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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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Introduction

Research on health care utilization and underlying factors associated with it among minority populations has been a major focus of health services research in many parts of 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). Several studies of non-economic influences (e.g. social class, education, linguistic and cultural competence) on utilization of health care services among ethnic minorities have focused on inequality due to discriminations existing in the health care system (Kasper, 2000; 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 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's subsidized health insurance cards since they do not have Thai citizenship (Isarabhakdi, 2004). Second, geographic and physical barriers often play an important role in access to health care services among minority people since most of them live far from roads and health centers. One study reported that ethnic minority villages were less likely to have their own medical professionals and basic medical supplies, and had a smaller number of health workers compared to non-minority villages. As a result, the quality of health care among people in minority villages tends to be below the national average (Asian Development Bank, 2000). Third, various cultural barriers (particularly, language, belief and religion) often make it inconvenient for people of ethnic minorities to have access to health care services.

A recent study reported that some Karen and Mon minorities in Thailand believe in spirits in their daily lives. They believe that spirits can cause some diseases, and they like both natural and spiritual healing. In addition, inability to speak Thai makes it difficult for them to utilize local health services (Isarabhakdi, 2004).

Lower utilization of health care services for ethnic minorities compared to that of the majority population reflects social inequality in society (Aday, 2000). In addition, differential health care utilizations among different ethnic groups also reflect unequal human rights, which have been a political concern of most governments; Thailand is no exception since a fairly large number of minority populations including displaced persons, refugees from threats of war and undocumented migrant workers live along the border areas (Registration Administration Bureau, 1999). These people have the basic right to access to health care resources, yet their situations are worse off. For example, in 1997 diarrhea, respiratory infection, tuberculosis, and HIV were among the 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 parts of Thailand (Institute for Population and Social Research & Thai Health Promotion Foundation, 2005).

Identifying and addressing differences in utilization of health care services among ethnic groups, as will be done in this study, are important. At least, they can help us better understand where difficulties are located and how they can be improved.

Reports on utilization of health care by ethnic minorities in the border areas are scarce. Previous studies in Thailand are mainly descriptive 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, especially different needs for health care and different health status. These descriptive studies do not measure the impacts of health insurance, linguistic competence, and geographic and physical barriers on utilization of health care services among minority groups. In addition, no studies classify ethnic minorities in the border region as foreign-born and native-born for the analysis to disentangle the effects of ethnicity and immigration status.

This study aims to identify different patterns of utilization of health care services among ethnic groups, and to examine the extent to which differences in use of health care services were associated with different characteristics of each ethnic group on the Thailand-Myanmar border. The data relevant to utilization of health care services

were collected in 2000, just prior to the initiation of universal coverage of health care scheme (UC scheme, popularly referred to as 30-baht scheme) in Thailand. These data provided the base-line information for evaluation of the UC scheme, and at the same time they can inform policy-makers and health-care providers in order to improve health care services for ethnic minorities in the border areas. Thus, this study will be helpful for researchers and policy-makers who are interested in closing the ethnic gap in utilization of health care services.

This paper begins with a brief description of ethnic minorities in Thailand with special reference to Kanchanaburi province. It then provides contextual information on health insurance system for Thai people and foreign workers around the time of the study. Next, conceptual framework, hypothesis, methods of the study, results of analysis, and discussion are presented.

Ethnic Minority in Thailand with Special Reference to Kanchanaburi Province

Thai population is relatively homogenous. Although several ethnic groups with distinctive cultural characteristics exist, they largely share many important features. Examples of such ethnic 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 culturally, socially and economically "marginal" and live largely in remote, peripheral areas.

Ethnic minorities in Thailand may be broadly divided into two major groups, namely, those who live in the highlands and those who live in the lowland mixing to a large extent with the mainstream "Thai population". The highland groups, commonly referred to as "hill tribes", include the Karen, Hmong, Mien, Akha, Lahu, Lisu, 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. As for the highland minorities, a recent survey by the Department of Social and Welfare Development, Ministry of Social Development and Human Security, gives the total number of 1,203,149 people,

which is about 2 percent of total Thai population in 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 province is one among these provinces.

