CHAPTER I

INTRODUCTION

1. Background and Significance

Dengue is a mosquito-borne infection found in tropical and subtropical regions in more than 100 countries. Two-fifths of the world's population or about 2.5 billion people are now at risk for dengue, and every year approximately 50 million new cases occur worldwide (World Health Organization [WHO], 2002). The global prevalence of dengue infection has increased dramatically in recent decades, particularly in the U.S., Western Pacific, and South-east Asia (Halstead, 1998). Today, in several Asian countries, Dengue Haemorrhagic Fever (DHF) is a leading cause of pediatric hospitalization and death. Population growth, rural-urban migration, inadequacy of basic urban infrastructure and growth of consumerism are responsible for conditions highly favourable for viral transmission by the main mosquito vector, *Aedes aegypti* (WHO, 1997). Since the first dengue epidemic in 1958 in Thailand, there has been an upward trend in the incidence of dengue infections. Periodic outbreaks of dengue have been reported throughout the country, with a large outbreak in 1987 causing more than 1000 deaths (Ministry of Public Health, Division of Epidemiology, 1989) and another in 1998 causing 424 deaths (Ministry of Public Health, Department of Communicable Disease Control, 2000). The epidemic pattern has changed from one of alternate years to an irregular pattern. According to a report on dengue haemorrhagic fever in Thailand from 2001 to 2004, the morbidity rates of dengue

haemorrhagic fever were 224.43, 184.88, 101.36, and 62.04 per 100,000 population, respectively. (MoPH, Division of Epidemiology, 2005).

In Sukhothai Province, morbidity rates from the year 2001 to 2004 were 241.88, 120.38, 55.67 and 16.92 per 100,000 population, respectively (MoPH, Division of Epidemiology, 2005). During 1 January- 25 October 2005, the morbidity rate was 31.32 per 100,000 population (Sukhothai Provincial Health Office, 2005). These data indicate that Sukhothai still has problems of dengue outbreaks. The 9th National Plan of Social and Economic Development aims to reduce the morbidity rate of DHF less than 22 per 100,000 populations or to control and prevent the disease to the level that it is not a health problem for Thai population (National Health Development Plan the 9th National Plan of Social and Economic Development 2002-2006).

In Kongkrailat District, morbidity rates from the year 2001 – 2004 were 435.7, 110.3, 113.5 and 39.1 per 100,000 population, respectively. During 1 January- 25 October 2005, the morbidity rate was 35.8 per 100,000 population. In 2003 and 2004, Kongkrailat had the highest dengue morbidity rate of any district in Sukhothai Province. Also, even in years 2001, 2002 and 2005, its morbidity rate was second-highest or third-highest in the province (Sukhothai Provincial Health Office, 2005). These data indicate that Kongkrailat District has problems of dengue outbreaks (even though Kongkrailat has received the same dengue prevention/control programs as other districts in Sukhothai). Programs for the prevention and control of the disease were introduced in the community, school, temple, and training program for the

health volunteers and even for the health officers. The problem may be due, at least partly, to discontinuous and irregular application of prevention/control activities, or it might be unawareness of the people in the community toward preventive behavior in the aspect of elimination of *Aedes* mosquito, the larvae of mosquito and breeding places.

A possible determinant of decrease in dengue illness rate could be increased awareness of the disease, which might be brought about by dengue prevention programmes. In 1999 a large prevention and control programme for dengue, to celebrate His Majesty the King's 72 (sixth cycle) birthday, was introduced in Thailand. In this project people were informed through education, posters, cassettes, videos and television advertisements. The aim was to increase people's knowledge of the disease and as a consequence to change their risk behavior. Although knowledge often increases through prevention programmes, it is well known that changing risk behavior is difficult. There is no dengue vaccine available to date, so the focus must be on prevention/control activities. Community participation has resulted in various degrees of success in disease prevention. It seems difficult to motivate people for continuous participation in larval control activities (Yongyut Wangroongsarb, 1997).

The Eighth Public Health Development Plan encourages more participation from the community to take care of themselves and their families. The plan requires 85% of all villages to train at least one member in the family to understand and be able to provide basic treatment to their family members. These skilled people are called "Family Health Leaders" (FHLs) (Ministry of Public Health, 1999). The Ninth

Public Health Development Plan identifies 5 main strategies. The first strategy is to strengthen the community and emphasize human development at the grassroots of society. It requires a program to develop the capacity of the leaders for change to the health system from the people's side. At the family level, the Family Health Leader is a part of the health care team, which has capacity of take care of themselves and their families. This would then result in efficient health care in the community level (Ministry of Public Health, 2000).

The reason for choosing Family Health Leaders (FHLs) in this study is that they have been trained by health officer and public health volunteers in the fundamental knowledge, such as knowledge of public health prevention and knowledge of health care for persons and family members. The training would yield good results for individual, family and community health care as a whole because it is believed that the Family Health Leader could bring about health behavioral changes of neighbors in the community (Phensri Pliankham, 2000). The training leads to develop their capacity in terms of knowledge and skills in providing health care services for themselves and family members. They are recognized as local resources that can make contributions to community development, especially in terms of public health. They have the responsibility: to be a major leader of family who takes care of family members' health, to be a good example of good health care to family members, and to represent the family in participating in problem solving and public health development at the community level. Thus, ensuring that FHLs engage in effective dengue prevention behavior should help to ensure that the community as a whole will also engage in effective behavior.

