

**DIFFERENTIAL UTILIZATION OF HEALTH CARE SERVICES  
AMONG ETHNIC GROUPS  
ON THE THAILAND-MYANMAR BORDER:  
A CASE STUDY OF KANCHANABURI PROVINCE, THAILAND**

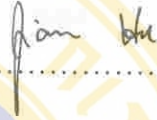



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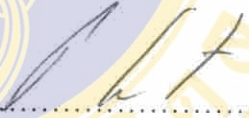
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DIFFERENTIAL UTILIZATION OF HEALTH CARE SERVICES AMONG  
ETHNIC GROUPS ON THE THAILAND-MYANMAR BORDER: A CASE  
STUDY OF KANCHANABURI PROVINCE, THAILAND

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**ABSTRACT**

This cross-sectional study utilizes the 2000-2004 panel data of the Kanchanaburi Demographic Surveillance System to explore patterns of health care utilization among ethnic groups, and to investigate the extent to which differences in reported use of health care results from different underlying characteristics of each ethnic group on the Thailand-Myanmar border. A total of 57.7 percent of ethnic Thai, 42.9 percent of the native-born ethnic minority populations, and 27.5 percent of the foreign-born minority populations reported that they had received medical treatment from health service providers in June 2000 when they were ill. The foreign-born minority and native-born minority were significantly less likely to have received treatment than Thais after controlling for type of self-reported illness. However, the ethnic gap in utilization of health care disappeared when the characteristics of each ethnic group were the same, in terms of age, type of self-reported illness, health insurance, religion, receiving health information from a health officer, availability of a Tambon health center and bus route in a village, and type of village. Age and type of self-reported illness were also not significantly different among ethnic groups. The results suggest that utilization of health care services was not equal among ethnic groups in the border areas. Health insurance system, reducing cultural barriers, communication between patients and health service providers, and community resources for health care can mitigate the effect of ethnicity on health care utilization.

**KEY WORDS:** ETHNIC GROUP/UTILIZATION OF HEALTH CARE

77 pp.

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# CHAPTER I

## INTRODUCTION

### 1.1 Rationale and justification

Research on health care utilization and underlying factors associated to health care services among ethnic minorities has been a major focus of health services research in the world (Agency for Healthcare Research and Quality & U.S. Department of Health and Human Services, 2005; Smedley, Smith, & Nelson, 2003; Mayberry, Mili, & Ofili, 2002; Atkinson, Clark, & Clay, 2001). It is also one of the emerging issues in developing countries (ESCAP Secretariat, 2005). Studies of non-economic influences (e.g. social class, education, linguistic and cultural competence) on utilization of health care services emerge among ethnic minorities (Kasper, 2000), because the existence of discrimination in the health care system is one key reason for researchers to focus studies in utilization of health care among ethnic minorities (Williams & Collins, 1995). In Thailand, the concern with inequity of utilization of health care services is growing (Ministry of Public Health, 2005). In particular, ethnic minority populations may have poorer health care utilization than Thais on the Thailand-Myanmar border region because of several barriers.

First, the lack of health insurance coverage limits utilization of health care services by members of ethnic minorities. Some members of ethnic minorities do not receive the Thai Government subsidized health insurance cards as they do not have Thai citizenship (Isarabhakdi, 2004).

Second, geographic and fiscal barriers to use of health care exist for ethnic minorities. Ethnic minorities often live far from roads and health centers. It is not convenient for them to use of health services. One study reported that ethnic minority villages were less likely to have their own medical professionals and basic medical supplies, and have a smaller number of health workers compared to Thai villages. The quality of health care in ethnic minority villages was below the national average (Asian Development Bank, 2000).

Third, different religious and language barriers prevent ethnic minorities from using health care services. A study shows that some Karen and Mon minorities believe in spirits in their daily lives. They think that spirits can cause some diseases, and they like both natural and spiritual healing. In addition, inability to speak Thai causes them problems of utilization of local health services (Isarabhakdi, 2004).

Finally, ethnic minorities are in a disadvantaged socioeconomic status. They are mostly involved in subsistence agriculture, and are much poorer than Thais. For example, in 1998 more than 46 percent of the hill-tribe population received welfare services (Asian Development Bank, 2001). Some minority people are too poor to afford travel costs for access to health services near their village. For poor minority members, indirect financial cost and the opportunity cost (patient's time for foregone wages) affect their decision about utilization of health care.

Identifying and addressing differences in utilization of health care services among ethnic groups is important. Less utilization of health care services for ethnic minorities than for Thais results in social inequity issues because utilization of health care services among ethnic groups reflects equity in society (Aday, 2000).

In addition, health care utilization among the foreign-born minorities reflects human rights issues and political concerns as Myanmar immigrants are identified as displaced persons, refugees from threats of war, migrant workers (illegal migrants), and students or intellectuals according to the Royal Thai Government policy (Registration Administration Bureau, 1999). They need the basic right to utilize Thai health care resources.

Moreover, a lower level in utilization of health care services is associated with worse health outcomes for ethnic minorities than for Thais. For example, in 1997 diarrhea, respiratory infection, tuberculosis, and HIV were major concerns in the highlands where most ethnic minorities live (Asian Development Bank, 2001). Another study reports that infant, child and maternal mortality rates are much higher in the highland regions than in other regions in Thailand (Institute for Population and Social Research & Thai Health Promotion Foundation, 2005).

However, reports on ethnic minority's utilization of health care along the border are scarce. Previous studies in Thailand are mainly descriptive studies

which do not identify the underlying factors that affect the utilization of health care services among ethnic minorities, because they do not control for relevant factors (e.g. potential different needs for health care or different health status). These descriptive studies do not measure the impacts of health insurance, linguistic competence, and geographic and fiscal barriers on utilization of health care services among ethnic groups. No studies classify ethnic minorities as foreign-born minorities and native-born minorities for analysis in the border region to disentangle the effects of ethnicity and immigration status.

It is difficult for policy-makers to target the barriers and tackle the significant policy problems without a clear picture of what is currently known about ethnic differences in utilization of health care on the border region. Therefore, it is necessary to study differential utilization of health care services among ethnic groups on the border. The data relevant to utilization of health care services were collected in 2000, just prior to the UC scheme and health insurance program for foreign workers in Thailand. This study provided the base-line information for evaluation of the UC scheme, and evidence for policy-makers and health-care providers to offer more appropriate health services for ethnic minority in the border areas as well. It will be helpful for researchers and policy-makers who are interested in closing the ethnic gap in utilization of health services.

## **1.2. Research questions and objectives**

### **1.2.1 Research questions**

Are there any differences in utilization of health care services among ethnic groups (Thai, native-born minority, and foreign-born minority) on the Thailand-Myanmar border?

If yes, to what extent do differentials in utilization of health care services result from differences in characteristics of the different ethnic group?

### **1.2.2 Research objectives**

To explore patterns of utilization of health care services among ethnic

groups.

To investigate the extent to which differences in reported health care use results from different underlying characteristics of each ethnic group on the Thailand-Myanmar border



## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Background

To better understand the situation of utilization of health care among ethnic minorities in the Thailand-Myanmar border areas, the study reviews the concept of ethnicity, ethnic minorities in Thailand with special reference to Kanchanaburi, health services in Thailand, health insurance schemes for Thai people, and health insurance and work permit registration for foreign workers.

##### 2.1.1 Concept of ethnicity

Ethnicity refers to a national, racial or tribal group, and the sharing of a distinctive cultural tradition (Hornby, 1994). Ethnicity often functions as a proxy for socioeconomic status (LaVeist, 1994; Schulman, et al., 1995; Williams, 1994) and functions in culture as well, which refers to attitudes, beliefs, and preferences of ethnic minorities.

##### 2.1.2 Ethnic minorities in Thailand with special reference to Kanchanaburi

Thai population is believed to be homogenous consisting of several ethnic groups who, despite their distinctive cultural characteristics, share many important features. Examples of such groups include people who speak their own dialects in different regions of the country and those with Chinese and Malay origins. Yet, because they share many similarities, these groups form the “mainstream” Thai population; they are not referred to as ethnic minorities. The term “ethnic minority” in Thailand is used largely to refer to minority populations who are not only small in number but are socially and economically “marginal” and live largely in remote or peripheral areas.

Ethnic minorities in Thailand may be broadly divided into two major groups, namely, those who live in the highland and those who live in the lowland. The

highland groups, commonly referred to as “hill tribes”; include Karen, Hmong, Mien, Akha, Lahu, Lisu, Mien, Lua, Htin, Khamu, and Mlabri. Those in the lowland, on the other hand, include Lue, Mon, Myanmar, Tai Yai, Khmer, Kui, and other small groups. Statistics on number and proportion of lowland minority are not available. But for the highland minorities, a recent survey by the Department of Social and Welfare Development, Ministry of Social Development and Human Security, gives the number of 1,203,149 people, which is about 2 percent of total Thai population around 2002 (Department of Social and Welfare Development, 2002). Most of these minorities live in the peripheral areas of 20 provinces, nearly all of which are located along the Thailand-Myanmar border from the North down to the lower part of the Central region. Kanchanaburi is one among these provinces.

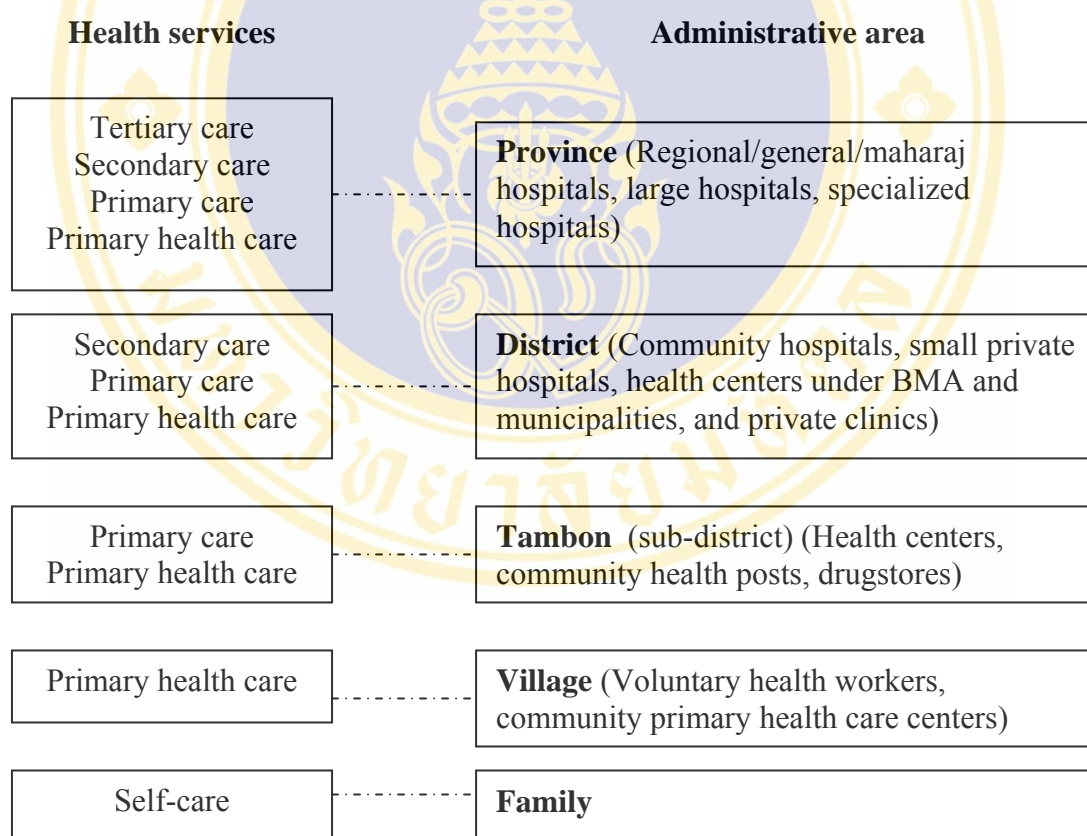
Kanchanaburi province is located in the western part of Thailand, about 120 kms from Bangkok, sharing a long border in the west with Myanmar. In 2006 it has the total population of 757,461 people. Topographically, Kanchanaburi consists of both lowland and upland with two major rivers, Kwaie Yai and Kwaie Noi. The upland population consists of about 85,000 people; slightly more than half of these people (46,000 people) are actually lowland Thais who have moved and settled in the upland for decades. The rest are ethnic minorities which include Mon, Karen, Mien, Myanmar, and other small groups. If the lowland Thais who settled in the upland are excluded, the minority population consists almost entirely of only two largest ethnic groups, Karen (about 80 percent) and Mon (17 percent), who have moved in from Myanmar for different durations of time (Institute for Population and Social Research, 2006).

In addition, it is believed that there are a number of undocumented Myanmar workers who moved in recently, but because of their illegal status it is not possible to have an accurate number of these people. Some studies have estimated it to be as many as 90,000 people in Kanchanaburi alone (Archavanitkul, Jarusomboon, & Warangrat, 1997). This, however, seems to be over-estimated. These minorities have their own culture, speak their own language and usually share their traditions with other ethnic minorities who were born and grew up in Thailand. Thus, the minorities in Kanchanaburi province, which is the site of the present research, consist

of those who were born and grew up in Thailand (native-born minority) and those who were born abroad and moved into Kanchanaburi later (foreign-born minority).

### 2.1.3 Health services in Thailand

Figure 2.1 shows the five levels of health services in Thailand. Tertiary care, secondary care and primary care refer to professional care. Since 2002, under the universal coverage of health care scheme, 6,899 Primary Care Unit (PCUs) provide basic or primary care to the Thai population (Ministry of Public Health, 2005). In villages, village voluntary health workers and community primary health care centers provide primary health care.



**Figure 2.1 Level of health services in Thailand**

Source: Ministry of Public Health (2005: Figure 6.33)

#### **2.1.4 Health insurance schemes for Thai people**

Health insurance plays an important role in protecting people from unpredictable events. It reduces people's economic burden when they seek health services, especially for the disadvantaged ethnic minority. Before 2001, five major schemes of health insurance were available in Thailand: the medical services for civil servants and state enterprise employees, the social security and worker compensation fund, the medical welfare for the poor, the voluntary health insurance, and other private health insurance programs. With initiation of the universal coverage plan (UC -- commonly known as the "30 baht for all diseases scheme") in 2001, the government voluntary health insurance stopped providing its service since it was merged into the UC scheme where a Thai citizen only pays for a small amount of 30 Baht for health services at each visit. Since November 2, 2006, UC card holders can access health care services without paying 30 Baht. This is the main kind of health insurance schemes for Thai citizens today.