Kanchanaburi province is located in the western part of Thailand, about 120 kms. away of 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, Kwae Yai and Kwae Noi. The upland population consists of about 85,000 people; slightly more than half of these (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 a few other small groups. If the lowland Thais who settled in the upland are excluded, the minority population consists almost entirely of only two large 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, 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 them to be 90,000 people in Kanchanaburi alone (Archavanitkul, Jarusomboon, & Warangrat, 1997). This, however, seems to be over-estimated. These minority populations have their own culture, speak their own dialects 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 (referred to here as “native-born minority”) and those who were born abroad and moved into Kanchanaburi later (conveniently referred to as “foreign-born minority”).

Health Insurance System for Thai People and Foreign Workers

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. These are the medical services

for civil servants and state enterprise employees, the Social Security Fund, the medical welfare for the poor, the voluntary health insurance, and other private health insurance programs. With initiation of the universal coverage health scheme (UC -- commonly known as the "30 baht scheme") in 2001, the government voluntary health insurance was merged into the UC scheme where a Thai citizen only pays a small amount of 30 Baht per visit for health services. UC is the main and the most important source of health service for the largest majority of Thai citizens today. (The program revision in November, 2006, has made it possible for all Thai citizens to have access to health service under this UC scheme without having to pay any fee.)

However, a large number of minority people, especially hill tribes, still cannot benefit from this government-subsidized health insurance program because they do not have Thai citizenship. In 2000 the Ministry of the 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 health insurance for such case cost 1,700 baht per worker per year (Martin, 2004:19).

Conceptual Framework and Hypothesis

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 which 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, at least to some extent, affected by the existing health policy which acts as an overall regulator.

The analysis below draws upon this model with some modification. In particular, it regards the use of health care service as a result of three sets of independent factors: predisposing factors, enabling factors and need factor. Predisposing factors are the tendency of individual to use health services, which include

demographic characteristics (age, sex, and marital status), and social structure (occupation, education, ethnicity, religion, and language). Enabling factors refer to the ability of an individual to make use of the services; they include family and community resources that can impinge upon health care use. Family resources include income, and family health insurance. Community resources include availability of a health facility, health personnel, and transportation network in the village, the type of village, and source of health information. Need factor refers to the individual's need for health care service indicated here by type of illness reported by the sample respondents.

Our analysis 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 are reduced or removed. Such barriers include limited access to health insurance, inability to use Thai language, poor transportation and community health resources.

Methods

Data source

The Kanchanaburi Demographic Surveillance System Project (KDSS) was undertaken in Kanchanaburi province by the Institute for Population and Social Research, Mahidol University with support from The Wellcome Trust Foundation of the United Kingdom. The main objective of the KDSS was to document population changes in the study areas in relation to social, economic and environmental changes including the effects of governmental and non-governmental projects. The KDSS collected data from a sample of 100 villages/census blocks. These sites were selected by stratified systematic cluster sampling technique applied to the total of 1,004 villages/census blocks of five strata in Kanchanaburi province. The five strata included urban/semi-urban area, rice cultivation area, plantation area, upland area and mixed economy area. Twenty villages/census blocks were sampled in each stratum, resulting in 100 sample villages/census blocks. Three sets of instruments were used to collect data from village, household, and individual. Individuals aged 15 years and older in each sample household were interviewed. The data were collected in the field site each year since 2000 (Institute for Population and Social Research, 2001).

For the present analysis most variables were drawn from the 2000 data, supplemented by extra variables from the 2002 and 2004 datasets of KDSS. The data on demographic and socioeconomic factors, utilization of health care service, health insurance status, and source of health information were taken from the individual file of the 2000 dataset. The information on availability of a health care facility and transportation infrastructure (bus route linking the village to outside world), and the type of village was derived from the village data file in 2000. And finally, the information on ability to speak Thai was drawn from the individual data file in 2002, while the information on ethnicity and religion was taken from the individual data file in 2004. The data from these sources were merged to make a single analytical file.

