them to play their roles. It might be due to their income quite low and they have more family tasks to do. It makes them have to struggle to earn money for daily living. So, they had no enough time to play their VHVs roles or joint in other social works. All of this makes them lack of confidence to do their VHVs roles which leaded to their performances gotten low.

5.5 Source of Information support VHVs to Perform DHF Prevention and Control Activities.

The result showed that, VHVs who had information support had higher proportion of high performances than those who had moderate and low social support (p-value < 0.05). This finding was supported by other studies were done by Bayliab K. (10), Tiewsuwan, B. (24) and Kumnerdkarn D. (40).

Considering to types of information support from (health personnel, neighbors, friends, relatives, newspapers, book and handouts, magazines, television and radio.), the results found that, all of them were significantly related to the performances of VHVs (p-value < 0.05).

Information support was very important reinforcing factors that affect to VHVs' performances at high level. It might be due to the most important thing of DHF prevention and control implementation was community participation. Many sources of information to support VHVs make them increased their knowledge about DHF prevention and control which leaded to their performances. As the result of this study, nearly all of VHVs (97.27%) that had high information support they had high performances.

5.6 Social Support VHVs to Perform DHF Prevention and Control Activities

The result showed that, VHVs who had social support had higher proportion of high performances than those who had moderate and low social support at p-value < 0.05. This finding was supported by other studies were done by Bayliab K. (10), Tiewsuwan, B. (24) and Kumnerdkarn D. (40).

Considering to types of social support (mental support, material support and financial support), the results found that, three of them were significantly related to the performances of VHVs (p-value < 0.05).

Social support was very important reinforcing factors that effect to VHVs' performances at high level. It might be due to the most important thing of DHF prevention and control implementation was community participation which leads to encouragement, VHVs who mobilized DHF prevention and control activities need to have these supports from community. As the result of this study, the great majority of VHVs (95.86%) that had high social support they had high performances.

CHAPTER 6
CONCLUSION AND RECOMMEDATION

This research was a cross sectional study aimed to describe the performances of VHVs on DHF prevention and control and its related factors as predisposing factors in term of socio demographic characteristics, knowledge about DHF prevention and control, perception towards on DHF prevention and control, enabling factors in term of information support and social support such as financial, instrument, and mental support.

The study was carried out in Thali district, Loei province during 20th January to 25th February, 2006. The 384 VHVs in the 29 villages of 6 sub-districts were selected by using multistage random sampling. Trained interviewers were employed for collecting the data.

6.1 Conclusion

1 Performances of VHVs

From the results, it was shown that, nearly three-forth of respondent (76.30%) had high performances, while nearly one-forth of VHVs (23.70%) low performances.

2 Socio-demographic Characteristics of VHVs

The finding were presented that, nearly six-tenth of respondents were female (58.33%), a majority of them were married (84.38%), a half of them (50.00%) were within the age group 35 to 44 years. More than six-tenth of VHVs (65.36%) were graduated at primary school level and their main occupation was farmer (78.65%). Average duration of working as VHV was 10 years with 21.88 percent of them had work duration < 5 years, more than six-tenth of respondents (66.67%) had family income per month less than 5,000 baht per month.

3 Psycho-social Factors Affected VHVs' Performances

Nearly six-tenth of respondents (59.90%) had moderate knowledge about DHF prevention and control and 60.68 percent of them had high perception towards performances for their activities. Almost one half of VHVs (48.44%) always disseminated the knowledge DHF prevention and control to villagers , and nearly a half of respondents (48.18%) always leaded to do the big cleaning day in their village and more than six-tenth of them (65.10%) always surveyed the mosquito larva in their responsibility area.

4 Sources of Information Affected VHVs' Performances

A great majority of respondents (91.67%) received information about DHF prevention and control from health personnel while 79.17 percent of them got information about DHF prevention and control from television.