Table 2.1 shows the major health insurance schemes and the changes in health insurance coverage from 1991 to 2004 in Thailand. 71.0 percent of Thai population benefited from the health insurance schemes in 2001. The UC scheme began on a pilot scale in six provinces in April 2001, and then expanded to another 15 provinces in June 2001, finally to all provinces in January 2002. The UC scheme is financed by general tax revenue, and managed by the National Health Security Office (NHSO) under the Ministry of Public Health, which compensates health service providers before the services are actually provided. The amount of funds depended on the number of individuals who were registered with a particular health service provider. Beneficiaries of the UC scheme are those who were not currently covered by either of the other two existing schemes such as the Civil Servants Medical Benefits Scheme (CCSMBS) and the Social Security Scheme (SSS). As a result, 47.7 million Thai citizens or 74.7% of all 63.8 million people nationwide were covered by the universal healthcare scheme in 2003, leaving only 3.2 million people or 5.1% of total population without any health insurance coverage. In 2004, the coverage of health insurance increased to 94.3 percent with 5.7 percent of the uninsured population (Ministry of Public Health, 2005).

**Table 2. 1 Percentage of Thai people with health security, 1991 to 2001**

Health insurance scheme	Before the launch of the UC healthcare scheme			After the launch of the UC healthcare scheme	
	1991	1996	2001	2003	2004
1. Universal coverage healthcare			0.9	74.7	73.5
-Gold card with Tor	-	-	-		30.6
(not paying 30 baht/visit)					
-Gold card without Tor (paying 30 baht/visit)	-	-	0.9		42.9
2. Medical welfare for the poor	12.7	12.6	31.5	-	-
3. Medical services for civil servants and state enterprise employees			8.5	8.9	9.4
- Civil servants	13.2	10.2	7.5		
- State enterprise employees	2.1	1.2	1.0		
4. Social security and worker compensation fund	-	5.6	7.2	9.6	10.7
5. Voluntary health insurance	4.5	16.1	22.1	1.7	0.8
- MoPH health insurance	1.4	15.3	20.8	-	-
- Private health insurance	3.1	0.8	1.3	1.7	0.8
6. Others	0.9	1.0	0.8	-	-
People with health insurance	33.5	45.5	71.0	94.9	94.3
People without health insurance	66.5	54.5	29.0	5.1	5.7

Source: Ministry of Public Health (2005: Table 6.69).

Table 2.2 shows that the percentage of no insurance decreased in municipal and non-municipal areas from 1991 to 2004. Rural residents benefited more from the UC healthcare scheme than urban residents, while urban residents had more shares in social security scheme and civil servants medical benefit scheme.

**Table 2. 2 Percentage of people with health insurance by Municipal and Non-municipal area from 1991 to 2004**

Health insurance coverage	1991		1996		2001		2003		2004	
	M	N	M	N	M	N	M	N	M	N
-No insurance	65	68	58	52	42	22	9	3	10.1	3.5
-civil servants and state enterprise employees	22	6	17	7	16	9	15	6	15.3	6.5
-Universal coverage healthcare	-	-	-	-	-	-	56	84	54.6	82.8
-Social security	-	-	11	3	13	4	18	6	18.2	7.0
-Medical welfare for the poor	7	21	5	16	15	39	-	-	-	-
-Health card	1	2	6	20	10	27	-	-	-	-
-Private health insurance	5	1	2	1	3	1	3	1	1.8	0.3
-Others	1	1	1	1	1	1	-	-	-	-

“M” refers to Municipal area; “N” refers to Non-municipal area.

Source: Ministry of Public Health (2005: Table 6.70).

Table 2.3 presents the benefits and payments of different schemes in Thailand after 2001. Fee-for-service payment usually results in unequal charges for services from different providers and is the most favoured one for the providers, because providers can do any treatment regardless of expenses. However, capitation payment compensates providers before the services are actually rendered. The compensation according to capitation payment is used to control expenses and to increase the efficiency of the service and the management on one hand. On the other hand, the scheme is financially risky for providers because the final compensation might not cover the real expenses for hospitalization and treatment. In order to reduce the financial risk, providers might exclude some people from registration, who are expected to cause high costs. Thus, the Universal Health Coverage Scheme forced all providers to register the population in their vicinity regardless of their health status, gender and age, and calculate the capitation rate by per head of registered people.

**Table 2.3 Comparison of the health insurance systems in Thailand after 2001**

Items	Thirty Baht scheme	Civil servant insurance	Social insurance	Private insurance
-Beneficiaries	Card holder	Civil servant with family members (less than 3 children)	Insured person with spouse (only in case of delivery)	Insured person
-OPD services	Governmental- and private providers (in case of emergency any institution can be approached within the first 72 hours)	Governmental and private providers (in case of emergency private hospitals can be approached)	Governmental and private providers (in case of emergency any institution can be approached within the first 72 hours)	Governmental and private providers
-IPD services	Governmental- and private providers (in case of emergency any institution can be approached within the first 72 hours)	Governmental hospital (in case of emergency private hospitals can be approached)	Governmental- and private providers (in case of emergency any institution can be approached within the first 72 hours)	Governmental and private providers
-Service Coverage	Prevention, health promotion, and curative	Prevention, health promotion, and curative	Curative, and monetary assistance	Depending on the regulations of the insurance companies
-Annual health check-up	According to regulations of the 30 Baht scheme	Depending on regulations and age of insured person	Not offered	According to necessity
-Responsible organization	Health insurance office	Ministry of Finance	Social insurance office	Private insurance companies
-Expenses per person per year	1,202 Baht	2,106 Baht	1,558 Baht	According to premium schemes
-Type of payment	Capitation	Fee for services	Capitation	Fee for services

Source: Eamtrakul (2005: Table 7).

### **2.1.5 Health insurance and work permit registration for foreign workers**

Members of many ethnic minorities especially hill tribes do not benefit from this government-subsidized health insurance program because they do not have Thai citizenship. In 2000 the Ministry of Interior estimated that about 500,000 persons of hill tribe minorities did not have Thai citizenship (Huguet & Punpuing, 2005). A survey reported that 58 percent of highland villages were not recognized officially during the period from 1985 to 1988 (Aguettant, 1996:58). Non-registered villages are not qualified for government services such as schools, roads and health facilities. Similarly, undocumented foreign workers cannot receive health insurance, although they can purchase health insurance when they register for work permits with the Ministry of Labor. As of 2000 the costs of health insurance per person included 700 Baht for health examination and the 1,000 Baht for health insurance fee of 12 months (Martin, 2004:19). Since 2001, foreign workers with registered identification cards can have the same access to health services as Thai nationals under the foreign worker health insurance program; that is, they only pay 30 Baht per visit with the designated health service providers.

The Ministry of Labor started work permit registration for foreign workers including undocumented workers in 1992, and gradually expanded the number of provinces, working sectors, employers and workers. For example, the registration increased from 106,684 registered foreign workers in 37 provinces and 18 sectors in 2000 to 568,000 workers in all provinces and sectors in 2001 (Martin, 2004:19). On July 1<sup>st</sup>, 2004, the Ministry of Interior opened registration for all international migrants including undocumented migrants from Myanmar, Cambodia and the Lao People's Democratic Republic at no cost. A total of 1,284,920 migrants registered with the Ministry of Interior during July 2004, among whom the 1.0 million migrants were eligible for work permits. Before applying for a work permit, migrants have to take a medical examination and pay for health insurance fee. By December 2004, 817,254 migrants had received health insurance coverage, and 814,247 foreign workers obtained work permits from the Ministry of Labor prior to mid-December (Huguet & Punpuing, 2005:37-38).

In the registration process, employers are the key actors. The Royal Thai Government only allows employers to register foreign workers. The employers normally pay the fees and then deduct them from the workers' wages. They often retain their workers' work permits. Registered workers cannot move to other employers.

## **2.2 Theoretical activities**

This part reviews theoretical activities concerning concepts and theories of research in equity of utilization of health care, and barriers to utilization of health care services by ethnic minorities at patient level and at the health care system level. New directions and perspectives of research on equitable utilization of health care by ethnic minorities are presented.

### **2.2.1 Concepts and theories of differential utilization of health care**

Health care refers to preventive, curative, promotive and rehabilitation medical services. Utilization of health care refers to the ability of people to have use of certain health-care intervention to prevent or reduce the risk of disease, and the ability of people to obtain health services when they are ill. In developed countries, utilization of health care is considered as right of citizenship (Kasper, 2000). WHO defines equity in health as “reducing unfair and avoidable disparities in health outcomes between groups, and ensuring access to equitable health care on the basis of need (WHO, 1996: 1)”. Equity in health care means that all individuals should have an equal opportunity to utilize the health care resources according to her or his needs. It is classified as horizontal equity and vertical equity.

Horizontal equity refers to equal access or treatment for equal need. In other words, similar needs of health care should be met in equal ways. The basic principle of horizontal equity involves the equal distribution of health services to the population regardless of economical or political factors. In the U.K. and Canada, horizontal equity in health care is advocated in the health care system. In the U.K., the National Health Service established in 1948 promotes “equal treatment for equal

need” (Smaje & LeGrand, 1997). This means that the health system provides coverage to all, which allows patients free access to community practitioners. In Canada, the Health Act in 1984 stated that national systems of health care should “protect, promote and restore” the health of citizens by providing “access to health services without financial or other barriers” (Aday, 2000).

Vertical equity refers to providing different health services for different patients for their different needs. Patients could choose different services according to ability to pay for the services and their own health needs. In the U.S.A., vertical equity in health care is encouraged in the health care system. In order to provide basic health care services to the American people, the U.S.A. Government has built many programs. For example, under the Medicare program, those aged 65 and over can have universal physician and hospital care (American Association of Retired Persons, 1995).

Most research on differential utilization of health care are qualitative studies. Whether utilization of health care is equal or not can be studied empirically by comparing differences of ethnic groups in the use of health care controlling for potential differences in health status or health needs. If different ethnic groups with the same health status or needs for health care can have the same opportunity to use health care services, we can say that different ethnic groups have equal treatment for equal need.

Table 2.4 shows three primary philosophical traditions of the theoretical foundations of researches on equity in health care, namely, communitarians, deliberative democracy and liberalism, which illuminate the correlation and indicators of equity in health care in the levels of community, institution or individual (Aday, et al., 1998).

The communitarianism (or egalitarianism) insists on norms for the common good, social solidarity to protect the public welfare. In other words, communitarianism gives everybody equal rights and chances to receive health care in an equal way, regardless of a person’s socioeconomic status. It concerns the underlying social, economic and environmental underpinnings of inequity. Normally, the social justice model is applied in public health. The essential question of justice is “what is good for us”. For example, Aday’s (1993) model is grounded in the social

justice paradigm, and target groups are vulnerable populations (at higher risk of poor physical, social or economic). The components of the model are environment, health risks and community health. The unit of analysis is the community (Aday, 1993). Horizontal equity is based on the theory of communitarianism.

Deliberative democracy promotes the participation of affected stakeholders, enhances the dialogue between affected stakeholders, and addresses the conflicts (health providers, patients, regulators, insurers and taxpayers). An example is Habermas’s discourse conceptual framework for analyzing the form and quality of communication and participation from the micro level (e.g. patient-physician relationship) to the macro level (e.g. design of consumer-oriented health care programs and services, neighborhood or communitywide needs assessment and broader social change-oriented movements) (Habermas, 1995, 1996).

Liberalism advocates norms of personal well-being and individual freedom. In other words, it states that individuals should have access to a minimum of health care and those who have capability to pay can get a better service than those who do not (Pannarunothai, 2000: 95-96). The policy is to protect or assure individual rights with a distributive justice paradigm, which is usually applied to medical care. The question of equity is “what can I justly claim”. Vertical equity is based on liberalism theory. Aday and Andersen (1981) proposed the basic model for understanding of equity in access to health care.

**Table 2. 4 Contrasting paradigms of justice**

Focus	Individuals	Institutions	Community
Theory	Liberalism	Deliberative Democracy	Communitarianism
	Person well-being	Public governance	Common good
	Individual freedom	Popular sovereignty	Social solidarity
Policies	Minimalist state	Responsive state	Responsive state
	Individual rights	Civic participation	Public welfare
Paradigms	Distributive justice	Deliberative justice	Social justice
	Why can I justly claim?	Who decides and how?	What’s good for us?

Source: Aday, et al., (1998: Table 6.1)

Figure 2.2 shows Aday and Andersen's (1981) behavioral model for health care services use. A health care service is a market, in which health delivery systems supply health care services to a population at risk (patients) according to their demands. Health policy regulates the health care services market. On one hand, health policy influences the characteristics of health delivery systems by determining the budget allocated to the system, planning procedures, manpower development through educational measures and training, and the organization of the system. On the other hand, health policy adjusts the demand of health care services among the population at risk.

The characteristics of the health delivery system govern the quantity and the distribution of resources to the system and involve the performance of the health personnel to meet the satisfaction of the consumer.

The characteristics of the population at risk involve predisposing factors, enabling factors and need factors.

Predisposing factors describe the tendency of individuals to use the health service, which are related to demographic variables, social structures, and health beliefs. *Demographic variables* refer to age, gender, marital status, and family size; *Social structures* refer to education, occupation, nationality (ethnicity), religion; *Health beliefs* refer to general or disease specific beliefs and attitudes about the value of health services and/or knowledge of disease.

Enabling factors refer to the ability of patients to make use of the services and reflect the influence of resources on health care use. Enabling factors include family resources and community resources. *Family resources* refer to income, place of residence, and health insurance or social welfare schemes. *Community resources* refer to availability of health facilities and personnel.

Need factors refer to the need for health care of patients and are classified as perceived need and evaluated need. *Perceived need* stands for a self-evaluation of health such as overall health, symptoms, and functional difficulty. *Evaluated need* refers to a professional judgement concerning health status and need for care such as diagnosis.

The satisfaction of the consumer is classified as follows: (1). *Satisfaction on convenience* includes the time a patient has to spend before seeing the

doctor or other health personnel; the availability of services when needed and the easiness to receive care. (2). *Satisfaction on co-ordination* means that a patient is satisfied with health service's responses to the overall health needs and management of the referral system. (3). *Satisfaction on the courtesy at the place of service* refers to friendliness, having the feeling that good care is taken, and sufficient attention is paid to the patient. (4). *Satisfaction with the quality of health services* refers to the quality of medicine, professionalism of the medical doctor or other health personnel and the treatment schemes. (5). *Satisfaction on the information* refers to the information given concerning a patient's illness, diagnosis and health. (6). *Satisfaction on the price for health services* refers to reasonable price paid by the patients.