The study areas in this analysis are parts of KDSS research sites; they consist of villages from four districts (Amphoe) of Kanchanaburi province, namely, Sai Yoke, Tong Pha Phum, Sangkhla Buri and Sisawat where minority populations live. These four districts are also restricted areas allocated for displaced Myanmar persons who are allowed to live and work under control of the responsible authority (Registration Administration Bureau, 1999). Over 90 percent of Kanchanaburi ethnic minorities both native-born and foreign-born lived in twenty-six villages of these districts.

A total of 8,234 male and female respondents aged 15 and older were interviewed in the study area in 2000. After merging the data files for 2000, 2002 and 2004, 4,080 respondents were retained; the total retention rate from 2000 to 2004 is about 50 percent. The rest (4,154 respondents) could not be followed due mainly to out-migration or unavailability for interview for various reasons. These 4,080 male and female respondents are target population of the present analysis. But since the focus of this analysis is on utilization of health care service, thus only those who had experienced a health problem during the specified period before the survey are eligible. Based on this criterion the final screening for eligible cases resulted in the total number of 1,713 cases who had reported illness in June 2000 (i.e. one month before the survey in July 2000). These included 1,271 respondents of Thai ethnicity, 198 of the native-born minorities and 244 of the foreign-born minorities.

Variables and measurement

The dependent variable in this study is "*utilization of health care services*". It is defined as whether the respondents used health care service provided by local health service providers when they were sick in the period of one month prior to the interview

in July 2000. This dichotomous variable is classified as "Yes" (received health care service from public health service providers) and "No" (no treatment or self-treatment only). "*Health service provider"* refers to all levels of government and private sources of health services where medical expenses may be covered by health insurance. These include a government hospital, health center, clinic, malaria unit, VD/AIDS clinic, and private hospital.

The main independent variable is "*ethnicity*" defined as ethnic Thai and ethnic minority. Ethnic minority is further classified on the basis of the country of birth as local- or native-born minority and foreign-born minority. Ethnic minorities in the study area include Mon, Burmese/Twai, Karen, Khmer, Thai Yai, Yao, Karang, Nepalese, and Yuan or Vietnamese. All but 1 of the 244 respondents of the foreign-born minority came from Myanmar.

Other independent variables include "age, sex, marital status, education, occupation, religion, ability to speak Thai, source of health information, annual income, health insurance, availability of a health center, health personnel, and transportation facility in the village, type of village, and type of self-reported illness". In this study, "source of health information" refers to the source from which respondents received health knowledge or information which may be human source such as health personnel or non-human source such as television, a radio, poster, and newspaper. "Health insurance" refers to whether the respondents had any type health insurance in 2000. "Availability of health personnel in the village" refers to availability of any type of health workers in the village such as malaria volunteer, village health volunteer, trained and untrained midwife, and traditional medical practitioner. "Availability of a health facility in the village" refers to availability of a health center or primary health care center and drug fund/drug bank in the village. "Type of village" is defined by majority of residents and the language spoken by most residents in the village. If most of the residents are Thais and the language spoken by majority of residents in the village is Thai, the village is defined as Thai village, otherwise, minority village. "Type of self-reported illness" includes illness from non-communicable disease (such as diabetes, and heart disease, etc.), illness from communicable disease (such as malaria, dengue fever and tuberculosis, etc.), and illness due to functional disorders (such as headache, back/waist pain, and muscle/bone pain, etc.) reported by the respondents.

Data analysis

Univariate 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. Model building was through Restricted Maximum Likelihood method (P value at the 0.05 level, right tail) (Agrestic & Finlay, 1997). When difference of Chi-square value between Log-Likelihood ratios test and the Chi-square table was significant at the 0.05 level (right tail), Cox and Snell R Square increased and a standard error of coefficient of the predicator was small, the new predictor was added in the model, because this new predicator could increase the explanatory power for the new model. Otherwise, the predictor was dropped out from the model.