5 Social Support Affected VHVs' Performances

Almost of respondents (93.75%) received instruments support from health personnel, while 93.23 percent and 92.45 of VHVs got emotional support from health personnel and VHVs' clubs.

6 The Relationship between VHVs' Performances and Socio-demographic Characteristics.

In order to predict the factors affected the performances of VHVs, Correlation Coefficient and multiple regressions were performed to analyze the data. It was found that, among the socio-demographic characteristics, age and income of VHVs were significantly associated with their performances (p-value<0.05), while other factors were not.

7 The Relationship between VHVs' Performances and Psycho-social Factors.

There was significant associated between knowledge about DHF prevention and control and VHVs' performances (p-value < 0.001). There was significant associated

between perception about DHF prevention and control and VHVs' performances (p-value < 0.001).

8 **The Relationship between VHVs' Performances and Sources of Information.**

There was significant associated between source of information on DHF prevention and control activities and VHVs' performances (p-value < 0.001).

9 **The Relationship between VHVs' Performances and Social Support.**

There was significant associated between social support to perform DHF prevention and control activities and VHVs performances (p-value < 0.001).

6.2 Recommendation.

6.2.1 Recommendation for Implementation.

1. Base on research finding, it was found that, there was significantly associated between VHVs' performance and their knowledge. Therefore, the District Health Office should continue to refresh VHVs regularly in order to improve their knowledge. All VHVs should be trained in communication skill from district health office in order to request or get social support from other people.

2. According to research finding, perception of VHVs also was significantly associated with VHVs' performance. So, to make sure in perception of VHVs, the District Health Office should continue to monitor and evaluate the movement of VHVs regularly. After getting the result of evaluation, District Health Office should apply those data to plan for the next training.

3. More sources of information such as information from neighbors, friends, relative, magazines and radio were associated with VHVs' performance significantly. But the most important of Sources of information was from newspapers. So, to increase the knowledge and perception of VHVs, the MOPH should provide more sources of information especially through newspapers in order to access information easily.

4. The result showed that, majority of VHVs got the support from their family, relatives, VHVs' club, villagers, and health personnel in term of acquaintance, affection, closeness, reliability, trust, respect and praise, giving money, material or assistance, or giving information or suggestion. These lead to their performances gotten high level. Therefore, these social supports must be going on continuously in order to VHVs and community take care their health by themselves effectively. TAO must support VHVs in term of budget to promote them perform health development activities in their community significant increasing.

6.2.2 Recommendation for Further Study.

The finding indicated that some drawbacks such as real observation, in-depth interview or field discussion in group to describe the level of performances, knowledge, perception, source of information as well as social support toward VHVs' performances which could not be covered in this study due to limited time and some restriction, therefore, it was suggested that:

- A similar research with a large sample size and applying techniques with both quantitative and qualitative approaches as mentioned above to overcome the limitation of this study was recommended.

- Studies of VHVs' performance should be included on different area in the future. The VHVs who are working in different district, province or even in different countries especially in Asia countries.

- Focus group interview or in-depth interview could be a good method may provide more qualitative information about their understanding of performance on DHF prevention and control concept and possible factors.

- More independent variables should be added into the conceptual framework in order to find out other factors that are associated with the performance of VHVs.

- Longitudinal study was suggested for further study because it could give more evidence of causal factors.

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APPENDIX

APPENDIX A

QUESTIONNAIRES

PERFORMANCE OF VILLAGE HEALTH VOLUNTEER ON DHF PREVENTION AND CONTORL IN THALI DISTRICT, LOEI PROVINCE, THAILAND

This questionnaire is prepared for collecting data about performance of village health volunteer on DHF prevention and control and use for MPHM course at the ASEAN Institute for Health Development, Mahidol University. Your answers will be confidential and use for research purpose.

