

**EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS
HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH
KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN
TAK PROVINCE, THAILAND**

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บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)
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ปัจจุบันมีผู้อพยพชาวพม่าอาศัยอยู่ในประเทศไทยจำนวนประมาณ 2 ล้านคน และพบว่ามีความรู้เกี่ยวกับโรคติดเชื้อต่างๆ ก่อนข้างสูงในกลุ่มผู้อพยพชาวพม่า เมื่อเปรียบเทียบกับผู้อาศัยอื่นในชุมชนเดียวกัน เช่น โรคท้องร่วง โรคติดเชื้อทางเดินหายใจ โรคมาลาเรีย และวัณโรค การสร้างทีมอาสาสมัครสาธารณสุขในชุมชนแรงงานชาวพม่าจะพัฒนาความรู้พื้นฐานในเรื่องโรคติดเชื้อแก่ประชาชน นำไปสู่การลดปัญหาสุขภาพในชุมชนได้ การศึกษานี้มีสองระยะ ระยะแรกเป็นการศึกษาภาคตัดขวาง (Cross-sectional study) มีวัตถุประสงค์เพื่อ ศึกษาความรู้ด้านสุขภาพของชุมชนและความสัมพันธ์ของความรู้เหล่านั้นกับตัวแปรด้านลักษณะทางประชากรและสังคม ระยะที่สองเป็นการศึกษากึ่งทดลอง (Quasi-experiment) เพื่อประเมินการเปลี่ยนแปลงการรู้คุณค่าและความสามารถของตัวเองของอาสาสมัครสาธารณสุขแรงงานชาวพม่าประจำหมู่บ้าน หลังจากได้เข้าร่วมโครงการเสริมสร้างพลังความสามารถด้านความรู้พื้นฐานในเรื่องโรคติดเชื้อในชุมชน การศึกษานี้มีประชากรที่ศึกษา 2 กลุ่ม คือ กลุ่มแรงงานชาวพม่าผู้อาศัยอยู่ในชุมชน และกลุ่มอาสาสมัครสุขภาพในชุมชน การศึกษาระยะที่สองนี้ อาสาสมัครชาวพม่าที่เข้าร่วมการศึกษามี 2 กลุ่ม คือ กลุ่มทดลองและกลุ่มควบคุม ได้รับการฝึกอบรมเรื่องโรคติดเชื้อเบื้องต้นเป็นเวลา 2 วัน หลังจากนั้นเฉพาะกลุ่มทดลองจะได้รับการสนับสนุนและติดตามผลในการทำงานทุกเดือนเป็นเวลา 6 เดือน

ผลการศึกษาพบว่า ความรู้เรื่องโรคติดเชื้อมีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับอายุ ($\chi^2 = 26.39, P < 0.001$) ระดับการศึกษา ($\chi^2 = 21.64, P < 0.001$) อาชีพ ($\chi^2 = 39.3, P < 0.001$) การอยู่อาศัยที่ถูกต้องตามกฎหมาย ($\chi^2 = 21.16, P < 0.001$) รายได้ ($\chi^2 = 9.81, P = 0.044$) ระยะเวลาที่อาศัยอยู่ในชุมชน ($\chi^2 = 21.51, P < 0.001$) และความเชี่ยวชาญในการใช้ภาษาไทย ($\chi^2 = 6.16, P = 0.046$) ในระยะที่สอง พบว่าในกลุ่มทดลอง มีคะแนนความรู้สึกรู้สึกมีคุณค่าในตัวเองและความสามารถในการตนเองเพิ่มขึ้น รวมถึงมีความรู้ด้านสุขภาพชุมชนเพิ่มขึ้นด้วยเช่นกัน ผลการศึกษาในระยะแรกสะท้อนให้เห็นว่า แรงงานชาวพม่าชายขอบส่วนใหญ่เป็นกลุ่มที่มีการศึกษาน้อย มีอาชีพทางการเกษตร ไม่มีเอกสารรับรองการอยู่อาศัยที่ถูกต้องตามกฎหมาย และมีข้อจำกัดในทักษะการใช้ภาษาไทย ดังนั้นในการส่งเสริมสุขภาพสำหรับกลุ่มแรงงานชาวพม่า ควรเจาะจงไปยังกลุ่มดังกล่าวข้างต้น ผลการศึกษาแสดงให้เห็นว่า ควรมีการติดตามและให้การสนับสนุนการดำเนินงานสร้างเสริมพลังอาสาสมัครสาธารณสุขชาวพม่าอย่างต่อเนื่องทั้งการประชุม สนับสนุนทางเทคนิคและจิตใจและให้มีการเชื่อมประสานการดำเนินงานร่วมกับระบบของประเทศปลายทาง เพื่อความยั่งยืนต่อไปในอนาคต

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AUNG KAY TU: EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS
HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH
KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN TAK PROVINCE,
THAILAND. ADVISOR: ASST. PROF. KHEMIKA YAMARAT, PhD.,
CO-ADVISOR: PROF. PEERASAK CHANTARAPRATEEP, D.V.M., M.Sci.Vet.,
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About two million migrants from Myanmar are residing in Thailand. Incidence of infectious diseases such as diarrhea, acute respiratory infections, malaria, Tuberculosis is higher among the Myanmar migrants compare to the incidence in the host community. Formation of teams of community health volunteers in the migrant community would improve the knowledge of people about common infectious diseases and mitigate the problems. There were 2 phases in the study. Phase (I) was a cross sectional study and the objective was to investigate the community health knowledge in relation to socio-demographic factors. Phase (II) was a quasi-experimental study to assess the changes in self esteem and self efficacy among the Myanmar migrant community health volunteers (CHV) after participating in empowerment program and their ability in improving health knowledge of common infectious diseases in their communities. There were 2 groups of participants in the study. One group was community members and another group was Community Health Volunteers (CHV). In Phase (II), recruited CHV from both intervention and control clusters received initial 2 day training related to common infectious diseases. After initial training, only CHV in the intervention clusters received follow-up booster trainings once a month for six months.

The knowledge about infectious diseases was significantly related to age ($\chi^2 = 26.39$, $P < 0.001$) education level ($\chi^2 = 21.64$, $P < 0.001$), occupation ($\chi^2 = 39.3$, $P < 0.001$), legal stay status in Thailand ($\chi^2 = 21.16$, $P < 0.001$) and income ($\chi^2 = 9.81$, $P = 0.044$), duration of stay in the community ($\chi^2 = 21.51$, $P < 0.001$) and Thai language proficiency ($\chi^2 = 6.16$, $P = 0.046$). In phase (II), there were significant improvements in self-esteem and self-efficacy mean scores of CHV in intervention clusters. There were also significant increases in the community health knowledge in intervention clusters at the end of project. Based on the findings of the phase (I), uneducated young migrant agricultural farmers, without any legal stay documentation, with limited Thai language skill were marginalized people and therefore further health promotion intervention for Myanmar migrants should focus on this vulnerable group. The findings in phase (II) indicate that regular follow up meetings with technical and moral supports were necessary for a successful migrant CHV program. For sustainability, it should be linked up to CHV system of the host country.

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LIST OF ABBREVIATION

AIDS	Acquired Immunodeficiency Syndrome
CDC	Centers for Disease Control and Prevention
CHV	Community Health Volunteers
CHW	Community Health workers
DHF	Dengue Hemorrhagic Fever
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
IOM	International Organization for Migration
IRC	International Rescue Committee
KAP	Knowledge, attitude and Practice
MoI	Ministry of Interior, Thailand
MoPH	Ministry of Public Health, Thailand
NGO	Non Governmental Organization
ORS	Oral Rehydration Solution
PHC	Primary Health Care
TB	Tuberculosis
UNHCR	United Nations High Commissioner for refugee
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1 Migrant workers in Thailand

Millions of people are migrating because of economic, political and social reasons. The phenomenon of mobility creates channels where information, culture and disease travel from one place to another. In recent years, Thailand has become the most developed country in the Greater Mekong sub-region offering more employment opportunities and higher wages than any of its neighbors. Significant economic disparity can be demonstrated by comparing Thailand's per capita gross domestic product (GDP) to that of Cambodia, Lao PDR and Myanmar. In 2009, Thailand's per capita GDP was US\$ 8,200, compared to Cambodia's of US\$ 1,900, Lao PDR's of US\$ 2,100 and Myanmar's of US\$ 1,100 (CIA, 2010). The gap of socioeconomic development between Thailand and its neighboring countries, otherwise known as the push and pull factors of migration, has made Thailand an attractive destination for migrants, particularly from Myanmar, Lao PDR, and Cambodia. The challenges are vast and complex with 1.2 million labor migrants and their families, as well as an equal number of unregistered migrants thought to be residing in Thailand (IOM, 2009)

There are estimated 2-3 million migrants living and working in Thailand and an additional 141,000 displaced persons from Myanmar residing in temporary shelters along the border (International Organization Migration, 2011). Most are from Myanmar, and more than half are believed to live in the ten provinces of Thailand bordering Myanmar. The number of migrants in Thailand is in increasing trend (Martin, 2007); (Rattana, 2009). It is estimated that about 90% of all migrants in Thailand originated from Myanmar. Among the ten provinces along Thai-Myanmar border, Tak and Ranong provinces had received most of the migrant workers from Myanmar. Migrants contributed 24.8 % of Tak province population in 2004 (see Table 1.2). In addition, there were 73,026 refugees living in three camps (UNHCR, 2007), and 124,618 registered migrant workers and approximately 50,000-100,000 non-registered migrant workers in Tak province (Ministry of Interior, 2004). The

economic growth continues to make Thailand a main destination country for migrant workers from Cambodia, Lao PDR and Myanmar. As of September 2005, there were about 1,284,920 migrants registered with the Thai Ministry of Interior. (Huguet and Punpuing, 2005). In addition to the registered and unregistered migrants currently in Thailand, there are approximately 140,000 displaced persons in camps along the border with Myanmar (UNHCR, 2007).

Table 1.1 Estimated numbers of migrants in Thailand (1999-2009)

Year	Registered	Non-registered	Total	% of registered migrants
1999	99,974	886,915	986,889	10
2000	99,956	563,820	663,776	15
2001	568,249	281,751	850,000	67
2002	409,339	558,910	968,249	42
2003	288,780	711,220	1,000,000	29
2004	849,552	149,848	999,400	85
2005	705,293	807,294	1,512,587	47
2006	668,576	1,104,773	1,773,349	38
2007	460,014	1,339,986	1,800,000	26
2008	501,570	1,289,430	1,800,000	28
2009	1,094,981	841,365	1,936,346	57

Source: Martin (2007) and Rattanakrath (2009)

A range of structural and cultural factors operating at the individual and community level are closely linked to the limited access that approximately 2.5 million migrants residing and working in Thailand have to health facilities. These factors are major constraints to improving and enhancing the health behaviors and health conditions of both registered and unregistered migrants and their host communities. The multi-dimensional aspect of personal and community health requires a collaborative response to ensure marginalized communities and underserved migrants have access to basic health services that meet their specific

needs. Despite Thailand has strong record of public health standards, migrant populations remain vulnerable to various health risks, often lacking the economic means or social safety nets to access adequate health services. This is a concern from a public health standpoint, as sustained health problems in a concentrated demographic often translate to issues among the wider population. In other words, the broader Thai population has a large stake in the health of migrants (IOM, 2009).

Table 1.2 Population of the Provinces in Thailand Bordering Myanmar

Province	Province Population¹	Registered Migrants²	% of migrants in Province
Chiang Rai	1,244,564	32,725	2.6
Chiang Mai	1,599,538	82,959	5.2
Mae Hong Son	239,128	8,818	3.7
Tak	503,042	124,618	24.8
Kanchanaburi	799,588	32,391	4.1
Ratchaburi	832,005	20,307	2.4
Phetchaburi	461,539	5,333	1.2
Prachuap Khiri Khan	490,479	14484	3.0
Chumphon	475,467	23,504	4.9
Ranong	163,298	55,749	34.1

Source ¹ Bureau of Epidemiology, Department of Disease Control, as of December 2003.

² Ministry of Interior, as of 15 November 2004

1.2 Living Condition of Migrant workers in Thailand

A number of measures are undertaken by Royal Thai government to improve the health status of migrants. Despite this, they still have a lot of health problems. The registered migrant workers can now access to government health services under the 30 Baht scheme through the National Health Plan, however, the large number of unregistered migrants experience financial, security, cultural, language and geographic barriers in obtaining health services. The mobility of the population,

combined with access barriers, contributes to increased morbidity and mortality. (MOPH, 2007).

Over 90 percent of migrant workers working in Thailand are living in poor condition and consequently they became stressful and anxious due their life struggles (Tutchananusorn, 2000). They work in unsafe environments, do hard, risky, dirty job, having long hour at work place and also inequitably treated. These factors cause both physical and mental health problems. (Kaekprayoon, 2003). Incidences of infectious diseases among migrant workers are higher and cross border migrant are even more vulnerable to infectious diseases (United Nations Country Team in Thailand, 2005). They may be prone to greater health risks than non-migrants if they lack knowledge about healthy behaviors as well as if they cannot access to health services (Isarabhakdi, 2004).

1.3 Myanmar Migrant Workers in Tak Province

Mae-Sot and Phob Pra are towns bordering Myanmar in the Tak province of Thailand. Thai and Myanmar sides are separated by a small river called the Moei. The friendship bridge constructed in 1997 by the Thai government connects the two sides. There are about 100,000 Myanmar migrant workers working in Mae Sot predominantly in garment factories but also in the construction and agricultural sectors. The working conditions in the garment factories are quite crowded and workers have to work for long hours. The factories in Mae Sot are unique in the sense that most of the Burmese workers live on the factory premises. Thus there is no clear distinction between working and living areas. The residential quarters or dormitories are very crowded and unhygienic. Workers have to sleep on narrow shelves on top of each other (Arnold, 2004). These conditions put the migrant workers at risk of infectious diseases especially during the outbreaks and pandemic such as influenza A H1N1.

There are existing health care problems in Mae Sot due to lack of knowledge about primary health care and hygiene among migrants. Rented houses and rooms for migrants are substandard, congested with no garbage treat because house owners are neither concerned nor cooperative with local authorities. Epidemics like Cholera, TB and Malaria are found among migrants more than local Thais. High mobility of

migrant makes Mae Sot hospital health and diseases surveillance less effective. The surveillance program cannot monitor migrants who are on the move. (Chantavanich, 2008)



Fig (1.1) Rented rooms for migrant workers in Mae Sot



Fig (1.2) Migrant workers working in a factory



Fig (1.3) A Myanmar migrant community near agricultural farms in Phob Pra district



Fig (1.4) Migrant workers working in agricultural farm

1.4 Common health problems among Myanmar migrants

For health care providers and public health officials, knowledge of local patterns of disease is critical for making informed treatment and prevention decisions. In many developing nations, prevalence and incidence of infectious disease is largely unknown, with estimates based on scanty or unreliable data (Crump, 2003). According to Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand, in 2008 top ten diseases among the foreign migrant workers were acute diarrhea, malaria, pyrexia, pneumonia, dengue fever, sexually transmitted

diseases, food poisoning, conjunctivitis, tuberculosis and chicken pox. Non-infectious diseases are most common cause of mortality among migrants, followed by accidents and infectious diseases. Among the people died due infectious diseases, Myanmar migrants are in the highest number (21%) compare to Laos (11%) and Cambodia (20%). (Srivirojana and Punpuing, 2009).

Diarrhea including cholera outbreaks have been frequently reported among such displaced persons and sometimes have caused a serious public health problem to residents of the hosting countries due to overcrowding, inadequacy of water supply, and poorly maintained sanitation facilities (CDC, 1992). Cholera continues to occur in Myanmar in both rural and urban settings, including Yangon. Information regarding outbreaks is difficult to confirm and often hidden, making this an underreported disease. Even less information about cholera exists along the Thai-Myanmar border, although occasionally outbreaks have been reported in refugee camps (McDowell, 1997). A cholera outbreak took place in among Myanmar migrants living in a Thai-Myanmar border area, Tak Province, Thailand between May and October 2007. Diarrhea outbreaks in displaced persons can be made worse by limited access to medical care services. In this outbreak, many symptomatic cases did not seek treatment although some of them had severe dehydration and required rapid fluid replacement. Early detection and treatment of infected persons by active case finding might reduce the morbidity and mortality among migrants. Active case surveillance should cover all the migrants at risk who normally have poor access to healthcare services. To reduce the public health problems in this population, the Mae Sot District Health Office and the hospital organized trained migrant health volunteers whose activities were similar to those of the Thai Village Health Volunteers (MHV). However, the preventive health activities were not fully effective due to limited financial support, regular follow up activities and the illegal status of MHV. Active case finding and implementation of preventive and control measures with the assistance of trained migrant health volunteers and workers might reduce the morbidity and mortality in this population (Swaddiwudhipong et al., 2008).

Malaria is one of the most commonly reported diseases in Myanmar migrants. In one estimate, Myanmar migrants have higher prevalence rates of malaria than other population groups living along the Thai-Myanmar border. Of about 25,000 cases of

malaria reported to the Thai Ministry of Public Health in 2005, 92 percent (23,000) were found in Myanmar migrants. Thirty percent of all reported cases of malaria in Thailand occur in Tak Province, adjacent to Myanmar. (Wongsrichanalai et al, 2000). The annual incidence of *Plasmodium falciparum* malaria was 87.8 per 1,000 in Thais and 285.9 per 1,000 for non-Thais. Myanmar migrants in Thailand are not only more likely to be ill from malaria but also commonly have asymptomatic parasitemia. According to a study published in 2002, Burmese migrants in Tak Province had a 4.4 percent asymptomatic parasitemia prevalence rate compared to 0.2% in local Thais. (Wiwatitkit, 2002) This large reservoir of both symptomatic and asymptomatic individuals who remain untreated has contributed to large outbreaks of malaria in Thailand. Control of these outbreaks has been complicated by high mobility in undocumented migrants, a problem compounded by difficulties in accessing care and prevention. Multi-drug resistant malaria is an increasing problem along the Thai-Myanmar border for several reasons. One of the main reasons is that many Myanmar migrants who lack access to adequate health care often buy and take medications without supervision and control. Second, while the mainstay of treatment for *falciparum* malaria along the border is artesunate with mefloquine combination therapy, counterfeiters have destabilized this treatment regime by producing and selling fake artesunate (Wongsrichanalai et al, 2001). The data from the Vector Borne Disease Control center in Mae Sot, showed very low percentage of recovery among Myanmar migrants due to the inability to follow through with all requirements on the malaria treatment after the initial diagnosis and lack of knowledge of malaria treatment. Failure by migrants to follow through with full malaria treatment may lead to more severe form of malaria which will be resistant to previously used medicines. (Krissanakriangkrai and Hengboriboonpong, 2007)

DHF is a part of global health problems affecting tens of millions of people (Monath, 1994). The incidence and geographical distribution of dengue have greatly increased in recent years. The emergence of epidemic DHF as a global public health problem in the past 15 years is associated closely with demographic and societal changes. The factors involved have been population growth rapid urbanization, especially in tropical developing countries, the lack of effective mosquito control, and the deterioration of public health infrastructure (Gubler and Clark, 1995). Dengue

hemorrhagic fever (DHF) is endemic in 12 out of 14 states and divisions in Myanmar. The Myanmar National Health Plan (NHP) (1996-2001) termed DHF as one of the diseases under national surveillance. One of the strategies devised in NHP for the prevention and control of DHF is production of guidelines for basic health staffs as part of the information, education and communication (IEC) program (Khynn Than Win, 2004). Mae Sot district at the Thai-Myanmar Border is a dengue endemic area in which outbreaks occurs periodically every 2-3 years. During 2003, the Dengue Hemorrhagic Fever (DHF) morbidity rate in the district was the highest in Tak Province (MOPH 2004). Health education on DHF was required for the *Aedes* mosquito control program and the main effective mass media for public health education were radio and television (Swaddiwudhipong et al., 1992). Communication participation appears to be one of the most promising innovative means to prevent and control DHF. Simple elimination of vector-breeding water collections or “source reduction” is the possible solution to the problem. Community activities are identified mainly as reduction of non-essential water containers, protection of water containers from larvae breeding. Community participation needs to be sustained by dissemination of health messages through various channels (Yoon, 1987).

TB is the most prevalent infectious disease found in Myanmar migrants who undergo health screening for work-permit registration in Thailand (Amarinsangpen, 2006). In Tak Province alone, 885 out of 30,000 Burmese migrants who registered to work in the province in 2002 had active tuberculosis that required treatment. The Mae Tao Clinic diagnosed 700 cases of TB in Myanmar migrants in 2004, with residents of Myanmar outnumbering residents of Thailand 2:1 (Mae Tao Clinic, 2004) and (Marwaan, 2005). The situation is further compounded by the fact that TB rates are likely to increase as HIV becomes entrenched in migrant communities. In 2006, among cases reported to the Thai Ministry of Public Health, almost 20 percent of migrants with AIDS are infected with tuberculosis. (Thanaisawanyangkoon, 2006). In some northern Thai border provinces almost half the patients diagnosed with tuberculosis are now non-Thai, overwhelming the capacity of local health care providers to isolate and follow up with patients (Wandee et al., 2004). TB cure rates in these migrants are significantly lower than their Thai counterparts, and treatment default rates are higher. In Mae Sot,

treatment-discontinuation rates in Myanmar patients with tuberculosis are consistently higher than in Thais. These failures reflect not only the high burden of the disease in migrants but also the barriers to their abilities to access care in Thailand. (Sawasdiwuthipong and Kasam, 2004). These situations reflect the poor health knowledge of Myanmar migrants regarding tuberculosis.

As in many other parts of the world, commercial sex workers and Intravenous Drug Users (IDUs) suffer from especially high rates of HIV infection on the Thai-Myanmar border. In a study conducted by the Myanmar Ministry of Health, the prevalence of HIV in women presenting for antenatal care was above 1 percent and there was high prevalence of HIV infection in the general population living in eastern Myanmar neighboring to Thailand. (Beyer et al, 2006). In a report, prevalence rates were 9 percent in Shan men and 7.5 percent in pregnant women in Hpa-an, the capital of Karen State and a “pass through” site for many Myanmar migrant workers heading to Thailand (Marshall, 2006). Meanwhile, there is a growing concern about the prevalence of HIV on the Thai side of the border. In a clinic that serves mostly Myanmar migrant sex workers in Mae Sot, the prevalence of HIV is around 10%. In Mae Sot, HIV infection rates in women presenting for antenatal care have been increasing. At the Mae Tao Clinic, the most recent prevalence rate is 2.2 percent, compared with 0.8 percent five years earlier. The rate in Myanmar women presenting for antenatal care at Mae Sot Hospital is 1.6 percent, triple that of their Thai counterparts (Sawasdiwuthipong et al, 2006). The combination of low levels of knowledge, lack of legal status, and fear heightens the risk for exploitation, including trafficking put Myanmar migrants at risk of HIV/AIDS.

In late April 2009, the WHO declared that the emergence of this virus represented a ‘public health emergency of international concern’ and on 11 June 2009, raised the phase of pandemic alert to 6, indicating that a new influenza pandemic was under way (Chan, 2009). The H1N1 virus has spread with great speed and reached all continents and is causing considerable human suffering. It is also having an adverse impact on the health services and the economy. Communicable diseases are currently the leading cause of preventable deaths worldwide, disproportionately affecting resource-poor settings. Pandemic influenza would add to already unacceptable levels of morbidity and mortality from diarrhea, malaria,

pneumonia, HIV/AIDS and tuberculosis. During a pandemic, these illnesses are likely to increase in resource-poor settings where chronically strained health systems would face even higher patient volumes, severe resource constraints, and absenteeism of health staffs (WHO, 2009).

Most of the recent studies focus on one particular disease and there are limited number of studies about the knowledge, attitude and practices about Myanmar migrants regarding infectious diseases prevalent in the area. Therefore, in this study, knowledge of Myanmar migrants on the common infectious diseases will be investigated and developed an intervention to improve the knowledge of Myanmar migrants in the study area. In addition to distribution of health information materials such as posters and brochures, one of the key strategies to provide health information in the community was training the local people from the community in which they live, earn their livelihood and familiar to the way of life of the people they serve (Kahssay et al., 1998). As a matter of fact, the key intervention strategy is training and empowerment of selective Myanmar migrants as community health volunteers to work together with local health authorities; factories and farm owners, and community people to conduct health promotion and disease prevention activities as well as providing health information and education. Myanmar migrants should be empowered socially and psychologically through access to health information and regular follow up meetings in their localities to improve the health knowledge of people in their communities.

1.6 RESEARCH OBJECTIVES

Phase (I)

1. To investigate the knowledge about the common infectious diseases among the Myanmar Migrants in Tak Province, Thailand.

Phase (II)

1. To assess the changes in self esteem and self efficacy among the Myanmar migrant community health volunteers after participating in empowerment program.
2. To assess the ability of Myanmar migrant community health volunteers in improving community health knowledge of common infectious diseases.

1.7 RESEARCH HYPOTHESIS

Phase (I)

1. The knowledge about the common infectious diseases among the Myanmar Migrants in Tak Province, Thailand is associated with socio demographic factors.

Phase (II)

1. Empowerment of Myanmar migrant workers as community health volunteers is effective in increasing self esteem and self efficacy of volunteers for providing health education to community members.
2. Empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases in Tak province, Thailand.

1.7 OPERATIONAL DEFINITION

1.7.1 Myanmar Migrants

They are referred as the people from Myanmar living and working in Thailand for more than six months in the study area.

1.7.2 Community Health volunteers (CHV)

They are the people from the study clusters and received health trainings for giving health education in the community about common infectious diseases. The CHV are not paid monetary incentives but they provide services with their willingness and volunteer spirit.

1.7.3 Empowerment

It is defined as a process to encourage CHV to gain control socially and psychologically through access to information, knowledge and skills, decision making, individual self-efficacy and community participation. The process includes an initial training for 2 days and follows up meetings for one a month for six months.

1.7.4 Self Esteem

It is the feeling of CHV who were respected and accepted by their community members and have ability to provide health education in community successfully.

1.7.5 Self Efficacy

It is the belief of CHV in performing health activities in the community to make sure that community members attain proper and correct health knowledge.

1.7.6 Community Members

They are the people living in the study area for more than six months and having no Thai ID card. In this study, these people were interviewed about the knowledge about common infectious diseases.

1.7.7 Ability of CHV

It means the ability to provide health education in the community and is proved by improved community health knowledge.

1.7.8 Follow up Meetings

These are the meetings among research team members and community health volunteers in the intervention clusters to booster their knowledge and confidence.