Results

Profiles of respondents in the sample

Table 1 gives profiles of respondents included in the sample of this study. In all three ethnic groups, more than three-fourths of the respondents were from the age group of 25-59. Compared to Thais, respondents of the foreign-born minority had a larger proportion of male, of those working in non-agricultural sector, and a smaller proportion of respondents without any income. Buddhism was the religion of the largest majority of respondents. In the foreign-born respondents, nearly 40% are non-Buddhist who believe in Christianity, Islam and Hinduism. More than half of the foreign-born respondents cannot use Thai language. The results in Table 1 show strong contrast of the three ethnic groups with regard to education. This may be due partly to reporting error because this study only considers Thai education system, respondents who had education in Myanmar or other system may be misclassified or reported as no schooling.

With regard to sources of health information, availability of health personnel, health facilities and transportation facilities in the villages, Thais were better off than members of the other two minority groups, with members of the foreign-born minority

being the worst off. These differences may contribute to differential utilizations of health care services among the three ethic groups in the study area.

In this study we classified two types of villages: Thai villages where residents were predominantly Thai, and minority villages where majority of residents were minority people. The results in Table 1 suggest substantial degree of "ethnic mixture" among members of the three ethnic groups in the study area. Respondents of ethnic Thai were also better off than the other two ethnic groups with regard to availability of health and transportation facilities in the village.

Table 1: Percent distribution of respondents in the sample, by ethnic group and selected characteristics

Characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
Age				
- 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
Male	40.6	35.9	45.1	40.7
Married	82.8	84.8	95.5	84.9
Occupation				
- 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
Annual income				
- 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
Buddhism	99.2	94.9	61.1	93.3
Ability to speak Thai	100.0	94.9	46.7	91.8
Education				
- 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
Receiving information from a health officer	71.8	51.5	41.0	65.0

Table 1: (Continued)

Characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
Receiving information from television	69.7	32.8	7.0	56.5
Receiving information from a poster	53.6	27.3	19.3	45.7
Type of village				
- Thai village	88.9	60.1	50.4	80.1
- Minority village	11.1	39.9	49.6	19.9
Health center in the village	65.1	46.0	24.6	57.2
Bus route available in the village	77.7	61.1	36.1	69.9
Village health volunteer in the village	98.2	91.9	93.9	96.8
Untrained midwife in the village	38.9	70.2	75.0	47.6
Trained midwife in the village	21.2	26.3	19.7	21.6
Number of cases	1,271	198	244	1,713

Health status, health insurance and utilization of health care services

Table 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 among the sample respondents in the study area. About half of respondents in each ethnic group 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 reporting communicable diseases (accounting for less than 10 percent). 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 resulted from different health care needs or health statuses. If type of self-reported illness presented above reflects morbidity pattern of the people in study area around the year 2000, it suggests that non-communicable diseases was a predominant form of morbidity among the study populations.

In general, low health insurance coverage was found in the study area, especially among the foreign-born and native-born minorities. The national health insurance coverage in non-municipal areas reported for 2001 was 78 percent (Ministry of Public Health, 2005). In addition, Thais and members of the native-born minority were fairly similar in their access to health insurance. Distributions of respondents from these two groups were more or less similar with regard to different types of health insurance. Members of foreign-born minority, however, because of their migration and non-Thai status, only had access to "health insurance card for foreign workers". 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.

With regard to use of health care services, Table 2 clearly suggests that there was a substantial difference among the three ethnic groups in this study. Overall, only about half 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 Thai respondents, followed by those from native-born minority and from foreign-born minority, respectively.

Table 2: Percent distribution of sample respondents, by selected health related characteristics and ethnic group

Health related characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
Type of self-reported illness				
- 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
Health insurance				
- No	38.7	50.0	73.8	45.0
- Yes	61.3	50.0	26.2	55.0
Type of health insurance				
- 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 [a]	10.3	3.0	0.0	8.0
Subtotal	61.3	50.0	26.2	55.0

Table 2: (Continued)

Health related characteristics	Ethnic group			Total
	Thai	Native-born minority	Foreign-born minority	
Utilization of health care				
- 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
Total				
Percentage	100.0	100.0	100.0	100.0
Number of cases	1271	198	244	1713

[a] Refers to health insurance card for the village health volunteer, and social security card largely for workers in the private sector.