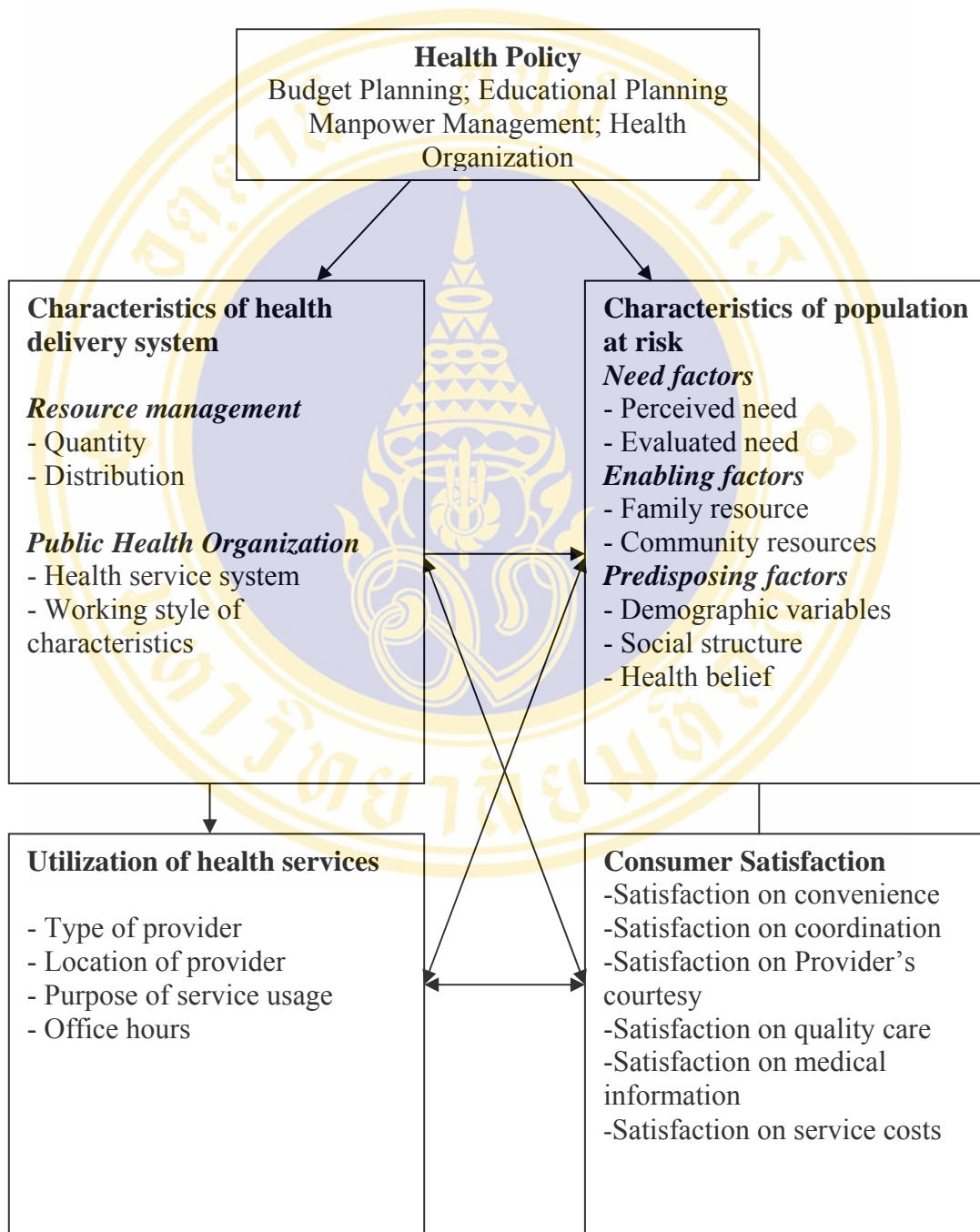
Utilization of health services includes type of provider, location of provider, purpose of service usage, and servicing time period.

The utilization of health services and the satisfaction of consumers measure equity of access as objective and subjective indicators of the actual process to care-seeking.

Aday and Andersen's (1981) model is grounded in the distributive justice paradigm and tries to deal with the fairness of the health-care system for the patients. It is one of most widely used models in studying equity of utilization of medical care. The individual is the unit of analysis. This model has some advantages, such as suitability for population-based data (Andersen, 1995:1), and with need-based criterion (Aday & Andersen, 1981; Aday, 1993). The research concerns whether or not, or how much care is provided (made available) and how potential or actual consumers are satisfied with the health-care system. In addition, it considers barriers to health care with the health care system on one hand, and barriers to health care with individuals and their social environment on the other hand, such as poverty and socioeconomic status (income, education and social class), culture among ethnic minorities.

In short, Aday and Andersen's (1981) model as shown in Figure 2 below is a systematic approach for analyzing the behavior and determinants of utilization of health care. It provides a template to measure the extent of disparities in utilization of health care among ethnic groups, in terms of socioeconomic status and poverty, and cultural and linguistic barriers at the patient level, and of resource

management and public health organization at the health care system level. Two components of this model such as characteristics of population at risk and utilization of health services will be used in this study.



**Figure 2.2 Model of using health care services**

Source: Aday & Andersen (1981: 25)

### 2.2.2 Barriers of utilization of health care by ethnic minorities

In general, ethnicity has an independent effect on health care use (Mayberry, Mili, & Ofili, 2002), though the strongest determinants are health insurance and poverty, stage or severity of disease, morbidity, type and availability of health care services.

Many different factors potentially influence differential utilization of health care by ethnic minority groups. It is difficult to disentangle these to form a comprehensive social and health policy. For illustrative purposes, barriers could be demonstrated at two levels: the patient level, and the health care system level. The interaction between minority patients and health providers raises differences in utilization of health care as well.

**Barriers at patient level:** *Socioeconomic status and poverty.* Extensive literature describes the socioeconomic status and poverty effect on utilization of health care by indicators of income and/or education, or social class (Stephanie & James, 2000). In developed countries, the relationship between income and primary care of ethnic minorities is weak, because of introduction of Medicare and Medicaid insurance scheme among the poor in the United States (Badgley, 1991), universal coverage and public financing of care for all in the U.K. and Canada. But studies show that there are differences by social class in the use of preventive services such as immunization, breast cancer screening in the U.K., even though universal coverage has reduced socioeconomic differences in many types of utilization (Benzeval, Judge, & Smaje, 1995).

*Cultural and linguistic barriers.* Culture dimensions include religion, gender and differential expressions of symptoms and family accompanies during access to care (Atkinson, Clark, & Clay, 2001). Various dimensions of culture have effects on utilization of health care by ethnic minorities, especially in immigration group, because of their particular health beliefs, attitudes and behaviors to specific diseases and different types of health care (U.S. Department of Health and Human Services, Office of Public Health Services, & Office of Minority Health, 2001).

In addition, studies show that poor linguistic competence is one of major barriers to health care for ethnic minorities, because communication with health providers, information and knowledge of disease and perceived need to care influence

entry to care and the willingness to pay among minority patients. For example, a survey in London showed among the surveyed London adults, only 14 percent of Bengalis, 29 percent of Gujaratis, 26 percent of Punjabis, 41 percent of Chinese and 32 percent of refugees reported to have survival English. These minorities often faced problems in accessing health care because they could not communicate with health providers well in English (Carr-Hill, Passingham, & Wolf, 1996). In another example, a mammography study of the United States among Hispanic women, cultural adaptation or acculturation and inability to speak English exert an effect on the Hispanic women (Stein, Fox, & Maturata, 1991).

Low literacy is also an important factor among elderly minority people who cannot read leaflets even in their own minority language. Among elderly Bangladeshi and Pakistani people in the U.K, over half of women and 20 percent of men were illiterate in any language (Rudat, 1994).

**Barriers at the health care system level:** *Geographical and fiscal barriers.* Geographical residence differences may impact availability of health care services. Studies in the U.S.A. indicated a significant regional and rural/urban difference in access to care before 1963. The Chinese have consistently lower utilization level than the White people due to their residential patterns (Kasper, 2000). But now the residence difference is not so evident in access to care by ethnic minorities. The reasons may be partly due to the reduction of rural-urban difference, and wide utilization of primary care in inner cities and rural areas, which has been provided by community health centers in the U.S.A. (Blumenthal, Mort, & Edwards, 1995).

*Insurance coverage.* Studies demonstrate the deleterious effect on access to care among the uninsured. The monitoring of the size and scope of the uninsured remains a central issue in many health care systems. In addition, studies continue to assess the effect of access to care on public health or health outcome among the insured and the uninsured (Davis, 1997).

*Barriers within health care system.* There are two types of study related to access to care: the process of care and quality of care. In the study of the process of care, the results indicated that access to primary care could reduce hospitalization rates (Pappas, et al., 1997). In the study of quality of care, the findings

indicate that the ability to obtain the needed and appropriated care among ethnic minorities affects their access to care. In other words, availability of drugs, health beliefs, condition of health facilities and opening hours have a great effect on realized access and continuity to care.

### 2.2.3 New directions and perspectives of research

Many studies in the U.S.A., the U.K, and Canada document that ethnic minorities continue to have poorer access to quality health care services, such as in physician use, prenatal care (LaVeist, Keith, & Gutierrez, 1995), mental health care (Wells, et al., 1987), nursing home use (Mui & Burnette, 1994), interventions for coronary artery disease (Ford & Cooper, 1995), HIV treatment (Heslin, et al., 2005), and emergency room use (White-Means, 1995) than non-minorities. Research on equitable access to health care by ethnic minorities is one of the top priorities for health care services research in these developed countries. The existence of discrimination in the health care system is one key reason for researchers to focus studies in access to health care by ethnic minorities (Williams & Collins, 1995). Studies of non-economic influences on access to care among ethnic minorities reemerge such as social class, education, linguistic and culture competence (Kasper, 2000).

Based on different paradigms of justice, three perspectives are considered for holistic research: patient, community-participation and population health-oriented perspectives of research.

**Patient perspective:** The health care market includes demand for care of patients, supply of care of providers, and market regulation and policy intervention. Previous studies emphasized variations among providers in delivering services and ignored the patients' role.

Ethnic minorities usually have low economic and education status, and are isolated from major society in terms of economy and information. This makes them disadvantaged in access to care, even though they have universal coverage of health care. In addition, ethnic minorities have their own traditional culture and practice. Their disease-specific health beliefs, attitudes, and preferences may differ from those of ethnic majorities.

Researchers need to add psychosocial factors into the traditional behavioral model to disentangle the effects of ethnicity from socioeconomic status and other factors. For example, a health belief model could be incorporated into Aday and Andersen's behavior model for health service use to measure unmet need for care and some psychosocial factors.

In addition, more intragroup comparison study and more assessment of promising intervention strategies and researches on ethnical issues should be conducted (Smedley, Smith, & Nelson, 2003).

**Community-participation perspective:** The interaction between minority patients and health service providers affects the differences in utilization of health care. The World Health Organization has encouraged the activities of the Healthy Cities and Healthy Communities to promote the health of community residents. In the U.S.A., the U.K., and Canada, participation and dialogue among affected parties are central components of the design of social and health programs (Robertson & Minkler, 1994). For studies of equity in access to care in institution level, Arnstein's (1969) ladders of citizen participation (Arnstein, 1969) or Charles and DeMaio's (1993) framework (Charles & DeMaio, 1993) could be used.

In addition, in order to develop cultural and linguistic competence in health care organizations, particularly in clinic areas where access is poor, medical staff should be trained bilingually or biculturally; more minority medical staff should be recruited; and more appropriate health information should be provided to ethnic minority groups through mass media in the local ethnic minority language. Translation services should be strengthened and visual representation references to minority groups and culture should be prepared in posters and other materials as well.

**Population health-oriented perspective:** The disparities in health between ethnic groups persist and are widening (Aday, 1993; National Center for Health Statistics, 1997). Vulnerable population such as immigrants, refugees, and ethnic minorities have the greatest health need because of their low social status, low social capital (weak or fractured social and family tie), and low human capital (the schools, jobs, income, housing and neighborhoods) (Aday, 2000).

Therefore, broad health services including prevention-oriented, long-term community-based and acute medical care services should be developed to

address the health and health needs of the most vulnerable (Aday, 1993). World Health Organization Year 2000 Objective provides guidance for identifying and tracking the subgroups disparities in health (WHO Regional Office for South-East Asia, 2000). The population-oriented health care perspective can be used to extend the managed care markets into the communities targeting on disadvantaged populations.

### **2.3 Conceptual framework**

Utilization of health services is generally influenced by a complex interaction of a number of factors. Aday and Andersen (1974, 1981) proposed a behavioral model as shown in Figure 2.2. This model views utilization of health service as an outcome of the interplay of characteristics of the individual at risk and his or her satisfaction, on one hand, and the characteristics of health delivery system which includes resource management and public health organization, on the other. All of these are influenced by the existing health policy which acts as a general regulator.

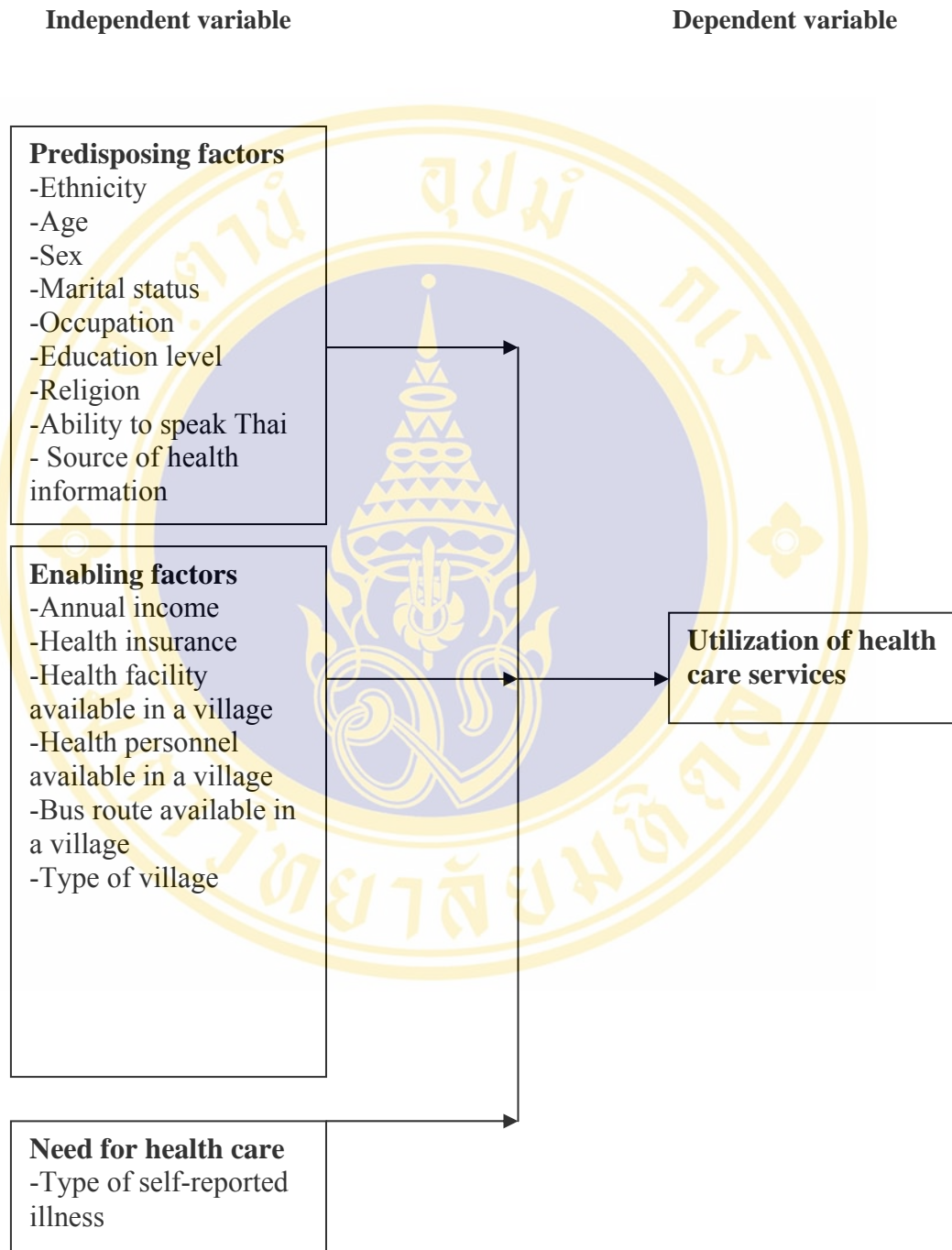
Figure 2.3 shows conceptual framework of this study, which draws upon Aday and Andersen's model with some modification. It regards the use of health care service as a result of three sets of independent factors: (1) Predisposing factors which include age, sex, marital status, occupation, education, ethnicity, religion, language and source of health information; (2) Enabling factors which include income, health insurance, availability of health facilities, health personnel, and transportation network, and type of village; and (3) Need for health care which indicates health status or health needs of individuals.