Fig (1.5) Conceptual framework I

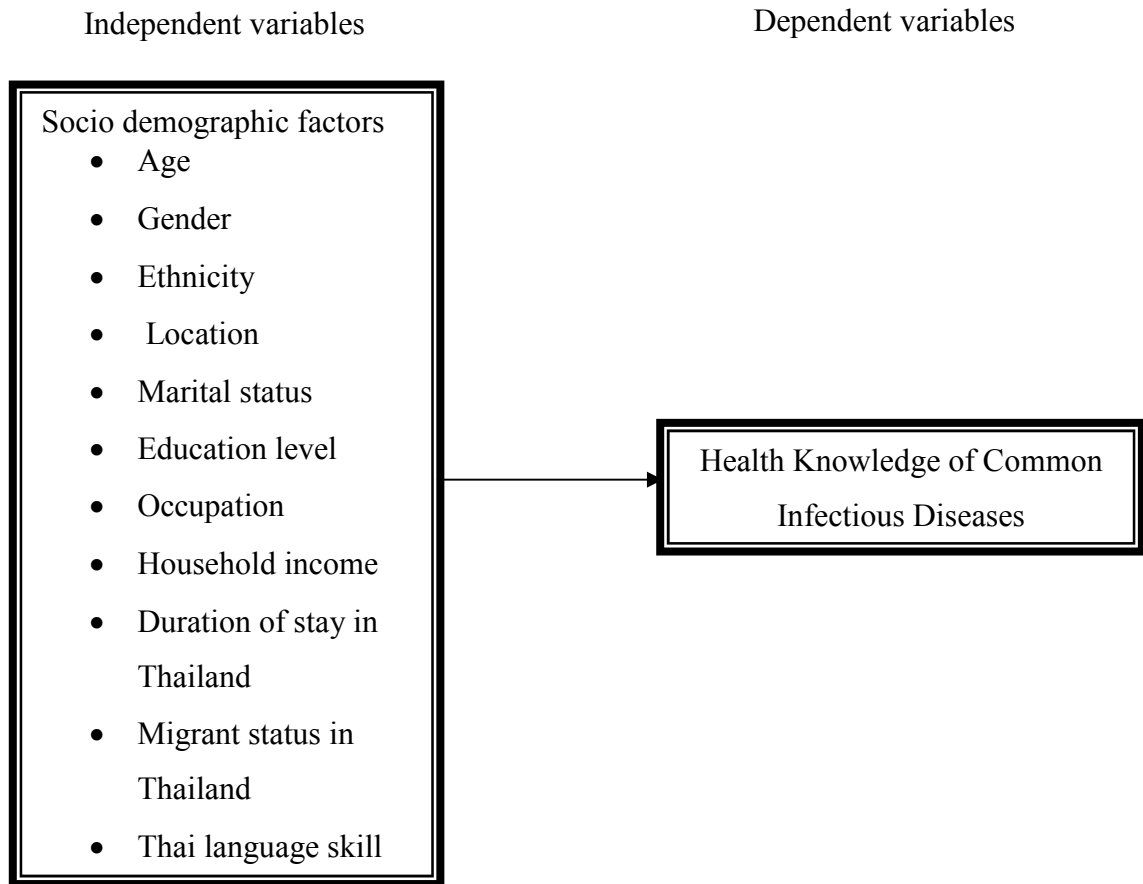


Fig (1.6) conceptual framework (II)

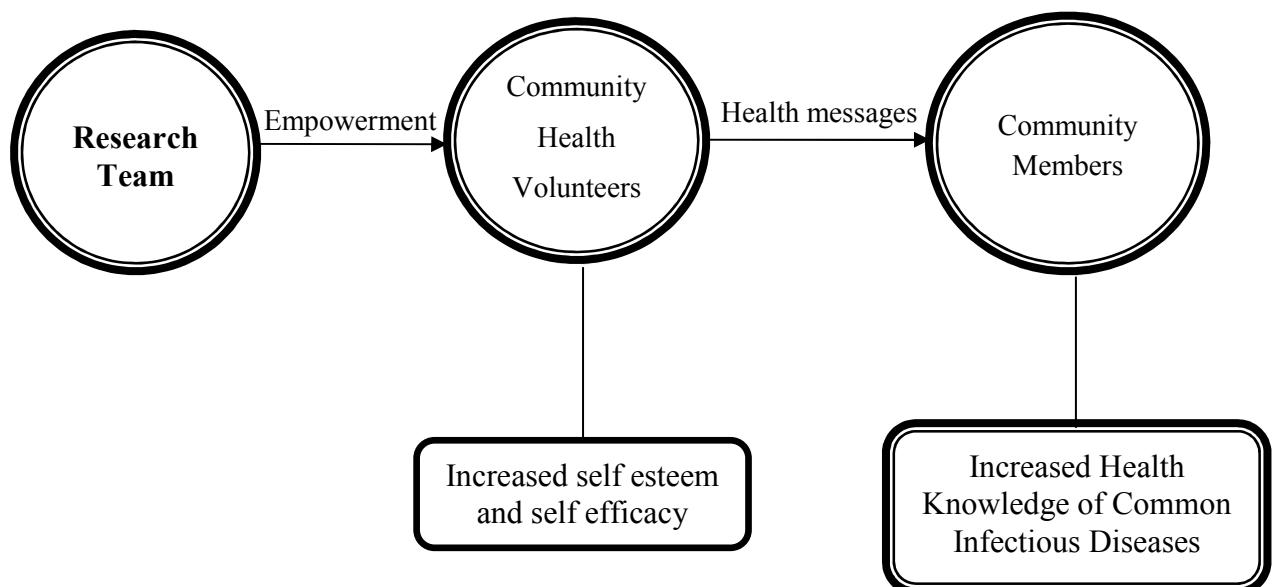
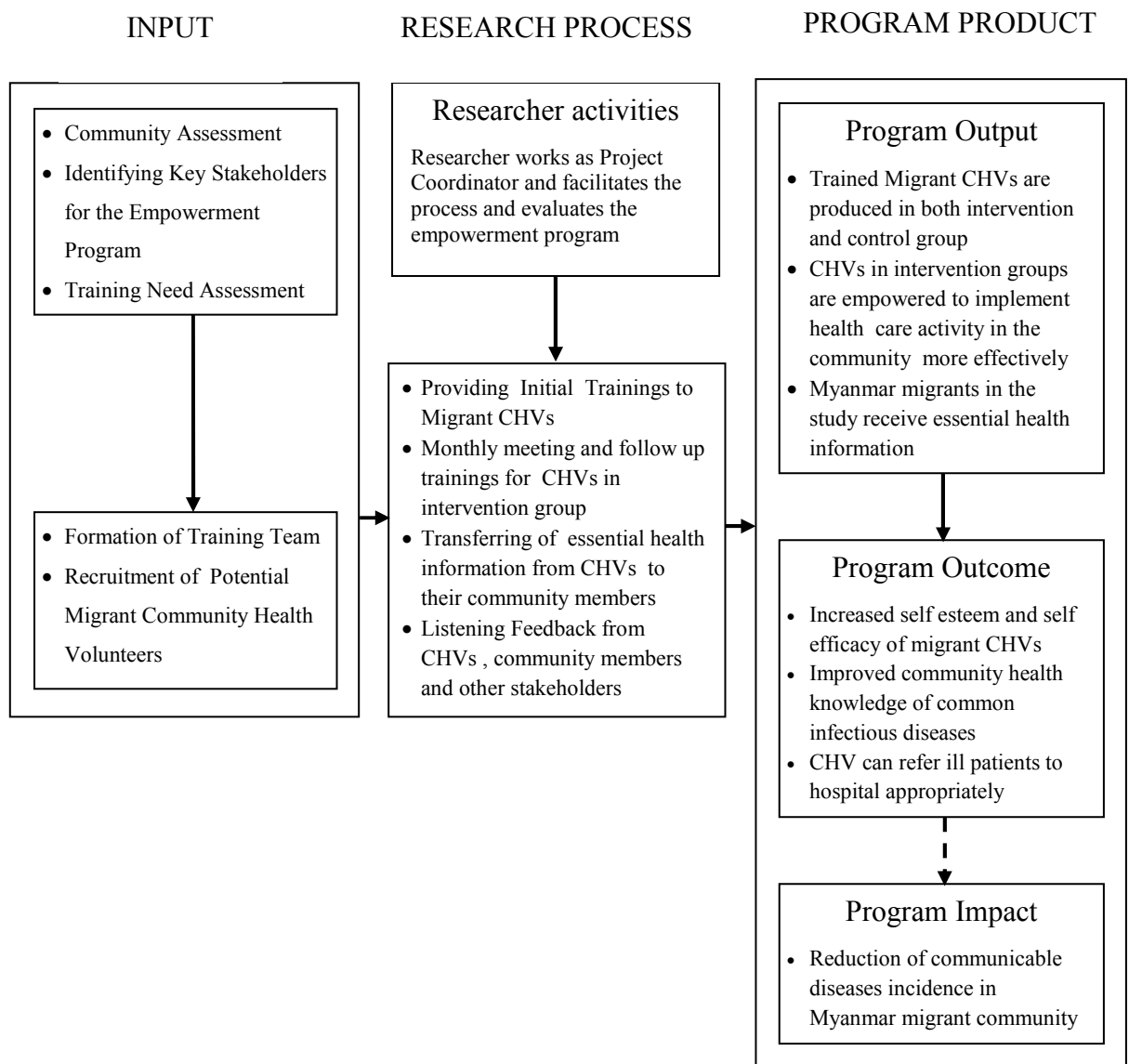


Fig (1.7) Conceptual Framework III: Empowerment Process for Myanmar Migrant Workers as Community Health Volunteers



CHAPTER II

LITERATURE REVIEW

This chapter presents a review of literature with regards to empowerment, self esteem, self efficacy, health promotion in workplace and development of a suitable empowerment intervention to promote self esteem and self efficacy of Community Health Volunteers (CHV) and improving community health knowledge. The review also consists of relevant studies about roles, training, motivation for CHV and sustainability of community health volunteer program.

2. 1 EMPOWERMENT

2. 1.1 Definitions of Empowerment

The concept of ‘empowerment’ has been used in many different disciplines (Perkins, 1995) most notably in the fields of health promotion and health education, community psychology, mental health, nursing, medicine, social work, education and organizational development. Across these domains, definitions of ‘empowerment’ vary considerably. Some overarching features, however, include the idea that ‘empowerment’ occurs on different levels: individual, organizational, community and societal/political, and may refer to both processes and outcomes.

The relevant definitions of empowerment for health care and in the field of community psychology, Zimmerman (1988) mentioned that empowerment is the ability of individuals to gain control socially, politically, economically and psychologically through access to information, knowledge and skills, decision making, individual self-efficacy, community participation and perceived control.

Empowerment is also defined as a process of helping people to take control over the factors which affect their lives. This includes both the individual responsibility in health care and the broader institutional, organizational or societal responsibilities in enabling people to assume responsibility for their own health. (Gibson, 1991)

2.1.2 Community empowerment

(Becker et. al.,1998) define community empowerment as “effecting community-wide change in health related behaviors by organizing communities to define their health problems, to identify the determinants of those problems and to engage in effective individual and collective action to change those determinants.” (Minkler and Wallerstein, 2005) define community empowerment as “a social action process through which individuals, communities and organizations gain mastery over their lives in the context of changing their social and political environment to improve equity and the quality of life.”

There three key ideas in community empowerment. First, community empowerment, much like behavior change, constitutes a process rather a singular event. Communities gradually redefine existing conditions such as poor health knowledge and accessibility to health services. Over time, norms are adjusted and resources mobilized to address the problem. Leaders become advocates for new norms. Communities uncover their own resources and capacity to take effective action in support of community health. Community representatives learn to be effective negotiators with external authorities and resources. Secondly, community empowerment implies collective action. Community participation only makes sense when the nature of the problem or the task requires collective action. (Askew, 1989). The third core concept embedded in the definitions of community empowerment is that of outcomes. Community empowerment is more than a process; it must lead to a change in people’s lives. One example of outcome is increased capacity.

2.1.3 Developing a facilitation team for community empowerment

Community empowerment requires significant investment of time and energy. Staffs are required to facilitate the process. It is needed to assemble a facilitation team to plan and implement participatory exercises and support collective action by a wide range of individuals and groups. The facilitation team should include health professionals, community leaders and other community representatives. A non-governmental organization can often play a helpful role in organizing, staffing and supporting the facilitation team. (Middleberg, 2003)

2.1.4 Empowerment and health promotion

Health promotion has been defined by the World Health Organization's 2005 Bangkok Charter for Health Promotion in a Globalized World as "the process of enabling people to increase control over their health and its determinants, and thereby improve their health". According to an action-theoretical approach to health promotion, it involves processes and also structures aimed at strengthening the ability of the individual to act, and to promote contextual conditions for action. (Nordenfelt, 1987). A central feature of action-oriented health theories is empowerment, which is essential in health promotion. According to the World Health Organization (WHO), empowerment aims to mobilize vulnerable individuals and groups by strengthening their basic life skills and enhancing their influence on underlying social and economic conditions (Nutbeam, 1998).

Empowerment is suggested to encompass individual goals (e.g. ability, autonomy, control and self-efficacy) and acts as a process leading to increased influence over decisions that impact on the individual's life (Nutbeam, 1998). Participation and self-directed activities are then crucial. True empowerment in this sense requires the individuals to make decisions and to actively participate in events that shape their lives. Empowerment processes involve the individual identifying problems and formulating vital goals and strategies to overcome the problems and achieve the goals (Brooking and Bolton, 2000).

2.1.5 Outcome of Empowerment

Empowerment as an outcome reveals change in the performance of the person following the process of empowerment. The outcome of empowerment of CHVs can be measured at the personal and community level (Israel & Checkoway, 1994). The outcome measure at the personal level is the self reported change in the awareness, self esteem, self efficacy, confidence and competence of CHVs in the provision of health services to the community. The outcome measure at the community level is whether CHVs have helped community members in gaining health knowledge, good attitude and healthy behaviors. These can be assessed in terms of health education activities carried out by individual CHV such as disease awareness-raising sessions conducted, individual consultations provided.

2.1.6 Development of an Empowerment Model

In developing a model, there are three phases; (1) conceptualization, (2) model formulation and (3) testing the model in the practical situation for validation. Conceptualization begins with defining empowerment in terms of expected outcome and including input and process and focus of model is determined. In model formulation, the empowerment model including steps and measurement of empower, is constructed through literature review. The validation of the model is performed by testing the model practical situation in the field to determine how it functions well (Gibson, 1995).

2.1.6.1 Concept of Empowerment

Wallenstein and Bernstein (1994) mentioned that empowerment is a social action process that promotes participation of people, organizations and communities in gaining control over their lives in their communities and larger society. It was also mentioned that empowerment differs across the level of analysis at three different levels. Individual empowerment refers to the individual ability to make decisions and have control over his or her life which includes participation in the activities, motivation to exert control, feeling of efficacy and development of personal competency. Organizational empowerment includes democratic management, shared leadership, opportunities to develop skill. Members share information and power and make use of cooperative decision making process. In community empowerment, individuals and organizations apply their skill and resources in collective effort to meet their respective needs and allow for multiple different perspectives during the time of conflict.

Staples (1990) described empowerment as a process and outcome and as spiral phenomenon in which individuals, through their participation in the group activities, gain knowledge and skills that lead to personal development. It is cyclical with alternating activities of action and reflection that is based on group participation and discussion. Process includes group activities and outcome includes resultant increased in power and control among the participants. In the process of empowerment, the professional can only facilitate the participants through problem-posing education to reveal reality and to build up a sense of consciousness and confidence among the

participants (Freire, 1970). Therefore, in empowering the participants, the facilitators need to take different roles such as teaching, advising, providing support, promoting participants in decision making and assisting in finding solutions (Stewart, 1994).

Gibson (1995) described process of empowerment as four psychological changes in a phase-wise manner. The first phase is discovering reality and realizing the existence of a problem. The second phase includes critical reflection, evaluating oneself and examining the situation critically and developing in one's knowledge and abilities to carry out necessary activities. The third phase is dealing with current situation through activities such as learning to interact effectively with health care system and establishing a partnership with facilitator and peers. The fourth phase is maintaining one's own sense of power in making effort to attain desirable outcome. Therefore, development of critical consciousness, formation of a feeling of self-confidence and increased level of competency in performing specific tasks are said to be central part of empowerment.

2.1.6.2 Participatory learning and empowerment

The principle of participatory learning is to develop maximum learning among learners through maximum participation and to enable the learners to reach maximum performance. The four components of participatory learning are (1) experience (2) reflection and discussion (3) understanding and conceptualization (4) experimentation or application. In first component, learners are encouraged to bring their experience to develop new body of knowledge. In reflection and discussion part, learners should have opportunity to express their opinion to exchange ideas to develop mutual learning, to rise up with various conclusions and to work as a team. For the third component; understanding and conceptualization, learners have to initiate their understanding of an idea or concept and instructor has to complete it or vice versa. In last component; experimentation or application, learners have to put new things they had learned in various situations until they find the guideline to perform certain activities by themselves (Kolb, 1984).

According to Social Cognitive Theory, the process of feedback or reinforcement is said to be one of the important components in learning a behavior. Reinforcement can be accomplished through three approaches; (1) direct

reinforcement through verbal feedback from facilitator, (2) reinforcement through social modeling and (3) self-reinforcement through self evaluation of the performance.

2.1.6.3 Empowerment model for Myanmar migrant community health volunteers

The main objective of this study is to empowerment of Myanmar migrant workers as health volunteers for improving community health knowledge of common infectious diseases in Tak province at Thai-Myanmar border. The empowerment training for Myanmar CHV will be based on Participatory Learning theory and Paulo Freire's theory of empowerment education consisting of listening-dialogue-action cycle. Participatory learning approach will be applied for the initial 2 day training about common infectious diseases for selected Myanmar migrant CHVs. Follow up booster trainings will apply Freirian Model which consists of three-phased process. The first phase is the listening phase where one asks the question, 'What is the problem?' or 'What is the question under discussion?' The listening stage is conducted in equal partnership with the community members to identify problems and determine priorities (Gugushe, 1996). The second phase is the reflection phase where one poses the question, 'How do we explain this situation?' This is also called as the dialogue stage in which discussion objects called "codes" are created to structure problem posing dialogue around these issues. A code is a physical representation of an identified community issue in any form: role plays, stories, slides, photographs, songs etc. An effective "code" exemplifies a problematic situation with many aspects so that participants can express their emotional and social responses. In some training program, the facilitators help in reflection by using five step questioning strategy in which participants are asked to: (a) describe what they see and feel, (b) as a group define the many levels of the problem, (c) share similar experiences from their lives, (d) question why this problem exists, and (e) develop action plans to address the problem. The third phase is the action phase characterized by the question, 'What can be done to change this situation?' or 'What options do we have?' The unique feature of this approach is 'process centered' as opposed to 'outcome-centered' or 'product

centered.’ It does not prescribe any acceptable end product in the beginning but only specifies the approach to be adhered to. (Gugushe, 1996).

It is also assumed that Myanmar migrant CHVs already were acquainted with their own community and the empowerment training would build upon their existing knowledge to analyze the problems of high prevalence of infectious diseases among the migrants and to develop consciousness regarding the problem and its causes. By developing critical consciousness, which is central part of empowerment education, Myanmar migrant CHVs would recognize the problem of high prevalence and incidence of infectious diseases as emerging from lack of knowledge and power among the marginalized Myanmar migrant communities and would realize the need to take action to mitigate the problems. Applying Participatory Action Research (PAR) in this research would support Myanmar migrant CHVs to improve their awareness by exchanging information, ideas and experiences within the group and which would facilitate to move forward from personal to group level analysis and then to action level to action level (Smith et al., 1993). Through the use of PAR, Myanmar migrant CHVs would develop effective communication, participatory learning and planning and decision making. The enthusiasm of Myanmar migrant CHVs to learn and their commitment to serve their community would be the principal factor to keep them involve in the study.

2. 2 SELF ESTEEM

2. 2.1 Definitions of self esteem

Self-esteem is a term used in psychology to reflect a person's overall evaluation or appraisal of his or her own worth. Self-esteem encompasses beliefs (for example, "I am competent" or "I am incompetent") and emotions such as victory, depression, pride and shame. A person's self-esteem may be reflected in their behavior such as in assertiveness, shyness, confidence or caution. Self-esteem can be mentioned as “how good you feel about yourself; your opinion of yourself”.

In the mid 1960s, Morris Rosenberg and social-learning theorists defined self-esteem in terms of a sense of personal worth or worthiness. This became the most frequently used definition for research (Baumeister et al., 1996). Nathaniel Branden in 1969 defined self-esteem as "the experience of being competent to cope with the basic

challenges of life and being worthy of happiness". This two-factor approach, as some have also called it, provides a balanced definition that seems to be capable of dealing with limits of defining self-esteem primarily in terms of competence or worth alone (Mruk, 2006)

2.2.2 Theories of self esteem

Many early theories suggested that self-esteem is a basic human need or motivation. American psychologist Abraham Maslow included self-esteem in his hierarchy of needs. He described two different forms of esteem: the need for respect from others and the need for self-respect, or inner self-esteem (Maslow, 1987). Respect from others involves recognition, acceptance, status, and appreciation. According to Maslow, without the fulfillment of the self-esteem need, individuals will be driven to seek it and unable to grow and obtain self-actualization. Modern theories of self-esteem explore the reasons humans are motivated to maintain a high regard for themselves. Socio-meter theory maintains that self-esteem evolved to check one's level of status and acceptance in ones' social group. According to terror management theory, self-esteem serves a protective function and reduces anxiety about life and death (Greenberg, 2008).

2.2.3 Measurement of self esteem

For the purposes of research, researchers typically assess self-esteem by a self-report inventory yielding a quantitative result. They establish the validity and reliability of the questionnaire prior to its use. Whereas popular tradition recognizes just "high" self-esteem and "low" self-esteem, the Rosenberg Self-Esteem Scale (1965) and the Coopersmith Self-Esteem Inventory (1981) both quantify it in more detail, and feature among the most widely used systems for measuring self-esteem. The Rosenberg test usually uses a ten-question battery scored on a four-point response system that requires participants to indicate their level of agreement with a series of statements about themselves. The Coopersmith Inventory uses a 50-question battery over a variety of topics and asks subjects whether they rate someone as similar or dissimilar to themselves

2.3. SELF EFFICACY

2.3.1 Definitions of Self Efficacy

Self-efficacy has been described as the belief that one is capable of performing in a certain manner to attain certain goals (Ormrod, 2006). It is a belief that one has the capabilities to execute the courses of actions required to manage prospective situations. It has been described in other ways as the sense of belief that one's actions have an effect on the surroundings (Matsushima and Shiomi, 2003). There is a distinction between self-esteem and self-efficacy. Self-efficacy relates to a person's perception of their ability to reach a goal, whereas self-esteem relates to a person's sense of self-worth (Pajares and Urdan, 2006).

2.3.2 Factors affecting perceived Self-Efficacy

Albert Bandura has defined self-efficacy as one's belief in one's ability to succeed in specific situations. One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges. The concept of self-efficacy lies at the center of Bandura's social cognitive theory which emphasizes the role of observational learning and social experience. According to Bandura's theory, people with high self-efficacy, that is, those who believe they can perform well, are more likely to view difficult tasks as something to be mastered rather than something to be avoided (Bandura, 1977).

Bandura pointed out our sources affecting self-efficacy;

- (i) **Mastery experience:** It is the most important factor deciding a person's self-efficacy. Success raises self-efficacy, failure lowers it. So development of perceived self efficacy requires training to gain sufficient skills to achieve the goal.
- (ii) **Modeling:** This is a process of comparison between oneself and someone else. When people see someone succeeding at something, their self-efficacy will increase; and where they see people failing, their self-efficacy will decrease.
- (iii) **Social persuasions:** relate to encouragements/discouragements. These can have a strong influence – most people remember times where something

said to them significantly altered their confidence. While positive persuasions increase self-efficacy, negative persuasions decrease it.

- (iv) **Physiological Factors:** In unusual stressful situations, people commonly exhibit signs of distress; shakes, aches and pains, fatigue, fear, nausea, etc. A person's perceptions of these responses can markedly alter a person's self-efficacy. People with high self-efficacy are likely to interpret such physiological signs as normal and unrelated to his or her actual ability.

2.3.3 Self Efficacy and Health Behaviors

Health behaviors such as non-smoking, physical exercise, dieting, condom use, dental hygiene are dependent on one's level of perceived self-efficacy (Conner and Norman, 2005). Self-efficacy beliefs are cognitions that determine whether health behavior change will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and failures. Self-efficacy is directly related to health behavior, but it also affects health behaviors indirectly through its impact on goals. Self-efficacy influences the challenges that people take on as well as how high they set their goals.

A number of studies on the adoption of health practices have measured self-efficacy to assess its potential influences in initiating behavior change. It is actually not necessary to use larger scales if a specific behavior is to be predicted. If the target behavior is less specific, one can either use more items that jointly cover the area of interest, or develop a few specific sub-scales. Whereas general self-efficacy measures refer to the ability to deal with a variety of stressful situations, measures of self-efficacy for health behaviors refer to beliefs about the ability to perform certain health behaviors (Luszczynska et al., 2007).

2.4. WORKPLACE HEALTH PROMOTION

Since this study focuses on the empowering migrant workers as community health volunteers in responding influenza pandemic, health promotion at workplace should be discussed. The concept of Workplace health promotion (WHP) been used

in a broad sense, where it often includes disease prevention. In fact, most reported WHP interventions aim at disease prevention

by focusing on individual lifestyle to reduce health risks, often based on methods directed towards the individual (Peltomäki et al., 2003).

Evaluations stress that interventions focusing on individual risk factors alone are insufficient. Other additional characteristics for WHP interventions are important (Noblet, 2003). These are

- (i) Participation, including autonomous and self directed formulation of tasks, goals, methods and strategies, as well as evaluation. Participation is reported to stimulate creative learning.
- (ii) Social support, preferably reciprocal and facilitated in groups
- (iii) Individual and organizational learning
- (iv) A systematic model on a continuous basis over time, enabling time for learning and reflection
- (v) An ecological approach including authorization of the WHP from the employer, involvement and commitment from management and bottom-up as well as top-down activities
- (vi) The creation of a health-promoting setting in the organization rather than focusing only on the individual level

The outcome reporting intervention studies share some methodological features: initial identification of problems in organization specific conferences followed by working groups and the development of action plans. The working groups, e.g. health circles, social networks for informal systems, health promotion teams and work groups, included roughly five to 15 participants who met in recurrent group sessions over a limited time-period (3–18 months). A trained facilitator periodically supported some of the working groups. (Arneson and Ekberg, 2005).

2.5. COMMUNITY HEALTH VOLUNTEERS (CHV)

2.5.1 Role of Health Volunteers

Health Volunteers are people who are willing to provide their services to others voluntarily as part of their socio-cultural behaviors (Love et al., 1997) This

form of volunteerism has been expanding rapidly in recent decades, as seen by the proliferation of millions of individuals and groups of volunteers and philanthropists, and many local, national and international nongovernmental organizations (NGOs) working in the area of health development in many countries. Volunteerism or voluntary action is any action of free will by an individual, a group or an organization, which is not prompted by any external pressure or self-interest, and has usually a purpose, a cause or a vision. (Sein, 2006)

The Alma Ata declaration in 1978 also advocated the use of such Community Health Volunteers (CHV) as a realistic solution for attaining total population coverage with essential health care (Zakus, 1998). Governments in many developing countries have promoted and optimally used such volunteering work as part of national development program. Community Health Volunteers are individuals who willingly provide their services on their free will, who are members of the community where they live or work, who are being selected and rewarded by the community and answerable to them, and who are not to be considered as part of public health organizations, but closely linked to them. They have been assigned with the different names and tasks. Some countries call them “Community Health Workers” as defined in many WHO documents, while other countries simply term them as “Health Volunteers”. They are the catalysts for timely health action at the community level, and could also work for the promotive, preventive, curative and rehabilitative health interventions nearer to people’s homes (Sein, 2006).

The CHVs actually constitute the "third workforce of human resources for health". Many countries have accelerated their health development by using them effectively and appropriately. With their full involvement in undertaking various health actions at the community level, many public health programs have been successfully implemented. There are numerous success stories in this regard, especially in disease elimination and eradication campaigns, provision of essential care for mothers and children including nutrition promotion, health promotion and community health education, treatment of minor ailments and provision of water and sanitation, and lately in the prompt and rapid response to emergencies. (Sein, 2006)

The Alma-Ata Report had highlighted the importance of the major contribution made by health volunteers, since they were crucial in carrying out health

action at the community level with minimal training and supervision inputs. People themselves were important resources in any country and these potential resources should be properly utilized in health development (WHO, 1978). The establishment of a link by deploying a health volunteer at the front-end of the health system as the first contact is a key Primary Health Care strategy. Such CHVs may vary in type and quality in each country, since their requirement depends on the health care needs and the resources available for satisfying them. In most cases, these volunteers are selected from among the community members, and trained in a short period to perform the specific task of serving their own communities. Since these volunteers are from the locality in which they live and earn their livelihood, they are accustomed to the way of life of the people they serve (Kahssay et al., 1998)

2.5.2 Training for Health Volunteers

Health volunteers are able to carry out a broad range of functions, such as service providers; health communicators; local organizers; health educators; and agents of change with a short period of training for two to four weeks. All of these functions are essential to improving the health of communities. Moreover, these functions can easily be transferred from health care professionals to volunteers, as they usually comprise basic skills and knowledge on health and health-risk behaviors, and can be learnt by any member of the community, provided that the health volunteers have the basic level of general education, and some knowledge of health prevention and promotion. Hence, it is realistic to assign a member of the community, with a wide range of functions which are basic, essential and appropriate at the community level (Sein, 2006).

At the same time, it is considered unreasonable and unrealistic to expect health volunteers to first learn and then to teach others about the standard health practices and procedures that are supposed to be provided by fully-trained health professionals who have to undergo longer duration of training from accredited institutions. There are many different types of CHVs who have been trained and deployed on various tasks of providing essential care for simple ailments, including supervised treatment for TB or malaria. Since their basic education training and skills are limited they

cannot be assigned as replacements for fully-trained health professionals. (WHO, 2005)

Again, health volunteers are not to be trained over a longer period to become specialists, who should know everything on health or who can do everything. But, many of them are actually trained for carrying out very specific tasks like providing health education and health promotion messages, organizing community action for health, providing essential health care or working as local organizers. That is why different categories of community volunteers have been assigned to undertake different sets of functions (Tin, 2004).

2.5.3 Motivation and Sustainability of CHV programs

Training and deployment of CHVs are usually a part of national health development, in the larger framework of national socioeconomic development. The adoption of a viable policy on the selection, training and deployment mechanisms is an important factor in sustaining the health volunteer programs.

Sustainability of community health volunteers depends upon their social standing and long-term commitment to the community they serve. It also usually depends on the way the health volunteers influence their own communities.

Another question is whether any remuneration is necessary for compensation of time spent by volunteers, since it involves a significant proportion of their working day in some cases. Since the volunteers are accountable to the community and deliver services that the community needs, they could be provided with some form of remuneration, either in cash or non-monetary items, depending upon the local culture. The social recognition of health volunteers by their own communities and appreciation of their contribution to health development by national health authorities help in sustaining the health programs. The provision of certificates, badges and uniforms, arrangement of group study tours, rewarding best serving volunteer awards, etc. enhances the self esteem, self efficacy and social status of health volunteers (Sein, 2006).

2.6 ROLE OF COMMUNITY HEALTH VOLUNTEERS (CHV) IN INFLUENZA PANDEMIC

The primary role of the CHV is to provide a minimum amount of health-care delivery during an influenza pandemic. This can either be in the form of providing health communications or health education messages for families or communities, or delivering direct patient care. The level of implementation will depend on the training of the CHV, as well as the availability of resources at the local level (WHO,2008b) Community-level health providers in a variety of contexts can be a valuable part of the health system, and as such are able to increase access to preventive and curative health care for families and communities. Relevant examples include lady health workers in Pakistan, and extension health workers in Ethiopia. Community health volunteers programs may support national pandemic preparedness by providing key health services in the community. Benefits include improved community access to prevention and treatment programs and a relative reduction in crowding at health facilities.

2.6.1 Referral of severely ill patients

Many patients with an acute illness arising during a pandemic can be treated safely in the home and community, and can remain at home during convalescence. Severely ill patients that cannot be effectively treated at home will need referral to a health-care facility for definitive treatment. Examples of danger signs indicating the need for immediate referral include convulsions, dehydration, difficulty breathing, and severe chest or abdominal pain. These danger signs should be communicated in the local language for use at the household and community levels. CHVs and community-based treatment of illnesses, as an integral strategy within the larger health system, should be closely linked with health facilities to be most effective. Health systems should develop a strategy for patient referral during a pandemic, accounting for the limited availability of resources at receiving health facilities. Regular communications between CHVs and receiving health facilities is critical. During an influenza pandemic, certain infection-control practices should be followed during transfer of severely ill patients to lower the risk of transmission. Patients with fever and respiratory symptoms such as cough should be instructed as to when and

where to seek care, and what infection-control precautions should be followed during travel.(WHO, 2008b)

2.6.2 Lady health workers in Pakistan (Garwood, 2006)

The National Program for Family Planning and Primary Health Care of the Government of Pakistan initiated its Lady Health Worker program in 1994 to improve child and maternal health in rural areas through increased access to health care for communities. There are over 90 000 lady health workers trained to provide basic health services such as family planning, immunization, hygiene, and maternal and child health. One lady health worker is deployed to provide services for a village of at least 1000 people or 150 households. These health workers are equipped with a kit of supplies for the treatment of diarrhea, pneumonia, malaria, and contraceptives for family planning. They are also trained to assist with referral to the nearest health facility, when appropriate.

2.6.3 Health extension workers in Ethiopia (WHO, 2008b)

The government of Ethiopia has instituted a national community-based public health program to address the low coverage of child and maternal health services. The Health Extension program was implemented to deliver maternal and child care at the community level. The government is deploying 30 000 female health extension workers (HEWs) to address the major causes of child and maternal mortality, with emphasis on household-level interventions. The program advocates for access to affordable health care and helps to bridge the gap between the health sector and communities. The HEWs undergo a one-year training program to provide community-based services for hygiene and sanitation, family health services including maternal and child health, immunizations, reproductive health and nutrition, disease prevention and control, and health education.