Can different utilization of health care services among the sample respondents noted above be explained in terms of the predisposing factors, enabling factors and need factor included in our conceptual framework? To determine this we performed a logistic regression analysis, the results of which are presented in Table 3.

Logistic regression analysis

Four Models were prepared in the logistic regression analysis of utilization of health care: Model 1 included only ethnicity; Model 2 added type of self-reported illness as a proxy of need factor; in Model 3 enabling factors were included; and finally Model 4 examined effects of the predisposing factors together with those of all other factors included in Models 1-3 above. 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 effects of any factors, the native-born and foreign-born minority were statistically less likely to use health care services than Thais. In Model 2, after controlling for different type of self-reported illness (need factor), comparing to the Thai, the native-born respondents were still less likely, while the foreign-born respondents were least likely, to utilize health care services.

Note that, when results of Models 1 and 2 are compared, the logistic coefficient for the foreign-born respondents increases when compared to that of the Thai respondents; while the same coefficient for the native-born sample remains more

or less unchanged. Had the type of self-reported illness influenced the utilization of health care services, the coefficients for the two minority groups would have decreased from Model 1 to Model 2. For example, if respondents of the foreign-born minority had lower health needs (or better health status) than Thai respondents, they would be less likely to use health care services compared to the Thai respondents, and then the difference in utilization of health care between the foreign-born minority and Thais should reduce. Thus, the magnitude of the foreign-born minority compared to that of the Thais should be smaller in Model 2 than in Model 1. But this is not the case. The result seems to indicates that type of self-reported illness (need factor) was not really associated with utilization of health care services among the study populations in the study area. This result is consistent with the findings in Table 2 above.

Compared to non-communicable disease (reference), communicable diseases had a significantly positive effect, while functional disorders had a significantly negative effect on utilization of health care. This may be due to different severity and duration of diseases. Most communicable diseases cause acute illness, while non-communicable diseases cause chronic illness. Thus, patients with communicable diseases are more likely to seek care 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 are more likely to buy drugs from drug stores or seek self-treatment.

In Model 3, effects of enabling factors were examined in conjunction with those of ethnicity and need factor. Health insurance had a statistically significant effect on utilization of health care. The respondents with any kind of insurance were more likely to use health care services than those who had no insurance. Respondents who received health information directly from health personnel were more likely to receive health service than those who did not. Respondents who lived in the village with a health center and public bus routes linking with the outside were significantly more likely to utilize health care services than respondents who lived in the villages without these facilities. Respondents who lived in minority villages were significantly less likely to utilize health services than respondents who lived in Thai villages. Probably this is due to the fact that health and transportation facilities were poorer or hardly existed in minority villages.

Compared to Model 2, effect of ethnicity on utilization of health care service in Model 3 reduces substantially. This suggests that if members of foreign- and native-

born minorities were similar to Thais with regard to enabling factors, the native-born minority could have the same opportunity to utilize health care services as Thais; similarly the foreign-born minority could improve their use of health care services. This implies that health insurance, availability of a health center and availability of transportation facilities in the village, and type of village played important roles in improving health care utilization for the native- and foreign-born minority population in the study area.

Results of Model 4 show that respondents of the age older than 24 years were significantly more likely to use health care services than the younger ones. This may be due to different health statuses; younger people are generally of better health than those of the older ages. Model 4 also shows that respondents were also more likely to use health care services if they could speak Thai, or if they were Buddhists.

With regard to ethnicity, the most important issue in our research question, results in Model 4 suggest that when effects of need factors, enabling factors and predisposing factors were taken into account, effect of ethnicity reduced substantially and became insignificant. This is in contrast to the effects of all other factors which remain and were still statistically significant. Here, compared to the ethnic Thais, the coefficients for native-born and foreign-born respondents were not only at the low level but they were also no longer statistically significant. These results lead us to a conclusion that ethnicity is not an important factor as far as utilization of health care services is concerned.