Part I. Socio-demographic factors

Instruction: Please put the symbol √ in the appropriate box □ or write down the answer in the space)

1. Age:_____ years old

2. Gender:

□1. Male

□ 2. Female

3. What is your marital status ?

□ 1. Single

□ 2. Married

□ 3. Widow/divorce/separate

□ 4. Others(specify)_____

4. What is your highest education attainment ?

□ 1. Primary school

□ 2. Secondary school

□ 3. Vocational school

□ 4. Others(specify)_____

5. What is your main occupation?

□ 1. Farmer

□ 2. Trader

□ 3. Civil servant

□ 4. Labor

□ 5. Others(specify)_____

6. How long have you been working as a VHV ?_____years

7. What is your total family income per month?_____baht/month

Part II: Knowledge about DHF of VHVs

Instruction: Please put the symbol √ in the appropriate box □ which you think it is correct answer.

8. How many serotypes of dengue virus that cause of DHF?

□ 1. Only one serotype
□ 2. Two serotypes
□ 3. Three serotypes
□ 4. Four serotypes

9. Can DHF reinfect in the same person ?

□ 1. Yes, it can reinfect by same serotype.
□ 2. Yes, it can reinfect by other serotype.
□ 3. Yes, it can reinfect by both same serotype and other.
□ 4. No, it can't

10. Where do vector of DHFs not lay their eggs?

□ 1. Water in disposable containers
□ 2. Water in flower vases
□ 3. Water in storage containers in the houses
□ 4. Water in the rivers

11. What are the typical signs and symptoms of DHF?

□ 1. High fever, chillness, stomachache
□ 2. Low fever, chillness , stomachache
□ 3. High fever, chillness, joint pain, weakness and rash
□ 4. Low fever , chillness, joint pain, weakness and rash

12. How does DHF transmit from one to another person?

□ 1. By male mosquitoes bites
□ 2. By anopheles spp. bites
□ 3. By aedes aegypti bites
□ 4. By Culex spp bites

13. What kind of method should do for DHF patient before referring to health centers or hospitals?

□ 1. Using towel with cool water to reduce temperature of the body
□ 2. Using towel with warm water to reduce temperature of the body
□ 3. Using towel with hot water to reduce temperature of the body
□ 4. Using towel without water to reduce temperature of the body

14. What kind of medicine should DHF patients not take?

□ 1. Paracethamol
□ 2. Aspirin
□ 3. Paradol
□ 4. Vitamin

15. What is the best way to prevent from DHF ?

□ 1. Taking medicine
□ 2. Vaccination
□ 3. Avoiding from mosquito bites
□ 4. Taking vitamin

16. What is the epidemic season of DHF ?

□ 1. Rainy season
□ 2. Summer season
□ 3. Winter season
□ 4. All season

17. Which is best method to reduce the number of the mosquito?

□ 1. By herbal smoke
□ 2. Eliminate and survey mosquito's larva every week
□ 3. Chemical substance spraying
□ 4. Using larval fish

18. What is the most effective measures to control DHF epidemic nowadays?

□ 1. Vaccine injection
□ 2. Mosquito's larva and mosquitoes control
□ 3. Using mosquito nets
□ 4. Take medicine to prevent DHF

19. Which group of people is highest risk to get DHF?

□ 1. 0 - 4 year old
□ 2. 5 – 9 year old
□ 3. 10 – 14 year old
□ 4. More than 14 year old

20. Survey mosquito larva usually doing:

□ 1. Every day
□ 2. Every week
□ 3. Every month
□ 4. Every 3 months

21. What is control measure of DHF regularly which are use all area ?

□ 1. Chemical spraying and health education
□ 2. Chemical spraying and bleeding place control measures
□ 3. Bleeding place control measures
□ 4. Health education and bleeding place control measures

22. How often do the house owners have to clean water containers and other containers that contain water in their households?