2.7 SELECTION, TRAINING AND SUPERVISION OF CHVS

Human resource mapping with government agencies, communities and local partners is a useful method to identify CHVs. CHVs may include community-level health workers, members of local community based organizations, traditional healers

and other appropriate volunteers. CHVs may be identified and trained within existing networks of well-established community-based health providers. Training for pandemic response may be integrated into the existing training. Rapid refresher training might then be provided as needed. These health providers might deliver a variety of services during a pandemic, including messages for the prevention of influenza; home based management of mild symptoms of illnesses by families, and the prevention and treatment of common diseases in the community such as acute respiratory infections and diarrhea. CHVs should receive regular supervision and mentoring if possible during the pandemic. Supervision should be linked with existing networks of supervision as available. (WHO, 2008b)

2.8 RESEARCH RELATED TO EMPOWERMENT TRAINING

A quasi-experimental research showed the effectiveness of an empowerment program on malaria prevention among family health leaders in Aranyanprathet district, Sakaeo province of Thailand at Cambodian border. An empowerment model was devised to develop the program. The program activities included participatory thinking and acting in identifying malaria problem, analyzing causes, and planning a program to solve the problem. The family health leaders were required to transfer malaria knowledge to their family members. The experimental group consisted of 34 family health leaders and 44 family members of Ban Pa-Raimai village while the comparison group comprised 34 family health leaders and 39 family members of Ban Phu-Numkeng. The leaders in the experimental group were scheduled to participate in the empowerment program training, developed by the researcher and the local health center chiefs in the study area, for two days. Four weeks after training, the leaders program implementation was followed up and supported. Malaria preventive behaviors of the leaders and the family members as well as other related data were collected through interview schedule, 12 weeks after the training. It was found that, after the experiment, the leaders in the experimental group had statistically significant better knowledge, self-efficacy and malaria preventive behavior than before the experiment. The statistically significant difference in knowledge and behavior was also found in the family member group. After the experiment, only leaders' self-efficacy and family members' knowledge of the experimental group were

significantly increased than those of the comparison group. The study showed that the empowerment program on malaria prevention among family health leaders by applying the empowerment model improved malaria preventive behavior of both the family health leaders and the family members. (Duanchai, 2002).

A study investigated the effectiveness of health education program for *Aedes* mosquito larva control. The program activities were mainly developed based on the concepts of empowerment theory. Two main groups each divided into two subgroups were studied. The first group was comprised of 49 community key persons. Twenty three of them were in the experimental area and 26 key persons were in the comparison area. The second group was consisted of 54 heads of the households who were in the experimental area and 52 who were in the comparison area. The program activities were implemented for 10 consecutive weeks. It was found that after the experiment, community key persons in the experimental area had significantly improved behaviors in controlling the *Aedes* larva than those in the comparison area. It was also found that the community empowerment activities made the experimental area have more groups, activities and participation in the larva control in the experimental area. (Pakanon, 2000)

Intarasomwang (2000) conducted an empowerment program on AIDS prevention among pregnant women attending antenatal care at Pramongkutkiao hospital in Bangkok and the empowerment program significantly increased the HIV prevention knowledge, self appreciation, and self efficacy and self care for HIV prevention among the pregnant women. Sathirapanya (2002) implemented an empowerment program on promotion of quality of life of cerebrovascular patients and their relatives by applying empowerment principle developed by Gibson at Hospital in Songkla province, Thailand with 38 patients each in experimental and comparison group. The study found that there significant higher average scores of quality of life, self esteem, self efficacy and daily routine ability among the patients in experimental group compare to average scores of patients in comparison group.

Boromtanarat (1999) developed a management training program through the empowerment process management model of developing leadership potential for health center chiefs. The experimental group received 10 days empowerment training program for 10 days. After the program, leadership potentials of the experimental

group was significantly higher than that of comparison group regarding effective leadership, performance quality and service satisfaction among the villagers who were service receivers from the health centers.

Keitisut (2000) examined the job performance of 12 well- trained housewife - volunteers in providing health education activities for mothers and caregivers in a quasi-experimental research. The subject of the research were 94 mothers and caregivers of pre-school children, 46 of who were designated the experiment group, and 48 of who made up the comparison group . The experiment group participated in an 8- week health education program delivered by the 12 trained housewife- volunteers. The volunteers had been trained by researcher concerning on perceptions of diarrheal disease, health education approaches, and social support. The study showed that the subject had significant improvement in perceived diarrheal disease and practice in preventing diarrheal disease in their pre-school children after the intervention by the 12 trained housewife-volunteers. Regarding the findings, it is recommended that this approach to diarrheal disease prevention among pre-school age children should be taken into consideration. Such a program may be applied in other types of communities and for other types of diseases and aspects of public health.

In a study, Paulo Freire's theory was applied to empower a women's group to prevent and control malaria in Chiang Mai province, Thailand where 45 women were systematically recruited in a study village and in a control village. The empowerment program emphasized enhancement of malaria preventive levels, using insecticide-treated bed nets, self-esteem, and self confidence expectation to prevent and control malaria. Intensive training was conducted and activities performed among the women's group, with 10 participatory meetings in all. Data collection was conducted for the pre-test in month 1, and post intervention in months 3, 6, 9, and 12.

The results showed that, post-intervention, there were significantly increased levels for malaria preventive behaviors, behaviors of using insecticide-treated nets, self-esteem, and self confidence expectations, in the intervention village compared with the control village. Insecticide-treated net usage and insecticide-treated net usage behaviors increased in the intervention village more than before and more than that in the control village. The women's group in the intervention village created the following plans, which were crucial to malaria prevention: (1) a family protection

plan, (2) providing malaria education to community members, (3) a mosquito-control campaign, (4) scaling-up insecticide-impregnated bed nets, and (5) malaria control among foreign laborers. Besides, the empowered women's group performed sustainable activities and conducted a joint program to raise income for their families between malaria-prevention activities (Geounupakul et al., 2007).

2.9 RESEARCH RELATED TO COMMUNITY HEALTH WORKERS OR VOLUNTEERS PROGRAM

A study was done in Iran to determine the health workers knowledge, attitude and practice about family planning and also to know the gender differences in effectiveness of family planning. A KAP survey was conducted after 14 months of training of community health workers. The total samples of 1308 eligible couples were from two sites, 658 from project and 650 from control site. The results showed that the health workers were able to double the usage of pills among the eligible couples and this was true for both sexes of health workers, maximum between the age groups 25 to 34 years (Zeighami et al., 1977). Regarding health outcomes with introduction of CHW, a research done in rural South Africa covering a population of around 205,000 people to evaluate the immunization coverage among the rural South African children with use of CHW. The program has been running for 9 years with one CHW per 100 households. The Immunization coverage was high in children who lived in areas with CHWs (Chopra & Wilkinson, 1997).

In Pakistan, a cluster randomized control trail was done in 7 sub-districts and delivery kits were randomly assigned to traditional birth attendants (TBA) and Lady Health workers (LHW). The results showed that the maternal deaths and prenatal deaths reduced in the intervention area. Referral to public health services was also encouraged, and correspondingly, a higher proportion of women in the intervention group than in the control group were referred to an emergency obstetrical care facility (Jokhio, Winter, & Cheng, 2005).

A study was done to evaluate a CHW program to reduce malaria morbidity and mortality in Zaire. The findings showed that there was increase in health seeking behavior among the people, community expectations were higher, often dissatisfied

with the limited service of CHW and CHW also mentioned their desire for further training and to be a part of health system (Delacollette, Stuyft, & Molima, 1996).

Islam et al., (2002) did a research to compare the cost-effectiveness of the tuberculosis (TB) program run by the Bangladesh Rural Advancement Committee (BRAC), which uses community health workers (CHWs), with that of the government TB program which does not use CHWs. TB statistics and cost data was collected from July 1996–June 1997 and cost per patient cured was calculated. 185 and 186 TB patients were treated by BARC and government respectively. It was found that the cost per patient cured was US\$ 64 in the BRAC area compared to US\$ 96 in the government area. IT was also found that the BRAC and government TB control programmes appeared to achieve satisfactory cure rates using DOTS and the involvement of CHWs was found to be more cost-effective in rural Bangladesh.

A study in Nigeria examined the appropriate treatment for malaria with implementation of CHW program. The study included an intervention village (N=597 households) and non intervention village (N=600 households). Pre and post intervention showed the preference of CHWs over self treatment at homes. The use of community health workers (CHWs) increased from 0% to 26.1% ($p < 0.05$), while self-treatment in the homes decreased from 9.4% to 0% ($p < 0.05$) after the implementation of the CHW strategy. Use of patent medicine dealers also decreased from 44.8% to 17.9% ($p < 0.05$) after CHW strategy was implemented (Onwujekwe et al., 2006).

Regarding organizational issues that influence CHWs performance, in Thailand, Hathirat (1983) evaluated the health care training for Buddhist abbots and religious heads. A sample of 1600 Buddhist abbots and 400 ecclesiastical heads were selected and interviewed. The evaluation found that 82 % of abbots and religious head understood about primary health care, 66 % provide health education, 57% improve or educate nutrition, sanitation and environmental problems, 75% dispense modern drugs and 40 % dispensed herbal drugs and 29 % gave medical care. In India, Bhattacharji(1986) did an evaluation on the effectiveness of part time community health worker program. It showed that educational status, experience, the degree of supervision and the scattered houses seem to influence performance. The age of the

worker and the test scores do not seem to affect performance to a great extent but the supervision has an effect on Performance.

In Nepal, a study tested the hypotheses that volunteers can provide effective PHC. The study included one intervention and one control area with total of 2160 children. In-depth interview with mothers of children was done to know the first contact with CHVs for the past 12 months along with a total of 208 CHVs were also included in the sample. 95% of mothers in the intervention met CHVs at least once compared to 24% in control group. 35% mothers brought children to CHVs in intervention group. The ORS utilization was 78% in intervention group and 64% in the control group. The CHVs received double supervision and felt “not being” left alone (Curtale et al., 1995).

Therefore, in conclusion, the researcher of this study believe that the related concepts, theories and research reports can be applied to develop empowerment training program for Myanmar migrant workers as health volunteers for improving community health knowledge of common infectious diseases in Tak province, Thailand. The migrant CHV may gain knowledge about the common infectious in the community from the health training and may show increasing self esteem, self efficacy and ability through follow up meetings to transfer the information about common infectious diseases to their community members. Moreover, they will gain better knowledge about the common infectious diseases and hence, they may change behavior to prevent to the diseases and seek early medical care if they see danger signs of the illnesses. This may lead to the reduced morbidity, mortality and burden of infectious diseases among the Myanmar migrants living in Thailand.

CHAPTER III

METHODOLOGY

3.1 Research Methodology for Phase (I): Community health knowledge of common infectious diseases among the Myanmar migrant communities in Tak province

3.1.1. Research Design

Phase (I) was a cross sectional analytical study to investigate the community health knowledge of common infectious diseases among the Myanmar migrant communities in Tak province at Thai-Myanmar border.

3.1.2. Study site

It was estimated that approximately 95 percent of workers working in factories in Mae Sot and agricultural farms in Phob Phra area are migrants from Myanmar (Arnold, 2004). Mae Sot and Phob Phra are the districts in Tak Province about 600km northwest of Bangkok and adjacent to Thai-Myanmar border. In some areas, Myanmar migrants are living in isolation whereas some migrants are mixing with local Thai population. Most of the migrants working in factories and agricultural farms are usually living in their own communities. Therefore, this study emphasized on Myanmar migrant workers working in these areas.

3.1.3. Study population and sample size

It is difficult to mention the number of Myanmar migrant workers in Thailand especially in border area as migrant workers are highly mobile and crossing the porous border on daily basis. The study focused on the relatively stable migrant population. After communication with migrant community leaders and factory/farm owners or managers, the researcher was able identified migrant communities in eight separated locations and these communities were grouped as migrant clusters according to geographic location.

Fig (3.1) Map showing Mae Sot and Phob Pra Districts of Tak Province at Thai-Myanmar Border



The population in the selected eight migrant clusters was 7395 and based on Yamane sample size calculation formula (Yamane and Taro, 1967), sample size for phase (I) was calculated as follow:

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size

N = Population

E = Error of sampling

In this study, the error of sampling is 0.05 (95% confidence level) and the population size is 7395 Therefore sample size in this study is

$$n = \frac{7395}{1 + 7395(0.05)^2}$$

$$= 380$$

Because of different population size in different clusters, the sample size from each cluster is proportionately selected according to the cluster population.

Table (3.1) Migrant cluster, population and sample size

No.	Migrant Cluster	District	Migrant Population	Percentage	Sample size
1	Prathetpadeng	Mae Sot	1150	15.6	59
2	Tha sailuad	Mae Sot	850	11.5	44
3	Tesaban	Mae Sot	1100	14.9	57
4	MaePa	Mae Sot	1165	15.8	59
5	Saw Oo	Phob Pra	1000	13.5	51
6	PaMai	Mae Sot	950	12.8	49
7	Moo kauk	Mae Sot	600	8.1	31
8	PaKham Mai	Mae Sot	580	7.8	30
	Total		7395	100.0	380

People from each cluster are randomly selected for interview by means of simple random sampling. Any eligible person will be asked to participate and be interviewed.

Inclusion criteria for community members for Phase (I) were as follow:

1. Myanmar migrant workers living area in the study area for at least six months
2. Both male and female aged above 18 years
3. Willing to participate in the study

Exclusion criteria were

1. Myanmar migrant workers living in the study area who had Thai citizenship ID card
2. Myanmar migrants who were serving as community health volunteers or working with health organization

3.1.4. Questionnaire Development

The research instrument used in Phase (I) was a structure questionnaire for the assessment of community health knowledge of common infectious diseases. The questionnaire consists of 3 main parts: socio-demographic information, source of health information and health seeking practice and knowledge questions about six

common diseases: diarrhea, acute respiratory infection, malaria, dengue fever, tuberculosis and HIV/AIDS and general information.

Regarding with knowledge questions about six common diseases, the main facts were about modes of transmission of different infectious diseases, ways of prevention and danger signs of the diseases to seek immediate medical care. The research instrument was tested for the content validity and reliability. The Kuder-Richardson 20 (KR₂₀) formula for calculating reliability was used because it was simple to compute, and relying only on the number of test items and the variance of the test scores. The first draft of the questionnaire was pre-tested with 30 samples from the community members in Mae Sot and Phob Pra districts. The items found to have low discriminatory power were eliminated from the questionnaire, some were revised for the wordings and the questionnaire was reorganized and tested again. The formula for KR₂₀ is:

$$KR_{20} = \frac{n}{n-1} \left(\frac{SD^2 - \sum pq}{SD^2} \right)$$

Where,

n = number of items on the test

SD²= variance of scores (the standard deviation squared)

p = difficulty level of each item (the proportion of the group that responded correctly)

q = proportion responded incorrectly to each item, or 1 – p

Finally, the reliability of the knowledge questionnaire was found as follow:

Knowledge Items	Reliability
Diarrhea (17 items)	0.919
Malaria (13 items)	0.862
Dengue Fever (20 items)	0.938
Influenza A H1N1 (16 items)	0.883
Tuberculosis (21 items)	0.921
HIV/AIDS (15 items)	0.918
All diseases (102 items)	0.979

The contents of the questionnaires were based on the facts for life handbook 4th edition (UNICEF, 2010). The validity of questionnaires was reviewed and approved by one professor of infectious diseases from Kaohsiung Medical University, Taiwan, and Public health specialists from International Organization for Migration (IOM) and International Rescue Committee (IRC) based in Mae Sot who had expertise in health issues related to Myanmar Migrants.

Scoring system and level of knowledge

The levels of knowledge on the infectious diseases were groups into 3 levels by a criterion as follow:

- Low knowledge less than 60 %
- Moderate knowledge 60 – 79 %
- High knowledge more than or equal to 80%

Total score for diarrhea – 15

- 1) Causes of diarrhea = 3
- 2) Fluid given during diarrhea = 2
- 3) ORS knowledge and preparation = 4
- 4) Ways of prevention = 3
- 5) Danger signs = 3

<u>Level of knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 9
Moderate	60 – 79	9 – 11
High	≥ 80	≥ 12

Total score for malaria – 10

- 1) Heard of malaria = 1
- 2) Mode of transmission = 3
- 3) Signs and symptoms = 3
- 4) Ways of prevention = 3

<u>Level of knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 6
Moderate	60 – 79	6 – 7
High	≥ 80	≥ 8

Total score for Dengue fever – 16

- 1) Heard of Dengue fever = 1
- 2) Mode of transmission = 3
- 3) Signs and symptoms = 3
- 4) Prevention of mosquito bite = 3
- 5) Site of mosquito breeding = 3
- 6) Elimination of mosquito breeding = 3

<u>Level of knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 10
Moderate	60 – 79	10 – 12
High	≥ 80	≥ 13

Total score for H1N1 – 11

- 1) Heard of H1N1 = 1
- 2) Mode of transmission = 3
- 3) Can prevent = 1
- 4) Ways of prevention = 3
- 5) Danger signs = 3

<u>Level of knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 7
Moderate	60 – 79	7 – 8
High	≥ 80	≥ 9

Total score for tuberculosis (TB) – 14

- 1) Heard of TB = 1
- 2) Mode of transmission = 3
- 3) Signs and symptoms = 3
- 4) High risk people = 3
- 5) Can be cured = 1
- 6) Knowledge of treatment = 3

<u>Level of knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 9
Moderate	60 – 79	9 – 11
High	≥ 80	≥ 12

Total score for HIV/AIDS – 10

- 1) Heard of HIV = 1
- 2) Mode of transmission = 3
- 3) Confirm HIV(+) = 3
- 4) Ways of prevention = 3

<u>Level of knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 6
Moderate	60 – 79	6 – 7
High	≥ 80	≥ 8

Overall Knowledge about common infectious diseases

Total Score = Summation of total scores from Diarrhea, Malaria, DHF, Influenza A

H1N1, Tuberculosis and HIV

$$= 15+10+16+11+14+10 = 76$$

<u>Level of overall knowledge</u>	<u>Percent</u>	<u>score</u>
Low	< 60	< 46
Moderate	60 – 79	46– 60
High	≥ 80	≥ 60

3.2 Research Methodology for phase (II): Empowerment program for Myanmar migrant workers as community health volunteers for improving community health knowledge

3.2.1 Research Design

The objective of phase (II) was to implement empowerment program for Myanmar migrant workers as community health volunteers for improving community health knowledge of common infectious diseases in Tak province at Thai-Myanmar border. Phase (II) was quasi experimental research to assess the empowerment of community health volunteers was effective in improving community health knowledge of common infectious diseases. There were 2 groups in the study: one group is intervention group and one is control group. The results from study phase (I) will become baseline characteristic and baseline knowledge in phase (II)

3.2.2 Sample size for CHVs and sample selection

It was assumed that one Community Health Volunteers can take care of 50 people. Since the population size in study area was 7395, the number of CHV required to cover these population was $7395/50= 148$. Drop-out rate during the intervention period was expected to be about 10% (15 CHVs out of 148). After adjusting 10% drop out rate, the total number of CHV in both intervention and control cluster would be 163. Because of different population size in different clusters, the numbers of Myanmar migrant CHV were different and allocated according to the population size in each migrant cluster in both intervention and control clusters.

Migrant workers from Intervention clusters	O ₁ = Observation in the study phase (I)- baseline 1.Community health knowledge, 2.self-esteem and self-efficacy of CHV	Empowerment program	O ₂ = Observation at the end of intervention
Migrant workers from Control clusters	O ₃ = Observation in the study phase (I)- baseline 1.Community health knowledge, 2. self-esteem and self-efficacy of CHV	Routine activity	O ₄ = Observation at the end of intervention

Intervention clusters

No.	Migrant Cluster	District	Population	Required No. of CHV
1	Prathetpadeng	Mae Sot	1150	25
2	Mae Pa	Mae Sot	1165	26
3	Saw Oo	Phob Pra	1000	22
4	Moo Kauk	Phob Pra	600	13
Total			3915	86

Control clusters

No.	Migrant Cluster	District	Population	Required No. of CHV
1	Tha sailuad	Mae Sot	850	19
2	Taseban	Mae Sot	1100	24
3	PaMai	Phob Pra	950	21
4	Pa khamai	Phob Pra	580	13
Total			3480	77

In Mae sot, the migrant clusters were made up of people working and living in the factories and in Phob Pra district, migrant clusters were made up of people working and living in agricultural farms. Two clusters from Mae Sot and two clusters from Phob Pra were selected in both intervention and comparison groups.

Fig (3.2) Map showing Intervention Clusters (I) and Control Clusters (C) in Mae Sot district

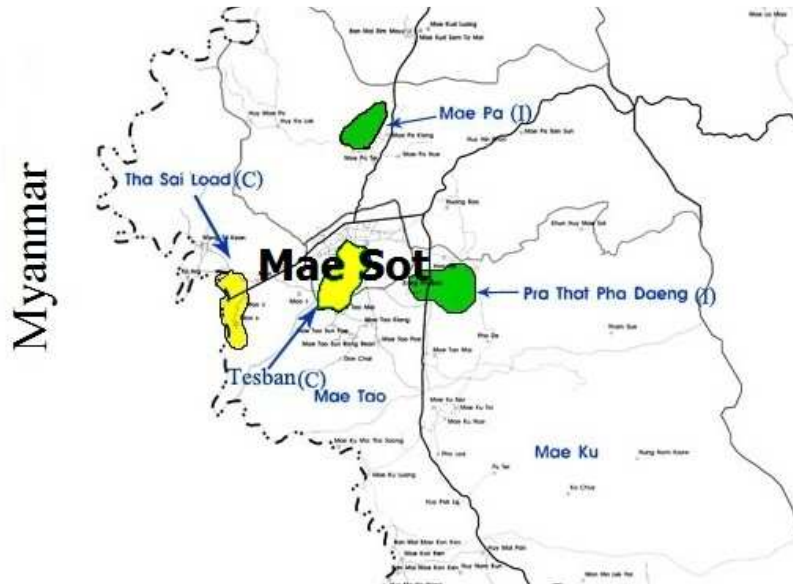
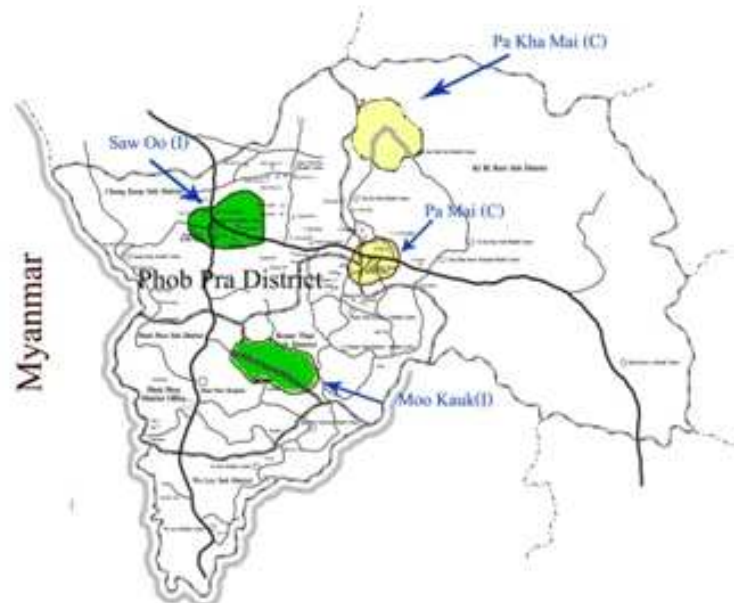


Fig (3.3) Map showing Mae Sot Clusters (I) and Control Clusters (C) in Phob Pra district



Criteria of Selection of CHV in phase (II) were as follow:

1. Myanmar migrant workers living area in the study area for at least six months
2. Both male and female aged above 18 years who understand Burmese language
3. Willing to participate in the study and get permission from the factory or farm owner/manager to work as CHV

Exclusion criteria:

1. Myanmar migrant workers living area in the study area who have Thai ID card.
2. Myanmar migrant workers who have no plan to stay in the study for six months starting from the beginning of the study.

3.2.3 Intervention Procedure for Phase (II)

The procedure included following steps and facilitated by research team.

Preparation for Intervention

The research team communicated with Myanmar migrant communities' leaders, Thai factory/ farms owners or managers regarding formation of migrant CHVs in both intervention and comparison groups. The training team consisted of the researcher himself, who is a medical doctor, two other Burmese Medical doctors who have master degree in public health and one public health officer. The team provided health trainings to Migrant CHVs selected by joint community leaders and factory/ farm owners or managers.

Training Need assessment

This step aimed to identify training needs for the migrant CHVs and in order to design empowerment training curriculum. To accomplish this step, discussions with migrant workers and meetings with Thai government health staffs who have been providing health care to Myanmar migrants were conducted.

Empowerment process

Required number of Myanmar migrant Community Health Volunteers (CHVs) were recruited from both intervention and comparison group. All recruited CHVs received 2 day training related to common infectious diseases. Participatory learning

approach was applied for the initial 2 day training about common infectious diseases for selected Myanmar migrant CHV. During the training, CHV trainees were encouraged to bring their experience to develop new body of knowledge about infectious diseases. As a part of reflection, trainees got opportunity to express their opinions to exchange ideas to develop mutual learning and to work as a team. For understanding and conceptualization of subject matters, trainees have to initiate their understanding of an idea or concept about the common infectious diseases and trainer has to complete it if it is not complete or correct it if it was wrong concept. In last part for application, CHV trainees had to put new things they had learned in various situations until they found the guideline to perform certain activities by themselves such as how to disseminate the correct health information in the community.

In the process of the training, at the end of a day (1), there were presentations of CHV on Diarrhea, Influenza A H1N1, Malaria. In day (2), the CHV trainees did presentation on Dengue Fever, Tuberculosis and HIV/AIDS. The CHV had to present about the infectious diseases focusing on mode of transmission, symptoms of the diseases, preventive measures and danger signs to seek immediate medical care. Training team checked the correctness of the health information provided by the CHV in the presentation. If the CHV presented wrong information, the trainers corrected the wrong knowledge of the CHV and provided correct health information. The purpose of the presentation was to make sure that CHV had the quality to give proper and correct health education in the community.

After initial 2 day training, only CHV in the intervention clusters received follow-up booster trainings or researcher facilitated group meetings. In these occasions, the researcher team applied Paulo Freire's theory of empowerment education which consists of listening-dialogue-action cycle. In the process of empowerment, the research team members, who were health professionals, could only facilitate the migrant CHV through problem-posing education to reveal reality and to build up a sense of consciousness and confidence among them. In the listening phase questions such as 'What is the problem?' or 'What is the question under discussion?' were raised. The listening stage was conducted in equal partnership with the Myanmar Migrant CHV to identify problems and determine priorities. In dialogue/ or reflection phase, where questions such as 'How do we explain this situation?' were

posed. The discussion points during the meeting were created to structure problem posing dialogue around these problems in the community. In action phase question such as, ‘What can be done to change this situation?’ or ‘What options do we have?’ were raised and try to find solutions and ways to perform community health activities or formulate strategies to address the situation. In this empowerment process, the migrant CHV worked as change agents and the migrant workers in the study clusters were beneficiaries. The CHV in the intervention clusters conducted meetings for once a month for six months with the facilitation of the research team. One session of meeting took about 2 hours. The CHV could decide freely not to attend the meeting if he/she was not available during the meeting time. The CHV who missed the monthly meeting were shared meeting minutes and decision points and solutions to mitigate or solve the health problems in the community from the meetings since the purposes of the meetings were to report problems encountered by CHV and to find ways to solve the problems. The research team members, who were facilitators of the meetings, shared the meeting minutes to the ones who missed the meeting.

During the time, people in both intervention and control clusters could receive regular health education materials such as health education brochures and posters in Burmese language. Community members recruited as CHV in control clusters also needed to be trained because, at the end of the intervention, the self esteem and self efficacy of CHV from both groups were compared. Again, to become CHV in the control group, they also needed to get basic health education training. After the initial training, they received health information materials and they could give health education in their community. But there were no empowerment process i.e., once a month follow- up meetings to solve the problems encountered by CHV in the control clusters. The researcher and researcher team members monitored the activities of CHV in the community once a month regularly.