The satisfaction of consumer and utilization of health services are two important indicators for measurement of differences in using health care services. The data set only provided the information of self-reported health services use (received treatment from public health service providers) in June 2000/June 2004 when ill, and lacked of the information of perception of clients on health services. Thus, this study cannot measure the satisfaction of consumer on health services. The measurement of utilization of health services is self-reported utilization of health services, which is an objective indicator of actual process of care-seeking, and provides some insights of differences in utilization of health care.

In predisposing factors, general or specific disease beliefs and attitudes about health services and/or knowledge of disease among ethnic groups may influence the behavior of care-seeking. The study cannot determine effects of health beliefs on utilization of health care services among ethnic groups because there is no information of health beliefs of each ethnic group in the data. However, receiving health information sources and ability to speak Thai variables are introduced to examine the linguistic competence of ethnic minority patients with health service providers.

In enabling factors, availability of health facilities, personnel, and bus routes linking the village to outside in villages, and the type of village measure community resources for health services; annual income and health insurance measure the family resources for health services.

In need factors, type of self-reported illness indicates perceived need for health care in this study, because there is no information about diagnosed disease for evaluated need.



**Figure 2.3 Conceptual framework**

## 2.4 Research hypothesis

This study is to test a hypothesis that there is a difference in utilization of health care services among the ethnic groups (Thai, native-born and foreign-born minorities). Such difference, however, can be reduced if the barriers of health insurance, language, communication, and community resources for health care are removed.

The justifications are as follows: Firstly, native-born minority and foreign-born minority had less access to health insurance than Thais, which prevented ethnic minorities from using health care. Second, ethnic minority particularly foreign-born minority had cultural and language barriers to utilization of health services. The barriers restricted them to utilize health services. Finally, native-born minority and foreign-born minority had a disadvantage status in community resources for health care. Thus, native-born and foreign-born minority had poorer utilization of health services than Thais in the Thailand-Myanmar border region in 2000 when ill. And when these barriers are removed, the ethnic gap in utilization of health care will be reduced.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.1 Research setting**

Kanchanaburi is the third largest province in Thailand, covering an area of about 19,000 square kilometers. It is an important producer of plantation crops and one of the major tourist destinations in Thailand. The provincial area is mountainous, and consists of 897 villages and 107 census blocks (Institute for Population and Social Research, 2001:8).

Kanchanaburi is located in the western part of Thailand, about 130 Kilometers from Bangkok, and shares a long land border with Myanmar. Many ethnic groups and Myanmar migrants (both documented and undocumented) live in the province. For example, nearly 40 percent of households in the uplands spoke languages other than Thai in daily life, including 20.2 percent of Karen/Karang/Pa Ka Yaw; 9.6 percent of Mon; 5.8 percent of Burmese, 2.2 percent of Lao and 1.0 percent of other ethnic minorities (Chumpaklai, 2004a: 57). Educational attainment and economic activity of Kanchanaburi were lower in the uplands than in the other strata, such as urban/semi-urban, rice cultivation, plantation, and mixed economy areas. For example, among the female population aged 15 and over in 2002, those not working accounted for about 31 percent in the uplands and only nearly 22 percent in the mixed economy stratum. The percentage with no schooling was just over 41 percent in the uplands and nearly 18 percent in the mixed economy stratum among the female population aged 7 and over (Chumpaklai, 2004b: 51-55).

#### **3.2 Kanchanaburi Demographic Surveillance System**

The Kanchanaburi Demographic Surveillance System (KDSS) was a research project in Kanchanaburi province and had been undertaken by the Institute for Population and Social Research, Mahidol University since July 2000 with support

from the Wellcome Trust Foundation of United Kingdom. Its major objective was to document the population change in the study areas in relation to social, economic and environment changes including the effects of government and non-government projects. It covered a study area of 100 villages/census blocks. These were selected by stratified systematic cluster sampling technique applied to 1,004 villages/census blocks of five strata: urban/semi-urban areas, rice cultivation areas, plantation areas, upland areas and mixed economy areas. Twenty villages/census blocks were sampled in each stratum. Three sets of instruments were used to collect data from village, household, and individual. Individuals aged 15 and over in each household were interviewed. The data were collected in a census of the field site population each year (Institute for Population and Social Research, 2001).

Table 3.1 shows that there was useful and meaningful information related to health care in 2000, 2002 and 2004. In 2000, the information about utilization of health care and relevant factors could help researchers to explore the extent of differences in utilization of health care and barriers of utilization of health care among ethnic groups. In 2002, the data set gave information about ability to speak Thai among ethnic groups. In 2004, the KDSS offered information about religion and ethnic group which was defined by nationality and the country of birth place.

**Table 3. 1 Available information related to utilization of health care in KDSS, 2000-2004**

Variable	2000	2001	2002	2003	2004
-Utilization of health care in the past month of survey	Yes	No	No	No	Yes
-Ethnic group <sup>a</sup>	Yes	Yes	Yes	Yes	Yes
-Religion	No	No	No	No	Yes
-Ability to speak Thai	No	No	Yes	No	No
-Main language used in the household	Yes	Yes	Yes	Yes	Yes
-Source of health information	Yes	No	No	No	No
-Health insurance	Yes	No	Yes	Yes	Yes
-Type of health insurance	Yes	No	No	No	No
-Availability of a health facility in a village	Yes	No	No	No	No
-Availability of health personnel in a village	Yes	No	No	No	No

**Table 3.1 Available information related to utilization of health care in KDSS, 2000-2004 (Cont.)**

Variable	2000	2001	2002	2003	2004
- Availability of a bus route in a village	Yes	No	No	No	No
-Type of village	Yes	No	No	No	No
-Self-reported illness in the past month of survey	Yes	No	No	No	Yes
-Type of self-reported illness in the past month	Yes	No	No	No	Yes
-Using 30-baht scheme	No	No	Yes	Yes	Yes
-Satisfaction of customer on 30-baht scheme	No	No	No	Yes	Yes
-Utilization of health care before year of survey	Yes	No	No	No	No
-Utilization of health care in the last three months of survey	No	Yes	No	No	No
-Utilization of health care in the last three months of survey	No	No	No	No	Yes

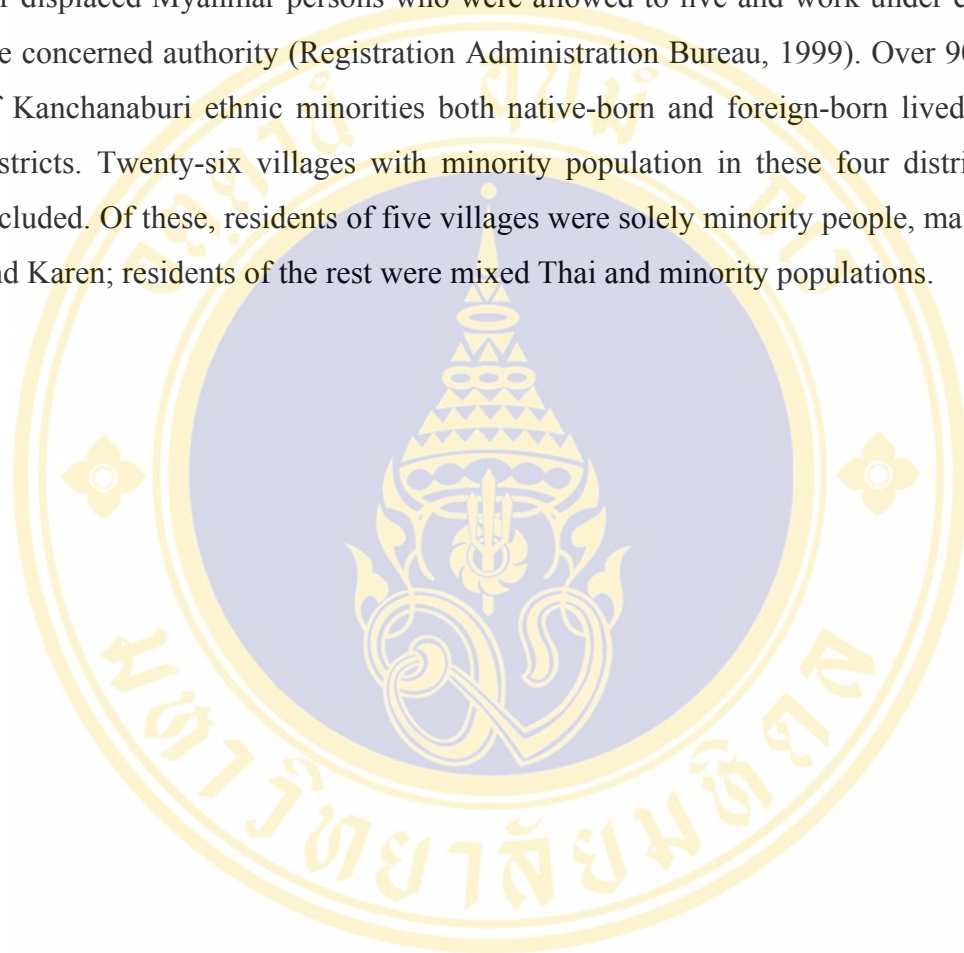
<sup>a</sup> In 2000 household data set, regular language use in the household defined ethnic group such as Thai ethnicity and ethnic minority. In 2001-2004 individual data set, nationality and the country of the birthplace defined ethnic group as Thai ethnicity, native-born minority and foreign-born minority.

### 3.3 Data source

The data for this study were drawn from the 2000-2004 panel data sets of the KDSS. In the 2000 and 2004 individual data files, the information included demographic and socioeconomic factors, utilization of health care, health insurance, and type of self-reported illness in 2000/2004. In addition, in the 2000 individual data file, source of health information was found. The information on availability of health personnel, facilities, bus routes linking the village to outside in villages and the type of village was available in the 2000 village data file. The information on ability to speak Thai came from the 2002 individual file, while the information about ethnicity and religion from the 2004 individual file. Based on individual and village ID in the data sets, the data from these sources were merged to make a single analytical file.

### 3.4 Study area

The study area for this analysis was four districts (amphoe) in Kanchanaburi province, namely, Sai Yoke, Tong Pha Phum, Sangkhla Buri and Sisawat as shown in Figure 3.1. These four districts were the restricted areas allocated for displaced Myanmar persons who were allowed to live and work under control of the concerned authority (Registration Administration Bureau, 1999). Over 90 percent of Kanchanaburi ethnic minorities both native-born and foreign-born lived in these districts. Twenty-six villages with minority population in these four districts were included. Of these, residents of five villages were solely minority people, mainly Mon and Karen; residents of the rest were mixed Thai and minority populations.



The map of Kanchanaburi province



Figure 3.1 The map of the study area

### 3.5 Size of study population

In total, 8,234 male and female aged 15 and over were interviewed in the study area in 2000. After merging the data files for 2000, 2002 and 2004, 4,080 respondents were included in this study. The total retention rate from 2000 to 2004 was 49.6%. In other words, 4,080 male and female aged 15 and over were followed from 2000 to 2004 in the study as shown in Table 3.2. Some respondents could not be followed from 2000 to 2004, because of out migration or because they could not be located or reached for some reasons. The eligible study population for utilization of health care were respondents who had reported illness in June 2000 or June 2004 (one month before the survey in July 2000 or July 2004), for example 1,713 in 2000 and 744 in 2004.

**Table 3.2 Size of study population by ethnic group**

Characteristics	Thai	Native-born minority	Foreign-born minority	Total
Sample followed from 2000 to 2004	3012	447	621	4080
Utilization of health care in 2000	1271	198	244	1713
Utilization of health care in 2004	573	71	100	744

### 3.6 Selectivity test

Table 3.3 shows that proportions of the samples which were included in the study (the study sample) and excluded from the study (the non-study sample). The study sample shows some characteristics of permanent residents. For example, it had a higher proportion of female, married family, the poor, workers in agriculture sector, reporting functional disorders and health insurance, and a lower proportion of the youth, and no schooling and secondary education than the non-study sample. This suggests that some foreign-born minorities may be excluded from the study sample, because foreign-born minorities have higher migration rate and lower health insurance coverage than Thais and native-born minorities.

However, there were no significant differences in utilization of health care between the study sample and the non-study sample. This suggests that respondents from both samples had similar patterns of utilization of health care, which was the dependent variable of this study. Thus, the study sample did not have an obvious selection bias from total sample for the study in utilization of health care.