□ 1. Every day
□ 2. Every week
□ 3. Every month
□ 4. Every 3 months

Part III. Perception on DHF prevention and control

Instruction: Please put the symbol √ in the column that you agree with, you have 3 choices they are agree, not sure and disagree you can choose only one of them

Statement	Agree	Not sure	Dis agree
23. DHF is not very dangerous disease for human			
24. Children got DHF is difficult to be treated			
25. DHF leads to death to children only			
26. DHF causes death if it is not treated in time and properly.			
27. DHF cost a lot of money to treat it			
28. Children and adult are easier to get DHF			
29. People sleep in mosquito net, they have same chance to get DHF with those do not sleep in mosquito net			
30. Living or staying in the places that have many mosquitoes can easily get DHF infection			
31. Adults also get DHF infection easily if do not protect from biting of mosquito			
32. Watching TV with many mosquitoes in day time people have less chance to get DHF infection			
33. Getting DHF infection is duty for family to take care			
34. DHF can not reinfect in the same person			
35. Getting DHF infection make family member lost times in taking care			
36. Getting DHF infection make him or her can not do his or her job continuously.			
37. Doing DHF prevention and control activities can effect community has a clean environment			

Statement	Agree	Not sure	Dis agree
38. Doing DHF prevention and control activities can not reduce DHF infection rate in community			
39. Doing DHF prevention and control activities can save money from DHF treatment			
40. Doing DHF prevention and control activities can reduce DHF infection rate of the community			
41. Doing DHF prevention and control activities can reduce death rate of the community			
42. DHF infection is a natural phenomenon, there are no way to prevent it			
43. DHF is cause by mosquitoes, it is difficult to prevent and control it			
44. It is difficult to convince villagers to destroy the bleeding place of mosquito larva			
45. Villagers always pay less attention to cooperate DHF prevention and control activities			
46. Sleeping without mosquito nets in night time do not get DHF infection			
47. Children with DHF are not needed to refer to health centers or hospitals			
48. People who has more of DHF knowledge can not protect DHF, if their practices are not suitable			

Part IV. Information factors

Instruction: Please put the symbol √ in the box □ that you agree

49. Have you ever gotten DHF information from health personnel?

□ Yes □ No

50. Have you ever gotten DHF information from neighbors?

□ Yes □ No

51. Have you ever gotten DHF information from friends?

□ Yes □ No

52. Have you ever gotten DHF information from relative?

□ Yes □ No

53. Have you ever gotten DHF information from newspapers?

□ Yes □ No

54. Have you ever gotten DHF information from books or handouts?

□ Yes □ No

55. Have you ever gotten DHF information from magazines?

□ Yes □ No

56. Have you ever gotten DHF information from TVs?

□ Yes □ No

57. Have you ever gotten DHF information from radio?

□ Yes □ No

Part V. Social supporting factors

Instruction: Please put the symbol √ in the box □ that you agree

58. Have you ever gotten any instrument support for DHF prevention from TOA ?

□ Yes □ No

59. Have you ever gotten any financial support for DHF prevention from TOA ?

□ Yes □ No

60. Have you ever gotten any emotional support for DHF prevention from TOA?

□ Yes □ No

61. Have you ever gotten any instrument support for DHF prevention from health center?

□ Yes □ No

62. Have you ever gotten any financial support for DHF prevention from health center?

□ Yes □ No

63. Have you ever gotten any emotional support for DHF prevention from health center?

□ Yes □ No

64. Have you gotten any emotional support for DHF prevention from VHV's club?

□ Yes □ No

65. Have you gotten any labor support for DHF prevention from villagers?

□ Yes □ No

66. Have you gotten any emotional support for DHF prevention from family?

□ Yes □ No

Part VI. Performances of VHVs on DHF prevention and control activities

Instruction: Please put the symbol √ in the box □ that you agree with, you have 3 choices they are always, some times and never, you can choose only one of them.