Table 3: Logistic coefficients for regression of utilization of health care (N=1713)

Variables	Model 1	Model 2	Model 3	Model 4
	B	B	B	B
Ethnicity				
-Thai (ref.)				
-Native-born minority	-.59**	-.58**	-.20	-.09
-Foreign-born minority	-1.28**	-1.38**	-.68**	.13
Need factor				
Type of self-reported illness				
-Non-communicable disease (ref.)				
-Communicable disease		2.41**	2.60**	2.64**
-Functional disorders		-.25*	-.23*	-.28*
Enabling factors				
Health insurance				
-No (ref.)				
-Yes			.65**	.65**
Receiving health information from a health officer				
-No (ref.)				
-Yes			.48**	.49**
Health center available in the village				
-No (ref.)				
-Yes			.36**	.32**
Bus route available in the village				
-No (ref.)				
-Yes			.33**	.27*
Type of village				
-Thai village (ref.)				
-Minority village			-.80**	-.65**
Predisposing factors				
Age group				
-15-24 (ref.)				
-25-59				.67**
- ≥60				.44*
Ability to speak Thai				
-No (ref.)				
-Yes				.93**
Religion				
-Non Buddhism (ref.)				
-Buddhism				1.21**
Constant	.31**	.28**	-.53**	-3.54**
-2 log likelihood	2289.29	2162.60	2079.17	2027.10
Model Chi-Square	83.54**	210.23**	293.66**	345.73**
Cox & Snell R Square	.048	.115	.158	.183

Wald test: *p<0.05, **p<0.01

Discussion

This study documents different patterns of health care utilization among ethnic groups on the Thailand-Myanmar border area, and examines the extent to which characteristics of each ethnic group were associated with health care use. Results of univariate analysis show substantial difference in utilization of health care service among the three ethnic groups, with respondents of the ethnic Thai being better-off and those of the foreign-born minority being worst-off while the native-born minority respondents fell somewhere in between these two ethnic groups. The difference, according to results of univariate analysis, was understood in terms of different characteristics, especially the needs for health care, enabling factors and predisposing factors specific to individuals of these ethnic groups.

Such difference, however, is not illusive and not real because each factor was considered independently without taking into account potential effects from other factors. To be more accurate, we performed logistic regression where effect of each factor was considered net of the effect of all others. The main results suggest that effect of ethnicity is reduced substantially, while all variables in each set of the need, enabling and predisposing factors generally can retain their independent and statistically significant effects on utilization of health care services. This means, other thing being equal, if there is no difference in need for health care and other enabling and predisposing factors, people of all ethnic groups will be more likely to have similar utilization of health care services. More specifically, respondents of foreign-born and native-born minorities can have nearly as much opportunity to utilize health care services as those of the ethnic Thais, if they do not significantly differ from the latter in terms of access to health insurance, health information, availability in the village of health and transportation facilities, and ability to use Thai language.

The finding above has important policy implications. It calls attention to reducing social differences among ethnic groups which inhibits access and utilization of the health care services. To achieve this goal, public programs must address the problem from at least two dimensions. On one hand, individuals of the ethnic minorities must be given equal opportunity to receive health information, if not in Thai language, at least in their native dialects. For this purpose and where possible, local health centers and hospitals may consider hiring some workers who know language of minority population in the area. In the long run, minority population should have access to education through which they can learn Thai language. On the other, national health

insurance scheme should extend its coverage to population of minority groups. In addition, local administrative authorities may strengthen minority communities with reasonable transportation and health facilities which will enable people to have access to service when they need it. All these, need innovative programs and certainly public investment.

This study looks at the issue of health care utilization among the populations of ethnic groups solely from the users' side. To be more complete, future study should take into accounts variables relevant to both the users' and the providers' sides. Analysis along this line will be of special interest if national, large-scale sample is included.

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