**Table 3. 3 Percentage distribution of selected variables in the study sample and the non-study sample in 2000**

Variable	Study sample	Non-study sample	Total	Number of cases	$X^2$
<b>Sex</b>					30.9**
-Female	59.3	50.0	54.6	1876	
-Male	40.7	50.0	45.4	1559	
<b>Age</b>					282.3**
-15-24	8.3	27.6	18.0	619	
-25-59	77.9	61.0	69.4	2385	
->=60	13.8	11.4	12.5	431	
<b>Marital status</b>					131.7**
-Not married	15.1	31.8	23.5	806	
-Married	84.9	68.2	76.5	2629	
<b>Education level</b>					76.1**
-No schooling	30.6	34.1	32.3	1112	
-Primary school	44.7	31.0	37.8	1299	
-Secondary school and above	24.7	34.9	29.8	1024	
<b>Occupation</b>					32.1**
-Agriculture	57.1	47.4	52.3	1795	
-Non-agriculture	22.3	25.8	24.0	826	
-No paid job	20.6	26.8	23.7	814	
<b>Annual income</b>					116.4**
-No income	60.3	43.8	52.1	1788	
-=<18,999	15.7	29.0	22.4	769	
->=19,999	24.0	27.1	25.6	878	
<b>Type of self-reported illness</b>					16.40**
-Non-communicable disease	49.7	53.1	51.4	1767	
-Communicable disease	8.6	11.3	10.0	343	
-Functional disorders	41.6	35.6	38.6	1325	
<b>Health insurance</b>					52.31**
-No	44.5	56.8	50.7	1767	
-Yes	55.5	43.2	49.3	1695	
<b>Utilization of health care</b>					3.15
-No	48.3	51.3	49.8	1713	
-Yes	51.7	48.7	50.2	1722	
<b>Total</b>	100.0	100.0	100.0		
<b>Number of cases</b>	1713	1722		3435	

Pearson Chi-Square: \* $P < 0.05$ , \*\* $P < 0.01$

### 3.7 Measurement

**Table 3. 4 Operational definitions and measurements of variables**

Variable Name	Description	Measurement
<b>Dependent variable</b>		
1. Utilization of health care services	<p>(1). Respondents received medical treatment from health service providers when they were sick in June 2000/June 2004</p> <p>(2). Health service provider referred to all levels of government and private sources of health services where patients' medical expenses may be covered by health insurance. It included a government hospital, health center, clinic, malaria unit, VD/AIDS clinic, private hospital.</p> <p>(3). Self-treatment referred to using traditional medicine or drugs from drug stores to treat illness without seeking services of health personnel. Patients with self-treatment cannot benefit from health insurance.</p>	<p>Nominal</p> <p>-Yes (received treatment from health service providers)</p> <p>-No (self-treatment or no treatment)</p>

**Table 3. 4 Operational definitions and measurements of variables (cont.)**

<b>Variable Name</b>	<b>Description</b>	<b>Measurements</b>
<b>Independent variables</b>		
<i>Predisposing factors</i>		
2. Ethnicity	<p>(1). Nationality in the question of the 2004 individual questionnaire defined ethnic group as Thai and ethnic minority;</p> <p>(2). The country of the birth place classified ethnic minority further into native-born minority and foreign-born minority</p> <p>(3). Ethnic minorities in this study included ethnic Chinese, Mon, Burmese/Twai, Karen, Khmer, Thai Yai, Yao, Karang, Nepalese, Yuan or Vietnamese. Of the 244 respondents of the foreign-born minority, 243 respondents came from Myanmar, and 1 respondent was from Lao PDR.</p>	<p>Nominal</p> <p>-Thai</p> <p>-Native-born minority</p> <p>-Foreign-born minority</p>
3. Ability to speak Thai	Able to speak Thai language	<p>Nominal</p> <p>-Yes</p> <p>-No</p>
4. Religion	Faith or belief system Non-Buddhism referred to Christianity, Islamism and Hinduism.	<p>Nominal</p> <p>-Buddhism</p> <p>-Non-Buddhism</p>
5. Age	The age of the respondent in completed years in 2000/2004	<p>Nominal</p> <p>-15-24</p> <p>-25-59</p> <p>-&gt;=60</p>
6. Sex	The sex of the respondent, such as male and female	<p>Nominal</p> <p>-Male</p> <p>-Female</p>

**Table 3. 4 Operational definitions and measurements of variables (cont.)**

<b>Variable Name</b>	<b>Description</b>	<b>Measurements</b>
7. Marital Status	The respondent's marital status at that time when answered the questionnaire in 2000/2004	Nominal -Married -Not married
8. Occupation	(1). The respondent's major employment was classified by agriculture, non-agriculture and no paid job in 2000/2004.  (2). Non-agriculture referred to work in industry/handicraft, construction, public facilities/sanitation, transportation, communication, and services.  (3). No paid job referred to no job or housewife working at home without pay.	Nominal -Agriculture -Non-agriculture -No paid job
9. Education level	The respondent's highest educational level in 2000/2004	Nominal -No schooling -Primary school -Secondary school and above
10. Source of health information	The persons or places from which people received health knowledge or information, such as neighbors, radio, television, posters, newspapers and health officers	Nominal -Yes -No
<b><i>Enabling factors</i></b>		
11. Annual income	The individual annual income including all income from all jobs in 2000/2004	Ordinal -No income -<=18,999 ->=19,000 (Mean: 19,000)

**Table 3. 4 Operational definitions and measurements of variables (cont.)**

<b>Variable Name</b>	<b>Description</b>	<b>Measurements</b>
12. Availability of health facilities in villages	- Tambon health centers - Primary health care centers - Drug fund/drug banks	Nominal -Yes -No
13. Health insurance	Health insurance referred to whether people had health insurance in 2000. Such insurance includes voluntary government health insurance (a health card), or private health insurance, government health insurance provided to government and state enterprise worker, and health insurance card for foreign workers.  UC card or 30 Baht card was proxy as health insurance in 2004.	Nominal -Yes -No
14. Availability of health personnel in a village	Either any of following personnel available in a village: -Malaria volunteers, -Village health volunteers -Trained midwives -Untrained midwives -Traditional medical practitioners	Nominal -Yes -No
15. Availability of a bus route in a village	A public bus route linking the village to outside available in a village	Nominal -Yes -No
16. Type of village	Type of village was defined by the question “What language do most people in this village normally speak in daily life” in 2000 village file.	Nominal -Thai village -Minority village

**Table 3. 4 Operational definitions and measurements of variables (cont.)**

Variable Name	Description	Measurements
<i>Need for health care</i>		
17. Type of self-reported illness	Illness had similarly worded questions for the survey in 2000 and 2004.  Type of self-reported illness in 2000/2004 included illness from non-communicable disease (such as common cold, diabetes, and heart disease), communicable disease (such as malaria, dengue fever and tuberculosis), and functional disorders (such as headache, back/waist pain, and muscle/bone pain) reported by the respondents.	Nominal -Non-communicable disease -Communicable disease -Functional disorders

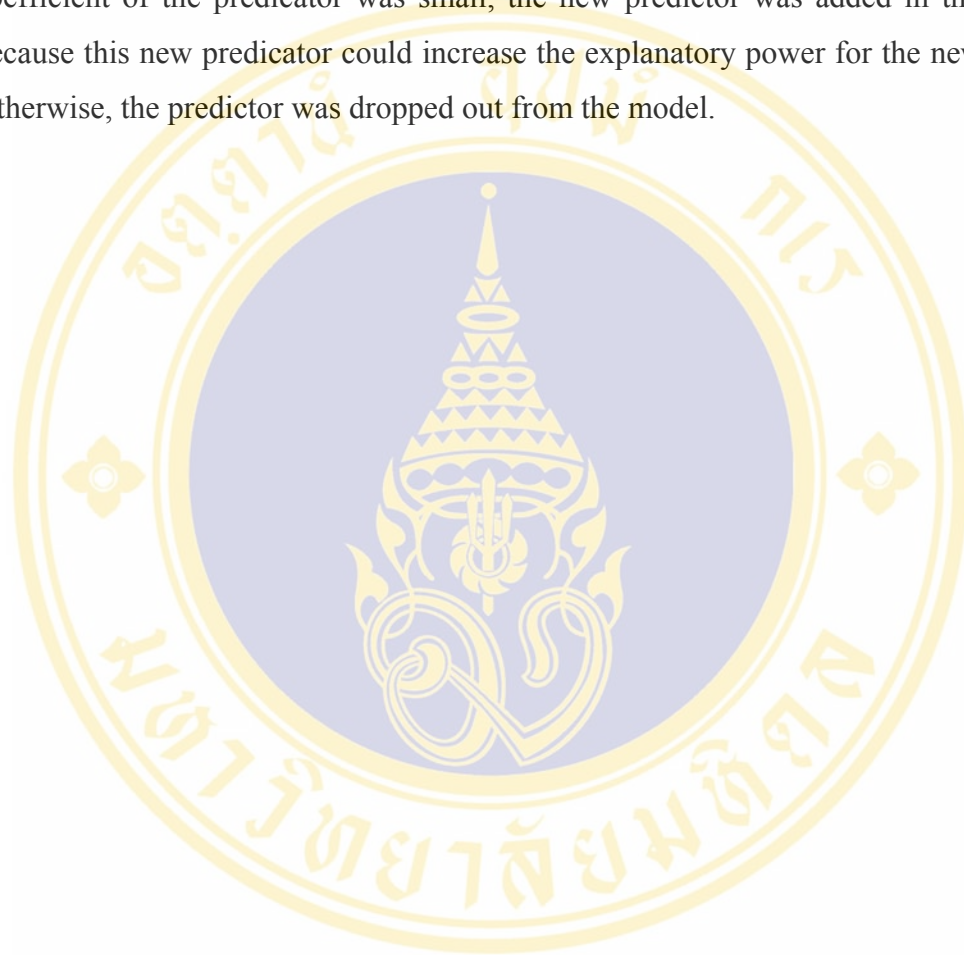
### 3.8 Data analysis

Univariate, bivariate and multivariate analysis were conducted to examine patterns of utilization of health care services among ethnic groups, and the effects of relevant characteristics of each ethnic group on utilization of health care.

Multivariate analysis was logistic regression for non-linear probability model. The equation of logistic regression for year 2000 was as follow:  $\text{logit } Y_{2000} = a + bX_{2000}$ . (logit  $Y_{2000}$  refers log odds ratio,  $Y_{2000}$  refers to odd ratio of utilization of health care services in 2000;  $X_{2000}$  refers to predictors in 2000;  $a$  is a constant;  $b$  is a coefficient).

Model building was through Restricted Maximum Likelihood method (P value at the 0.05 level, right tail) (Agrestic & Finlay, 1997). For example, Log-likelihood ratios test formula:  $LR=2(Lu-Lr)$ . Where: LR--log likelihood ratio; Lu--the log likelihood function of the larger model (unrestricted model); Lr--the log likelihood function of the smaller model (restricted model). After adding new predictor, the study compared the differences in Chi-square value between LR and

Chi-square table. Degree of freedom was the difference in the number of parameter between the restricted model and unrestricted model including intercept. When difference of Chi-square value between LR and the Chi-square table was significant at the 0.05 level (right tail), Cox and Snell  $R^2$  increased and a standard error of coefficient of the predictor was small, the new predictor was added in the model, because this new predictor could increase the explanatory power for the new model. Otherwise, the predictor was dropped out from the model.



## CHAPTER IV

### RESULTS

#### 4.1 Univariate analysis for utilization of health care in 2000

Table 4.1 gives selected profiles of respondents included in the sample of this study. Overall, more than three-fourths (78 percent) of the respondents were from the age group of 25-59, the rest were of older age of 60 and above (14 percent) and younger age of 15-24 (8 percent). Similar age distributions are observed in all three ethnic groups. Compared to Thais and the native-born minority, the foreign-born minority had a larger proportion of male, of working in non-agricultural sector, and a smaller proportion of respondents without any income. Buddhism was the religion of the largest majority of respondents, with virtually all Thais and nearly all respondents of the native-born minority and over 60 percent of those from the foreign-born minority being the followers of Buddhism. Non-Buddhists accounted for a small proportion, i.e. 39 percent of respondents from foreign-born minority and 5 percent of those from native-born minority. This non-Buddhist group consisted of those who believe in Christianity, Islam and Hinduism. As expected, literally all members of the Thai and native-born minority groups can speak Thai, but only 47 percent of the foreign-born respondents can speak Thai. It remains to be seen if this wide gap ability to speak Thai was associated in any difference in utilization of health care service among the three ethnic groups.

The results in Table 4.1 show strong contrast of the three ethnic groups with regard to education. While 85 percent of Thai respondents had primary education or higher, only about 40 percent of those from native-born minority and about 12 percent from foreign-born minority had formal education, largely at the primary level. Because this study only coded education in Thai education system, some respondents who had education in Myanmar or other countries may be classified as no schooling due to coding error.

Overall, 65 percent of the respondents in the sample had received health information from health personnel, compared to about 57 percent receiving the same information from television, and 46 percent from a poster. With regard to sources of health information, Thais were better off than members of the other two minority groups, with members of the foreign-born minority being the worst off because the largest proportion of them did not receive health information from any sources. These differences may contribute to differential utilizations of health care services among the three ethnic groups in the study area.

In this study, villages were classified into two types: Thai villages where residents were predominantly Thai and minority villages where majority of residents were minority people. Regardless of ethnicity, eighty percent of the respondents in our sample lived in “Thai villages”; only about twenty percent of them lived in “minority villages”. Eighty-nine percent of the Thais lived in Thai villages compared with 60 percent of those from the native-born and 50 percent from the foreign-born minorities. Note that about 11 percent of the Thai respondents were residents of minority villages while 60 percent of respondents from native-born minority and 50 percent from foreign-born minority lived in “Thai villages”. In general, the data in this respect suggest substantial degree of “ethnic mixture” among members of the three ethnic groups in the study area. The results of health personnel, health and transportation facilities available in villages also suggest that Thais and members of the native-born minority were much better off than those from the foreign-born minority since majority of these two groups lived in the villages with a health center (including primary health center and drug fund/ drug bank), bus route linking their villages to the outside world, village health volunteer and trained midwife.

**Table 4. 1 Percentage distribution of selected characteristics of respondents in the sample by ethnic group in 2000**

Characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
<b>Age</b>				
-15-24	7.9	8.1	11.1	8.3
-25-59	77.7	76.8	79.5	77.9
- ≥60	14.4	15.2	9.4	13.8
<b>Sex</b>				
- Female	59.4	64.1	54.9	59.3
- Male	40.6	35.9	45.1	40.7
<b>Marital status</b>				
-Not married	17.2	15.2	4.5	15.1
-Married	82.8	84.8	95.5	84.9
<b>Occupation</b>				
-Agriculture	57.2	61.6	52.9	57.1
-Non-agriculture	22.3	17.7	25.8	22.3
-No paid job	20.5	20.7	21.3	20.6
<b>Annual income</b>				
-No income	60.7	69.2	51.2	60.3
-<=18,999	13.5	16.2	27.0	15.7
->=19,000	25.9	14.6	21.7	24.0
<b>Religion</b>				
-Non Buddhism	.8	5.1	38.9	6.7
-Buddhism	99.2	94.9	61.1	93.3
<b>Ability to speak Thai</b>				
-No	.0	5.1	53.3	8.2
-Yes	100.0	94.9	46.7	91.8
<b>Education level</b>				
-No schooling	15.0	59.1	88.5	30.6
-Primary school	54.0	30.8	7.8	44.7
-Secondary school and above	31.0	10.1	3.7	24.7
<b>Receiving information from a health officer</b>				
-No	28.2	48.5	59.0	35.0
-Yes	71.8	51.5	41.0	65.0

**Table 4. 1 Percentage distribution of selected characteristics of respondents in the sample by ethnic group in 2000 (cont.)**

Characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
<b>Receiving information from television</b>				
-No	30.3	67.2	93.0	43.5
-Yes	69.7	32.8	7.0	56.5
<b>Receiving information from a poster</b>				
-No	46.4	72.7	80.7	54.3
-Yes	53.6	27.3	19.3	45.7
<b>Type of village</b>				
-Thai village	88.9	60.1	50.4	80.1
-Minority village	11.1	39.9	49.6	19.9
<b>Tambon health center available in a village</b>				
-No	34.9	54.0	75.4	42.8
-Yes	65.1	46.0	24.6	57.2
<b>Bus route available in a village</b>				
-No	22.3	38.9	63.9	30.1
-Yes	77.7	61.1	36.1	69.9
<b>Village health volunteer available in a village</b>				
-No	1.8	8.1	6.1	3.2
-Yes	98.2	91.9	93.9	96.8
<b>Untrained midwife available in a village</b>				
-No	61.1	29.8	25.0	52.4
-Yes	38.9	70.2	75.0	47.6
<b>Trained midwife available in a village</b>				
-No	78.8	73.7	80.3	78.4
-Yes	21.2	26.3	19.7	21.6
<b>Total</b>	100.0	100.0	100.0	100.0
<b>Number of cases</b>	1271	198	244	1713

Table 4.2 gives descriptive information on health status (indicated by type of self-reported illness), access to health insurance, and the use of health care services of the sample respondents in the study area. About half of respondents in each ethnic groups reported non-communicable diseases as the types of illness from which they suffered around the time of the survey in 2000; those who reported functional disorders accounted for another 40 percent with the rest (accounting for less than 10 percent) reporting communicable diseases. This finding suggests that members of the three ethnic groups in the study area had similar health needs, which may be a result of similar age structure noted above. It also suggests that any differences in their utilization of health care services may not be associated from different health care needs or health statuses. If type of self-reported illness presented above was representing what was happening in the study area, it suggests that non-communicable diseases was a predominant form as the pattern of morbidity among these populations.