Evaluation of the program

Since the main objective of study was to increase the community health knowledge about common infectious diseases, health knowledge of the beneficiaries was assessed by quantitative method with the same questionnaires used in phase (I). At the same time, the purpose of empowerment was to promote self esteem and self

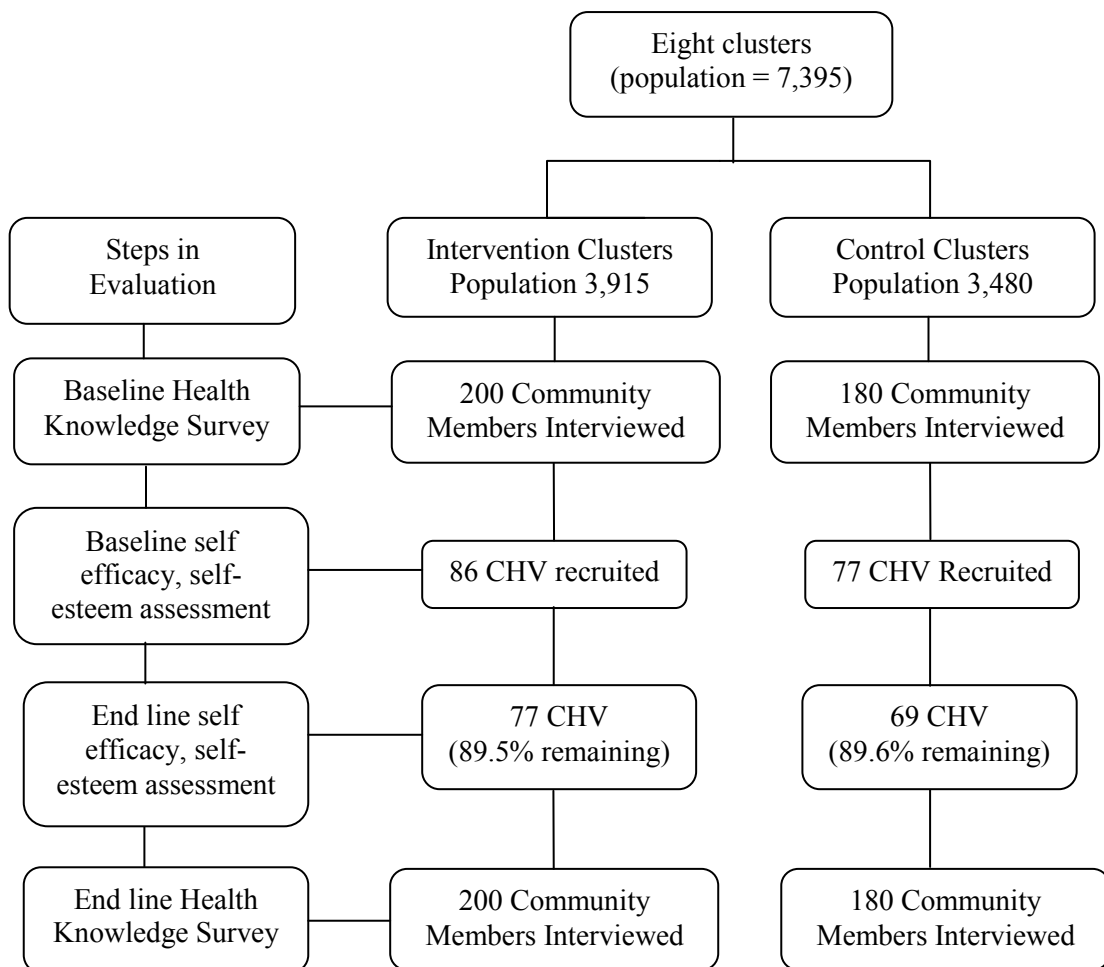
efficacy of Myanmar migrant CHV to implement health education activities in the migrant community effectively, the self esteem and self efficacy of CHV in both groups were assessed and compared with base line data. (See Fig.3.4) Qualitative methods such as focus group discussions and in dept interview with community members, CHV, factory owners or managers and Thai Government Health staffs were conducted to evaluate the program.

The objective of the focus group discussion with community members in the intervention area was to explore the activities of CHV in the community and to assess whether the empowerment of Myanmar migrant workers as community health volunteers was effective in improving migrant community health knowledge of common infectious diseases, in the perspective of community members. The expected outcome would be increased community members' trust in the activities of CHV and hence CHV could work more effectively and provide health education messages in their community with confidence. There were 2 sessions of focus group discussion; one was in Mae Sot and one was in Phob Pra. There were 7-8 participants in each session. The selection criteria were Myanmar migrant workers living area in the study intervention area for at least six months, aged above 18 years and willing to participate in the focus group discussion.

The objective of the in-depth interview with Thai Factory or Farm owner/manager was to explore the activities of migrant CHV activities in the community and to assess whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of Factory or Farm owner/manager. One factory owner/manager from the study intervention area in Mae Sot and one agricultural farm owner/manager in the study intervention area in Phob Pra will be interview. The factory or farm owner/manager who will be interviewed must have known that the migrant workers are working as community health volunteers in their factory or farm. The expected outcome was getting good impression of Thai employer towards the Myanmar migrant workers since they could also work for the own community's health during their free hours in addition to their regular job.

The objective of the in-depth interview with government health center staff was to explore the activities of migrant Community health volunteers (CHVs) activities in the community and to assess whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of a government health staff. One government health staff from Mae Sot district and one from Phob Pra district will be interviewed. The government health staffs who will be interviewed must have known empowerment program for Myanmar migrant workers as community health volunteers in improving community health knowledge. The expected outcome would be improved linkage between the Myanmar migrant CHV and Thai health system and leading to sustainability of migrant CHV program.

Figure 3.4: Research evaluation including number of CHV and community members interviewed



Development of strategies for sustainability of the migrant CHV program

At the end of the program, the results from the study were presented to all stakeholders such as officials from Phob Phra and Mae Sot district health offices (DHO), factory/ farm owners and managers. The works of migrant CHV were acknowledged by DHO as effective representatives on health issues. CHV lived in the communities and conducted home visits, and met frequently with community members to informally assess individual and community level health needs, as well as health services they were receiving. CHV and their friends gathered in the community most evenings acting as an informal support group for community. Thai health staffs also agreed to provide regular visit and supervision. During these visits, CHV can share the health and social concerns with health staffs.

3.2.4. Quantitative Research Instruments for Phase (II)

There were 2 sets of structured questionnaires. Questionnaires Set I was for the assessment of health knowledge of common infectious diseases among the community members which was used in phase (I). Questionnaires Set II was for the Community Health Volunteers (CHV) to assess the Self Esteem and Self Efficacy of CHV. The self esteem is assessed by a group of questions regarding feelings of self worth, acceptance and admiration by the community. The self esteem question set was adapted from Rosenberg's self esteem assessment (Rosenberg, 1965). The self efficacy was assessed by a group of questions related to self perception of the CHV regarding their own ability to provide health education in the community.

The self esteem and self efficacy of the CHV were assessed by structured questionnaires comprise of 10 items with 5 point Likert rating scale. For positive statement, Always =5, Often=4, Sometimes=3, rarely=2, Never=1 and for negative statement, Always =1, Often=2, Sometimes=3, rarely=5, Never=5. After the questionnaires were completed, each item was analyzed separately as well as scores for a group of items were analyzed. Questionnaires related to self esteem and self efficacy is reviewed and approved by a community mental health specialist from Department of Mental Health, Ubon Rajthani, Ministry of Public Health.

3.2.5. Qualitative Research Instruments for Phase (II)

There are 3 sets of questions for qualitative data collection. These included 5 probing questions for Focus Group Discussion with Community members for the assessment of CHV activities in the community, 4 probing Questions for In- Depth Interview with Factory or Farm owner/manager to assess whether the empowerment of Myanmar migrant workers as community health volunteers was effective in improving migrant community health knowledge of common infectious diseases, in the perspective of Factory or Farm owner/manager and 3 probe questions for In-Depth Interview with government Health staffs to explore the activities of migrant CHV and linkage between the Government Health staffs. The qualitative data of each activity were collected, grouped and differentiated in accordance with objectives of the group discussion and in depth interview.

3.2.6 Training Module and Manual for CHV training

The 2 day training manual covered identification of common health problems in the migrant community, basic knowledge about Diarrhea, Acute Respiratory Infections and Influenza A – H1N1, Malaria, Dengue Fever, Tuberculosis and HIV/AIDS. The knowledge component of the infectious diseases was simplified and mainly focused on the signs and symptoms of the disease, mode of transmission, preventive measures and danger signs to seek immediate health care. In diarrhea portion, preparation of ORS was mentioned as it was important as secondary preventive measure in case of diarrhea outbreak.

3.2.7. Data Analysis

1. Pearson chi-square test was used to examine relationship for categorical variables among socio-demographic information and knowledge about six common diseases: diarrhea, acute respiratory infection, malaria, dengue fever, tuberculosis and HIV/AIDS.
2. Student t- test was used to examine the difference in mean values in self efficacy and self esteem scores between groups and pair t- test was applied for within group comparison.

3. In Kaplan Meier survival analyses, the time variable utilized was the time in month in which CHV in both groups remaining in the program.

3.2.8 Ethical Approval

The study protocol was reviewed and approved by the Ethics Review Committee of the research involving Human research subjects, Health Science Group, Chulalongkorn University. The certificate of approval number was 029/2011. The purpose of the study was explained to community leaders, factory and farm owners and participants. Consent was obtained from participants before the interview.

CHAPTER IV

RESULTS

This chapter includes four components: (1) community health knowledge of common infectious diseases among the Myanmar migrant communities in Tak province, (2) empowerment program to improve the self-esteem and self-efficacy of Myanmar migrants CHVs (3) improvement in community health knowledge about common infectious diseases as result of empowerment program and (4) qualitative research findings about the process and outcome of the intervention process.

Results from Phase (I): Community health knowledge of common infectious diseases among the Myanmar migrant communities in Tak province

This study was conducted at Mae Sot and Phob Phra districts in Tak Province adjacent to Thai-Myanmar border. In these districts, Myanmar migrants were living in their communities whereas some migrants are mixing with local Thai population. Most of the migrants working in factories and agricultural farms are usually living in their own communities. This study focused on Myanmar migrant workers working in these areas. Data collection was done in eight migrant communities: four in Mae Sot district and four in Phob Phra district. There were 380 representatives from the migrant communities who completely responded the structured questionnaire concerning community health knowledge of common infectious diseases among the Myanmar migrants: diarrhea, acute respiratory tract infection such as influenza A H₁N₁, dengue fever, malaria, tuberculosis and HIV/AIDS.

4.1.1 Socio demographic characteristics of respondents

Table (4.1.1) shows socio demographic characteristics of respondents. The respondents were 145 men and 235 women; age ranged from 18 – 67 years with median age of 31 years. About 40% of respondents were in the age group between 20-29 years. Majority (60.5%) was married and 93.7% of respondents were Buddhist. Regarding duration of stay in the community, 33.7 % of respondents were living the communities for more than 5 years with median duration of stay 4.5 years. About half (51.1%) were living between 1 to 5 years. About 70% of them had primary school and

middle school education levels. A few people (6.9%) could not read and write. Occupations were slightly different between those who were working in agricultural farms and those working in the factories, 45.3% and 38.2% respectively. Some were dependent and were doing other jobs (16.5%) such as selling goods at own shops and working at construction sites. About 23 % of respondents had total family income less than 2,500 Baht per month. Half of the respondent (50.5%) had total family income between 2500 and 3500 Baht per month. Concerning Thai language proficiency, 41.3% of respondents could not communicate and 56.6% could communicate fairly and 2.1% of respondents could communicate well. Regarding legal status in Thailand, nearly half (47.4%) were unregistered migrants i.e., they had no legal documents to stay. Registered migrants were only 34.7%. Some (17.9%) were holding other documents such as 10 year- card, 5 year-card, documents from the village leaders.

Table (4.1.1) Socio demographic characteristics of respondents

Socio demographic characteristics	Number (n=380)	Percent (%)
Location		
Mae Sot	219	57.6
Phob Phra	161	42.4
Age (Years)		
< 20	28	7.4
20 – 29	157	41.3
30 – 39	114	30.0
≥ 40	81	21.3
Median = 30 yr, Mean = 31.5 ± 9.8	Min = 18 years	Max = 67 years
Gender		
Male	145	38.2
Female	235	61.8
Marital status		
Single	116	30.5
Married	230	60.5
Separated/Widowed/Divorced	34	9.0
Duration of stay in community		
< 1year	58	15.2
1 – 5 years	194	51.1
> 5 years	128	33.7
Median = 3.2 yr, Mean = 4.5 ± 3.6	Min = 0.5 years	Max = 20.5 years

Cont. Table (4.1.1)

Ethnicity		
Burmese	308	81.0
Non-Burmese	72	19.0
Education		
Illiterate	26	6.9
Primary and Middle	268	70.5
High school and higher	86	22.6
Occupation		
Farm	172	45.3
Factory	145	38.2
Other	63	16.5
Total family income (Baht)		
< 2500	90	23.7
2500 – 3500	192	50.5
> 3500	98	25.8
Median Income = 3000 Baht	Min = 500 Baht	Max = 12000 Baht
Thai language proficiency		
Cannot communicate	157	41.3
Communicate fairly	215	56.6
Communicate well	8	2.1
Legal status		
Unregistered	180	47.4
Registered	132	34.7
Others	68	17.9

4.1.2 Community knowledge of common infectious diseases regarding causes, mode of transmission, prevention and danger signs

(a) Community knowledge of diarrhea

Table (4.1.2) displays knowledge of respondents about causes of diarrhea, importance of giving fluid during diarrhea, Oral Rehydration Salt preparation (ORS), and methods of prevention and danger signs to seek medical care. Regarding causes, people mainly mentioned unclean food (67.4%), contaminated food with fly (62.4%) and unclean water (48.9%). Knowledge about giving fluid during diarrhea, 38.4 % and 35.3% mentioned that fluid should be given as usual and more respectively. Some respondents (7.6%) mentioned that fluid should be suspended during diarrhea and 11.3% of respondents said that less fluid should be given. As a part of prevention of

dehydration in diarrhea, 90 % of respondents ever heard about ORS but when they were requested to prepare ORS, only 36.8% of participants could prepare properly. Related to knowledge about prevention of diarrhea, people mentioned about protection of food from flies (61.3%), drinking clean water (60%) and proper hand washing (52.9%). Regarding knowledge about the signs that indicate a patient with diarrhea should seek immediate medical care, study participants mentioned about diarrhea with fever (45%), repeated vomiting (34.5%), unconsciousness (32.1%) and patient cannot drink or drink poorly (31.6%).

Table (4.1.2) Community knowledge of diarrhea

Knowledge items	Frequency	Percentage
Causes of diarrhea*		
Unclean food	256	67.4
Contaminated food with flies	237	62.4
Unclean water	186	48.9
Fluid during diarrhea		
Suspend fluid	29	7.6
Less fluid	43	11.3
As usual	146	38.4
More fluid	134	35.3
Don't know	31	8.2
Oral rehydration salts (ORS)		
Ever heard of ORS use in diarrhea	342	90.0
Know well how to prepare ORS	140	36.8
Know how to prevent diarrhea*		
Protect food from flies	233	61.3
Drink clean water	228	60.0
Proper hand washing	201	52.9

Cont. Table. (4.1.2)

Knowledge of danger signs *

Diarrhea with fever	171	45.0
Repeated vomiting	131	34.5
Unconsciousness	122	32.1
Not able to drink or drink poorly	120	31.6

*multiple response

(b) Community knowledge of malaria

Table (4.1.3) shows community knowledge of malaria. Most of the respondents heard about malaria (94.7%). Regarding mode of transmission, respondents mentioned that malaria was transmitted by mosquito bite (78.2%), drinking water from the stream (23.4%), taking bath in stream water and eating fruits/banana from the forest (12.9%). Relating to signs and symptoms of malaria, people mentioned fever with chills and rigors (59.7%), paleness/anemia (27.4%), convulsion (23.4%) and unconsciousness (22.9%). Concerning prevention of malaria, participants stated using mosquito nets (74.2%), mosquito repellent coils (39.2%), wearing long sleeve shirts (33.4%), and spraying insecticide (29.7%) and also mentioned that they could prevent malaria by not drinking water from the stream (22.9%).

Table (4.1.3) Community knowledge of malaria

Knowledge on malaria	Frequency	%
Heard about malaria	360	94.7
Mode of transmission*		
Mosquito bite	297	78.2
Drinking stream water	89	23.4
Taking bath in stream water	69	18.2
Eating banana/fruits from the forest	49	12.9
Signs and symptoms of malaria*		
Fever with chills and rigors	227	59.7

<i>Cont. Table (4.1.3)</i>	104	27.4
Anemia /paleness		
Convulsion	89	23.4
Unconsciousness	87	22.9
Prevention of malaria		
Using mosquito net	282	74.2
Mosquito repellent coils	149	39.2
Wearing long sleeve shirts	127	33.4
Spraying insecticide	113	29.7
Not drink stream water	87	22.9

*multiple response

(c) Community knowledge of Dengue hemorrhagic Fever

Table (4.1.4) shows knowledge of Dengue hemorrhagic Fever. Nearly 90% of respondents ever heard about DHF and 73.4 % of respondent could mention that dengue was transmitted by mosquito bite. Regarding signs and symptoms of DHF, people mentioned about fever (49.7%), red spot on the skin (48.9%), body aches (27.9%), coffee ground colored vomiting (27.9%), abdominal pain (16.3%), and cold extremities (15.8%). When respondents were asked about how to protect mosquito bite, they mentioned about using mosquito net (75.5%), using mosquito repellent, coil or cream (46.1%) and wearing long sleeve shirts or trouser (35.5%). Respondents mentioned blocked gutter (58.9%), flower vases (44.5%), water containers (39.2%), old tyre / broken pots (27.1%). Regarding elimination of mosquito breeding places, respondent mentioned about changing stored water frequently (46.8%), spraying insecticide (44.5%), covering water containers (38.7%), putting sand abate in water containers (35.3%), and turning containers upside down (34.2%).

Table (4.1.4) Community knowledge of Dengue hemorrhagic Fever

Knowledge items	Frequency	Percent
Heard about DHF	339	89.2
Mode of transmission (mosquito bite)	279	73.4
signs and symptoms of dengue fever*		
Fever	189	49.7
Red spot on the skin	186	48.9
Body aches	106	27.9
Coffee ground colored vomiting	106	27.9
Abdominal pain	62	16.3
Cold extremities	60	15.8
Protection from mosquito bite*		
Using mosquito net	287	75.5
Mosquito repellent, coil or cream	175	46.1
Wearing long sleeve shirts or trousers	135	35.5
Mosquito breeding places*		
Blocked gutter	224	58.9
Flower vases	169	44.5
Water containers	149	39.2
Old tyre/ broken pots	103	27.1
Elimination of mosquito breeding places*		
Changing stored water frequently	178	46.8
Spraying insecticide	169	44.5
Covering water containers	147	38.7
Putting sand abate in water containers	134	35.3
Turning containers upside down	130	34.2

*multiple response

(d) Community knowledge of influenza A H₁N₁

Table (4.5) displays community knowledge of influenza A H₁N₁. Over sixty percent of respondents heard about pandemic influenza A H₁N₁, also known as swine flu. Regarding mode of transmission, people mentioned about cough and sneezing (35.3%), eating pork (21.8%), touching objects previously handled by infected person (19.5%), close contact with infected person (18.9%), blood transfusion (8.9%). Nearly half of respondents (47.9%) said they could prevent influenza A H₁N₁. Related to knowledge of methods of prevention, people answered covering mouth and nose when coughing and sneezing (30.8%), frequent hand washing (24.2%), avoiding crowded place (23.9%) and not spitting in the crowded place (16.1%). When respondents were asked about danger signs, in patients with fever, cough and sneezing, which indicated to seek immediate medical care, the answers were high fever (42.4%), inability to eat or drink (33.7%), difficult breathing (30.5%), fast breathing (19.7%), vomiting everything (17.6%) and convulsion (15.0%).

Table (4.1.5) Community knowledge of influenza A H₁N₁

Knowledge items	Frequency	Percentage
Heard of pandemic influenza (swine flu)	246	64.7
Know mode of spread*		
Cough and sneezing	134	35.3
Eating pork	83	21.8
Touching objects previously handled by infected person	74	19.5
Close contact with infected person	72	18.9
Blood transfusion	34	8.9
Can prevent H₁N₁	182	47.9
Ways of prevention*		
Covering mouth and nose when coughing and sneezing	117	30.8
Frequent hand washing	92	24.2

Cont. Table (4.1.5)

Avoiding crowded place	91	23.9
Not spitting in the crowded place	61	16.1

**Danger signs in patients with fever,
cough and sneezing***

High fever	161	42.4
Cannot eat or drink	128	33.7
Difficult breathing	116	30.5
Fast breathing	75	19.7
Vomits everything	67	17.6
Convulsion	57	15.0

*multiple response

(e) Community knowledge of Tuberculosis (TB)

Table (4.1.6) shows knowledge of respondents about TB. Over ninety percent heard about TB. Regarding mode of transmission, only sixty percent of respondents mentioned the correct mode of transmission airborne infection from TB patients when coughing or sneezing and some people said that TB can be transmitted through genetic (18.4%) and weakness (12.4%). Related to signs and symptoms of TB, study participants mentioned cough with blood (53.9%), cough more than 2 weeks (46.3%), weight loss (40.5%), sputum expectoration (36.3%), low grade fever (23.2%), and night sweat (21.6%). When the respondents were asked about the people who were vulnerable to get TB infections, the responses were Smokers (44.7%), staying together with untreated TB patient (37.9%), HIV patients (30.0%), malnourished people (20.8%), people living in overcrowded conditions (17.1%) and homeless people (5.0%). Nearly eighty percent of respondents said that TB was curable and out of this percentage, TB could be curable by taking drugs from health center (74.2%), taking drugs from grocery shops (6.6%) and taking herbal/ traditional medicines (3.9%).

Table (4.1.6) Community knowledge of Tuberculosis (TB)

Knowledge items	Frequency	Percentage
Heard about TB	350	92.1
Modes of transmission*		
Through air from TB patients when coughing / sneezing	228	60.0
Smoking	187	49.2
Alcohol drinking	81	21.3
Genetic	70	18.4
Weakness	47	12.4
Exhaustion	23	6.1
Signs and symptoms of TB*		
Cough with blood	205	53.9
Cough more than 2 weeks	176	46.3
Weight loss	154	40.5
Sputum expectoration	138	36.3
Low grade fever	88	23.2
Night sweat	82	21.6
Susceptible people to TB infection*		
Smokers	170	44.7
Staying together with untreated TB patient	144	37.9
HIV patients	114	30.0
Malnourished people	79	20.8
People living in overcrowded conditions	65	17.1
Homeless people	19	5.0
TB is curable	301	79.2
Treatment of Tuberculosis		
Taking drugs from health center	282	74.2
Taking drugs from grocery shops	25	6.6
Taking herbal/ traditional medicines	15	3.9

*multiple response

(f) Community knowledge of HIV/AIDS

Table (4.7) shows knowledge of respondents about HIV/AIDS. Nearly ninety percent of respondents heard about HIV/AIDS. When respondents were interviewed about the mode of transmission, their answers were having sex with HIV + person without condom (67.9%), sharing needles and syringes with someone who is infected (43.7%), sharing of piercing equipments with someone who is infected (41.1%) and from HIV + mother to baby (34.7%) and through infected blood transfusion (33.4%). When respondents were asked how can they know whether a person is infected with HIV, the responses were by doing blood test (66.8%), looking at physical appearance (10.5%), by doing X ray (7.9%). Regarding knowledge about prevention, respondents mentioned preventive ways such as having sex with one partner only (58.9%), having sex using condom in extramarital relation (43.9%), avoiding needle/ piercing equipments sharing (35.0%), avoiding unnecessary injection (31.1%) and taking medicine during pregnancy when a pregnant mother was found to be infected with HIV (27.9%)

Table (4.1.7) Community knowledge of HIV/AIDS

Knowledge items	Frequency	Percentage
Heard about HIV/ AIDS	338	88.9
Know correct ways of transmission		
Having sex with HIV + person without condom	258	67.9
Sharing needles and syringes with someone who is infected	166	43.7
Sharing of piercing equipments with someone who is infected	156	41.1
From HIV + mother to baby	132	34.7
Through infected blood transfusion	127	33.4
Confirmation of HIV (+)		
Blood test	254	66.8
Physical appearance	40	10.5

Cont. Table (4.1.7)

X ray	30	7.9
Stool test	20	5.3
Know how to prevent HIV/ AIDS		
Having sex with one partner only	224	58.9
Having sex using condom in extramarital relation	167	43.9
Avoid needle/ piercing equipments sharing	133	35.0
Avoid unnecessary injection	118	31.1
Taking medicine during pregnancy when a pregnant mother was HIV+	106	27.9

4.1.3 Level of knowledge about the infectious diseases

The levels of knowledge on the infectious diseases were groups into 3 levels by a criterion as follow:

- Low knowledge less than 60 %
- Moderate knowledge 60 – 79 %
- High knowledge more than or equal to 80%

Table (4.1.8) shows distribution of level of knowledge of respondents regarding six infectious diseases. Highest percentages in high level of knowledge was seen in HIV/AIDS (47.6%) and followed by Malaria (37.6%), TB (35%), DHF (35.0%), diarrhea (23.4%) and lowest percentage in high level knowledge was seen in influenza A H1N1.

Table (4.1.8) Level of knowledge about causes, mode of transmission, prevention and danger signs among infectious diseases

Items	Level of knowledge		
	Number (Percent)		
	High	Moderate	low
Diarrhea	89 (23.4%)	90 (23.7%)	201 (52.9%)
Malaria	143 (37.6%)	122 (32.1%)	115 (30.3%)
DHF	133 (35.0%)	72 (18.9%)	175 (46.1%)
Influenza A H1N1	59 (15.5%)	37 (9.7%)	284 (74.8%)
TB	133 (35.0%)	89 (23.4%)	158 (41.6%)
HIV/AIDS	181 (47.6%)	70 (18.4%)	129 (34.0%)

4.1.4 Association of knowledge of common infectious diseases with socio-demographic factors

(a) Relationship between the knowledge of diarrhea and socio-demographic variables

Table (4.1.9) shows relationship between the knowledge of diarrhea and socio-demographic variables. Knowledge of diarrhea was found to be associated age, gender, district, income and Thailand language proficiency at level of significance $p < 0.05$. Respondent age between 30-39 yr had highest percentage in good level of knowledge and female and people from Phob Pra district had better knowledge in diarrhea. People who could communicate well or fairly in Thailand language had better knowledge. Community knowledge about diarrhea was significantly associated with education level, occupation, legal status and duration of stay in Thailand at $p < 0.01$. People who had higher education had better knowledge obviously. People working in agricultural farms and people without legal documentation in Thailand had highest percentage in poor knowledge. People living in Thailand for more than 5 years had higher knowledge. The knowledge of diarrhea was found to be not associated with ethnicity and marital status.

Table (4.1.9) Relationship between the knowledge of diarrhea and socio-demographic variables

General characteristics	Sample	Knowledge of diarrhea						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	1	3.6	5	17.9	22	78.6	
20 – 29 yr	157	35	22.3	45	28.7	77	49.0	14.02
30 – 39 yr	114	32	28.1	26	22.8	56	49.1	0.029*
≥ 40 yr	81	21	25.9	14	17.3	46	56.8	
Gender								
Male	145	24	16.6	38	26.2	83	57.2	6.19
Female	235	65	27.7	52	22.1	118	50.2	0.045*
District								
Mae Sot	219	40	18.3	60	27.4	119	54.3	9.08
Phob Phra	161	49	30.4	30	18.6	82	50.9	0.011*
Ethnicity								
Burmese	308	74	24.0	66	21.4	168	54.5	4.58
Non-Burmese	72	15	20.8	24	33.3	33	45.8	0.101
Education								
Illiterate	26	2	7.7	7	26.9	17	65.4	
Primary and Middle	268	61	22.8	54	20.1	153	57.1	15.96
High school and higher	86	26	30.2	29	33.7	31	36.0	0.003**
Occupation								
Factory	145	40	27.6	44	30.3	61	42.1	
Farm	172	21	12.2	39	22.7	112	65.1	38.11
Other	63	28	44.4	7	11.1	28	44.4	<0.001**

Cont. Table (4.1.9)

Legal status									
Registered	132	37	28.0	43	32.6	52	39.4	17.68 0.001**	
Unregistered	180	33	18.3	32	17.8	115	63.9		
Color card	68	19	27.9	15	22.1	34	50.0		
Income (Baht)									
< 2500	90	21	23.3	20	22.2	49	54.4	11.35 0.023*	
2500 – 3500	192	47	24.5	35	18.2	110	57.3		
> 3500	98	21	21.4	35	35.7	42	42.9		
Marital status									
Single	116	26	22.4	32	27.6	58	50.0	5.37 0.249	
Married	230	52	22.6	48	20.9	130	56.5		
Divorced/ Separated/ Widowed	34	11	32.4	10	29.4	13	38.2		
Duration of stay									
< 1 year	58	9	15.5	9	15.5	40	69.0		21.03 <0.001**
1 – 5 years	194	35	18.0	57	29.4	102	52.6		
> 5 years	128	45	35.2	24	18.8	59	46.1		
Thai language proficiency									
Cannot Communicate fairly/well	157	27	17.2	33	21.0	97	61.8	9.22 0.010*	
Communicate fairly/well	223	62	27.8	57	25.6	104	46.6		

¹ Pearson Chi-square Test * Significant at p<0.05 ** Significant at p <0.01

(b) Relationship between the knowledge of malaria and socio-demographic Variables

Table (4.1.10) shows relationship between the knowledge of malaria and socio-demographic variables. The knowledge of malaria was found to be associated with occupation at p<0.01. People working in agricultural farms in Thailand had

highest percentage in poor knowledge compare to those working in factories and dependents. People who had no job were found to be highest percentage in good knowledge. Knowledge of malaria is associated with gender, legal status, duration of stay in Thailand and Thai language proficiency at $p < 0.05$. Female respondents had better knowledge compare to men. People without legal documentation in Thailand had highest percentage in poor knowledge about malaria compare to registered migrants and migrant with color cards. People living in Thailand for more than 5 years had higher knowledge. People who could communicate well or fairly in Thailand language had better knowledge compare to those who could not communicate at all. Knowledge of malaria was not significantly associated with district, ethnicity, education level, income and marital status.

Table 4.1.10 Relationship between the knowledge of malaria and socio-demographic variables

General characteristics	Sample	Knowledge of malaria						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	4	14.2	12	42.9	12	42.9	
20 – 29 yr	157	61	38.9	51	32.5	45	28.6	10.582
30 – 39 yr	114	51	44.7	34	29.9	29	25.4	0.102
≥ 40 yr	81	27	33.3	25	30.9	29	35.8	
Gender								
Male	145	48	33.1	42	29.0	55	37.9	6.553
Female	235	95	40.5	80	34.0	60	25.5	0.038*
District								
Mae Sot	219	74	33.8	75	34.2	70	32.0	3.259
Phob Phra	161	69	42.9	47	29.1	45	28.0	0.196
Ethnicity								
Burmese	308	116	37.7	100	32.4	92	29.9	0.15
Non-Burmese	72	27	37.5	22	30.6	23	31.9	0.928

Cont. Table (4.1.10)

Education								
Illiterate	26	8	30.8	7	26.9	11	42.3	
Primary and Middle	268	98	36.6	87	32.4	83	31.0	3.565
High school and higher	86	37	43.0	28	32.6	21	24.4	0.468
Occupation								
Factory	145	65	44.8	48	33.1	32	22.1	
Farm	172	47	27.3	55	32.0	70	40.7	20.548
Other	63	31	49.2	19	30.2	13	20.6	<0.001**
Legal status								
Registered	132	59	44.7	43	32.6	30	22.7	
Unregistered	180	56	31.1	54	30.0	70	38.9	13.114
Color card	68	28	41.2	25	36.7	15	22.1	0.011*
Income (Baht)								
< 2500	90	36	40.0	24	26.7	30	33.3	
2500 – 3500	192	67	34.9	68	35.4	57	29.7	2.727
> 3500	98	40	40.8	30	30.6	28	28.6	0.604
Marital status								
Single	116	40	34.5	41	35.3	35	30.2	
Married	230	89	38.7	70	30.4	71	30.9	1.258
Divorced/ Separated/ Widowed	34	14	41.2	11	32.4	9	26.4	0.868
Duration of stay								
< 1 year	58	13	22.4	18	31.0	27	46.6	
1 – 5 years	194	74	38.1	68	35.1	52	26.8	12.078
> 5 years	128	56	43.8	36	28.1	36	28.1	0.017*
Thai language proficiency								
Cannot communicate	157	47	29.9	52	33.2	58	36.9	
Communicate fairly/well	223	96	43.0	70	31.4	57	25.6	8.240
								0.016*

[†] Pearson Chi-square Test

* Significant at p<0.05 ** Significant at p<0.01

(c) Relationship between the knowledge of DHF and socio-demographic variables

Table (4.1.11) shows relationship between the knowledge of DHF and socio-demographic variables. The community knowledge about DHF was significantly associated with age, education level, occupation, legal status in Thailand, income, marital status, duration of stay in Thailand and Thai language proficiency. Same as in diarrhea and malaria, people aged between 30-39 years had highest percentage and people aged below 20 years lowest percentage in good knowledge level. People living in Phop Pra had better knowledge compare to those in Maesot. People with higher knowledge had better knowledge. . People working in agricultural farms and people without legal documentation in Thailand had lowest percentage in good knowledge level. Divorced/separated/widowed had better knowledge about DHF compare to married and single people. People who live in Thailand for more than 5 years had highest percentage in knowledge and respondents who lived less than one year had least percentage in good knowledge level. Clearly, people who could communicate well in Thailand language had better knowledge than who could not communicate.