67. Have you ever disseminated the knowledge about DHF to a villagers?

□ Never □ Sometime □ Always

68. Have you ever discussed with villagers about DHF prevention and control?

□ Never □ Sometime □ Always

69. Have you ever survey the mosquito larva in your responsibility area ?

□ Never □ Sometime □ Always

70. Have you ever destroy the mosquito larva when you have found ?

□ Never □ Sometime □ Always

71. Have you ever joint the mosquito larva control activities like provided chemical substance, chemical spraying.

□ Never □ Sometime □ Always

72. Have you ever campaigned the mosquito net use among the villagers?

□ Never □ Sometime □ Always

73. Have you ever advised villagers to use the mosquito net ?

□ Never □ Sometime □ Always

74. Have you ever leaded to do the big cleaning day in your village?

□ Never □ Sometime □ Always

75. Have you ever done the DHF control activities in your house as the pilot house in the village?

□ Never □ Sometime □ Always

76. Have you ever done the first aid for DHF patient then advise them refer to health centers or hospitals?

□ Never □ Sometime □ Always

77. Have you ever reported DHF data in your village to health personnel?

□ Never □ Sometime □ Always

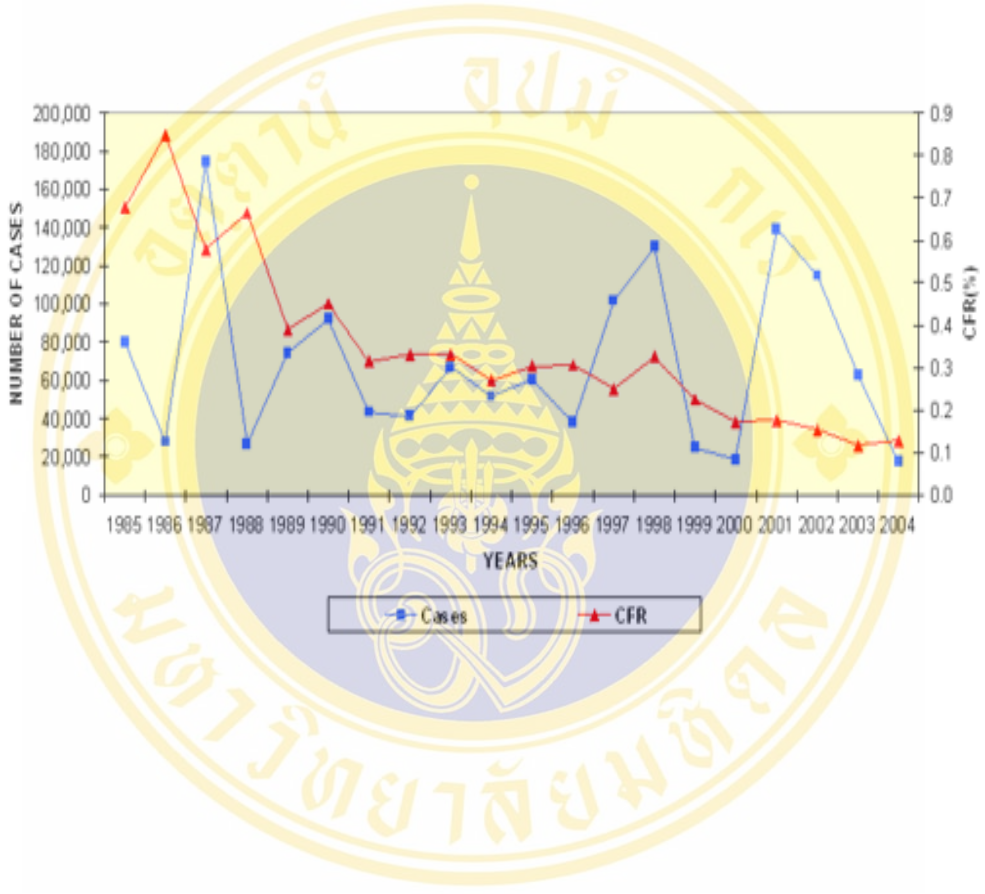
78. Have you ever reported DHF data in your village to TAO?