Thais and members of the native-born minority were fairly similar in their access to health insurance. Distributions of respondents from both groups were more or less similar with regard to different types of health insurance. It is observed that the respondents having government voluntary health insurance card accounted for about 30 percent followed by those who had government insurance cards for the elderly and the poor (20 percent for Thais, 17 percent for respondents from native-born minority). Members of foreign-born minority, on the other hand, because of their migration and non-Thai status, did not have access to any of the above insurance. However, they had access to another kind of health insurance which was available for foreign workers only. In order to have this kind of health insurance, foreign workers must have work permits, and the process involved some costs in part of the foreign workers. This explains why only a small proportion of them (26 percent) reported having health insurance.

The result of use of health care service in Table 4.2 clearly suggests that there was a substantial difference among the three ethnic groups in this study. Overall, only about half (52 percent) of all respondents in the sample used health care services provided by any health care providers around the time of the survey in 2000. The largest proportion who used the services was found among the Thai respondents

(58 percent), followed by those from native-born minority (43 percent) and from foreign-born minority (28 percent) respectively.

**Table 4. 2 Percentage distribution of type of self-reported illness, health insurance, type of health insurance, and utilization of health care services by ethnic group in 200**

Characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
<b>Type of self-reported illness</b>				
-Non-communicable disease	50.0	49.0	48.8	49.7
-Communicable disease	9.0	6.6	8.2	8.6
-Functional disorders	40.9	44.4	43.0	41.6
<b>Health insurance</b>				
-No	38.7	50.0	73.8	45.0
-Yes	61.3	50.0	26.2	55.0
<b>Type of health insurance</b>				
-Health card	30.8	30.3	0.0	26.3
-Elderly card and low income card	20.2	16.7	0.0	16.9
-Health insurance card for foreign migrants	0.0	0.0	26.2	3.8
-Other health insurance cards <sup>a</sup>	10.3	3.0	0.0	8.0
<b>Utilization of health care</b>				
-Yes (Received treatment in public health services)	57.7	42.9	27.5	51.7
-No (Self-treatment or no treatment)	42.3	57.1	72.5	48.3
<b>Total</b>	100.0	100.0	100.0	100.0
<b>Number of cases</b>	1271	198	244	1713

<sup>a</sup> refers to health insurance card for the village health volunteer, and social security card largely for workers in the private sector.

#### 4.2 Bivariate analysis for utilization of health care in 2000 and 2004

Table 4.3 shows that ethnicity, education attainment, religion, ability to speak Thai, health insurance and type of self-reported illness were associated with utilization of health care in both 2000 and 2004. Education attainment was not a reliable variable here due to coding error mentioned above. In addition, age was associated with utilization of health care in 2000 but not in 2004. Other factors such as sex, marital status, occupation and annual income did not show any association with utilization of health care in both two years.

**Table 4.3 Association of variables with utilization of health care in 2000 and 2004**

Variable	Utilization of health care in 2000				Utilization of health care in 2004			
	No	Yes	Total	$\chi^2$	No	Yes	Total	$\chi^2$
<b>Total</b>	100.0	100.0	100.0		100.0	100.0	100.0	
<b>Number of cases</b>	828	885	1713		177	567	744	
<b>Sex</b>				1.9				1.0
-Female	57.6	60.9	59.3		59.3	63.7	62.6	
-Male	42.4	39.1	40.7		40.7	36.3	37.4	
<b>Age</b>				16.1**				1.4
-15-24	11.0	5.8	8.3		3.4	2.3	2.6	
-25-59	75.2	80.3	77.9		74.6	72.3	72.8	
- $\geq 60$	13.6	13.9	13.8		22.0	25.4	24.6	
<b>Marital status</b>				.1				0.01
-Not-married	15.3	14.9	15.1		20.3	19.9	20.0	
-Married	84.7	85.1	84.9		79.7	80.1	80.0	

**Table 4. 3 Association of variables with utilization of health care in 2000 and 2004 (cont.)**

Variable	Utilization of health care in 2000				Utilization of health care in 2004			
	No	Yes	Total	$\chi^2$	No	Yes	Total	$\chi^2$
<b>Occupation</b>				1.8				.8
-Agriculture	55.4	58.6	57.1		58.8	55.9	56.6	
-Non-agriculture	23.1	21.6	22.3		17.5	20.6	19.9	
-No paid job	21.5	19.8	20.3		23.7	23.5	23.5	
<b>Education level</b>				36.5**				9.8*
-No schooling	37.4	24.2	30.6		38.4	26.8	29.6	
-Primary school	39.3	49.8	44.7		40.1	50.3	47.8	
-Secondary school and above	23.3	26.0	24.7		21.5	22.9	22.6	
<b>Ethnicity</b>				81.6**				26.5**
-Thai	65.0	82.8	74.2		65.5	80.6	77.0	
-Native-born minority	13.6	9.6	11.6		9.6	9.5	9.5	
-Foreign-born minority	21.4	7.4	14.2		24.9	9.9	13.4	
<b>Ability to speak Thai</b>				78.9**				12.8**
-No	14.3	2.5	8.2		19.8	9.7	12.1	
-Yes	85.7	97.5	91.8		80.2	90.3	87.9	
<b>Religion</b>				61.1**				26.5**
-Non Buddhism	11.8	1.9	6.7		13.0	3.0	5.4	
-Buddhism	88.2	98.1	93.3		87.0	97.0	94.6	

**Table 4. 3 Association of variables with utilization of health care in 2000 and 2004 (cont.)**

Variable	Utilization of health care in 2000				Utilization of health care in 2004			
	No	Yes	Total	$\chi^2$	No	Yes	Total	$\chi^2$
<b>Annual income</b>				5.8				3.0
-No income	59.2	61.4	60.3		53.7	59.3	57.9	
-≤18999	17.9	13.7	15.7		8.5	9.9	9.5	
-≥19000	22.9	25.0	24.0		37.9	30.9	32.5	
<b>Health insurance</b>				52.7**				8.6**
-No	53.5	36.0	44.5		25.4	15.7	18.0	
-Yes	46.5	64.0	55.5		74.6	84.3	82.0	
<b>Type of self-reported illness</b>				107.7**				15.2*
-Non-communicable disease	50.6	48.9	49.7		41.8	49.6	47.7	
-Communicable disease	1.6	15.3	8.6		2.8	9.3	7.8	
-Functional disorders	47.8	35.8	41.6		55.4	41.1	44.5	

Pearson Chi-Square: \* $P < 0.05$ , \*\* $P < 0.01$

Table 4.4 shows association of other variables with utilization of health care in 2000. These variables were only available in 2000. The results show that utilization of health care was associated with receiving health information from radio, TV, newspapers and health officers, Tambon health centers, bus routes, untrained midwives, and traditional medical practitioners available in villages, and type of village. This suggests that mass media and communication between patients and health providers may encourage people to use health care services through providing health information. Availability of such health facilities and personnel, transportation networks, and type of village may play important roles in utilization of health care.

**Table 4.4 Association of variables with utilization of health care in 2000**

Variable	Utilization of health care in 2000			$X^2$
	No	Yes	Total	
<b>Availability of health facility in a village</b>				
<b>Tambon health center</b>				32.3**
-No	49.9	36.3	42.8	
-Yes	50.1	63.9	57.2	
<b>Primary health care center</b>				2.2
-No	52.1	48.5	50.2	
-Yes	47.9	51.5	49.8	
<b>Drug fund/drug banks</b>				3.5
-No	68.8	73.0	71.0	
-Yes	31.2	27.0	29.0	
<b>Availability of health personnel in a village</b>				
<b>Malaria volunteer</b>				.3
-No	43.2	44.5	43.9	
-Yes	56.8	55.5	56.1	
<b>Village health volunteer</b>				.3
-No	3.4	2.9	3.2	
-Yes	96.6	97.1	96.8	
<b>Trained midwife</b>				2.1
-No	76.9	79.8	78.4	
-Yes	23.1	20.2	21.6	

**Table 4.4 Association of variables with utilization of health care in 2000 (cont.)**

Variable	Utilization of health care in 2000			$X^2$
	No	Yes	Total	
<b>Untrained midwife</b>				34.3**
-No	45.0	59.2	52.4	
-Yes	55.0	40.8	47.6	
<b>Traditional medical practitioner</b>				7.5**
-No	46.4	53.0	49.8	
-Yes	53.6	47.0	50.2	
<b>Bus route available in a village</b>				30.7**
-No	36.5	24.2	30.1	
-Yes	63.5	75.8	69.9	
<b>Type of village</b>				62.2**
-No	72.2	87.5	80.1	
-Yes	27.8	12.5	19.9	
<b>Source of health information</b>				
<b>Neighbor</b>				2.2
-No	49.0	45.4	47.2	
-Yes	51.0	54.6	52.8	
<b>Radio</b>				15.5**
-No	62.0	52.5	57.1	
-Yes	38.0	47.5	42.9	

**Table 4.4 Association of variables with utilization of health care in 2000 (cont.)**

Variable	Utilization of health care in 2000			$X^2$
	No	Yes	Total	
<b>TV</b>				40.1**
-No	51.3	36.2	43.5	
-Yes	48.7	63.8	56.5	
<b>Newspaper</b>				14.9**
-No	69.0	60.0	64.3	
-Yes	31.0	40.0	35.7	
<b>Poster</b>				2.4
-No	56.3	52.5	54.3	
-Yes	43.7	47.5	45.7	
<b>Health officer</b>				28.3**
-No	41.3	29.0	35.0	
-Yes	58.0	71.0	65.0	

Pearson Chi-Square: \* $P < 0.05$ , \*\* $P < 0.01$

Because some independent variables in this study may have high correlation each other, which affected prediction of utilization of health care. In order to control this kind of multicollinearity, the simple or zero-order correlation was performed between two variables. Table 4.5 shows correlations between some selected variables. Ethnicity and ability to speak Thai had the same magnitude of correlation with utilization of health care. However, ability to speak Thai had a high correlation coefficient with ethnicity which is the main independent variable in this study. Thus, it is necessary to drop ability to speak Thai from the multivariate analysis to reduce the effect of collinearity between ability to speak Thai and ethnicity.

**Table 4.5 Correlation matrix of selected variables in 2000**

Variable	Utilization of health care	Ethnicity	Ability to speak Thai	Religion	Education	Type of village
Utilization of health care	1.0					
Ethnicity	-.22**	1.0				
Ability to speak Thai	.22**	-.63**	1.0			
Religion	.20**	-.49**	.53**	1.0		
Education	.06*	-.51**	.34**	.24**	1.0	
Type of village	.13**	.37**	-.35**	-.44**	-.07**	1.0

\*  $P < 0.05$ , \*\*  $P < 0.01$

### 4.3 Multivariate analysis for utilization of health care in 2000

In order to measure partial effects of variables on utilization of health care in terms of relationship between predictors and utilization of health care, the magnitude and direction of effects, a logistic regression was performed. In the logistic regression, the study examines the coefficient changes of ethnicity in each model and the independent effects of the characteristics which were associated with differences in health care use among ethnic groups.

The results of logistic regression of utilization of health care services in 2000 appear in Table 4.6. Four Models are examined. Model 1 only includes ethnicity. Model 2 adds type of self-reported illness as need factor. Model 3 includes ethnicity, type of self-reported illness and enabling factors. Model 4 covers all variables except ability to speak Thai because ability to speak Thai had high collinearity with ethnicity. From Model 1 to Model 4, Cox and Snell R Square increases, and Model 4 is the best fit model of this study.

In Model 1, without controlling for any factors, the native-born and foreign-born minority were statistically different from Thais in utilization of health care. Both ethnic minority groups, especially the foreign-born minority, were less likely to use health care services.

In Model 2, after controlling for different type of self-reported illness of each ethnic group, there were significant differences in utilization of health care services among ethnic groups. The foreign-born minority respondents were the least likely to receive health care of the ethnic groups. The native-born minority respondents were less likely to use health care than Thai respondents. This suggests that the foreign-born minority and native-born minority did not utilize health services as much as Thais. They had poorer utilization of health care services than Thais.

It is observed that the logistic coefficient of the foreign-born minority to the Thais increased; and the coefficient of the native-born minority to the Thais was almost the same, compared Model 2 and Model 1. This indicates that type of self-reported illness was not a factor which associated with the lower use of health care for the two ethnic minority populations than for Thais in the study area, because if type of self-reported illness influenced the utilization of health care among them, the coefficients should decrease from Model 1 to Model 2. For example, if respondents of the foreign-born minority had lower health needs or better health statuses than Thai respondents, they would use less health services than Thai respondents, the difference in utilization of health care between the foreign-born minority and Thais should reduce. Thus, the magnitude of the foreign-born minority to Thais should be smaller in Model 2 than the coefficient in Model 1. This result is consistent with the findings in Table 4.2. In addition, compared to respondents with non-communicable diseases, respondents with communicable diseases were more likely to utilize health services; respondents with functional disorders were less likely to use health services when they were ill.

In Model 3, the insured were more likely to use health services than the non-insured. Respondents who had a Tambon health center and public bus route available in their village were significantly more likely to utilize health care services than respondents who did not have these resources. Respondents who lived in a minority village were significantly less likely to utilize health services than respondents who lived in a Thai village.

Comparing Model 3 to Model 2, the magnitude of ethnicity effect reduces. This means that if the foreign-born and native-born minority had the same situation in above enabling factors as Thais, the native-born minority can have the

same opportunity to utilize health care as Thais; the foreign-born minority can improve their use of Thai health care services. This suggests that health insurance, a Tambon health center and bus route available in a village, and type of village played important roles in improving health care utilization for the foreign-born and native-born minority.