Table (4.1.11) Relationship between the knowledge of DHF and socio-demographic variables

General characteristics	Sample	Knowledge of DHF						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	3	10.7	8	28.6	17	60.7	
20 – 29 yr	157	53	33.8	38	24.2	66	42.0	18.103
30 – 39 yr	114	47	41.2	19	16.7	48	42.1	0.006**
≥ 40 yr	81	30	37.0	7	8.6	44	54.4	
Gender								
Male	145	43	29.7	27	18.6	75	51.7	3.565
Female	235	90	38.3	45	19.1	100	42.6	0.168
District								
Mae Sot	219	62	28.3	50	22.8	107	48.9	11.607
Phob Phra	161	71	44.1	22	13.7	68	42.2	0.003**
Ethnicity								
Burmese	308	106	34.4	59	19.2	143	46.4	0.264
Non-Burmese	72	27	37.5	13	18.1	32	44.4	0.884
Education								
Illiterate	26	7	26.9	5	19.2	14	53.7	
Primary and Middle	268	90	33.6	42	15.7	136	50.7	14.976
High school and higher	86	36	41.8	25	29.1	25	29.1	0.005**
Occupation								
Factory	145	54	37.2	42	29.0	49	33.8	
Farm	172	45	26.2	21	12.2	106	61.6	39.639
Other	63	34	54.0	9	14.3	20	31.7	<0.001**

Cont. Table (4.1.11)

Legal status									
Registered	132	54	40.9	36	27.3	42	31.8	24.875 <0.001**	
Unregistered	180	49	27.2	27	15.0	104	57.8		
Color card	68	30	44.1	9	13.3	29	42.6		
Income (Baht)									
< 2500	90	31	34.4	14	15.6	45	50.0	22.522 <0.001**	
2500 – 3500	192	71	37.0	24	12.5	97	50.5		
> 3500	98	31	31.6	34	34.7	33	33.7		
Marital status									
Single	116	35	30.2	35	30.2	46	39.6	14.015 0.007**	
Married	230	84	36.5	33	14.3	113	49.2		
Divorced/ Separated/ Widowed	34	14	41.2	4	11.7	16	47.1		
Duration of stay									
< 1 year	58	10	17.2	14	24.1	34	58.7		14.771 0.005**
1 – 5 years	194	65	33.5	40	20.6	89	45.9		
> 5 years	128	58	45.3	18	14.1	52	40.6		
Thai language proficiency									
Cannot communicate	157	40	25.5	37	23.5	80	51.0	11.341 0.003**	
Communicate fairly/well	223	93	41.47	35	15.7	95	42.6		

¹ Pearson Chi-square Test

** Significant at p <0.01

(d) Relationship between the knowledge of influenza A H1N1 and socio-demographic variables

Table (4.1.12) shows relationship between the knowledge of DHF and socio-demographic variables. The community knowledge about influenza A H1N1 was significantly associated with education level ($p < 0.001$), occupation ($p < 0.001$), legal status ($p = 0.001$). Respondents who had higher education had higher knowledge level. People who worked in factories had highest percentage in good knowledge level

compare to those working in agricultural farms and dependents. Registered migrant workers had highest level in good knowledge level compare to unregistered and color card holders. The community knowledge about influenza A H1N1 was not significantly associated with age, gender, district, ethnicity, income, marital status, duration of stay in Thailand and Thailand language proficiency.

Table 4.1.12 Relationship between the knowledge of influenza A H1N1 and socio-demographic variables

General characteristics	Sample	Knowledge of H1N1						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	2	7.1	2	7.1	24	85.8	
20 – 29 yr	157	24	15.3	18	11.5	115	73.2	4.546
30 – 39 yr	114	22	19.3	11	9.6	81	71.1	0.603
≥ 40 yr	81	11	13.6	6	7.4	64	79.0	
Gender								
Male	145	22	15.2	17	11.7	106	73.1	1.054
Female	235	37	15.7	20	8.6	178	75.7	0.590
District								
Mae Sot	219	33	15.1	28	12.8	158	72.1	5.468
Phob Phra	161	26	16.1	9	5.6	126	78.3	0.065
Ethnicity								
Burmese	308	44	14.3	31	10.1	233	75.6	1.972
Non-Burmese	72	15	20.8	6	8.4	51	70.8	0.373

Cont. Table (4.1.12)

Education								
Illiterate	26	3	11.5	2	7.7	21	80.8	
Primary and Middle	268	33	12.3	20	7.5	215	80.2	21.124
High school and higher	86	23	26.7	15	17.5	48	55.8	<0.001**
Occupation								
Factory	145	34	23.4	25	17.3	86	59.3	
Farm	172	13	7.6	6	3.4	153	89.0	38.045
Other	63	12	19.0	6	9.6	45	71.4	<0.001**
Legal status								
Registered	132	33	25.0	15	11.4	84	63.6	
Unregistered	180	14	7.8	18	10.0	148	82.2	19.75
Color card	68	12	17.6	4	5.9	52	76.5	0.001**
Income (Baht)								
< 2500	90	13	14.4	5	5.6	72	80.0	
2500 – 3500	192	28	14.6	16	8.3	148	77.1	8.704
> 3500	98	18	18.4	16	16.3	64	65.3	0.069
Marital status								
Single	116	23	19.8	17	14.7	76	65.5	
Married	230	30	13.0	17	7.4	183	79.6	
Divorced/ Separated/ Widowed	34	6	17.6	3	8.9	25	73.5	8.648 0.071
Duration of stay								
< 1 year	58	4	6.9	5	8.6	49	84.5	
1 – 5 years	194	29	14.9	19	9.8	146	75.3	6.018
> 5 years	128	26	20.3	13	10.2	89	69.5	0.198

Cont. Table (4.1.2)

Thai language proficiency

Cannot communicate	157	20	12.7	11	7.0	126	80.3	
								4.477
Communicate fairly/well	223	39	17.5	26	11.6	158	70.9	0.107

¹ Pearson Chi-square Test

** Significant at $p < 0.01$

(e) Relationship between the knowledge of tuberculosis (TB) and socio-demographic variables

Table (4.1.13) shows relationship between the knowledge of tuberculosis (TB) and socio-demographic variables. The community knowledge of TB was associated with age, district, education level, occupation, legal status, income at $p < 0.01$ and associated with marital status at $p < 0.01$. The knowledge level became better with increased age but decline after 40 years. Respondents from Mae Sot had better knowledge than those from Phob Pra. People with higher education had higher knowledge level. People who are working in the factories had higher knowledge than those working in farms and dependent people. Registered migrant workers had highest level in good knowledge level compare to unregistered and color card holders. Knowledge of TB improved with increased income. Regarding marital status, single people had higher than married people and divorced. The knowledge of TB was not significantly related to ethnicity, gender, duration of stay in Thailand and Thai language proficiency.

Table 4.1.13 Relationship between the knowledge of tuberculosis (TB) and socio-demographic variables

General characteristics	Sample	Knowledge of TB						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	2	7.1	4	14.3	22	78.6	21.14
20 – 29 yr	157	60	38.2	43	27.4	54	34.4	0.002**
30 – 39 yr	114	44	38.6	25	21.9	45	39.5	
≥ 40 yr	81	27	33.3	17	21.0	37	45.7	
Gender								
Male	145	45	31.0	33	22.8	67	46.2	2.31
Female	235	88	37.4	56	23.9	91	38.7	0.316
District								
Mae Sot	219	87	39.7	65	29.7	67	30.6	26.94
Phob Phra	161	46	28.6	24	14.9	91	56.5	<0.001**
Ethnicity								
Burmese	308	110	35.7	75	24.4	123	39.9	1.89
Non-Burmese	72	23	31.9	14	19.5	35	48.6	0.39
Education								
Illiterate	26	3	11.5	6	23.1	17	65.4	29.93
Primary and Middle	268	85	31.7	58	21.7	125	46.6	<0.001**
High school and higher	86	45	52.3	25	29.1	16	18.6	
Occupation								
Factory	145	70	48.3	39	26.9	36	24.8	49.32
Farm	172	33	19.2	36	20.9	103	59.9	<0.001**
Other	63	30	47.6	14	22.2	19	30.2	

Cont. Table (4.1.13)

Legal status								
Registered	132	59	44.7	39	29.5	34	25.8	20.86
Unregistered	180	54	30.0	36	20.0	90	50.0	<0.001**
Color card	68	20	29.4	14	20.6	34	50.0	
Income (Baht)								
< 2500	90	30	33.3	13	14.5	47	52.2	14.85
2500 – 3500	192	64	33.3	44	22.9	84	43.8	0.005**
> 3500	98	39	39.8	32	32.6	27	27.6	
Marital status								
Single	116	55	47.4	23	19.8	38	32.8	
Married	230	65	28.3	58	25.2	107	46.5	12.76
Divorced/ Separated/ Widowed	34	13	38.2	8	23.6	13	38.2	0.012*
Duration of stay								
< 1 year	58	14	24.1	11	19.0	33	56.9	9.477
1 – 5 years	194	65	33.5	48	24.7	81	41.8	0.050
> 5 years	128	54	42.2	30	23.4	44	34.4	
Thai language proficiency								
Cannot communicate	157	55	35.0	36	23.0	66	42.0	0.041
Communicate fairly/well	223	78	35.0	53	23.7	92	41.3	0.980

[†] Pearson Chi-square Test * Significant at p<0.05 ** Significant at p <0.01

(f) Relationship between the knowledge of HIV/AIDS and socio-demographic variables

Table (4.1.14) shows relationship between the knowledge of HIV/AIDS and socio-demographic variables. The community knowledge about HIV/AIDS was associated with age, education, occupation, legal status, and duration of stay in Thailand at $p < 0.01$ and with income at $p < 0.05$. Regarding age group, unlike above five diseases knowledge level was highest in the group aged 20-29 years and lowest in aged less than 20 years. People with higher education had higher level of knowledge about HIV/AIDS. People who are working in the factories had higher knowledge than those working in farms and dependent people. Registered migrant workers had highest level in good knowledge level compare to unregistered and color card holders. Higher income associated with higher level of knowledge. Higher duration of stay in Thailand associated higher level of knowledge about HIV/AIDS but decline after more than 5 years of stay in Thailand. The community knowledge of HIV/AIDS was not associated with gender, district, ethnicity, marital status and duration of stay in Thailand.

Table 4.1.14 Relationship between the knowledge of HIV/AIDS and socio-demographic Variables

General characteristics	Sample	Knowledge of all six diseases						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	6	21.4	5	17.9	17	60.7	
20 – 29 yr	157	84	53.5	31	19.7	42	26.8	20.484
30 – 39 yr	114	57	50.0	24	21.1	33	28.9	0.002**
≥ 40 yr	81	34	42.0	10	12.3	37	45.7	
Gender								
Male	145	62	42.8	28	19.3	55	37.9	2.336
Female	235	119	50.6	42	17.9	74	31.5	0.306
District								
Mae Sot	219	111	50.7	35	16.0	73	33.3	2.739
Phob Phra	161	70	43.5	35	21.7	56	34.8	0.254
Ethnicity								
Burmese	308	149	48.4	60	19.5	99	32.1	2.739
Non-Burmese	72	32	44.4	10	13.9	30	41.7	0.254
Education								
Illiterate	26	9	34.6	2	7.7	15	57.7	
Primary and Middle	268	115	42.9	50	18.7	103	38.4	27.630
High school and higher	86	57	66.3	18	20.9	11	12.8	<0.001**
Occupation								
Factory	88	60.7	25	17.2	32	22.1	88	
Farm	56	32.6	35	20.3	81	47.1	56	31.843
Other	37	58.7	10	15.9	16	25.4	37	<0.001**

Cont. Table (4.1.15)

Legal status								
Registered	132	80	60.6	20	15.2	32	24.2	19.682 0.001**
Unregistered	180	72	40.0	31	17.2	77	42.8	
Color card	68	29	42.6	19	28.0	20	29.4	
Income (Baht)								
< 2500	90	37	41.1	13	14.5	40	44.4	11.628
2500 – 3500	192	88	45.8	36	18.8	68	35.4	0.020*
> 3500	98	56	57.2	21	21.4	21	21.4	
Marital status								
Single	116	66	56.9	22	19.0	28	24.1	8.125 0.087
Married	230	100	43.5	43	18.7	87	37.8	
Divorced/ Separated/ Widowed	34	15	44.1	5	14.7	14	41.2	
Duration of stay								
< 1 year	58	14	24.1	13	22.5	31	53.4	16.371 0.003**
1 – 5 years	194	102	52.6	33	17.0	59	30.4	
> 5 years	128	65	50.8	24	18.7	39	30.5	
Thai language proficiency								
Cannot communicate	157	67	42.7	29	18.4	61	38.9	3.277 0.194
Communicate fairly/well	223	114	51.1	41	18.4	68	30.5	

¹ Pearson Chi-square Test * Significant at p<0.05 ** Significant at p <0.01

(g) Relationship between the overall knowledge of all six diseases and socio-demographic variables

The knowledge of all six diseases was calculated by summing up the score of individual disease. The total score was 76 by adding diarrhea score 15, malaria score 10, DHF score 16, Influenza A H1N1 score 11, TB score 14 and HIV/AIDS scores 10. Table (4.1.15) shows the association between the overall knowledge of all six diseases and socio-demographic variables. It was associated with age group, education, occupation, legal status and duration of stay in Thailand at level <0.01 and associated with income and Thai language proficiency at $p<0.05$. Age group 30-39 yr had highest percentage in good knowledge level, people with higher education with higher knowledge. Factory workers had better knowledge than the agricultural farm workers and dependents. Register workers had higher knowledge than unregistered workers and color card holders. Respondents with higher income and longer duration of stay had higher knowledge. People who could communicate in Thai language had better knowledge than those who could not communicate. The overall knowledge level was not significantly associated with gender, district, ethnicity, and marital status.

Table 4.1.15 Relationship between the overall knowledge of common infectious and socio-demographic variables

General characteristics	Sample	Knowledge of all six diseases						χ^2 value P-value ¹
		Good		Moderate		Poor		
		N	%	N	%	N	%	
Age								
<20 yr	28	1	3.6	2	7.1	25	89.3	
20 – 29 yr	157	35	22.3	49	31.2	73	46.5	26.390
30 – 39 yr	114	32	28.1	28	24.6	54	47.4	<0.001**
≥ 40 yr	81	23	28.4	11	13.6	47	58.0	
Gender								
Male	145	31	21.4	34	23.4	80	55.2	1.003
Female	235	60	25.5	56	23.8	119	50.6	0.606
District								
Mae Sot	219	54	24.7	51	23.3	114	52.1	0.153
Phob Phra	161	37	23.0	39	24.2	85	52.8	0.926
Ethnicity								
Burmese	308	74	24.0	73	23.7	161	52.3	0.007
Non-Burmese	72	17	23.6	17	23.6	38	52.8	0.996
Education								
Illiterate	26	2	7.7	7	26.9	17	65.4	
Primary and Middle	268	56	20.9	58	21.6	154	57.5	21.638
High school and higher	86	33	38.4	25	29.1	28	32.6	<0.001**
Occupation								
Factory	145	51	35.2	36	24.8	58	40.0	
Farm	172	18	10.5	37	21.5	117	68.0	39.301
Other	63	22	34.9	17	27.0	24	38.1	<0.001**

Cont. Table (4.1.15)

Legal status								
Registered	132	42	31.8	41	31.1	49	37.1	21.16 <0.001**
Unregistered	180	32	17.8	34	18.9	114	63.3	
Color card	68	17	25.0	15	22.1	36	52.9	
Income (Baht)								
< 2500	90	20	22.2	16	17.8	54	60.0	9.802 0.044*
2500 – 3500	192	46	24.0	41	21.4	105	54.7	
> 3500	98	25	25.5	33	33.7	40	40.8	
Marital status								
Single	116	31	26.7	31	26.7	54	46.6	5.63 0.229
Married	230	49	21.3	55	23.9	126	54.8	
Divorced/ Separated/ Widowed	34	11	32.4	4	11.8	19	55.9	
Duration of stay								
< 1 year	58	7	12.1	11	19.0	40	69.0	21.506 <0.001*
1 – 5 years	194	40	20.6	59	30.4	95	49.0	
> 5 years	128	44	34.4	20	15.6	64	50.0	
Thai language proficiency								
Cannot communicate	157	28	17.8	37	23.6	92	58.6	6.159 0.046*
Communicate fairly/well	223	63	28.3	53	23.8	107	48.0	

¹ Pearson Chi-square Test * Significant at p<0.05 ** Significant at p <0.01

(h) Association between the knowledge of infectious diseases and socio-demographic variables

Table (4.1.16) shows summary about the association between the knowledge of infectious diseases and socio-demographic factors. Occupation and legal status in Thailand was associated with knowledge of individual six diseases and overall knowledge. Generally people who were working in agricultural farms and migrant workers without legal documents had poor knowledge. Duration of stay in Thailand was associated with knowledge of five diseases and overall knowledge except influenza A H1N1. Age was associated with diarrhea, DHF, TB and overall knowledge. Basically, respondents under 20 years had poor knowledge. Gender was associated with diarrhea and malaria knowledge and women had better than men. District was associated with diarrhea, DHF and TB. Respondents from Mae Sot district had better than those from Phob Pra district. Ethnicity had no relationship any of the disease knowledge. Education status was associated with knowledge of five diseases and overall knowledge except malaria. Respondents with higher education had better knowledge. Marital status had association with DHF and TB. Married people had better knowledge about DHF and single people has better knowledge about TB.

Table 4.1.16 Summary Table showing relationship between the knowledge of infectious diseases and socio-demographic variables

Socio-demographic characteristics	Knowledge of infectious diseases (χ^2 value ¹)						Overall knowledge
	Diarrhea	Malaria	DHF	H1N1	TB	HIV/AIDS	
Age	14.02**	10.58	18.10**	4.55	21.14**	20.48**	26.39**
Gender	6.19*	6.55*	3.56	1.05	2.31	2.37	1.00
District	9.08*	3.26	11.61*	5.47	26.95*	2.74	0.15
Ethnicity	4.58	0.15	0.25	1.97	1.89	2.74	0.01
Education Status	15.96**	3.57	14.98*	21.12**	29.94*	27.63**	21.64**
Occupation Status	38.11**	20.55*	39.64*	38.04**	49.32**	31.84**	39.30**
Legal Status	17.68**	13.14*	24.86*	19.75**	20.86**	19.68**	21.16**
Income (Baht)	11.35*	2.73	22.52*	8.70	14.86**	11.63*	9.81*
Marital Status	5.39	1.26	14.01**	8.65	12.76**	8.13	5.63
Duration Of Stay	21.03**	12.08*	14.77**	6.02	9.48*	16.37**	21.51**
Thai Language Proficiency	9.22*	8.24*	11.34**	4.48	0.041	3.28	6.16*

¹ Pearson Chi-square Test

* Significant at $p < 0.05$ ** Significant at $p < 0.01$

PHASE (2) Results of empowerment program for Myanmar migrant factory workers as community health volunteers for improving community health knowledge of common infectious diseases

4.2 Result of self-esteem and self- efficacy of CHVs among the intervention and control groups

Phase (II) was a quasi experimental research to assess the empowerment of community health volunteers is effective in improving community health knowledge of common infectious diseases. There were 2 groups in the study: one group was intervention group and one was comparison group. Prathetpadeng and Mae Pa migrant clusters from Mae Sot district were in the intervention cluster and Saw Oo and Moo Kauk migrant clusters from Phob Pra district were in intervention group. Tha sailuad and Tesaban migrant clusters from Mae Sot district and PaMai and Pakhamai migrant clusters from Phob Pra were in comparison group. Population in intervention area was 3915 and 86 CHVs were recruited. There were 3480 people in comparison area and 77 CHVs were recruited.

Table 4.2.1 Comparison of socio-demographic characteristics of CHVs from intervention and control groups at baseline

General characteristics	Intervention	Comparison	P – value ¹
	group (N = 86)	group (N = 77)	
	Number (%)	Number (%)	
Age			
<20 yr	6 (7.0)	8 (10.4)	0.623
20 – 29 yr	25 (29.1)	26 (33.8)	
30 – 39 yr	32 (37.2)	28 (36.3)	
≥40 yr	23 (26.7)	15 (19.5)	
Gender			
Male	28 (32.6)	30 (39.0)	0.394
Female	58 (67.4)	47 (61.0)	

Cont. Table (4.2.1)

District			
Mae Sot	51 (59.3)	43 (55.8)	0.656
Phob Phra	35 (40.7)	34 (44.2)	
Ethnicity			
Burmese	68 (79.1)	70 (90.9)	0.036
Non-Burmese	18 (20.9)	7 (9.1)	
Education			
Primary and Middle	55 (64.0)	49 (63.3)	0.966
High school and higher	31 (36.0)	28 (36.4)	
Occupation			
Factory	32 (37.2)	30 (39.0)	0.815
Farm	41 (47.7)	38 (49.4)	
Dependent/ other	13 (15.1)	9 (11.6)	
Legal status			
Registered	27 (31.4)	24 (31.2)	0.990
Unregistered	23 (26.7)	20 (26.0)	
Color card	36 (41.9)	33 (42.8)	
Income (Baht)			
<2500	11 (12.8)	10 (13.0)	0.839
2500 – 3500	57 (66.3)	48 (62.3)	
>3500	18 (20.9)	19 (24.7)	
Marital status			
Single	23 (26.7)	23 (29.9)	0.763
Married	59 (68.6)	49 (63.3)	
Divorced/ Separated/	4 (4.7)	5 (6.5)	
Widowed			

Cont. Table (4.2.1)

Duration of stay			
<1 year	3 (3.5)	3 (3.9)	
1 – 5 years	49 (57.0)	46 (59.7)	0.914
>5 years	34 (39.5)	28 (36.4)	
Thai language proficiency			
Cannot communicate	67 (77.9)	61 (79.2)	
Communicate fairly/well	19 (22.1)	16 (20.8)	0.838

¹ Pearson Chi-square Test

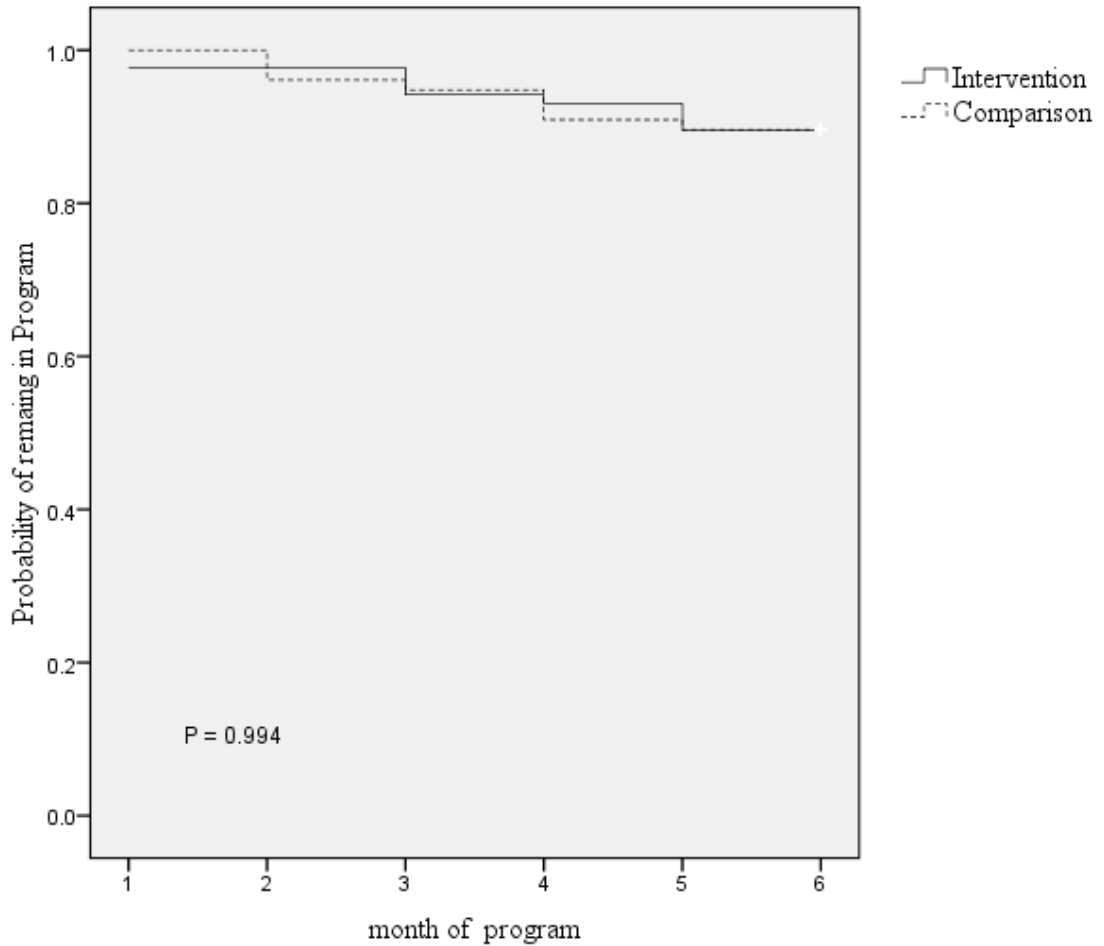
4.2.1 CHV remaining in intervention and control groups by Kaplan Meier survival analysis

9 CHV from intervention group and 8 CHV from control group and thus total 17 CHVs drop out during the study period. After one month, 2 CHVs intervention group and after 2 months, 3 CHVs from comparison group quit. After 3 months of study period, 4 CHVs from both groups left. After 4 months, another 4 CHV from both group drop-out and at the end of 5th month, 4 more CHV drop out and at the end of the study period, 146 CHVs were remaining in the program for the end-project analysis. The reasons of drop-out were moving to another place to work, return back to home in Myanmar and being not able to provide enough time to work as CHV.

Table 4.2.2 CHV drop-out rate in both groups

	Total No. of CHV	No. CHV drop out	No. of CHV remaining at the end of Program	
			N	Percent
Intervention	86	9	77	89.5%
Control	77	8	69	89.6%
Overall	163	17	146	89.6%

Fig (4.1) Kaplan-Meier survival curve



4.2.2 Comparison of self-esteem mean score of CHVs between and within the intervention and control group, before and after the intervention

Comparison of mean score of CHV self-esteem between groups was computed by using student's t- test and within group by using paired sample t- test, with the level of confidence 95%. There were 10 items and highest score for each item was 5 and total score, therefore, was 50. There were 86 CHVs in the intervention group and 77 CHVs in comparison group, and hence, there were total of 163 CHVs in both groups at the beginning of the program. At the end of the program, there were 77

CHVs in intervention group and 69 CHVs remaining in the control group and the total number was 146. It was confirmed that the self-esteem mean score of intervention group became higher significantly than that of comparison group after the intervention. Within the group, the self efficacy mean score increased significantly in intervention group at the end of the project whereas there was no significant increase in comparison group. (Table 4.2.4)

Table 4.2.3 Comparison of self esteem mean score between and within the intervention and control group, before and after the intervention

Self Esteem	Mean	SD	t - value	d.f	p – value
Before Program					
Intervention group	20.697	3.006	0.835	161	0.405
Control group	20.298	3.087			
After Program					
Intervention group	40.416	2.556	46.728	144	<0.001
Control group	20.565	2.569			
Within Comparison					
Before program	20.333	3.184	0.421	68	0.675
After program	20.565	2.569			
Within Intervention					
Before program	20.701	3.048	40.572	76	<0.001
After program	40.416	2.556			

4.2.3 Comparison of self-efficacy mean score of CHVs between and within the intervention and control group, before and after the intervention

Comparison of self-efficacy mean score of CHVs between groups was computed by using student's t- test and within group by using paired t-test, with the level of confidence 95%. There were 10 items and highest score for each item was 5 and total score was 50. It was found that the mean score of intervention group was higher significantly than that of comparison group after the intervention. Within the group, the mean score increased significantly in intervention group whereas there was

no significant increase in self- efficacy means score in comparison group at the end of the project. (Table 4.2.4)

Table 4.2.4 Comparison of self efficacy means score between and within the intervention and control group, before and after the intervention

Self Efficacy	Mean	SD	t - value	d.f	p – value
Before Program					
Intervention group	19.95	2.58	- 0.35	161	0.728
Comparison group	20.10	2.94			
After Program					
Intervention group	39.88	2.61	47.60	144	<0.001
Comparison group	19.64	2.51			
Within Comparison					
Before program	20.06	2.96	- 0.91	68	0.367
After program	19.64	2.51			
Within Intervention					
Before program	19.99	2.59	45.02	76	<0.001
After program	39.88	2.61			

4.3 Changes in knowledge about causes, mode of transmission, prevention and danger signs to seek immediate medical treatment regarding common infectious among the intervention and comparison group after the intervention

4.3.1 Changes in diarrhea knowledge among the intervention and control group

The results showed that there were significant improved in causes, prevention and dangers signs about diarrhea. During diarrhea, percentage of respondents who said more fluid should be given increased from 35% to 72% in the intervention group ($p < 0.001$) but in the comparison group, the percentage increased from 35.6% to 41.7% ($p = 0.234$). There was significant increase in number of respondents who knew how to prepare ORS (Oral rehydration solution) properly in intervention group ($p = 0.004$) whereas there was no significant improvement in comparison group ($P = 0.330$). Percentage of respondents who knew 2 or more danger signs such as diarrhea with fever, repeated vomiting, unconsciousness, unable to drink or drink poorly, increased significantly in intervention group ($p = 0.007$). (Table 4.2.5).