□ Never □ Sometime □ Always

Thank you for your cooperation

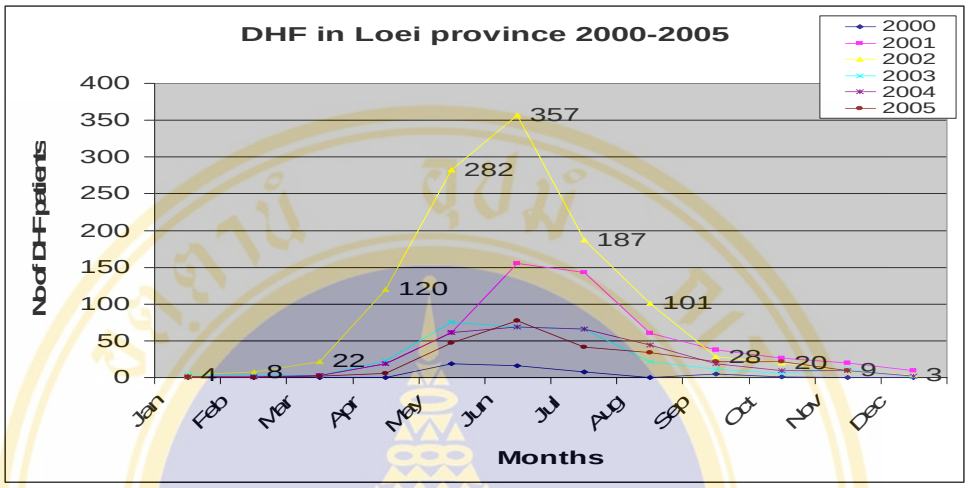
APPENDIX B

Figure 4 : Number of reported cases & case fatality rates of DHF in Thailand (1985-2004)



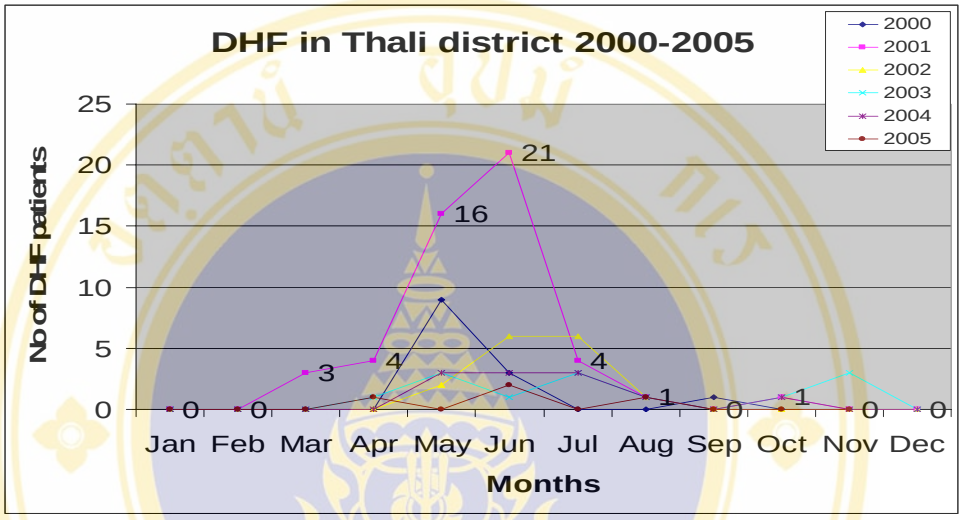
Source: Epidemiology Division Ministry of Public Health (2004)

Figure 5 : Number of reported cases rates of DHF in Loei province Thailand (2000-2005)



Source: Loei province Public Health Office (2005)

Figure 6 : Number of reported cases rates of DHF in Thali district, Loei province Thailand (2000-2005)



Source: Loei province Public Health Office (2005)

BIOGRAHPY

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