Comparing Model 4 to Model 3, the magnitude of ethnicity effect reduces further. Compared to the Thais, the coefficients of native-born minority and foreign-born minority in Model 4 are not statistically significant. This suggests that the foreign-born and native-born minority can have the same opportunity to utilize the Thai health care services as Thais if the barriers to health care services were removed, in terms of type of self-reported illness, health insurance status, a Tambon health center and bus route available in a village, type of village, age, religion, and receiving health information from a health officer.

The results in Model 4 also shows that respondents aged 25 and over were more likely to utilize health care services than were respondents aged 15-24; respondents who were Buddhist were more likely to use health services compared to respondents with other religions (Christianity, Islamism and Hinduism); respondents who received health information from a health officer were more likely to utilize health care than respondents who did not receive health information from a health officer. This may suggest that respondents' religious backgrounds significantly influenced respondents' behavior of utilization of health care. Interaction between patients and health care providers may have an impact on utilization of health care services, or people may have information at the time they received health services.

**Table 4. 6 Logistic coefficients for regression of utilization of health care services in 2000 (N=1713)**

Variable	Model 1		Model 2		Model 3		Model 4	
	B	(SE)	B	(SE)	B	(SE)	B	(SE)
<b>Ethnicity</b>								
-Thai (ref.)								
-Native-born minority	-.59**	(.15)	-.58**	(.16)	-.20	(.16)	-.10	(.18)
-Foreign-born minority	-1.28**	(.15)	-1.38**	(.17)	-.68**	(.17)	.21	(.24)
<b>Need factor</b>								
<b>Type of self-reported illness</b>								
-Non-communicable disease (ref.)								
-Communicable disease			2.41**	(.31)	2.60**	(.32)	2.64**	(.33)
-Functional disorders			-.25*	(.11)	-.23*	(.11)	-.26*	(.11)
<b>Enabling factors</b>								
<b>Health insurance</b>								
-No (ref.)								
-Yes					.65**	(.11)	.65**	(.11)
<b>Tambon health center available in a village</b>								
-No (ref.)								
-Yes					.36**	(.11)	.34**	(.11)
<b>Bus route available in a village</b>								
-No (ref.)								
-Yes					.33**	(.12)	.32*	(.13)
<b>Type of village</b>								
-Thai village (ref.)								
-Minority village					-.80**	(.15)	-.69**	(.16)
<b>Predisposing factors</b>								
<b>Age group</b>								
-15-24 (ref.)								
-25-59							.65**	(.20)
- ≥60							.49*	(.24)

**Table 4. 6 Logistic coefficients for regressions of utilization of health care services in 2000 (N=1713) (cont.)**

Variable	Model 1		Model 2		Model 3		Model 4	
	B	SE	B	SE	B	SE	B	SE
<b>Religion</b>								
-Non Buddhism (ref.)								
-Buddhism							1.34**	(.34)
<b>Receiving health information from a health officer</b>								
-No (ref.)								
-Yes							.51**	(.12)
Constant	.31**	(.06)	.28**	(.08)	-.53**	(.16)	-2.76**	(.43)
-2 log likelihood	2289.29		2162.60		2079.17		2035.66	
Model Chi-Square	83.54**		210.23**		293.66**		337.17**	
Cox & Snell R Square	.048		.115		.158		.179	

Wald test: \* $P < 0.05$ , \*\* $P < 0.01$

## CHAPTER V

### CONCLUSION AND DISCUSSION

#### 5.1 Conclusion

This study documents the differences in utilization of health services among ethnic groups on the Thailand-Myanmar border. The native-born minorities and the foreign-born minorities had significantly lower level of health care utilization when ill than did Thais in 2000. The following factors contribute such differences.

*Health insurance status:* In 2000, 26.0 percent of the foreign-born minorities, 50.0 percent of the native-born minorities, and 61.0 percent of Thais reported to have health insurance, respectively. The results of multivariate analysis show that health insurance had a strong effect on utilization of health care. This suggests that low health insurance coverage limited ethnic minorities to utilize health services.

*Availability of a Tambon health center and bus route in a village, and the type of village:* The results show that the foreign-born and the native-born minorities had less availability of a Tambon health center and bus route in a village than did Thais. After multivariate controlling, a Tambon health center and bus route available in a village had a positive relationship with utilization of health care services. Ethnic minority village had a negative relationship with utilization of health care services. This suggests that the foreign-born minorities and the native-born minorities had a disadvantaged status in community resources for health care services. More health facilities and transportation networks for ethnic minorities should be provided in the Thailand-Myanmar border region.

*Receiving health information from a health officer and cultural barriers:* The foreign-born minorities had lower proportions of ability to speak Thai, Buddhism religion and receiving health information from a health officer than did Thais. In the logistic regression analysis, religion and receiving health information from a health officer show independent effects on utilization of health care among

ethnic groups. This suggests that it is necessary to improve communication between foreign-born minority patients and health services providers, and provide culturally sensitive health services for foreign-born minority.

In short, utilization of health care among ethnic groups was not equal on the Thailand-Myanmar border region. Foreign-born minorities and native-born minorities were less likely to use health care than Thais. Health insurance, community resources for health care, religion, communication between minority patients and health service providers can be attributed to different utilization of health services among ethnic groups.

## 5.2 Discussion

The results show that a total of 57.7 percent of Thais, 42.9 percent of the native-born minority populations, and 27.5 percent of the foreign-born minority populations reported that they had received medical treatment from health service providers in June 2000 when they were ill. The foreign-born minority and native-born minority were significantly less likely to utilize health care services than Thais after controlling for health needs or health status. This reflects different use of Thai health care service resources by each ethnic group and implies that the utilization of health care was not equal among ethnic groups in the border areas.

The results also reveal several factors associated with differences in health care utilization among ethnic groups, namely, health insurance, availability of a Tambon health center and bus route in a village, and type of village, religion, receiving health information from a health officer. These factors had independent effects on utilization of health care, and when they were the same among ethnic groups, the foreign-born and native-born minority can have the same opportunity as Thais to utilize health care services.

The Ministry of Public Health (2005) reported that average health insurance coverage was 78 percent in non-municipal areas in 2001. Very low health insurance coverage was found in the study area, especially among the foreign-born minority and native-born minority. Health insurance had a significant effect on utilization of health care among ethnic groups. This suggests that improving the

health insurance coverage for the foreign-born minority and native-born minority should be a central issue in the Thai health care system.

The percentage living in a village where a Tambon health center and public bus route available was lower for the foreign-born and native-born minority than for Thais. Availability of a Tambon health center and public bus route available in a village can increase the opportunity to utilize health care for ethnic minority. Compared to people in Thai villages, people in minority villages had a disadvantage in utilization of health care services. This suggests that it is necessary to provide more health facilities and improve the transportation networks to health facilities for ethnic minority villages.

Nearly 40 percent of the foreign-born minority populations had different religions from those of ethnic Thai, and religion had a strong independent effect on health care utilization as well. This indicates that the foreign-born minorities may have particular health beliefs, attitudes and behaviors to specific diseases, which may influence the behavior of utilization of health services.

Receiving health information from a health officer had a positive effect on health care utilization, and the foreign-born and native-born minority population had a lower proportion of receiving health information from a health officer than Thais. This suggests that we should improve communication between ethnic minority patients and health service providers to reduce barriers to health care. The results indicate that language barriers may affect entry to care and communication with health-care providers among minority patients. These findings are consistent with other studies in the U.S.A. and the U.K., where foreign-born minorities have difficulty in utilization of health care due to their inability to speak English. For example, a survey in London showed that among the surveyed London adults, only 14 percent of Bengalis, 29 percent of Gujeratis, 26 percent of Punjabis, 41 percent of Chinese and 32 percent of refugees reported to have survival English. And these minorities often face problems in accessing health care since they could not communicate with health-care providers well in English (Carr-Hill, Passingham, & Wolf, 1996). Another study indicates that children in non-English speaking families have difficulties to seek health care in the U.S.A. due to poor linguistic competence (Yu, et al., 2006). A mammography study of the United States among Hispanic women suggests that

cultural adaptation or acculturation and unable to speak English exert effects on the Hispanic women (Stein, Fox, & Maturata, 1991).

This study highlights the importance of communication between patient-provider, and religion in ensuring utilization of health care services. Studies in the U.S.A. show that the training of health providers is an effective strategy to improve the cultural competence knowledge, attitude and skills of health providers (John Hopkins University Evidence-based Practice Center, 2004; Brach & Fraserirector, 2000). Raks Thai Foundation (2005:25) reported that the foreign-born minority patients would like to use the services of Non-Government Organization clinics, for example, the Mae Tao Clinic in Mae Sot, Tak Province. These clinics had minority and international physicians or health assistants, and provided friendly services in a local minority language. The Thai Government hospitals and health centers did not allow hiring migrants as employees. Some hospitals cooperated with NGOs to provide interpretation services and develop health education in a local ethnic minority language. This suggests that it is necessary to train medical staff bilingually and cultural sensitively; recruit more minority medical staffs or staff who can speak minority language; provide medical enrollment forms and appropriate health information in the local ethnic minority languages in the border areas; and provide Thai language learning course for foreign-born minority, if we want to reduce the gap between Thais and foreign-born minority in utilization of health care services.

The significant differences in age and type of self-reported illness were not found among ethnic groups. Thus, age and type of self-reported illness were not associated with differences in utilization of health care among ethnic groups. Only compared to the reference group, some groups in age and type of self-reported illness show significant effects on utilization of health care. For example, compared to the respondents aged 15-24, the respondents aged 25 and over were significantly more likely to use health care. This may be due to some biologically factors such as a stronger immune system in youth than in adult or the elderly. Compared to non-communicable diseases, communicable diseases had a significant positive effect, and functional disorders had a negative effect on utilization of health care. This may be due to the different duration of diseases. Most communicable diseases are acute diseases. Non-communicable diseases are chronic diseases. Thus, patients with

communicable diseases were more likely to seek health care in public health providers than patients with non-communicable diseases. Functional disorders such as back pain and headache are less severe than non-communicable diseases. Patients with functional disorders were more likely to buy drugs from drug stores or seek self-treatment.

The advantage of this study in methodology is that the study utilizes the panel data of the KDSS in the study area efficiently. For example, the data in 2000 lacked of the important information about religion and the ability to speak Thai, nationality and the country of birth place, while it was found in the individual data in 2002 and 2004. Without merging the data file in 2000, 2002 and 2004, and individual file with village file in 2000, the study cannot measure the potential cultural and language barriers to health care services among ethnic groups, and cannot define ethnicity into Thai, native-born minority and foreign-born minority for the separation of the effects of ethnicity and immigration status.

However, this study has several limitations. First, the study was lack of measurements related to characteristics of health-care providers due to limitations of data. It cannot assess the effects of provider-patient cultural and language concordance. Future research might examine cultural and linguistic competence of provider-patient in the health care system level.

Second, this study only included respondents who had stayed the study area from 2000 to 2004 because the panel data excluded respondents who moved out from the study area during the study period. The result of selectivity test shows some characteristics of migrants for the respondents who were excluded from this study. Health insurance coverage was higher in the study sample than the non-study sample. Thus, the results of this study may over-estimate health insurance of respondents in the study area, especially for foreign-born minorities.

Last, this study was restricted to villages which had been recognized officially by the Royal Thai Government in the border areas in Kanchanaburi province. The results of community resources for health care services may not reflect the situation of non-recognized villages. Further research might explore community resources for health services further by including villages which have not been recognized by the Royal Thai Government in the border areas.

## REFERENCES

- Aday, L. A., & Andersen, R. M. (1974). A framework for the study of access to medical care. *Health Services, 9* (3), 208-220.
- Aday, L. A., & Andersen, R. M. (1981). Equity of access to medical care: a conceptual and empirical overview. *Medical Care, 19* (suppl.), 4- 27.
- Aday, L. A. (1993). *At Risk in America: The Health and Health Care Needs of Vulnerable Populations in the United States*. San Francisco: Jossey-Bass.
- Aday, L. A., Begley, C. E., Lairson, D. R., & Slater, C. H. (1998). *Evaluating the Health Care System: Effectiveness, Efficiency, and Equity* (2<sup>nd</sup> ed.). Chicago: Health Administration Press.
- Aday, L. A. (2000). An Expanded Conceptual Framework of Equity: Implications for Assessing Health Policy. In G. L. Alberecht, R. Fitzpatrick, & S. C. Scrimshaw (Eds.), *Handbook of Social Studies in Health and Medicine* (pp. 481-492). London: SAGE Publications.
- Agency for Healthcare Research and Quality & U.S. Department of Health and Human Services. (2005). *2005 National Healthcare Disparities Report*. MD: AHRQ.
- Agrestic, A., & Finlay, B. (1997). *Statistical Methods for the Social Sciences* (3<sup>rd</sup> edition). New Jersey: Prentice Hall.
- Aguettant, J. L. (1996). Impact of population registration on hilltribe development in Thailand. *Asia-Pacific Population Journal, 11* (4), 47-72.
- American Association of Retired Persons. (1995). *Coming Up Short: Increasing Out-of-Pocket Health Spending by Older Americans*. Washington, DC.
- Andersen, R. M. (1995). Revising the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36*, 1-10.

- Archavanitkul, K., Jarusomboon W., & Warangrat A. (1997). *The Complexities and Confusion of Transnational People in Thailand*. Nakornpathom: Institute for Population and Social Research, Mahidol University. (in Thai).
- Arnstein, S. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, (July), 216-24.
- Asian Development Bank. (2000). *Thailand Country Report Health and Education Needs of Ethnic Minorities in the GMS*. Research Triangle Park, NC: Research Triangle Institute.
- \_\_\_\_\_. (2001). *Health and Education Need of Ethnic Minority in the Greater Mekong Subregion*. Manila, Philippines.
- Atkinson M., Clark M., & Clay D. (2001). *Systemic review of ethnicity and health service access for London*. Coventry: Center for Health Services Studies, University of Warwick.
- Badgley, R. (1991). Social and economic disparities under Canadian health care. *International Journal of Health Services*, 21, 659-71.
- Benzeval, M., Judge, K., & Smaje C. (1995). Beyond class, race and ethnicity: Deprivation and health in the Britain. *Health Services Research*, 30, 163-77.
- Blumenthal, D., Mort, E., & Edwards, J. (1995). The efficacy of primary care for vulnerable population groups. *Health services Research*, 30, 253-73.
- Brach, C., & Fraseirector, I. (2000). Can Cultural Competency Reduce Racial And Ethnic Health Disparities? A Review And Conceptual Model. *Medical Care Research and Review*, 57 (Suppl. 1), 181-217.
- Carr-Hill R., Passingham S., & Wolf A. (1996). *Lost Opportunities: The Language Skills of Linguistic Minorities in England and Wales*. London: Basic Skill Agency.
- Charles, C., & DeMaio, S. (1993). Lay participation in health care decision making: A conceptual framework. *Journal of Health Politics, Policy and Law*, 18, 881-904.