Table 4.3.1 Changes in diarrhea knowledge before and after intervention among the intervention and control group

Knowledge items (Diarrhea)	Intervention group (N = 200)			Control group (N = 180)		
	Before	After	P - value	Before	After	P - value
	No. (%)	No. (%)		No. (%)	No. (%)	
Know 2 or more causes	103(51.5)	135(67.5)	0.001	101(56.1)	105(58.3)	0.670
Give more fluid during diarrhea	70 (35.0)	144(72.0)	<0.001	64 (35.6)	75(41.7)	0.234
Know well how to prepare ORS	75 (37.5)	104(52.0)	0.004	65 (36.1)	74(41.1)	0.330
Know 2 or more ways of prevention	124 (62.0)	150(75.0)	0.005	124(68.9)	126(70.0)	0.819
Know 2 or more danger signs	84 (42.0)	111(55.5)	0.007	80 (44.4)	85(47.2)	0.597

4.3.2 Changes in knowledge about malaria among the intervention and control group

The results in table (4.3.2) show that there were significant improved in causes, prevention and dangers signs about malaria in the intervention group. The number of respondents who knew malaria is transmitted by mosquito bite increased significantly in intervention group ($p=0.003$) but there was no significant change in comparison group ($p=0.349$). Regarding symptoms of malaria, there was significant increase in number of respondents who knew 2 or more symptoms such as fever with chills and rigors, paleness, convulsion, unconsciousness, in intervention group ($p<0.001$) where as there was no significant increase in comparison group ($p=0.912$). Similarly, there was significant change in percentage of respondents who knew 2 or more ways of prevention of malaria such as using mosquito net, (from 52% to 74.5%) in intervention group ($p<0.001$) but there was no obvious improvement in comparison group ($p=0.914$).

Table 4.3.2 Changes in malaria knowledge before and after intervention among the intervention and control group.

Knowledge items (Malaria)	Intervention group (N = 200)			Control group (N = 180)		
	Before	After	P - value	Before	After	P - value
	No. (%)	No. (%)		No. (%)	No. (%)	
Malaria transmitted by mosquito bite	155 (77.5)	177(88.5)	0.003	142(78.9)	149(82.8)	0.349
Know 2 or more symptoms	71 (35.5)	108(54.0)	<0.001	61 (33.9)	63(35.0)	0.912
Know 2 or more ways of prevention	104 (52.0)	149(74.5)	<0.001	108(60.0)	109(60.6)	0.914

4.3.3 Changes in knowledge about DHF among the intervention and control group

Table (4.3.3) shows changes in level of knowledge about DHF among the intervention and comparison groups. The number of respondents who knew DHF is transmitted by mosquito bite increased significantly in intervention group ($p=0.002$) but there was no significant change in comparison group ($p=0.399$). There was significant increase in number of respondents who knew 2 or more symptoms such as fever, red spots on the skin, body aches, vomiting coffee ground color vomitus, abdominal pain, in intervention group ($p<0.001$) where as there was no significant increase in comparison group ($p=0.912$). There were significant changes in percentage of respondents who knew 2 or more ways of protection from mosquito bite, 2 or more methods of elimination of mosquito and 2 or more mosquito breeding places in the intervention group ($p= 0.005$), ($p<0.001$) and ($p<0.001$). But there were no significant changes in comparison group ($p=0.522$), ($p=0.289$) and ($p= 0.204$) respectively.

Table 4.3.3 Changes in DHF knowledge before and after intervention among the intervention and control group.

Knowledge items (Dengue Fever)	Intervention group (N = 200)			Control group (N = 180)		
	Before	After	P - value	Before	After	P - value
	No. (%)	No. (%)		No. (%)	No. (%)	
Dengue is transmitted by mosquito bite	149 (74.5)	174(87.0)	0.002	130(72.2)	137(76.1)	0.399
Know 2 or more symptoms	103 (51.5)	142(71.0)	<0.001	92 (51.1)	96(53.3)	0.673
Know 2 or more ways of protection	87 (43.5)	115(57.5)	0.005	101(56.1)	107(59.4)	0.522
Know 2 or more methods of elimination of mosquito	96 (48.0)	134(67.0)	<0.001	94 (52.2)	104(57.8)	0.289
Know 2 or more mosquito breeding places	80 (40.0)	133(66.5)	<0.001	92 (51.1)	104(57.8)	0.204

4.3.4 Changes in knowledge about influenza A H1N1 among the intervention and control group

Table (4.3.4) shows changes in level of knowledge about DHF among the intervention and comparison groups. The number of respondents who ever heard of pandemic influenza H1N1 increased from 60.5% to 89.0% in the intervention group ($p<0.001$). But there was no significant increase in comparison ($p=0.123$). The number of respondents who mentioned pandemic influenza H1N1 can be prevented increased 45.5% to 71.0% in the intervention group ($p<0.001$). There were significant changes in number respondents who knew 2 or more ways of transmission of H1N1, 2 or more ways of prevention of H1N1 such as covering mouth and nose when sneezing and coughing, frequent hand washing, avoidance of crowded places and not spitting in the public and 2 or more danger

signs of patients with fever, cough and sneezing such as high fever, inability to eat or drink, difficult breathing, fasting breathing, increased significantly in intervention group ($p=0.009$), ($p<0.001$) and ($p<0.001$) respectively.

Table 4.3.4 Changes in influenza A H1N1 knowledge before and after intervention among the intervention and control group.

Knowledge it2ems (H1N1)	Intervention group (N = 200)			Control group (N = 180)		
	Before	After	P - value	Before	After	P - value
	No. (%)	No. (%)		No. (%)	No. (%)	
Heard of pandemic influenza H1N1	121 (60.5)	178(89.0)	<0.001	125(69.4)	138(76.7)	0.123
Pandemic influenza can be prevented	91 (45.5)	142(71.0)	<0.001	91 (50.6)	101(56.1)	0.291
Know 2 or more ways of transmission	48 (24.0)	72(36.0)	0.009	58 (32.2)	65(36.1)	0.437
Know 2 or more ways of prevention	39 (19.5)	72(36.0)	<0.001	62 (34.4)	64(35.6)	0.825
Know 2 or more danger signs of patients with fever, cough and sneezing	71 (35.5)	116(58.0)	<0.001	93 (51.7)	99(55.0)	0.526

4.3.5 Changes in knowledge about tuberculosis among the intervention and control group

Table (4.3.5) shows changes in level of knowledge about tuberculosis among the intervention and control groups. The number of respondents who knew tuberculosis is transmitted through air from TB infected patients during coughing and sneezing increased significantly in intervention group ($p < 0.001$) but there was no significant change in comparison group ($p = 0.271$). There was significant increase in number of respondents who knew 2 or more symptoms such as coughing for more than 2 weeks, cough with blood, low grade fever, weight loss in intervention group ($P < 0.001$). The number of respondents who knew 2 or more susceptible conditions such as HIV infected people, staying together with TB infected patients increased significantly in intervention group ($P < 0.001$) and TB treatment at Health Center properly also increased in intervention group but not significant statistically ($p = 0.114$).

Table 4.3.5 Changes in TB knowledge before and after intervention among the intervention and control group

Knowledge items (TB)	Intervention group (N = 200)			Control group (N = 180)		
	Before	After	P - value	Before	After	P - value
	No. (%)	No. (%)		No. (%)	No. (%)	
Know correct way of TB transmission	117 (58.5)	150(75.0)	<0.001	111(61.7)	121(67.2)	0.271
Know 2 or more symptoms of TB	109 (54.5)	147(73.5)	<0.001	106(58.9)	112(62.2)	0.518
Know 2 or more susceptible conditions	65 (32.5)	113(56.5)	<0.001	72 (40.0)	76(42.2)	0.668
Know TB treatment at Health Center	159 (79.5)	171(85.5)	0.114	123(68.3)	121(67.2)	0.822

4.3.6 Changes in knowledge about HIV/AIDS among the intervention and control group

Table (4.3.6) shows changes in level of knowledge about HIV/AIDS among the intervention and comparison groups. In intervention group, there were significant increase in number of respondents who knew 2 or more ways of prevention of HIV and confirmation of HIV through blood test ($P= 0.001$) and ($P=0.034$) respectively. But there is no significant in knowledge about 2 or more ways of HIV transmission in both types of clusters. There were no significant changes in control group regarding the knowledge about HIV/AIDS.

Table 4.3.6 Changes in HIV/AIDS knowledge before and after intervention among the intervention and control group.

Knowledge items (HIV)	Intervention group (N = 200)			Control group (N = 180)		
	Before	After	P - value	Before	After	P - value
	No. (%)	No. (%)		No. (%)	No. (%)	
Know 2 or more ways of HIV transmission	111 (55.5)	127(63.5)	0.103	99(55.0)	112(62.2)	0.164
Know confirmation of HIV	144 (72.0)	162(81.0)	0.034	110(61.1)	116(64.4)	0.513
Know 2 or more methods of prevention	99 (49.5)	133(66.5)	0.001	88 (48.9)	98(54.4)	0.292

4.4 Qualitative Research Findings

The qualitative research was carried out along side with the quantitative quasi experimental research to high light the findings of the effectiveness of the empower of Myanmar migrant workers as health volunteers for improving community health knowledge of common infectious diseases in Tak province on the Thai-Myanmar border by looking for process and other factors that could help explained the results across the intervention. The research team explained about the formation of migrant CHVs in the communities to the leaders of the migrant communities, the owners or managers of the factories and agricultural farms where migrant workers are working. Training need assessment was done through the discussions with migrant workers and meetings with government health staffs who are providing health care services to Myanmar migrants.

Focus group discussions (FGD) with community members in the intervention area and in-depth interviews (IDI) with the owners or managers of the factories and agricultural farms and government health staffs were used to carry out this qualitative investigation. The answers to the open questions in the CHV self esteem and self efficacy questionnaires were also included in the qualitative presentation. Two FGD and four IDI were conducted in the study. The researcher and the four research assistants including Thai- English and Burmese-English interpreters experienced in qualitative interviewing carried out the data collection and transcription for the study.

The first step in the analysis of the data consisted of reviewing and categorizing the textual data under different themes that were of interest in the study. The data in the thematic categories was then written up as sections of this report. Particularly expressive and programmatically meaningful comments made by respondents were extracted to be used as quotes in the report.

4.4.1 Selection of migrant CHV

The community members, the factory/ farm owners informed the research team about the potential of migrant workers to be selected as health volunteers on the basis of characteristics such as literacy, communication skills, and credibility or previous roles as volunteer health workers. The initial reaction of those who were

selected to become CHVs was generally positive. Most said that they were happy to be selected either because they were chosen by their community as worthy of the role or because they wanted to serve or teach their community regarding health.

The reason for accepting their role as volunteers for the overwhelming majority of CHVs was also their desire to help members of their community maintain their health or to protect them against common infectious diseases. Some reported that they took up their role because they wanted to keep themselves or their family healthy. Some respondents mentioned the link between community health and their own well-being as a reason for accepting volunteer work.

4.4.2 Training and Empowerment of migrant CHVs

CHV training takes place soon after their selection. The trainings in the community lasted 2 days, either consecutively or one week apart. The training given to CHV was mainly focus on the common infectious diseases in the community such as diarrheal diseases, malaria, dengue, acute respiratory infections including influenza H1N1, tuberculosis and HIV, and how to give health education to the community members. Most respondents said they found the training useful and effective in terms of providing them with the knowledge they needed to work as migrant CHVs, as well as ways of approaching the co-workers and people in their community. The CHV training motivated them to adopt improved health practices themselves and to maintain their health.

The monthly meetings that CHVs had with the training team were generally considered constructive. These meetings were usually concerned with reviews of the accomplishments of CHVs in the previous months with respect to health promotion activities. Such reviews reportedly played a role in motivating and sustaining the commitment of CHVs to their work. In the study sites in Mae Sot, the additional attention to providing continual lessons on health issues such as influenza A H1N1 and HIV was found to be even more motivating and supportive. The frequency of visits that training team made to CHV sites of operation was greatly variable depending on the intervention and control clusters.

I came to know that some facts related to common infectious diseases that we believe are absolutely incorrect, e.g., eating bananas, drinking stream water can cause malaria.

A female migrant CHV from Phob Phra

We feel more confident in provision of health education to the community after the initial training and follow-up meetings with the training team.

A male migrant CHV from Mae Sot

4.4.3 Roles and Activities of migrant CHVs

According to focus group discussions with community members and in-depth interviews with factory/ farm owners, government health staff, the main activities of CHVs were to transmit key health messages to the community and assist in health related activities with Thai community health volunteers and government health staffs. The key health messages were concerned with aspects of common infectious diseases prone to the migrant community. They usually use the health education handbook for migrant CHV to convey such messages to people through house-to-house or room to room visits, but also in health education campaigns. In addition, CHVs mobilized households and communities to build latrines and drainage channels in Phob Phra area. Community responses to CHV activities have often been characterized by initial resistance to health messages or recommended practices followed by gradual acceptance. The rate at which improved health practices were adopted varied among different households and depending on the types of practices that were recommended.

CHVs in different sites said they believe the purpose of their work is to transfer the health knowledge they had gained during the training and follow-up meetings to members of their community. Their aim was also to help their community adopt improved health practices and remain healthy. The migrant CHVs expressed positive attitudes about their work. They felt that they were engaged in protecting their community from common infectious diseases. Their positive perceptions of their work were reinforced when they noticed that people accepted their advices regarding health issues.

The government health staffs pointed out the usefulness of migrant community health volunteers in disease prevention and control activities for disease outbreaks such as cholera and dengue. It was also mentioned that the migrant community health volunteers are helpful in their community level in disease surveillance, health promotion and community mobilization. Their roles were improving the accessibility for migrant workers to the public health services and assisting in communicable disease control in Thai and non-Thai communities. When any outbreaks happen in their area, the migrant CHVs help the government health staffs in screening the migrant people and assist in referring sick people to hospital or clinics.

The factory/ farm owners also expressed the benefits of having migrant CHVs in the factories or farms. They can provide correct health information in the factory/farms, and assist in referring patients to hospitals or clinics. The CHVs were not quite confident initially to communicate with hospital staff and afraid of police arrest on the way to hospitals and clinics. After the regular follow-up meetings and linkage with Thai government health staffs, they gradually became quite confident to overcome the obstacles and they could accompany the ill patients to the health facilities.

I noticed CHV providing health education to other workers by using the health education handbook. Afterwards, I noticed that factory workers keep their premises clean after CHV provide health education. I also found out less sick people during this period.

A factory manager from Mae Sot

Migrant CHVs could identify the signs in a sick person that need urgent medical care and I could rely them for referring the patient to hospital and clinics.

A farm owner from Phob Phra

Migrant CHVs could demonstrate how to prepare ORS correctly to the community members and people became aware of importance of ORC in prevention of dehydration in diarrheal diseases.

A government health staff from Mae Sot

When cholera outbreak was reported in our area, the migrant CHVs were very helpful in tracing the contact cases and taking rectal swabs. They are quite supportive in disease prevention and control activities.

A government health staff from Phob Phra

I got clear understanding about the mode of disease transmission and ways of prevention after discussion with the CHVs.

A male factory worker from Mae Sot

I feel more comfortable when I need to get medical service as my neighbor, who is a CHV, accompanied me to the hospital or clinics.

A female farm worker from Phob Phra

4.4.4 Motivations of migrant CHVs

The reasons for working as health volunteers primarily came from a desire to serve or benefit their community. A number of CHVs expressed this as a desire to use the knowledge they had gained about health to teach or inform members of their community. Others said that they engaged in such activities in order to bring about change or improvements in their community which could include promoting adoption of better health practices especially hygiene and health seeking behaviors. Volunteers' perceptions regarding the purpose and nature of their work were important in keeping them motivated as volunteers.

The factory/ farm owners also mentioned that acknowledgement and appreciation of CHVs activities by the supervisors, managers and owners were key motivation factors for the migrant workers to work as CHVs. At the same time, it is necessary to give them opportunities and time to work as CHVs outside the working hours.

The government health officials recommended that providing awards to the outstanding CHVs and recognition of their performance and contribution to improving health status of both migrant and local Thai host community would be the strong motivation factors.

I usually mention about the values of CHVs in my factory in front of the workers and give some examples of their usefulness. I became aware that the CHVs then feel more confident and other workers seem to feel more reliable on CHVs.

A factory manager from Mae Sot

I noticed the improved hygienic behavior of my farm workers such as handwashing before eating food after they had attended the health campaigns organized by CHVs. I feel that the CHVs seem to be happy when they observe such behavior changes among their co-workers.

A farm owner from Phob Phra

Regular meetings with health staff from Anamai (health center) and CHVs would be a motivating factor for migrant CHVs to work in the migrant community with confidence.

A government health staff from Phob Phra

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This study was conducted at Mae Sot and Phob Phra districts in Tak Province adjacent to Thai-Myanmar border. In these districts, Myanmar migrants were living in their communities whereas some migrants are mixing with local Thai population. Most of the migrants working in factories and agricultural farms are usually living in their own communities. This study focused on Myanmar migrant workers working in these areas. The study was divided into two phases. The first phase was a cross sectional study to explore the knowledge of the Myanmar migrant people about the common infectious diseases in the study and the second was quasi experimental study to assess the empowerment program for migrant community health volunteers to improve the community knowledge.

5.1 Discussion for Phase (I): Community health knowledge of common infectious diseases among the Myanmar migrant communities in Tak province

The data about community health knowledge of common infectious diseases was done collected in eight migrant communities: four in Mae Sot district and four in Phob Phra district. There were 380 representatives from the migrant communities who completely responded the structured questionnaire concerning community health knowledge of common infectious diseases among the Myanmar migrants: diarrhea, acute respiratory tract infection such as influenza A H₁N₁, dengue fever, malaria, tuberculosis and HIV/AIDS.

5.1.1 Study samples

The respondents were 145 men and 235 women; ages ranged from 18-67 years with an average age of 31 years. About 70% of respondents were in the age group between 20- 39 years. In this study, there were more women than man in answering the questions because of the fact that during the interview time, women are at home and in the garment factories at Mae Sot, most of the workers were women. The study focused on Myanmar migrant workers and therefore, majority of the respondents were

in working age group. In these communities, most of the Myanmar migrant could not communicate in Thai and they solely depend on Burma regarding health information.

5.1.2 Knowledge about common infectious diseases

Generally overall knowledge of migrant in the study area was weak. Percentage of good knowledge level was higher in three diseases: HIV/AIDS, malaria and TB compare to other diseases such as diarrhea, dengue and Influenza A H1N1. This is probably due to the fact that health organizations working in the area provided health education focused on these diseases.

Related to diarrhea, in this study, 35.3 % of respondents mentioned to give more fluid during diarrhea. This result is much lower than that of the study done in rural area of Bangladesh in 2000 where 51.2 % of respondents mentioned about more fluid during diarrhea. Regarding knowledge about ORS, about 37% of people correctly prepared ORS and the result was lower than the same study in Bangladesh where 44% of participants could prepare well (Piechulek et al, 2003). But in a study done in Nepal, none of the respondents were able to mention all the steps for the correct and complete preparation of ORS solution (Ansari et al, 2011). But other studies done in India and Indonesia, it was found that approximately 20 to 50 % of respondents able to prepare ORS solution correctly and completely (Rasania et al, 2005) and (MacDonald et al, 2005). The majority of the respondents believed that the occurrence of diarrhea can be prevented through preventive approaches such as protection of food from flies, drink clean water and proper hand washing. These findings are similar to study done in marginalized community of Morang, Nepal (Ansari et al, 2011).

The role of mosquito in malaria transmission was recognized by 78.2 % of Myanmar migrant respondents which is higher than that reported in a study in Ethiopia where 48.8% of respondents knew correct mode of transmission (Paulander et al, 2009). The community's knowledge regarding malaria transmission was not well informed, where they knew that a mosquito bite causes the transmission of malaria. However, when discussing malaria transmission, they frequently described local misconceptions, such as drinking or bathing in spring water or eating bananas from the forest, as other causes of malaria transmission. These findings were

consistent with the local knowledge, attitudes and practices study in Myanmar (Hla Shein et al, 1998). The community knowledge of signs and symptoms showed that over 70% of the respondents identified headache, high temperature/ fever and chills as the most common ones. This finding is in line with the observations of most studies in endemic settings (Deressa et al, 2003) and (Dunyo et al, 2000).

Regarding Dengue, nearly 75% knew that the mosquito bite is the mode of transmission and this finding was similar to a study done in Tak province done in 2004 (Kyu et al, 2005). In this study, nearly half of the respondents knew that fever, red spot on the skin, body aches, vomiting were symptoms of DHF. This finding is a bit lower than that of the study done in Thailand which stated approximately 80% of respondents knew that high fever, muscle pain, vomiting and petechiae were symptoms of DHF (Kittigul et al, 2003). In this study, nearly half of the respondents mentioned changing stored water frequently and spraying insecticides as methods to prevent mosquito breeding. Only one third of respond mentioned about covering water containers. An earlier survey in an urban community of Thailand revealed that covering water containers was the most common practice to prevent mosquito breeding in drinking-water containers, whereas the addition of abate or changing stored water frequently may be done (Swaddiwudhipong et al, 1992). In this study, about 40% of respondents mentioned about the water containers and flower vases were the most common site for mosquito breeding. This finding was contrast to a study done in Laos which mentioned the most common breeding place for *Aedes* mosquitoes was water containers such as boxes, pots, cans, etc. (93.9%), followed by stagnant water reserves like the ponds/rivers (5.6%) (Nalongsack et al, 2009).

Novel influenza A (H1N1) also known as swine flu, emerged from Maxico and has caused the first pandemic in the century. In this study 64.7% of respondent ever heard about pandemic influenza A H1N1 and the finding was lower than that found in a study in India where 83.1% of respondents had heard about the influenza a H1N1(Kamate et at., 2010). But in a study done in Saudi Arabia where majority of participants (95.4) were aware of the diseases was a viral illness, whereas a large number (27.6%) also mistakenly believed that the diseases was an immunodeficiency disease. In that study, most reported accurate information about the mode of transmission, but 43% stated that sexual contact was a mode of transmission. (Balkhy

et al, 2010) In this study, 21.8% mentioned that eating pork was mode of transmission. It may be due to the fact that people assumed the mode of transmission due to common name swine flu or pork flu. Therefore it is important in mentioning the name of a disease of outbreak potential in community to make sure that people clearly understand the way of transmission.

In this study, 92.1% of the respondents heard about TB and the good level of knowledge of Tuberculosis in this study was 35% which was similar to finding in a research done among Myanmar migrants in Phuket province, Thailand. (Thwin and Chapman, 2009). Sixty percent of migrants in this study correctly knew that TB could be transmitted through the air when a person with TB coughs or sneezes which is very similar to a study done in Tajikistan about exploring KAP of TB among migrant workers (Gilpin et al., 2011). However, in a study conducted in India, it was found that only 29.7% of the respondents knew this fact (Bhat et al., 1999). Ignorance of the facts that the disease is an airborne and contagious has the consequence of increasing transmission of the disease. As a result of this ignorance people infected with TB will not care of adopting control measures in their households and/or workplace. About 80% of the respondents mentioned TB is curable and about two third of Myanmar migrant knew that they should get TB treatment at health center when they are suspected to get infection. The result is in agreement with the study in Iraq whereby 80.2% answered that the disease is curable (Hashim, 2003). Only 10% of people in this study mentioned that they can get medicine at grocery shops or take herbal medicines. It is said to be knowledge about TB is improving among migrants.

Regarding HIV/AIDS, nearly ninety percent of respondents heard about the disease. Good knowledge level on HIV with few misconceptions, compare to other infectious diseases, among migrants was the major findings. In a study about Myanmar migrants' knowledge about HIV/AIDS, the mean knowledge score on HIV/AIDS was lowest among respondents in Tak (45%) province compare to those living in Maha Chai (62%) and Ranong (52%) (Chantavanich, et al. 1999). Generally, overall knowledge of migrant in the study area was weak. Percentage of good knowledge level was higher in three diseases: HIV/AIDS, malaria and TB compare to other diseases such as Influenza A H1N1 and dengue. This is probably due to the fact that

health organizations working in the area provided health education focused on these diseases.

5.2 Discussion for Phase (II): Empowerment Program for migrant community health volunteers

5.2.1 Process of migrant CHV empowerment program

In this study the researchers attempt to provide the overview of concept and practice of empowerment for community health volunteers (CHVs) from Myanmar migrant communities residing bordering provinces of Thailand. The global policy of providing primary health care was initiated with declaration of Alma Alta in 1978. The countries signatory to Alma Alta declaration considered the formation of community based health workers as primary health care approach (Mburu, 1994). The project was a quasi-experimental design. The selected CHVs in the study areas were requested to participate in the program throughout the project period. In order to reduce the number of drop outs the study was done in the areas where Myanmar migrants live and work for longer duration such as farms and factories. Therefore there were low dropout rates about 10%.

The CHVs were selected with the help of factory and farm owners or managers and the Myanmar migrant CHV training materials and follow up plans were reported to respective Thai district health officers in Mae Sot and Phob Phra Districts. Some studies highlighted the need for recruiting CHVs from the community themselves. But these studies pointed the difficulties in implementing this approach, for example, social and economic backgrounds of CHVs may influence their acceptance by members of the community they serve (Jobert, 1985). To overcome these difficulties, before the start of programs or projects, the researcher explained about the possible problems in recruiting CHVs. The factory and farm owners knew well about their employees and help the research team to select CHVs who community people could trust. Therefore the CHVs in the study area would not only able to be accessible but also be able to gain the confidence of community members.

The aspect of introduction and continuing the training programs for CHVs have received considerable attention as they were often selected without any prior experience of professional training in community health (Abbatt, 2005). In this study,

CHVs in both interventions and control clusters receive initial two day training about common infectious diseases focusing on causes, mode of transmission, signs and symptoms, way of prevention and danger signs to seek immediate medical care.

The analysis for contents and approach of various training programs for community based health workers and their performance have been minimal. For example the algorithm developed by WHO on managing multiple childhood illness was found to be ineffective as CHWs reported serious difficulties in understanding training manuals (Kelly et al, 2001) and similar findings were reported in India by a Oxfam study about CHWs having difficulty in understanding training manuals (Ramprasad et al, 1988). In this study, training materials were simplified and validated by the infectious disease specialists and experts working on migrant health issues. In the beginning of the training, the training materials were produced in plain A4 sheet papers. During the on-job trainings, the CHVs mentioned that these materials could not be maintained for long time and could be lost easily. Therefore, the research team printed out the colorful and handy training books for CHVs during the project and CHVs really appreciated these books and willing to keep in their hands.

Only CHVs in the intervention cluster received follow up booster meeting or training once a month for six months. It was found to be crucial to improve the self-esteem and self-efficacy of CHVs which was the primary outcome measurement of the intervention. In the research team-facilitated monthly meetings, the CHVs got the opportunities to express their concerns and problems in providing health education to the community people. The research team and CHVs could explore the possible solutions to the problems. At the same time, the CHVs in the intervention cluster got confidence in their work. Although the health education materials such as posters and brochures are distributed to both CHVs in intervention and control clusters, only CHVs from intervention cluster got a chance to learn how to utilize and explain these health information materials to their community. They could overcome difficulties in understanding of the training materials during the project period. The benefits of thorough explanation of health information by the CHVs to the community were proven by the increased community health knowledge in the intervention cluster compared to control cluster. This action research finding was supported by one survey

on CHWs in the United States mention that on the job-training could overcome these difficulties in understanding training manual (Kash et al, 2007).

5.2.2 Analysis of migrant CHVs empowerment program

Through the qualitative research in this study, it was found that the CHVs were appreciated and valued in the communities by involving themselves in the community activities. They could identify danger signs in sick people and could assist in referring patients to health facilities. These findings are similar to a study done in Peru (Brown et al, 2006). The CHVs were part of community and they experienced the same problems and could promote community to confront the basic causes of ill health. This concept was supported by study done in South Africa (Cruise et al, 1997). At the same time, the CHVs could provide culturally appropriate health education and information by explaining the concepts of disease, mode of transmission, signs and symptoms, measures of prevention, danger signs to seek immediate medical care. This finding was similar to the report by National Rural Health Association (NRHA) which mentioned that community based health worker provided culturally appropriate health education and information (NRHA, 2000). In this study, the CHVs were not paid financial incentives except providing compensation for their attendance in the initial trainings and follow-up meetings. Therefore these factors are said to be the strengths of community based health worker program.

During the intervention period, in the follow up meetings, CHVs mentioned that the community members requested curative treatment for them. But in this study, the CHVs were trained on the health promotion aspect to provide health education. But they could provide information on how to prepare and provide ORS solution which is said to be secondary prevention for dehydration in diarrheal diseases. This problem was also indentified in the study done in Papua Guinea about performance of rural health workers (Thomason & Kolehmainen-Aitken, 1991). In this study, although the CHVs selection was informed to the community and selected CHVs were willing to work for their community, there were lack of transportation support and incentives to maintain health education records for each CHV and no monetary incentives for working as CHVs. This issue was already raised in a research done in Zambia, Africa which mentioned that the low performance of community health

workers was a real problem for study area due to the irregular and unreliable logistic support (Stekelenburg et al, 2003). Another study also mentioned the importance of logistic support for the proper performance of community based health workers, known by various names (e.g., community health advisors, outreach workers, health promoters). They are trusted community members providing informal community-based health-related services and establishing vital links between health providers and the community (Zuvekas et al, 1998). In this study, CHVs were really working on voluntary basis and not paid any financial incentive for their work, they could not develop definite work schedule and they provided their services to the community during their free time in ad hoc basis. This challenge was also mentioned in the study conducted in Thailand (Sringernyuang et al, 1995).