This study uses the term "dengue infection" as a viral infection caused by *Aedes aegypti.* (and sometimes *Aedes albopictus.),* which can be asymptomatic or subclinical, or can lead to symptoms such as sudden onset of high fever, severe headache (mostly in the forehead), pain behind the eyes which worsens with eye movement, body aches and joint pains, nausea or vomiting, severe and continuous pain in abdomen, bleeding from the nose mouth and gums or skin bruising, frequent vomiting with or without blood, black stools like coal tar, pale, cold skin, liver enlargement, haemorrhage, plasma leakage, and shock in some cases. For this study, dengue infection includes dengue fever (DF), dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS). The term "dengue infection" has very similar meaning to the Thai disease name "kai leuat auk."

Due to the reasons given above, in this study I examined the preventive behaviors against dengue infection among Family Health Leaders, as one part of the overall efforts to reduce the relatively high rates of dengue in Kongkrailat. The study uses PRECEDE PROCEED Model as the analysis framework to find out the factors that associate to the preventive behaviors against dengue infection among Family Health Leaders because this model can be analyze and cover all aspects of the behavior suitable to the problem in this area.

2. Research Questions

1. What are the preventive behaviors against dengue infection of Family Health Leaders?

2. What are the factors associated with dengue infection's preventive behaviors of Family Health Leaders?

3. Objectives of the study

3.1 General objective

To characterize preventive behaviors against dengue infection and related factors of Family Health Leaders.

3.2 Specific objectives

1. To describe preventive behaviors against dengue infection of Family Health Leaders.

2. To analyze the association between the independent variables of socio-demographic characteristics of Family Health Leaders, knowledge about dengue infection, attitude towards dengue infection, subjects' judgments about sufficiency of resources for prevention of dengue infection, social support from government in the prevention of dengue infection, and the dependent variables of preventive behaviors against dengue infection of Family Health Leaders.

4. Hypotheses of the study

4.1 Sociodemographic/predisposing factors (gender, age, marital status, educational level, occupation, household income, knowledge about dengue infection, attitude towards dengue infection) are associated with the preventive behaviors against dengue infection.

4.2 Enabling factors (resources for the prevention of dengue infection) are associated with the preventive behaviors against dengue infection.

4.3 Reinforcing factors (frequency of receiving dengue-related information, number of information sources) are associated with preventive behaviors against dengue infection.

5. Limitations of study

This study was conducted in the dry season (March 2006), so Family Health Leaders might pay less attention on the prevention on dengue infection than during the rainy season. The data were obtained through interviews, employing trained interviewers and standardized, pilot tested questionnaires.

6. Expected Outcome and Benefits

1. The results of the study can be used as guidelines for health workers in the training and promotion of Family Health Leader's preventive behaviors against dengue infection. This should promote better, more effective preventive behaviors, with fewer occurrences of dengue infection.

2. The results of this study can be used as guidelines in the formulation of administrative policies on health professional education, leading to improved knowledge and understanding concerning factors related to Family Health Leader's preventive behaviors against dengue infection.

3. The results can be used as guidelines in planning for more effective solutions to health problems concerning dengue infection that are appropriate and consistent with the actual situation.

4. To the best of my knowledge, dengue preventive behaviors have not previously been assessed in Sukhothai Province, or in Family Health Leaders anywhere in Thailand. Thus, the proposed study should provide a basis for comparing preventive behaviors in Sukhothai to behaviors in other provinces, and behaviors in Family Health Leaders to behaviors in other groups.

7. Variables in this study

Independent variables

1. Sociodemographic/predisposing factors

    1.1 Gender

    1.2 Age

    1.3 Marital status

    1.4 Educational level

    1.5 Occupation

    1.6 Household income

    1.7 Family size

    1.8 Dengue history

    1.9 Knowledge about dengue infection

    1.10 Attitude towards dengue infection

2. Enabling factors

    2.1 Resources for the prevention on dengue infection such as mosquito net, covered water jars, covered water containers, abate sand and other resources in community.

3. Reinforcing factors

3.1 Frequency of receiving information

3.2 Number of sources of information

Dependent variables

Preventive behaviors against dengue infection

Prevention and elimination of breeding places

Avoid getting bitten by the mosquito

Participation in community-level preventive activities

8. Operational definitions

Family Health Leader (FHL): person who provides health care and guidance in the household. He/She is selected from members in their families, health volunteers, Public health officers to attend training to acquire knowledge about self health care. The training was conducted in 1997-2002, following the Ministry of Public Health's policy in the family health leaders development project.

Knowledge about dengue infection: the knowledge that the Family Health Leader gained through education and experiences about the cause, transmission, clinical manifestation of disease, and prevention of dengue infection.