- Chumpaklai, A. (2004a). Socioeconomic Status. In *the Report of Round 3 Census (2002): Kanchanaburi Project* (p.51-55). Institute for Population and Social Research, Nakhonpathom, Thailand.
- \_\_\_\_\_. (2004b). Socioeconomic Status. In *the Report of Round 3 Census (2002): Kanchanaburi Project* (p.57). Institute for Population and Social Research, Nakhonpathom, Thailand.
- Department of Social and Welfare Development, Ministry of Social Development and Human Security. (2002). *Highland Communities within 20 Provinces of Thailand, 2002*. Bangkok: NETIKUL Printing Company.
- Davis, K. (1997). Uninsured in an era of managed care. *Health Services Research*, 31, 641-9.
- Eamtrakul, N. (2005). *A demand for health services at Lerdsin hospital after implementation of the Universal health coverage scheme*. Unpublished Ph.D dissertation in Medical and Health Social Science. Nakhonpathom: The Faculty of Graduate Studies, Mahidol University.
- ESCAP Secretariat. (2005). Health and Mortality: Issues and Recommendations. *Asian Population Studies Series*, 163, 1-8.
- Ford, E. S., & Cooper, R. S. (1995). Racial/ethnic differences in health care utilization of cardiovascular procedures: A review of the evidence. *Health Service Research*, 30, 237-51.
- Habermas, J. (1995). *Moral Consciousness and Communicative Action*. (C. Lenhardt & S. W. Nichol森, Trans.). Cambridge, MA: MIT Press.
- \_\_\_\_\_. (1996). *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*. Translated by W. Rehg. Cambridge, MA: MIT Press.
- Heslin, K. C., Andersen, R. M., Ethner, S. L., & Cunningham, W. E. (2005). Racial and ethnic disparities in access to physicians with HIV-related expertise. *Journal of General Internal Medicine*, 20, 283-289.
- Hornby, A. S. (1994). *Oxford Advanced Learner's Dictionary of Current English* (4<sup>th</sup> Ed.). London: Oxford University Press.

- Huguet, J. W., & Punpuing, S. (2005). *International Migration in Thailand*. Bangkok: International Organization for Migration, Regional Office Bangkok, Thailand.
- Institute for Population and Social Research, Mahidol University. (2001). *Report of Baseline Survey (2000): Kanchanaburi Project*. Nakhon Pathom, Thailand.
- \_\_\_\_\_. (2006). *Mahidol University Population Projections for Thailand, 2005-2025*. Nakhon Pathom, Thailand: Population and Social Press.
- Institute for Population and Social Research & Thai Health Promotion Foundation (2005). *Thailand Health 2005*. Nakhon Pathom, Thailand: IPSR, Mahidol University.
- Isarabhakdi, P. (2004). Meeting at the Crossroads: Myanmar Migrants and Their Use of Thai Health Care Services. *Asian and Pacific Migration Journal*, 13 (1), 107-126.
- John Hopkins University Evidence-based Practice Center. (2004). *Strategies for Improving Minority Healthcare Quality*. Rockville, MD: Agency for Healthcare Research and Quality.
- Kasper, J. D. (2000). Health-Care Utilization and Barriers to Health Care. In G. L. Albrecht, R. Fitzpatrick, & S. C. Scrimshaw (Eds.), *Handbook of Social Studies in Health and Medicine* (pp. 323-338). London: SAGE Publications.
- LaVeist, T. A. (1994). Beyond dummy variables and sample selection: What health services researchers ought to know about race as a variable. *Health Services Research*, 29, 1-16.
- LaVeist, T. A., Keith, V., & Gutierrez, M. L. (1995). Black/white differences in prenatal care utilization: An assessment of predisposing and enabling factors. *Health Services Research*, 30, 10-58.
- Martin, P. (2004). *Thailand: Improving the Management of Foreign Workers* (2<sup>nd</sup> ed.). Bangkok: International Labour office and International Labour Organization.

- Mayberry, R. M., Mili, F., & Ofili, E. (2002). Racial and ethnic differences in access to medical care. In T.A. LaVeist (Ed.), *Race, Ethnicity, and Health: a public health reader* (pp. 163-197). San Francisco: Jossey-Bass.
- Ministry of Interior. (1999). *Population Statistics*. Bangkok: Bureau of Registration, Department of Local Administration, Ministry of Interior..
- Ministry of Public Health. (2005). *Thailand Health Profile 2001-2004*. [Online]. Available from [http://www.moph.go.th/ops/health\\_48/index\\_eng.htm](http://www.moph.go.th/ops/health_48/index_eng.htm). [Accessed 2006 Feb. 8].
- Mui, A. C., & Burnette, D. (1994). Long-term care service use by frail elders: Is ethnicity a factor? *Gerontologist*, 34, 190-8.
- National Center for Health Statistics. (1997). *Health, United States, 1996-97, and Injury Chartbook*. Hyattsville, MD: Public Health Service.
- Pannarunothai, S. (2000). *Equities in Health System*. Bangkok: Health Systems Research Institute.
- Pappas, G., Haddenm, W. C., Kozak, L. J., & Fisher, G. F. (1997). Potentially avoidable hospitalizations: Inequalities in rates between US socioeconomic groups. *American Journal of Public Health*, 87, 811-16.
- Raks Thai Foundation. (2005). *Migrants' Health and Vulnerability to HIV/AIDS in Thailand*. [Online]. Bangkok: Brahm Press. Available from: <http://www.phmat.org>. [Accessed 2006 Oct. 2].
- Registration Administration Bureau. (1999). *Acts and Regulations Related to Management of Ministry Population in Thailand*. Bangkok: Ministry of Interior.
- Robertson, A., & Minkler, M. (1994). New health promotion movement: A critical examination. *Health Education Quarterly*, 21, 295-312.
- Rudat, K. (1994). *Black and minority ethnic groups in England: health and lifestyles*. London: Health Education Authority.
- Schulman, K. A., Rubenstein, L. E., Chesley, F. D., & Eisenberg, J. M. (1995). The role of race and socioeconomic factors in health services research. *Health Services Research*, 30, 179-95.

- Smaje, C., & LeGrand, J. (1997). Ethnicity, equity and the use of health services in the British NHS. *Social Science and Medicine*, 45, 485-96.
- Smedley, B. D., Smith, A. Y., & Nelson, A. R. (Eds.). (2003). *Unequal treatment: confronting racial and ethnic disparities in health care*. Washington DC: National Academics Press.
- Stein, S. A., Fox, S. A., & Maturata, P. J. (1991). The influence of ethnicity, socioeconomic status and psychological barriers on use of mammography. *Journal of Health Social Behavior*, 32 (June), 101-113.
- Stephanie A. R., & James S. H. (2000). Socioeconomic inequalities in health: integrating individual-, community-, and societal-level theory and research. In, G. L. Albrecht, R. Fitzpatrick, & S. C. Scrimshaw (Eds.), *Handbook of Social Studies in Health and Medicine* (pp. 115-135). London: SAGE Publications.
- U.S. Department of Health and Human Services, Office of Public Health Services, & Office of Minority Health. (2001). *Final report on standards for culturally and linguistically appropriate services in health care*. Washington D.C.
- Wells, K. B., Hough, R. L., Golding, J. M., Burnam, M. A., & Karno, M. (1987). Which Mexican Americans underutilize health services? *American Journal of Psychiatry*, 144, 918-22.
- White-Means, S. I. (1995). Conceptualizing race in economic models of medical utilization: A case study of community-based elders and the emergency room. *Health Services Research*, 30, 207-33.
- WHO. (1996). Equity in health and health care: a WHO/SIDA initiative. [Online]. WHO/ARA. Geneva. Available from <http://www.who.int/whr/previous/en:1>. [Accessed 2005 November 10].
- WHO Regional Office for South-East Asia. (2000). Equity in access to public health. Presented in the Fifty Third Regional Committee of the South-East Asia Region, New Delhi in India on September 4-7, 2000.
- Williams, D. R. (1994). The concept of race in health services research. *Health Services Research*, 29, 261-74.

- Williams, D. R., & Collins, C. (1995). US socioeconomic and racial differences in health: Pattern and explanations. *Annual Review of Sociology*, 21, 349-86.
- Yu, S. M., Huang Z. J., Schwalberg R. H., & Nyman, R. M. (2006). Parental English Proficiency and Children's Health Services Access. *American Journal of Public Health*, 96 (8), 1449-1455.





## APPENDIX

### QUESTIONNAIRES

#### A. Selected individual questionnaire in 2000

**Institute for Population and Social Research, Mahidol University**  
**Kanchanaburi Research Project**  
**Year 2000**

Individual Questionnaire  
For Respondents aged 15 and over

#### Part 1 : Personal Data

1.1 What is your birthday ?

Day ..... Month ..... Year .....

1.2 How old are you on your last birthday ? \*

Age in years .....

1.3 Sex of respondent.

1. Male                      2. Female

1.4 What is your marital status ?

1. Single                      3. Widowed  
2. Married                      4. Divorced/Separated

1.5 What is your (completed) education level ?

Education level.....

\* Record only these who do not know their birthday/or know year in Thai calendar.

## **Part 2: Occupation and Income**

Interviewer: The following are questions on occupation and income from April 1999 up to the present

Month: April 99, May 99, June 99, July 99, August 99, September 99, October 99, November 99, December 99, January 00, February 00, March 00, April 00, May 00, June 00, July 00, August 00

2.1 What is your major occupation? (Specify in detail)

0 Unemployed (go to Q 2.5 and do not ask minor occupation)

2.2 What type of work do you do?

(See codes)

2.4 What is your income for main occupation? (Baht/month)

2.9 What is your income for minor occupation? (Baht/month)

Codes for Q 2.2 and 2.7 Types of work:

1. Agriculture
2. Metals and non-metals mining
3. Industry/Handicraft
4. Construction
5. Public facilities/Sanitation
6. Commerce
7. Transportation and communication
8. Service
9. Other (Specify).

## **Part 4: Health and Sanitation**

4.2 In the past month, did you catch any disease or did you feel sick (Include both petty and serious sickness as well as accidents)?

1. Yes
2. No

4.2.1 Disease or symptoms of sickness over the past month (Specify symptoms in detail). Interviewer: If Q 4.1 and/or Q 4.2 is answered 1, then go to Q 4.4

4.2.2 Methods of treatment

Codes for Q4.2.2 methods of treatment

- 0. No treatment
- 1. Get / purchase drugs for self-treatment
- 2. Health care center
- 3. Go to clinic
- 4. Go to a private hospital
- 5. Go to a malaria unit
- 6. Go to government hospital
- 7. Go to a VD / AIDS clinic
- 8. Go to a herbalist / traditional doctor
- 9. Go to a witch doctor
- 10. Treat self without using drugs (e.g. cooling down the fever with wet cloth, avoiding taboo foods)
- 11. Other (Specify.....)

4.8 Do you have any health insurance? (For example, a health card or insurance from a private company)

- 1. Yes
- 2. No

4.9 Where have you ever received health knowledge or information (physical and mental health care)?

Interviewer: If the respondent has ever had health knowledge or news with leading spontaneous question, circle 1

If the respondent has never had health knowledge or information in any kind of source (in which not circle 1), then ask for each item “have you ever got information from.....?”

If the respondent say “yes” circle 2,

if he or she have never had health knowledge or information from that source (by spontaneous responses ask or not, then circle 3)

Source Response for health knowledge or information

	1. Yes (leading)	2. Yes (no leading)	3. Never
a. Neighbor		1	2 3
b. Radio		1	2 3

c. TV	1	2	3
d. Poster / Brochure / Leaflet	1	2	3
e. Newspaper / Magazine	1	2	3
f. Medical personnel	1	2	3
g. Other (Specify).....			

**B. Selected village questionnaire in 2000**

**Institute for Population and Social Research, Mahidol University  
Kanchanaburi Research Project  
Year 2000**

**Village Data Questionnaire**

**Part 4. Infrastructure and transportation**

4.17 Does this village have a bus route?

1. Yes.            2. No. (Go to Q. 4.17.3)

**Part 7: Communication**

7.2 What language do most people in this village normally speak in daily life?

- a. Standard Thai
- b. Northeastern Thai
- c. Mon
- d. Song Lao/Puan Lao
- e. Burmese
- f. Karen
- g. Chinese
- h. Other (specify)

**Part 8: Health and Sanitation and Public Health services**

8.1 Does this village have any of the following Public Health Services or personnel?

(If yes, record the numbers)

Type of Public Health Service

Yes. Specify)... No.( )

**Government**

- a. Community hospital .....
- b. Sub-district health station .....
- c. Community based public health centre .....
- d. Malaria Unit .....
- e. Malaria Volunteer .....
- f. Village public health volunteer .....
- g. Drug fund/ Drug cooperative/ Drug Bank .....
- h. Other (Specify).....

**Private**

- i. Private hospital .....
- j. Private clinic .....
- k. Dental Clinic (Treated by dentist) .....
- l. Dentist place (Treated by other personnel, who are not dentists  
.....
- m. Obstetrics office/ Antenatal/postnatal clinic .....
- n. Local midwife that has already been trained by public local health  
personnels ....
- o. Local midwife that has not been trained .....
- p. Witch doctor .....
- q. Pharmacy .....
- r. Grocery which also sells drug .....
- s. Other (Specify).....

**C. Selected individual questionnaire in 2002**

**Kanchanaburi Project**

**Round 3 (Year 2002)**

**Institute for Population and Social Research, Mahidol University**

**In collaboration with**

**Ratchapat Institute Kanchanaburi**

Individual Questionnaire  
For Respondents aged 15 and over

**Part 1 : Personal Data**

1.7 What language do you know?

Language ability: Spoken: 1. Yes    2. No

- a. Thai
- b. English
- c. France
- d. German
- e. Japanese
- f. Chinese
- g. Karen
- h. Mon
- i. Burmese
- j. Other (Specify).....
- k. Other (Specify).....

**D. Selected individual questionnaire in 2004****Kanchanaburi Project**

Round 5 (Year 2004)

Institute for Population and Social Research, Mahidol University

<p>Individual Questionnaire For Respondents aged 15 and over</p>
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1.6 What is your nationality?

- |         |          |              |     |
|---------|----------|--------------|-----|
| 1. Thai | 4. Karen | 7. Cambodian | 10. |
|---------|----------|--------------|-----|

Other (Specify)

- |            |         |               |
|------------|---------|---------------|
| 2. Burmese | 5. Chan | 8. Vietnamese |
| 3. Mon     | 6. Lao  | 9. Chinese    |

1.7 What is your religion?

1. Buddhism
2. Christianity
3. Islamism
4. Hindu
5. Other (Specify).....
6. No religion.....

**Part 2: Change in living place or workplace**

2.1 Where is your birthplace?

3. Other (Please specify: District .....Province.....Country.....)

## BIOGRAPHY

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