Based on the finding of this research where there were significant improvements in community health knowledge, the role of migrant CHVs were acknowledged by their factory and farm owners and health authorities. It became advocacy point to promote the role of migrant CHVs as effective members of the health care delivery team because they were able to provide outreach services to communities where larger main health system cannot cover. This important role was also mentioned in a study done in Minnesota, United States. The study mentioned that Community Health Workers (CHWs) serve as a bridge between the health care system and the distinct communities to which they also belong. CHWs provide their communities with information about health issues that affect them and link individuals with the health and social services they need to achieve wellness (Leinberger-Jabari et al, 2005). During the study period, the CHVs could help the referral of the ill patients to the health facilities and community really appreciated this service. It was like a psychological reward for CHVs for their better performance. A study done in Columbia also raised this issue; reward for CHVs (Robinson & Larsen, 1990). The CHVs in the study also acted two way referral mechanisms between community and the health care providers at the health care facilities. This finding was also similar to the study conducted in United States The study mentioned that Community health workers (CHWs) were community members who worked almost exclusively in community settings and served as connectors between health care consumers and providers (Marguerite et al, 2003).

In this study, the CHVs in control cluster received only initial two day training and didn't receive booster training or meetings in intervention period. As a matter of fact, they faced problems in conveying health messages in community and they didn't get self confidence in promoting health education. As a result, the community health knowledge in control cluster didn't improve significantly. It showed that the training for CHVs in control cluster was inadequate and lack of motivation to perform the tasks. This kind of threat was also mentioned in the study done in Northwestern Somalia. A case study was focused on the establishment of well-trained and well-supported CHWs at the community level (Bentley et al, 1989). Because CHVs in the control cluster could not explain well about health information in the posters and brochures, the trust of community members in the CHVs did not improve. This kind of risk was also mentioned in a study done in Burkina Faso, Africa about low utilization of community health workers by a household interview survey (Sauerborn et al, 1989).

5.2.3 Sustainability of migrant CHV program

The migrant community health volunteers are still needed in the health system especially in the areas when migrants are living in crowds such as factories and farms. As a matter of fact, a government health staff mentioned that the migrant CHV program should be continued and sustainable. Factory/ farm owners who employ migrant workers actively supported the training of migrant workers as CHVs and assisted the research team to find ways to motivate them to work as CHVs. The non-governmental organizations working on migrant health issues should provide regular support to community health volunteer program. Building cooperative network with the migrant CHVs and local authorities, religious groups, Myanmar migrant learning centers (migrant schools) in Phob Phra and Mae Sot area, Myanmar migrant social organization such as women and youth groups would contribute to the maintaining of CHVs' functions in the migrant community. At the end of this project, the migrant CHV empowerment program was presented to health authorities in Mae Sot and Phob Phra District Health Offices (DHO). The DHO officials mentioned their willingness to link up the migrant health CHV system to Thai community health volunteers (*Aor Sor Mor*) system.

5.3 Limitations of the study

This study had some limitations. First, it was conducted in isolated migrant community in Tak Province, that is, migrants living and working in factories and farms. Therefore the level of community health knowledge about common infectious diseases may not reflect that of whole Myanmar migrant community in Thailand. As this study was intervention study to empower the migrant CHVs and increase the community health knowledge, it was conducted among the migrants who lived in target area for more than six months. Since the border between Tak Province of Thailand and Myanmar is poorest and the study did not focus on Myanmar migrant who lived in target areas for less than six months. In reality, these temporary still migrants are the major risk of imposing transmission of infectious diseases along the border.

This study mainly focused on knowledge component and did not go into attitude and practice of migrant people since the purpose of study was to improve the community health knowledge through the empowerment of some selected Myanmar migrant CHVs. The primary outcome measurement was self-esteem and self-efficacy of Myanmar migrant CHVs and secondary outcome measurement was community health knowledge about common infectious diseases. Because of short duration of intervention period of six months, the researcher believed that the intervention could increase the knowledge level of the community. Therefore, the study could not explain about the attitude and practice of community towards the common infectious diseases.

For in-depth interview with Thai Government Health Officials and factory and farm owners/ managers, the researcher could communicate and interview with one person of each sector. Some factory and farm owners could not give enough time for interview with research team. Therefore, there could be some bias in qualitative part of the study.

5.4 Conclusion

In the first phase of the study, the survey finding showed that occupation, education and legal status were significantly related to the level of knowledge on all common infectious diseases. The uneducated migrant agricultural farmers without any legal documentation were marginalized population and therefore further health promotion intervention for Myanmar migrants should focus on this vulnerable group. Although health education posters and banners were put and brochures were distributed among migrant community, most of the information on health education materials were not clear enough for the migrant people understand message correctly. It is necessary to explain the meaning of key messages in health information posters and brochures. The trained migrant CHVs played an important role in explaining those health information messages. Therefore it is crucial to sustain the migrant CHV system and keep the system working.

One of the planned initiatives in the project was to develop and utilize non-financial means to motivate CHVs and sustain volunteerism among them leading to improved health knowledge of communities. This study has attempted to examine the empowerment process by examining the self esteem and self efficacy of CHVs and improve comparison of community knowledge in intervention and control clusters as a consequence of empowerment of Myanmar migrants as CHVs. The study found that aspects of the selection, training, regular meeting with CHVs and research team and work of CHVs were conducive to empowering them but could be strengthened further. Their selection on the basis of nomination by the factory and farm owners and managers was likely to enhance their recognition and acceptability in the community but has not always been accompanied by sufficient orientation of the community regarding their voluntary role and work. While the training of CHVs was informative and motivating, its impact should be strengthened by ongoing mentoring of their activities.

Community acceptance for CHVs and their attitudes to their work is generally positive. However, continual efforts to enhance recognition and understanding of their voluntary work in the community are needed to maintain their morale. Their work was also found to be tangible and expectations from them quite clear. The attractive teaching materials and the support provided to them by research team in the form of

monthly meetings intervention clusters were found to be important in improve the work of CHVs and community acceptance. At the same time, the research team found the acceptance of factory and farm owners or managers toward the performance of Myanmar migrant CHVs. It was due to the research team only mentioned the proper health issue related to prevention of infectious diseases among the Myanmar migrant workers. The factory and farm owners or managers welcomed the proposed ideas and activities of the research team as they felt that reduced incidence of illness among the workers would benefit them. The research team did not mention about migrant rights, labor rights, wages and salaries for the migrant workers since these issues would be the sensitive to the owners and managers. It might be main factor for the owners and managers to accept the research team to carry out the empowerment of the Myanmar migrants as CHVs.

The motivations of CHVs, in terms of their reasons for being involved in their work and the benefits they expected, were strongly characterized by their desire to promote health in their community including themselves and their families. Volunteers were also strongly motivated by the responsibility and acceptance they received from the community, as well as the recognition, respect and credibility they have gained. Conversely, they were sometimes discouraged by misunderstanding of their voluntary role on the part of the community. CHVs can therefore be further motivated by promoting community understanding and recognition of their work. Their aspirations for learning and employment opportunities for migrants can also be considered in relation to ways of sustaining volunteerism. The study has also shown that potential community gathering places such as monasteries and migrant schools which also known as migrant learning centers in Tak province, has had some role in supporting and motivating CHVs. The research team provided the initial training and follow up trainings at monasteries and migrant schools near to the factory and farms where CHVs are living and working.

5.5 Recommendations

Longer duration of stay in the migrant community significantly associate with the higher level of knowledge and it means that migrants living longer time have better knowledge than new arrivals. Thus, health education message delivery should

be focus to new arrivals. Migrants in Phob Pra better knowledge in diarrhea partly due to the fact that there were frequent diarrhea outbreaks and people received health information. Regarding IEC materials on Health Education for migrants, posting posters and distributing brochures were not enough to improve health knowledge of migrants. A group of facilitators such as CHVs are needed to explain clearly to the recipients. In this study, women had higher knowledge than men in all diseases probably because men had to work and did not receive much information or not interested in health education compare to women. Therefore, further interventions should be focused on working men. Agricultural farm workers were less well informed about health messages compare to those working in factories and so it is necessary to find a way to delivery message to men group and those working in agricultural farms. Legal status plays an important role in health knowledge since register migrant workers had higher knowledge than those without any legal document. Therefore expansion of the migrant registration process will give migrant workers legal status and better protect them from exploitative labor practices, including human trafficking and other rights violations, as well as better health services.

CHVs are an important and beneficial primary level cadre for the provision of community-based preventive health care. A vital success factor in CHV program is local accountability and mechanisms for formalizing. Therefore, this should be pursued. Evaluation should be seen as an integral part of CHV program. This should include pre-implementation assessment to enable projects to be developed in a need-based approach. The training of CHVs should be on the basis of a generic core curriculum and future training programs need to emphasize the importance of needs assessment both before and during training. The role of in-service and on-going trainings in developing productive links with other personnel working in government and non-governmental sectors are needed to expand and sustain the program. The efficiency and effectiveness of CHV activities need to be measured, and so the program implementers can consider the appropriate size and structure for future programming. The balance between the relative roles and strengths of CHVs and formally trained health personnel needs more consideration.

The outcome measurement of the study was only improvement in knowledge of the community but it did not show the attitude and behavior changes in the community since the intervention was only 6 months. Therefore, further intervention study should be conducted to see the improvement in the health behavior in the community in consideration with enough time to see behavior changes and providing enabling environment. This study was conducted in isolated Myanmar migrant communities in Phob Phra and Mae Sot districts in Tak Province. Actually most of the Myanmar migrants are living and working in Thailand and they are mixed with host communities. Some are working as domestic workers, such as house maid. Therefore, researcher would like to recommend the further studies on migrant health should pay attention hidden Myanmar migrant population.

REFERENCES

- Abbatt, F. (2005). Scaling up Health and Education Workers: Community Health Workers. London: DFID Health Systems Resource Centre.
- Amarinsangpen S.(2006). Strategic plan to control tuberculosis to meet decade end development goals, BE 2548. Update on TB situation in Thailand and around the world, Chiang Mai hiang Mai, Thailand, November 28, 2006.
- Ansari, M., Ibrahim, M M., Shankar, PR (2011). A survey of mothers' knowledge about childhood diarrhea and its management among a marginalized community of Morang, Nepal. Australasian Medical Journal , 4, 9: 474 – 479.
- Arneson, H. and Ekberg, K. (2005). Evaluation of empowerment process in a workplace health promotion intervention based on learning in Sweden. Health Promotion International, 20, 4:351-359.
- Arnold, D. (2004). The Situation of Burmese Migrant Workers in Mae Sot, Thailand, Working Papers Series No 71, Southeast Asia Research Centre, Hong Kong.
- Askew, I. (1989). Organizing Community Participation in Family Planning Projects in South Asia, Studies in Family Planning, 20, 4: 185–202.
- Balkhy, H., Abolfotouh, A., Al-Hathloul, H., and Al-Jumah, A. (2010). Awareness, attitudes, and practices related to the swine influenza pandemic among the Saudi public, BMC Infectious Disease, 10:42
- Bandura, A. (1977). Social Learning Theory, Alexandria, VA: Prentice Hall, 247.
- Baumeister, R., Smart, L. and Boden, J. (1996). Relation of Threatened Egotism to Violence and Aggression: The dark side of self-esteem. Psychological Review, 103, 5–33.
- Becker, C., Guenther-Grey, C., and Raj, A., (1998). Community Empowerment, Paradigm Drift and the Primary Prevention of HIV/AIDS, Social Science and Medicine, 46, 7: 831–842.
- Bentley, C. (1989). Primary Health Care in Northwestern Somalia, A case Study, Social Science and Medicine, 28,10: 1019 - 1030.
- Beyrer, C. (1999). The health and humanitarian situation of Burmese populations along the Thai-Burma border. A Report on Current Status. Johns Hopkins University School of Hygiene and Public Health. [Online]. Available from: <http://www.burmadebate.org/archives/bdfall99.html> [2009, January]

- Bhat, S., Singal N., Aggarwal C. S., and Jain, R.C., (1999). Knowledge, attitudes and practices of newly diagnosed sputum positive cases of pulmonary tuberculosis. J Communicable Disease. 31, 4: 247-252.
- Bhattacharji, S., Abraham, S., Muliylil, J. P. P., Job, J. S., John, K., and Joseph, A. (1986). Evaluating Community health workers performance in India. Health Policy and Planning, 1,3: 232-239.
- Bohra A., and Andrianasolo, H. (2001). Application of GIS in Modeling of Dengue Risk Based on Sociocultural Data: case of Jalore, Rajasthan, India. Dengue Bulletin , 25:92-102.
- Boromtanarat, C.,(1999) The development of a management training programme through the empowerment process management model of developing leadership potential for health center chiefs. Doctoral Thesis. Faculty of Public Health, Mahidol University
- Brookings, J. B., and Bolton, B., (2000). Confirmatory factor analysis of a measure of intrapersonal empowerment. Rehabilitation Psychology, 45: 292–298.
- Brown, A., Malca, R., Zumaran, A., and Miranda, J., (2006). On the front line of primary health care: the profile of community health workers in rural Quechua communities in Peru. Human Resource Health. [Online] Available from www.human-resource-health.com/content/4/1/11
- Centers for Disease Control and Prevention [CDC]. (1992) Famine-affected, refugee, and displaced populations: recommendations for public health issues. MMWR Recomm Rep, 41: 1-76.
- Central Intelligence Agency [CIA]. (2010). The world fact book. [Online]. Available from <http://cia.gov/cia/publications/factbook/> [2010, August]
- Chan M. (2009). Statement to the press by WHO, [Online], Available from: http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase_6_20090611/en/index.html [2009, June]
- Chansuda Wongsrichanalai et al, (2006), “Dengue on the Upsurge,” The Nation, June 26.
- Chantavanich S, Paul S, Wangsiripaisal, P, Suwannachot, P, Amaraphibal, A and Bessey, A. (1999). Cross-Border Migration and HIV Vulnerability in the Thai-

Myanmar Border: Sangkhla Buri and Ranong. Asian Research Center for Migration, Chulalongkorn University, Bangkok, Thailand

Chantavanich S.(2008). Executive summary report. The impact of Myanmar migrants to Thai border communities; the promotion of harmony and security in Maesot community [Online] available from:

http://www.mekongmigration.org/publications/4th%20MMN%20Annotated%20Bibliography%20_p.263%20-%20p288.pdf [2009, June]

Cheng K.F, Leung P.C (2007). History of infectious diseases, what happened in China during the 1918 influenza pandemic. International Journal of Infectious Diseases, 11: 360—364

Chopra M., and Wilkinson, D., (1997). Vaccination coverage is higher in children living in areas with community health workers in rural South Africa. 372-374. Available from: <http://tropej.oxfordjournals.org> [2009, Feb]

Conner, M., and Norman, P., (2005). Predicting Health Behavior: Research and Practice with Social Cognition Models, 2nd Ed. Maidenhead: Open University Press.

Cruse, D., (1997). Community Health Workers in South Africa: information for provincial policy makers. Durban: The Health Systems Trust, Available from: <ftp://ftp.hst.org.za/pubs/other/chws.pdf> [2010, May]

Curtale, F., Siwakoti, B., Lagrosa, C., LaRaja, M., & Guerra, R., (1995). Improving skills and utilization of Community Health Volunteers in Nepal. Social Science & Medicine, 40,8: 1117-1125.

Delacollette, C., Stuyft, P. V. D., & Molima, K. (1996). Using Community Health Workers for malaria control: Experience in Zaire. Bulletin of the World Health Organization, 74, 4: 423-430.

Deressa W, Ali A, Enquoselassie F., (2003). Knowledge, attitudes and practices about malaria, the mosquito and antimalarials drugs in a rural community. Ethiop J Health Dev, 17:99-104.

Duanchai, J.(2002) The empowerment program on malaria prevention among family health leaders in Aranyapathet district of Sakaeo Province, Master's Thesis Mahidol University, 2002.

- Dunyo, S.K, Afari, E.A., Koram, K.A., Ahorlu, C.K., and Abubakar, I., (2000) Health centre versus home presumptive diagnosis of malaria in southern Ghana: implications for home-based care policy. Trans R Soc Trop Med Hyg, 94:285-288.
- Ellis, R.D., Fukuda M.M., Mcdaniel, P., Welch, K., Nisalak, K., and Nilasak, A., (2006). Causes of fever in adults on the Thai-Myanmar border. Am. J. Trop. Med. Hyg, 74,1: 108–113.
- Freire, P. (1970). Pedagogy of oppressed. New York, Seabury Press.
- Garwood, P., (2006): Pakistan, Afghanistan look to women to improve health care. Bulletin of the World Health Organization, 84, 11:841-920.
- Geounuppakul M, Butraporn P, Kunstadter P, Leemingsawat S and Pacheun O (2007): An empowerment program to enhance women's ability to prevent and control malaria in the community, Chiang Mai province, Thailand: Southeast Asian J Trop Med Public Health: 38,3:546-59
- Gibson, C.H. (1991). A Concept Analysis of Empowerment. J Adv Nurs; 16, 3: 354-61.
- Gibson, C.H. (1995). The Process of Empowerment in Mothers of Chronically Ill Children. J Adv Nurs, 21: 1201-1210.
- Gilpin C., Colombani P., Hasanova S., Sirodjiddinova U.,(2011). Exploring TB-Related knowledge, attitude, behavior and Practice among Migrant Workers in Tajikistan. Tuberculosis Research and Treatment, [Online] Available from: <http://www.hindawi.com/journals/trt/2011/548617/> [2011, December]
- Greenberg, J., (2008). Understanding the vital human quest for self-esteem. Perspectives on Psychological Science, 3: 48-55.
- Gubler D J, Clark G G.(1995). Dengue/dengue hemorrhagic fever: the emergence of a global health problem. J Emerg Infect Dis, 1: 55-57.
- Gugushe, T.S. (1996). An Overview of Paulo Freire's Perspective on Health Education. Journal of the Dental Association of South Africa, 51: 734-736.
- Hashim, D. S., Al-Kubaisy, W., and Al-Dulayme, A., (2003). Knowledge, attitudes and practices survey among health care workers and tuberculosis patients in Iraq. Eastern Mediterranean Health Journal, 9, 4: 718-731.

- Hathirat, S. (1983). Buddhist monks as community health workers in Thailand. Social Science & Medicine, 17,19: 1485-1487.
- Hla Shein, Than Tun Sein, Soe Soe, Tin Aung, Ne Win, Khin Saw Aye. (1998). The level of knowledge, attitude and practice in relation to malaria in Oo Do village, Myanmar. Southeast Asia J Trop Med Public Health; 29: 546-9.
- Huget,J.W., and Punpuing, S., (2005). International migration in Thailand. Overview of Thai migration, International Organization for migration, Bangkok, Thailand. [Online]. Available from:
<http://www.eldis.org/assets/Docs/12740.html> [2010, May]
- Intarasomwang C.(2000). The effectiveness of empowerment program on AIDS prevention among pregnant women attending antenatal care at Pramongkutklao Hospital. Faculty of Public Health, Master's Thesis. Mahidol University,
- International Organization for Migration (IOM). (2009). Healthy Migrants, Healthy Thailand: A Migrant Health Program Model. [Online]. Available from:
http://publications.iom.int/bookstore/index.php?main_page=product_info&products_id=520 [2010, Feb]
- Isarabhakdi, P. (2004). Meeting at the cross road: Myanmar migrant and their use of Thai health care services. Asian Pacific Migration Journal, 13, 1: 107-126.
- Islam, M. A., Wakai, S., Ishikawa, N., Chowdhury, A. M. R., & Vaughan, J. P. (2002). Cost-effectiveness of community health workers in tuberculosis control in Bangladesh. Bulletin of the World Health Organization 80: 445-450.
- Israel, B.A. and Checkoway, B. (1994). Health education and community empowerment: Conceptualizing and measuring perceptions of individual, organizational and community control. Health Education Quarterly, 21,2: 149 – 170.
- Jobert, B. (1985). Populism and Health Policy: The case of Community Health Volunteers in India. Social Science Medicine, 20, 1: 1-28.
- Jokhio, A. H, Winter, H. R, & Cheng, K. K. (2005). An Intervention Involving Traditional Birth Attendants and Perinatal and Maternal Mortality in Pakistan. N Engl J Med , 352:2091-2099

- Kaekprayoon S. (2003). Female Myanmar migrant workers working in the refrigerated room factories. Bangkok: Thailand Research Fund.
- Kahssay, HM, Taylor, ME, Berman, PA. (1998). Community health workers: the way forward. Geneva, World Health Organization. [Online]. Available from: <http://apps.who.int/bookorders/anglais/detart1.jsp?codlan=1&codcol=39&codcch=4> [2009, March]
- Kamate K S, Agrawal A, Chaudhary H, Singh K, Mishra P, Asawa K(2010). Public knowledge, attitude and behavioural changes in an Indian population during the Influenza A (H1N1) outbreak. J Infect Dev Ctries, 4, 1:007-014.
- Kash, B. A., May, M. L., & Tai-Seale, M. (2007). Community health worker training and certification programs in the United States: Findings from a national survey. Health Policy, 80,1: 32-42.
- Keitisut K. (2000). The effectiveness of housewife volunteers performance on diarrheal disease prevention among pre-school age children in congested area of khon kaen province, Faculty of Public Health, Master's Thesis. Mahidol University,
- Kelly, J. M., Osamba, B., and Grag, R. M., (2001). Community Health worker performance in the management of Multiple Childhood illness: Siaya district, Kenya 1997-2001. American Journal of Public Health, 91: 1617 - 1624.
- Khynn Than Win, Sian Za Nang and Aye Min. (2004). Community-based Assessment of Dengue-related Knowledge among Caregivers. Dengue Bulletin, 28: 189-195.
- Kittigul, L., Suankeow, K., Sujirarat, D., Yoksan, S., (2003). Dengue hemorrhagic fever: knowledge, attitude and practice in Ang Thong province, Thailand: Southeast Asian J Trop Med Public Health, 34, 2: 385 - 391
- Kolb, A.D. (1984). Experiential learning: Experience as Source of Learning and Development. New Jersey. Prentice Hall.
- Krissanakriangkrai, O., and Hengboriboonpong, P., (2007). Malaria transmission along Thai-Myanmar Border. Journal of Science Technology and Humanity, 5,2: 31-38.

- Kyu, H.H, Thu, M., and Putten, M.V., (2005). Myanmar migrant woman caretakers on prevention of dengue fever: A study on knowledge, attitude and practices in Tak province, Thailand. Assumption University Tech Journal, 9, 2: 99-105.
- Love, M.B., Gardner, K. and Legion, V., (1997). Community Health Workers: Who they are and what they do. Health Education Quarterly, 24: 510 – 522.
- Luszczynska, A., Tryburcy, M., and Schwarzer, R.,(2007). Improving Fruit and Vegetable Consumption: A self-efficacy intervention compared to a combined self-efficacy and planning intervention. Health Education Research, 22: 630-638.
- MacDonald, S.E., Moralejo, D.G., and Matthews, M.K., (2005). Correct preparation and administration of oral rehydration solution: essential for safe and effective home treatment of diarrhea in Indonesia. Int Q Community Health Educ; 24, 3: 205 – 14
- Marshall, A. (2006). AIDS: Burma's Shadowy Mass Export, The Irrawaddy; Burma, HIV Threat Overshadows Political Instability, Inter Press Service, [Online]. Available from: <http://ww2.aegis.org/news/ips/2005/IP050718.html>.
- Martin, P. (2007) The Economic Contribution of Migrant Workers to Thailand. Bangkok: International Labor Office. [Online]. Available from: http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_098230.pdf
[2009, September]
- Martin, P., Martin-Granel, E. (2006). 2500-year evolution of the term epidemic, Emerg Infect Dis, 12,6: 976–80.
- Maslow, A. H. (1987). Motivation and Personality, 3rd Ed. New York: Harper & Row
- Matsushima, R. and Shiomi, K. (2003). Social Self-efficacy and Interpersonal Stress in Adolescence. Social Behavior and Personality, 31, 4: 323-332
- Mburu, F. M. (1994). Whither community health workers in the age of structural Adjustment, Social Science & Medicine, 39,7: 883-885.
- McDowell P. (1997). Burma Refugee Cholera Probed, Associated Press, [Online]. Available from: <http://www.burmalibrary.org/reg.burma/archives/199703/msg00154.html>;
[2010, May]

- Middleberg, M.,I (2003). Promoting reproductive security in developing countries; Academic Publishers, New York.
- Minkler, M. and Wallerstein, N. (2005). Improving Health through Community organization and Community Building for health and welfare: Rutgers University Press.
- Monath TP.(1994). Dengue: the risk to developed and developing countries. Proc Natl Acad Sci ; 91: 2395-400.
- Mruk, C. (2006). Self-Esteem research, theory, and practice: Toward a positive psychology of self-esteem 3rd Ed. New York.
- Nalongsack S, Yoshida Y, Morita S, Sosouphanh K and Samamoto J (2009): Knowledge, Attitude and Practice regarding dengue among people in Pakse, Laos. Nagoya J. Med. Sci. 71: 29 – 37.
- Narain J P, Kumar Rajesh, Bhatia Rajesh. Pandemic (H1N1) (2009): Epidemiological, clinical and prevention aspects; the national medical journal of India, 22:5.
- Noblet, A. (2003). Building health promoting work settings: Identifying the relationship between work characteristics and occupational stress in Australia. Health Promotion International, 18: 351–359.
- Nordenfelt, L., (1987). On the Nature of Health. Kluwer Academic Publishers, Dordrecht.
- Nosten F., Van Vugt M., Price R., Luxemburger C., Thway K. L., Brockman A., McGready R., Ter Kuile F., Looareesuwan S., White N. J. (2000). Effects of Artesunate-Mefloquine Combination on Incidence of Plasmodium Falciparum Malaria and Mefloquine Resistance in Western Thailand: A Prospective Study, Lancet, 356: 297-302.
- NRHA. (2000). Community Health Advisor Programs. NRHA Rural Health Policy Board, [Online]. Available from:
<file:///C:/Users/sony/AppData/Local/Temp/ipaper17.html> [2009, May]
- Nutbeam, D. (1998). Health promotion glossary. Health Promotion International, 13: 349–364.
- Onwujekwe, O., Dike, N., Ojukwu, J., Uzochukwu, B., Ezumah, N., Shu, E., et al. (2006). Consumers stated and revealed preferences for community health

- workers and other strategies for the provision of timely and appropriate treatment of malaria in southeast Nigeria. Malaria Journal, 1,5:117.
- Ormrod, J. E. (2006). Educational Psychology, 3rd Ed, Upper Saddle river, NJ: Merrill/Prentice Hall.
- Pajares, F., and Urdan, T. (2006). Adolescence and education, Self-Efficacy Beliefs of Adolescents. Greenwich, CT: Information Age Publishing.
- Pakanon P. (2000). Community Key Person Empowerment For Aedes Aegypti Larvae Control In Toungsriudom District Ubon Ratchathani Province, Faculty of Public Health, Master's Thesis, Mahidol University..
- Paulander, J., Olsson, H., Lemma, H., Getachew, H., and Sebastian, M.S., (2009). Knowledge, attitudes and practice about malaria in rural Tigray, Ethiopia. Global Health Action, 2:10
- Peltomäki, P., Johansson, M., Ahrens, W., Sala, M., Wesseling, C., Brenes, F., **et al.** (2003) Social context for workplace health promotion: feasibility considerations in Costa Rica, Finland, Germany, Spain and Sweden. Health Promotion International, 18: 115–126.
- Perkins DD. (1995). Speaking truth to power: empowerment ideology as social intervention and policy. Am J Community Psychol, 23, 5: 765-94.
- Piechulek H, Al-Sabbir A and Mendoza-Aldana J. (2003). Diarrhea and ARI in rural areas of Bangladesh. Southeast Asian J Trop Med Public Health, 34,2:337-42.
- Ramprasad, V. (1988). Community health workers-an evolving force. World Health Form, 9: 239-234.
- Rappaport J. (1987). Terms of empowerment/exemplars of prevention: toward a theory for community psychology. Am J Community Psychol, 15, 2: 121-148
- Rasania SK, Singh D, Pathi S, Matta S, Singh S. Knowledge and attitude of mothers about oral rehydration solution in few urban slums of Delhi. Health Popul Perspect , 28 ,2:100 –107
- Rattananut, N. (2009). Immigration Policy in Thailand. Department of Employment, Ministry of Labour. [Online]. Available from: <http://www.cdri.org.kh/dan/conf78oct09/d1/1.%20Mr%20Nara%20Rattananut%20-%20Thailand.pdf>; [2010, January]

- Robinson, S. A., & Larsen, D. E. (1990). The relative influence of the community and the health system on work performance: A case study of community health workers in Colombia. Social Science & Medicine, 30,10: 1041-1048.
- Rosenberg, M. (1965). Society and the adolescent self image. Princeton University Press.
- Sai Silp. (2006) . Thai Malaria Warning, The Irrawaddy, [Online]. Available from: <http://www.irrawaddy.org/aviewer.asp?a=5700&z=148>. [2009,May]
- Sathitapanya, C.(2001). The Effectiveness of Empowerment Program for Enhancing Quality of Life among Ischemic Stroke Patient Attending Songkla Neuropsychitric Hospital. Doctoral Thesis. Mahidol University,
- Sauerborn, R., Nougara, A., & Diesfeld, H. J. (1989). Low utilization of community health workers: Results from a household interview survey in Burkina Faso. Social Science & Medicine, 29,10: 1163-1174
- Sawasdiwuthipong, W., Phisuthikul, K., Tatip, P., Ampong, T., Tatip, Y., Mahasakdipan, P. (2006). Experiences Controlling Infectious Diseases in Burmese Mirgrants, Amphur Mae Sot, Tak Province, 2004, Journal of Health Science, 15: 243-50.
- Sein, T. (2006). Health Volunteers: Third Workforce for Health-for-All Movement. Regional Health Forum, 10:1
- Smith, S.E., Pyrch, T. and Lizard, A.O. (1993). Participatory Action Research for Health. World Health Forum, 14: 319-324.
- Sringernyuang, L., Hongvivatana, T., & Pradabmuk, P. (1995). Implications of Community Health Workers distributing drugs: a case study of Thailand. Action Programme on Essential Drugs. England: World Health Organization. [Online]. Available from: <http://apps.who.int/medicinedocs/en/d/Js2208e/4.html> [2011, March]
- Srivirojana, N. and Punpuing, S. (2009). Health and Mortality Differential among Myanmar, Laos and Cambodia Migrants in Thailand. [Online]. Available from: http://www.hiso.or.th/hiso/picture/reportHealth/ThaiHealth2010/eng2010_12.pdf; [2010, March]