Attitude towards dengue infection: the feelings of the Family Health Leader with regard to preventive behaviors against dengue infection such as tight container covers, larvivorous fish, removal of discarded containers, sleeping in the mosquito net, or window/door screens.

Preventive behaviors against dengue infection: the actions intended to prevent or reduce the occurrence of dengue infection consisting of searching out habitats of larvae of *Aedes aegypti*, elimination of breeding sites, elimination of larvae of *Aedes aegypti*, avoiding mosquito bite, and participating in community-level preventive activities.

Resource for the prevention of dengue infection: methods that are utilized for preventing dengue infection, comprising mosquito nets, covers for water containers and abate sand put in water containers. The availability of sufficient of resources for the prevention on dengue infection, means there is an adequate number of mosquito nets, covers for water containers and abate sand to put in water containers.

Access to information about dengue infection: the frequency that Family Health Leader get information about dengue infection from persons such as health personnel and village health volunteers, and from mass media such as television, radio, and newspapers.

9. Conceptual framework

This study is intended to identify the associations between predisposing, enabling, and reinforcing factors and preventive behaviors on dengue infection among the Family Health Leaders. This organization of independent variables draws from the widely used PRECEDE-PROCEED Model (Green & Kreuter, 1999) as shown in Figure 1.

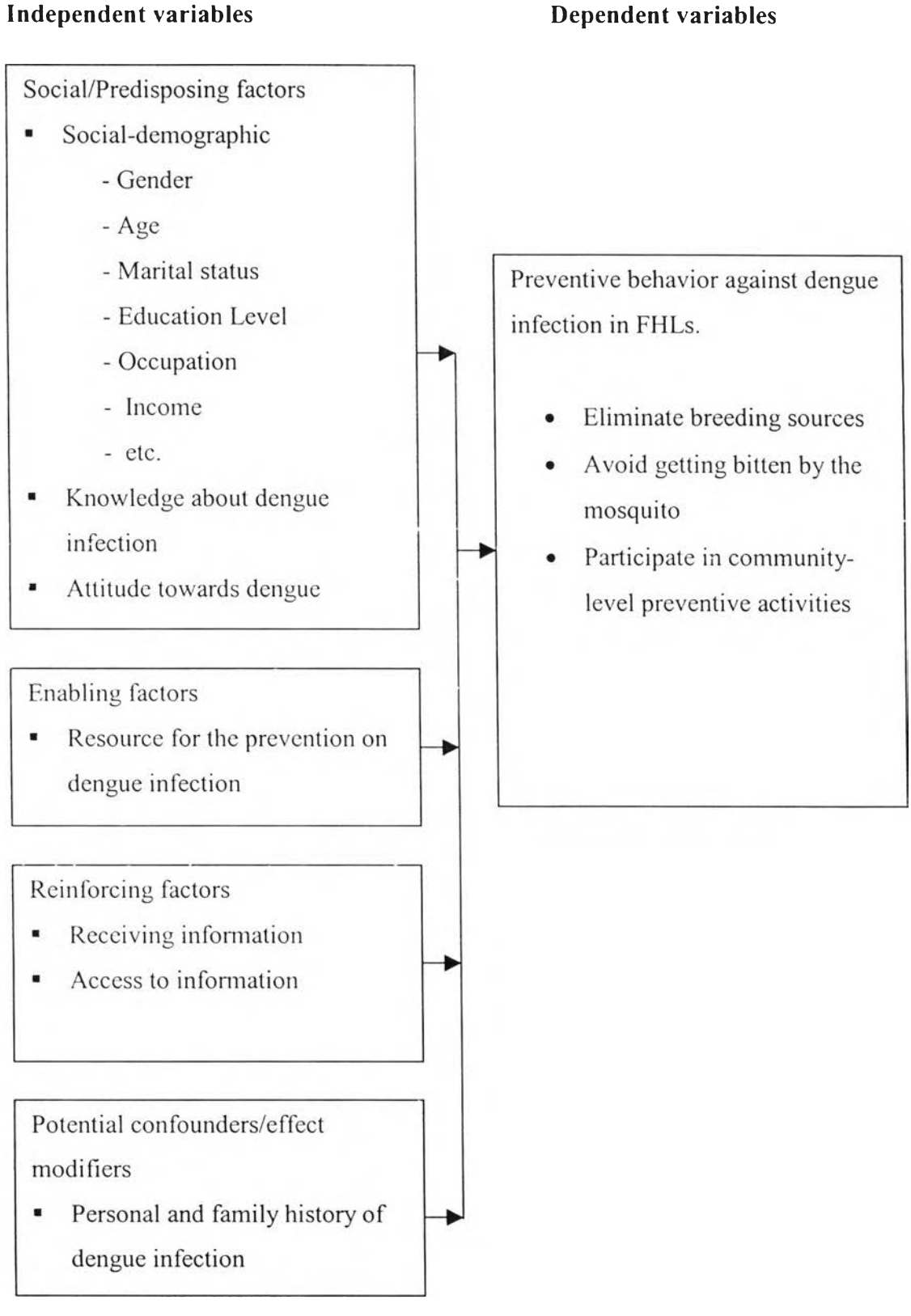

Figure 1 Conceptual framework