- Staples, L.H. (1990). Powerful ideas about empowerment. Administration And Social Work, 14, 2: 29-42.
- Stekelenburg, J., Kyanamina, S. S., & Wolffers, I. (2003). Poor performance of community health workers in Kalabo District, Zambia. Health Policy, 65,2: 109-118.
- Stewart, A.M. (1994). Empowering people. Singapore: Institute of Management, Pitman Publishing Co.
- Stover, E., Suwanvanichkij, V., Moss, A. (2007). The gathering storm: infectious diseases and human rights in Burma. [Online]. Available from: <http://www.jhsph.edu/bin/s/i/GatheringStorm.pdf>. [2009, Feb]
- Swaddiwudhipong W., Lerdlukanavong, P., Khumklam, P., Koonchote, S., Nguntra, P., Chaovakiratipong, C., (1992). A Survey of Knowledge, Attitude and Practice of the Prevention of Dengue Hemorrhagic Fever in Anurban Community of Thailand. Southeast Asian J Trop Med Public Health; 23: 207-211.
- Swaddiwudhipong, W., Phisuthikul, K., Tatip, P., Ampong, T., Tatip, Y., Mahasakdipan, P., (2004). Experiences controlling infectious diseases in Myanmar migrants, Mae Sot district, Tak Province. Journal of Health Science, 15: 243-250.
- Swaddiwudhipong W, Ngamsaithong C, Peanumlom P, Hannarong S., (2008). An outbreak of cholera among Migrants living in a Thai-Myanmar border area. J Med Assoc Thai, 91,9:1433-40.
- Thanaisawanyangkoon, S. (2006). An Epidemiologic Study on AIDS among Migrant Workers in Thailand. [Online]. Available from: <http://eforums.healthdev.org/read/messages?id=13177>. [2009, Feb]
- Thomason, J. A., & Kolehmainen-Aitken, R.-L. (1991). Distribution and performance of rural health workers in Papua New Guinea. Social Science & Medicine, 32,2: 159-165.
- Thwin H T and Chapman R S. (2009). *J Health Res (suppl)*: 65-67
- Tutchananusorn, S. (2000). Safety in Office. Journal of safety and environment 15,1: 29-39

- UNHCR. (2007). Burmese Border Refugee Sites with Population Figures, [Online]. Available from:
http://reliefweb.int/sites/reliefweb.int/files/resources/63FD2538D97112E5C12573AE003A637F-tbbc_IDP_mmr071211.pdf; 56. [2009, Feb]
- UNICEF-United Nations Children's Fund,(2010). Division of Communication, Permissions, 3 UN Plaza, NY 10017, USA. [Online]. Available from:
<http://www.factsforlifeglobal.org/resources/factsforlife-en-full.pdf> [2010, Feb]
- United Nations Country Team in Thailand. (2005). Thailand Common Country Assessment. [Online]. Available from:
<http://www.unpei.org/PDF/thailand-commoncountryassessment.pdf>
 [2010, Feb]
- Wallenstein, N. and Bernstein, E. (1994). Introductory to community empowerment, participatory education and health. Journal of Health Education, 21,2: 141-148.
- Wandee, P., Supawitkul S., Pinta N., Ngoentong Y., Khunkonkapan S., Kaewkampa P., Sumanapun S., Levine W., Sinsomboontong S., Mednavyn T. (2004). Dual TB/HIV Epidemic in Northern Thailand and Myanmar Border: The vital need for bridging cross-country cooperation, XV International AIDS Conference, Bangkok, July 11-16.
- World Health Organization [WHO]. (2008). Pandemic Influenza Preparedness and mitigation in refugees and displaced population. WHO guidelines for humanitarian agencies. 2nd Ed. Geneva. World Health Organization.
- World Health Organization [WHO]. (2008b). *Reducing excess mortality from common illnesses during an influenza pandemic*; WHO guidelines for emergency health interventions in community settings, Geneva.
- World Health Organization [WHO]. (2004). Report of Cases and Death in Camps. [Online] Available from:
<http://www.whothailand.org/en/Section3/Section39.htm>. [2009, November]
- World Health Organization [WHO]. (2009). Pandemic influenza preparedness and response: WHO guidance document. Geneva: World Health Organization;
- Yamane and Taro. (1967). Statistics, an Introductory Analysis, 2nd Ed., New York: Harper and Row.

- Yoon, S.Y. (1987). Community Participation in the Control and Prevention of DF/DHF: Is it possible? Dengue Newsletter, 13: 7-14.
- Zakus, J.D.L. (1998). Revisiting community participation. Health Policy and Planning, 13,1: 1 – 12.
- Zeighami, E., Zeighami, B., Javidian, I., & Zimmer, S. (1977). The Rural Health Worker as a Family Planning Provider: A Village Trial in Iran. Studies in Family Planning, 8,7: 184-187.
- Zimmerman, MA., Rappaport J. (1988). Citizen Participation, Perceived control, and Community Psychology. Am J Community Psychol; 16,3: 354-61.
- Zuvekas, A., Nolan, L. S., & Tumaylle, C. (1998). Impact of Community Health Workers on access, use of services and patient knowledge and behavior. The Bureau of Primary Health Care . Center for Health Policy Research. [Online]. Available from: <http://aspe.hhs.gov/pic/reports/hrsa/6355.pdf> [2011, Dec]

APPENDIX

Appendix A
Participant Information Sheet
(For community members- Interview with structured questionnaires related to community health knowledge of common infectious)

Title of research project Empowerment of Myanmar migrants as community health volunteers in improving community health knowledge of common infectious diseases in Tak Province, Thailand.

Principle researcher's name. Aung Kay Tu..... **Position.** PhD candidate

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You are being invited to take part in a research project. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and do not hesitate to ask if anything is unclear or if you would like more information.

1. This research project involves a cross sectional study to examine the community health knowledge of common infectious diseases among the Myanmar migrant communities in Tak Province, Thailand.
2. Objective of the study is to assess the community health knowledge of common infectious diseases among the Myanmar migrant workers.
3. Details of participant.

Inclusion criteria

- Myanmar migrant workers living area in the study area (Mae Sot and Phob Pra district of Tak Province) for at least six months
- Both male and female aged above 18 years
- Willing to participate in the study

Exclusion criteria

- Myanmar migrant workers living area in the study area who have Thai ID card
- Myanmar migrant workers living in Thailand for more than 10 years

Number of participants needed is 380 people from the study communities.

4. Procedure upon participants: The researcher will approach the community members with the permission of the community leaders and farm/factory owners and will ask participants few questions related to their socio-demographic conditions, sources of health information and health knowledge of common infectious diseases. It will take about 20-30 minutes. The language of interview will be in Burmese. The researcher will provide a soap bar to the participants as a gift for answering the questions.

5. Process of providing information.

5.1 Researcher will provide information to potential participants before asking questions and if the participants do not meet the requirement for this study, they will be thanked for their willingness to participate.

5.2 If potential participant is illiterate/cannot read Burmese language, the researcher will provide information about the research by reading aloud to the participants for getting informed consent.

6. If the process of **screening** potential participant found people who do not meet inclusion criteria and in need of advice, the researcher would provide health education and information about health services available in the migrant communities in Mae Sot and Phob Pra district. The screening does not need information in medical record.

7. There will be **no risk/harm** procedure which may cause ill effect to physical, mental, social, economic, belief of participants. Privacy of the participants will be protected as this study will not reveal information of an individual. The interviews will not take place during the working hours of the participants.

8. If study's results proved beneficial, researcher will share with the control group/community and all stakeholders of the study that the empowering of migrant workers as community health volunteers is beneficial for the community.

9. Information will include "participation to the study is **voluntary** and participant has the **right to deny** and/or **withdraw** from the study at any time, no need to give any reason, and there will be no bad impact upon that participant and still receive the same usual services.

10. Information will include "if you have any question or would like to obtain more information, the researcher can be reached at all time. If the researcher has new information regarding benefit on risk/harm, participants will be informed as soon as possible." This practice will provide an opportunity for participants to decide whether to stay/not stay with the project. (**Exception**, in case of one time interview and unable to re-contact participants.)

11. Information will include "Information related directly to individuals will be kept **confidential**. Results of the study will be reported as total picture. Any information which could be able to identify individual person will not appear in the report. Results of the study will be reported as an overall statement with anonymity.

12. State that if researcher does not perform upon participants as indicated in the information, the participants can report the incident to the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

Appendix B

Participant Information Sheet

(For Community Health Volunteers- interview with structured questionnaires related to self esteem and self efficacy and attending health training and monthly meetings)

Title of research project Empowerment of Myanmar migrants as community health volunteers in improving community health knowledge of common infectious diseases in Tak Province, Thailand.

Principle researcher's name. Aung Kay Tu..... **Position.** PhD candidate

Office address... College of Public Health Sciences, Chulalongkorn University, Bangkok

Home address 189/14, Intharakiri Soi 25, Mae Sot, Tak 63110

Cell phone... 08 44276122 **E-mail:** aungkay@gmail.com

You are being invited to take part in a research project. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and do not hesitate to ask if anything is unclear or if you would like more information.

1. This research project is about development of an empowerment program for Myanmar migrant workers as community health volunteers in improving community health knowledge of common infectious diseases.

2. Objective of the project is to empower Myanmar migrants as community health volunteers in improving community health knowledge of common infectious diseases in Tak Province, Thailand.

3. Details of participant.

Criteria of Selection of CHV

- Myanmar migrant workers living area in the study area (Mae Sot and Phob-Pra district) for at least six months
- Both male and female aged above 18 years who can read and write Burmese language
- Willing to participate in the study and willing to serve their community
- Get permission from factory/ farm owners

Exclusion criteria:

- Myanmar migrant workers living area in the study area who have Thai ID card.
- Myanmar migrant workers who have no plan to stay in the study for six months starting from the beginning of the study.

There will be 148 community health volunteers (77 from intervention clusters and 71 from control clusters). These people are invited to participate because they are marginalized population and the project will benefit them. People in the study will receive health information messages about common infectious prevalent in their community and hence they have increased knowledge of common infectious diseases and consequently leading to reduced incidence of diseases in the community.

4. Procedure upon participants: Migrant workers who are recruited as community health volunteers (CHV) will receive trainings. The initial training will take 2 days. After the initial training, the CHV in the intervention group will participate in the follow-up meetings once a month for six months. One session of meeting will take about 1-2 hours. The CHV can decide freely not to attend the meeting if he/she is not available on the meeting time. The CHV who miss the monthly meeting will be shared discussion and decision points and solutions to mitigate or solve the health problems in the community from the meeting. The Community Health Volunteers in both intervention and control clusters will be asked the questions related to self esteem and self efficacy before and after the intervention. The training and interview will be in Burmese language.

5. Process of providing information.

5.1 Researcher will provide information to potential participants before asking questions and if the participants do not meet the requirement for this study, they will be thanked for their willingness to participate.

5.2 If potential participant is illiterate/cannot read Burmese language, the researcher will provide information about the research by reading aloud to the participants for getting informed consent.

6. If the process of **screening** potential participant found people who do not meet inclusion criteria and in need of advice, the researcher would provide health education and information about health services available in the migrant communities in Mae Sot and Phob Pra district. The screening does not need information in medical record.

7. There will be **no risk/harm** procedure which may cause ill effect to physical, mental, social, economic, belief of participants. Privacy of the participants will be protected as this study will not reveal information of an individual. The interviews and trainings will not take place during the working hours of the participants. During the training, CHV trainees will be provided lunch and 150 Baht per day for the transportation. For the follow up meetings in the intervention group, participants will be provided snacks for the meetings.

8. If study's results proved beneficial, researcher will share with the control group/community and all stakeholders of the study that the empowering of migrant workers as community health volunteers is beneficial for the community.

9. Information will include "participation to the study is **voluntary** and participant has the **right to deny** and/or **withdraw** from the study at any time, no need to give any

reason, and there will be no bad impact upon that participant and still receive the same usual services.

10. Information will include “if you have any question or would like to obtain more information, the researcher can be reached at all time. If the researcher has new information regarding benefit on risk/harm, participants will be informed as soon as possible.” This practice will provide an opportunity for participants to decide whether to stay/not stay with the project.

11. Information will include “Information related directly to individuals will be kept **confidential**. Results of the study will be reported as total picture. Any information which could be able to identify individual person will not appear in the report. Results of the study will be reported as an overall statement with anonymity.

12. State that if researcher does not perform upon participants as indicated in the information, the participants can report the incident to the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

Appendix C

Participant Information Sheet (For Focus Group Discussion with Community members)

Title of research project Empowerment of Myanmar migrants as community health volunteers in improving community health knowledge of common infectious diseases in Tak Province, Thailand.

Principle researcher's name. Aung Kay Tu..... **Position..**PhD candidate

Office address... College of Public Health Sciences, Chulalongkorn University, Bangkok

Home address 189/14, Intharakiri Soi 25, Mae Sot, Tak 63110

Cell phone... 08 44276122 **E-mail:** aungkay@gmail.com

You are being invited to take part in a research project. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and do not hesitate to ask if anything is unclear or if you would like more information.

1. This research project is about development of an empowerment program for Myanmar migrant workers as community health volunteers in improving community health knowledge of common infectious diseases in Tak province, Thailand.

2. Objective of the focus group discussion is explore the activities of Community health volunteers (CHVs) activities in the community and to assess whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of community members.

3. Details of participant.

Inclusion criteria for participants in focus group discussion are

- Myanmar migrant workers living area in the study intervention area for at least six months
- Both male and female aged above 18 years
- Willing to participate in the focus group discussion

Exclusion criteria:

- Myanmar migrant workers living area in the study area who have Thai ID card.

There will be 2 sessions of focus group discussion; one will be in Mae Sot and one will be in Phob Pra. There will be 7-8 participants in each session.

4. Procedure upon participants: The researcher will approach the community members with the permission of the community leaders and farm/factory owners. The

researcher will explain and will get consent about tape recording and will destroy the recording after the project. During the focus group discussion, the participants will discuss duration of knowing the CHVs and time of contact with CHVs and the reasons for the contact. They will also discuss activities of CHVs in the community, including working together with Thai government health staffs, and the services they received from the CHVs. One session of focus group discussion will take about 2 hours. The language used in the focus group discussion will be in Burmese. The researcher will provide a soap bar to the participants as a gift of showing gratitude to their time for their involvement in the discussion.

5. Process of providing information.

5.1 Researcher will provide information to potential participants before focus group discussion and if the participants do not meet the requirement for this study, they will be thanked for their willingness to participate.

5.2 If potential participant is illiterate/cannot read Burmese language, the researcher will provide information about the research by reading aloud to the participants for getting informed consent.

6. If the process of **screening** potential participant found people who do not meet inclusion criteria and in need of advice, the researcher would provide health education and information about health services available in the migrant communities in Mae Sot and Phob Pra district.

7. There will be **no risk/harm** procedure which may cause ill effect to physical, mental, social, economic, belief of participants. Privacy of the participants will be protected as this study will not reveal information of an individual. The focus group discussion will not take place during the working hours of the participants. Participant will be provided snacks and provided 150 Baht for transportation.

8. If study's results proved beneficial, researcher will share with the control group/community and all stakeholders of the study that the empowering of migrant workers as community health volunteers is beneficial for the community.

9. Information will include "participation to the study is **voluntary** and participant has the **right to deny** and/or **withdraw** from the study at any time, no need to give any reason, and there will be no bad impact upon that participant and still receive the same usual services.

10. Information will include "if you have any question or would like to obtain more information, the researcher can be reached at all time. If the researcher has new information regarding benefit on risk/harm, participants will be informed as soon as possible." This practice will provide an opportunity for participants to decide whether to stay/not stay with the project.

11. Information will include "Information related directly to individuals will be kept **confidential**. Results of the study will be reported as total picture. Any information

which could be able to identify individual person will not appear in the report. Results of the study will be reported as an overall statement with anonymity.

12. State that if researcher does not perform upon participants as indicated in the information, the participants can report the incident to the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4th Floor, Soi Chulalongkorn 62, Phayathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

Appendix D

Participant Information Sheet (For In- Depth Interview with Factory or Farm owner/manager)

Title of research project Empowerment of Myanmar migrants as community health volunteers in improving community health knowledge of common infectious diseases in Tak Province, Thailand.

Principle researcher's name. Aung Kay Tu..... **Position.** PhD candidate

Office address... College of Public Health Sciences, Chulalongkorn University, Bangkok

Home address 189/14, Intharakiri Soi 25, Mae Sot, Tak 63110

Cell phone... 08 44276122 **E-mail:** aungkay@gmail.com

You are being invited to take part in a research project. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and do not hesitate to ask if anything is unclear or if you would like more information.

1. This research project is about development of an empowerment program for Myanmar migrant workers as community health volunteers in improving community health knowledge of common infectious diseases in Tak province, Thailand.

2. Objective of the in-depth interview is to explore the activities of migrant Community health volunteers (CHVs) activities in the community and to assess whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of Factory or Farm owner/manager.

3. Details of participant.

One factory owner/manager from the study intervention area in Mae Sot and one agricultural farm owner/manager in the study intervention area in Phob Pra will be interviewed. The factory or farm owner/manager knows the migrant workers working as community health volunteers in their factory or farm.

4. Procedure upon participants: The participant will be interviewed about whether empowering migrant workers as health volunteers is useful for the factory/ farm and migrant workers. The researcher will interview the participant about the activities of migrant CHV, including working together with government health staffs. One interview session will take about 1 hour. The researcher will not do tape recording for the interview. The interview will be in English and if the farm/factory owner cannot speak English, the researcher will conduct the interview with the help of one Thai interpreter.

5. There will be **no risk/harm** procedure which may cause ill effect to physical, mental, social, economic, belief of participants. Privacy of the participants will be protected as this study will not reveal information of an individual. The interview will take place at any convenient place and time for the factory or farm owner/manager.
6. If study's results proved beneficial, researcher will share with the control group/community and all stakeholders of the study that the empowering of migrant workers as community health volunteers is beneficial for the community.
7. Information will include "participation to the study is **voluntary** and participant has the **right to deny** and/or **withdraw** from the study at any time, no need to give any reason.
8. Information will include "Information related directly to individuals will be kept **confidential**. Any information which could be able to identify individual person will not appear in the report. Results of the study will be reported as an overall statement with anonymity.
9. State that if researcher does not perform upon participants as indicated in the information, the participants can report the incident to the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

Appendix E

Participant Information Sheet (For In- Depth Interview with Government Health Staffs)

Title of research project Empowerment of Myanmar migrants as community health volunteers in improving community health knowledge of common infectious diseases in Tak Province, Thailand.

Principle researcher's name. Aung Kay Tu..... **Position.** PhD candidate

Office address... College of Public Health Sciences, Chulalongkorn University, Bangkok

Home address 189/14, Intharakiri Soi 25, Mae Sot, Tak 63110

Cell phone... 08 44276122 **E-mail:** aungkay@gmail.com

You are being invited to take part in a research project. Before you decide to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and do not hesitate to ask if anything is unclear or if you would like more information.

1. This research project is about development of an empowerment program for Myanmar migrant workers as community health volunteers in improving community health knowledge of common infectious diseases in Tak province, Thailand.

2. Objective of the in-depth interview is to explore the activities of migrant Community health volunteers (CHVs) activities in the community and to assess whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of a government health staff.

3. Details of participant.

One government health staff from Mae Sot district and one from Phob Pra district will be interviewed. The government health staffs know empowerment program for Myanmar migrant workers as community health volunteers in improving community health knowledge.

4. Procedure upon participants: The participant will be interviewed about whether empowering migrant workers as health volunteers is useful for migrant community as well as for the Thai host community. The researcher will interview the participant about the activities of migrant CHV, including working together with government health staffs. One interview session will take about 1 hour. One interview session will take about 1 hour. The researcher will not do tape recording for the interview. The interview will be in English and if the government health staff cannot speak English, the researcher will conduct the interview with the help of one Thai interpreter.

5. There will be **no risk/harm** procedure which may cause ill effect to physical, mental, social, economic, belief of participants. Privacy of the participants will be protected as this study will not reveal information of an individual. The interview will take place at any convenient place and time for the government health staff.
6. If study's results proved beneficial, researcher will share with the control group/community and all stakeholders of the study that the empowering of migrant workers as community health volunteers is beneficial for the community.
4. Information will include "participation to the study is **voluntary** and participant has the **right to deny** and/or **withdraw** from the study at any time, no need to give any reason.
8. Information will include "Information related directly to individuals will be kept **confidential**. Any information which could be able to identify individual person will not appear in the report. Results of the study will be reported as an overall statement with anonymity.
9. State that if researcher does not perform upon participants as indicated in the information, the participants can report the incident to the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

Appendix F

Informed Consent Form (For community members- Interview with structured questionnaires related to community health knowledge of common infectious)

Address

Date

Code number of the participant

I who have signed here below agree to participate in this research project
Title “EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN TAK PROVINCE, THAILAND”

Principal researcher’s name – Mr Aung Kay Tu

Contact address ...189/14, Intharakiri Road, Soi25, Mae Sot, Tak 63110, Thailand

Telephone ...08 44276122

I have **read or been informed** about the rationale and objectives of the research project, about what I will engage in details, about the risk/ harm and the benefit of this research project. The researcher has explained to me and I **clearly understand with satisfaction**.

I willingly **agree** to participate in this research project and allow the researcher to conduct interviews related to knowledge about the common infectious diseases among Myanmar Migrants which takes about 20-30 minutes.

I have **the right** to withdraw from this research project at any time at will without any clarification. This withdrawal **will not have any negative impact upon me, for instance, health care services are still provided as usual**.

The researcher has confirmed that the procedures will be exactly the same as indicated in the participant information sheet such as interview for 20-30 minutes, the interviews will not take place during the working hours of the participants and the researcher will provide a soap bar as a gift. Any personal information will be **kept confidential**. Results of the study will be reported as an overall statement with anonymity.

If I am not treated as indicated in the participant information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU). Institute Building 2, 4 th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

I have also received a copy of participant information sheet and an informed consent form.

Signature

(.....)

Researcher

Signature

(.....)

Participant

Signature

(.....)

Witness

Appendix G
Informed Consent Form

(For Community Health Volunteers- interview with structured questionnaires related to self esteem and self efficacy and attending health training and monthly meetings)

Address

Date

Code number of the participant

I who have signed here below agree to participate in this research project

Title “EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN TAK PROVINCE, THAILAND”

Principal researcher’s name – Mr Aung Kay Tu

Contact address ...189/14, Intharakiri Road, Soi25, Mae Sot, Tak 63110, Thailand

Telephone ...08 44276122

I have **read or been informed** about the rationale and objectives of the research project, about what I will engage in details, about the risk/ harm and the benefit of this research project. The researcher has explained to me and I **clearly understand with satisfaction**.

I willingly agree to participate in this research project and allow the researcher to conduct the procedures involved interviews related to self esteem and self efficacy questions which will take about 20-30 minutes for 2 times before and end of the project and health trainings for 2 days. If I were in study intervention group, I willingly agree to participate in the meetings, one session per month for six months. I understand that one meeting will take about 1-2 hour. I can decide freely not to attend the meeting if I am not available on the meeting time. If I miss the monthly meeting, I will be shared the discussion and decision points and solutions to mitigate or solve the health problems in the community from the meeting.

I have **the right** to withdraw from this research project at any time at will without any clarification. This withdrawal **will not have any negative impact upon me, for instance, health care services are still provided as usual**.

The researcher has confirmed that the procedures will be exactly the same as indicated in the participant information sheet such as initial training will take 2 day and after the initial training, the CHV in the intervention group will participate in the follow-up meetings once a month for six months. One session of follow up meeting will take about 1-2 hours. The researcher will provide 150B for transportation cost. Any personal information will be **kept confidential**. Results of the study will be reported as an overall statement with anonymity.

If I am not treated as indicated in the participant information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU). Institute Building 2, 4 th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

I have also received a copy of participant information sheet and an informed consent form.

Signature

(.....)

Researcher

Signature

(.....)

Participant

Signature

(.....)

Witness

Appendix H

Informed Consent Form (For Focus Group Discussion with Community members)

Address

Date

Code number of the participant

I who have signed here below agree to participate in this research project

Title “EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN TAK PROVINCE, THAILAND”

Principal researcher’s name – Mr Aung Kay Tu

Contact address ...189/14, Intharakiri Road, Soi25, Mae Sot, Tak 63110, Thailand

Telephone ...08 44276122

I have **read or been informed** about the rationale and objectives of the research project, about what I will engage in details, about the risk/ harm and the benefit of this research project. The researcher has explained to me and I **clearly understand with satisfaction**.

I willingly agree to participate in this focus group discussion. I understand that I can freely discuss and express my opinion about the activities of migrant CHVs in the community, including working together with Thai government health staffs, and the services I received from the CHVs if I ever received it. I know that one session of focus group discussion will take about 2 hours.

I have **the right** to withdraw from this research project at any time at will without any clarification. This withdrawal **will not have any negative impact upon me, for instance, health care services are still provided as usual**.

The researcher has confirmed that the procedures will be exactly the same as indicated in the participant information sheet such as the researcher will do tape recording and recording will be destroyed after the project and one session of focus group discussion will take about 2 hours. The researcher will provide a soap bar to the participants as a gift. Any personal information will be **kept confidential**. Results of the study will be reported as an overall statement with anonymity.

If I am not treated as indicated in the participant information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU). Institute Building 2, 4 th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

I have also received a copy of participant information sheet and an informed consent form.

Signature

Signature

(.....)

(.....)

Researcher

Participant

Signature

(.....)

Witness

Appendix I

**Informed Consent Form
(For In- Depth Interview with Factory or Farm owner/manager)**

Address

Date

Code number of the participant

I who have signed here below agree to participate in this research project

Title “EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN TAK PROVINCE, THAILAND”

Principal researcher’s name – Mr Aung Kay Tu

Contact address ...189/14, Intharakiri Road, Soi25, Mae Sot, Tak 63110, Thailand

Telephone ...08 44276122

I have **read or been informed** about the rationale and objectives of the research project, about what I will engage in details, about the risk/ harm and the benefit of this research project. The researcher has explained to me and I **clearly understand with satisfaction**.

I willingly agree to answer the questions asked by Mr Aung Kay Tu regarding Myanmar migrant community health volunteer. I understand that I can freely discuss and express my opinion whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of Factory or Farm owner/manager. I know that one session of will take about one hour.

I have **the right** to withdraw from this research project at any time at will without any clarification. This withdrawal **will not have any negative impact upon me**.

The researcher has confirmed that the procedures will be exactly the same as indicated in the participant information sheet such as one interview session will take about 1 hour and the researcher will not do tape recording for the interview. Any personal information will be **kept confidential**. Results of the study will be reported as an overall statement with anonymity.

If I am not treated as indicated in the participant information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU). Institute Building 2, 4 th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

I have also received a copy of participant information sheet and an informed consent form.

Signature

(.....)

Researcher

Signature

(.....)

Participant

Signature

(.....)

Witness

Appendix J

Informed Consent Form (For In- Depth Interview with Government Health Staffs)

Address

Date

Code number of the participant

I who have signed here below agree to participate in this research project

Title “EMPOWERMENT OF MYANMAR MIGRANT WORKERS AS HEALTH VOLUNTEERS FOR IMPROVING COMMUNITY HEALTH KNOWLEDGE OF COMMON INFECTIOUS DISEASES IN TAK PROVINCE, THAILAND”

Principal researcher’s name – Mr Aung Kay Tu

Contact address ...189/14, Intharakiri Road, Soi25, Mae Sot, Tak 63110, Thailand

Telephone ...08 44276122

I have **read or been informed** about the rationale and objectives of the research project, about what I will engage in details, about the risk/ harm and the benefit of this research project. The researcher has explained to me and I **clearly understand with satisfaction**.

I willingly agree to answer the questions asked by Mr Aung Kay Tu regarding Myanmar migrant community health volunteer (CHV). I understand that I can freely discuss and express my opinion whether the empowerment of Myanmar migrant workers as community health volunteers is effective in improving migrant community health knowledge of common infectious diseases, in the perspective of a government health staff. I know that one session of will take about one hour.

I have **the right** to withdraw from this research project at any time at will without any clarification. This withdrawal **will not have any negative impact upon me**.

The researcher has confirmed that the procedures will be exactly the same as indicated in the participant information sheet such as one interview session will take about 1 hour and the researcher will not do tape recording for the interview. Any personal information will be **kept confidential**. Results of the study will be reported as an overall statement with anonymity.

If I am not treated as indicated in the participant information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (ECCU). Institute Building 2, 4 th Floor, Soi Chulalongkorn 62, Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: eccu@chula.ac.th.

I have also received a copy of participant information sheet and an informed consent form.

Signature

(.....)

Researcher

Signature

(.....)

Participant

Signature

(.....)

Witness

Appendix K

HEALTH KNOWLEDGE QUESTIONNAIRE FOR COMMON INFECTIOUS DISEASES AMONG MYANMAR MIGRANTS

CLUSTER NAME - _____
PROVINCE NAME - _____
RESPONDENT NO - _____
INTERVIEWER CODE - _____
INTERVIEW DATE AND TIME - _____

SOCIO DEMOGRAPHIC INFORMATION	
Q101. What is your age?	_____ YEARS
Q102. What is your gender?	MALE [] FEMALE []
Q103. What is your marital status?	A. SINGLE B. MARRIED C. DIVORCED D. SEPARATED E. WIDOW/ WIDOWER X. OTHER _____ (SPECIFY)
Q104. How long have you been living in Thailand?	_____ YEARS AND _____ MONTHS
Q105. How long have you been living in this community?	_____ YEARS AND _____ MONTHS
IF LESS THAN 6 MONTHS, STOP THE INTERVIEW AND SAY THANKS!	
Q106. What is your migrant status in Thailand?	A. REGISTERED WORKER B. UNREGISTERED WORKER C. COLOR CARD HOLDER X. OTHER _____ (SPECIFY)
Q107. What is your occupation?	A. FACTORY WORKER B. WORKING AGRICULTURAL FARM C. DEPENDENT X. OTHER _____ (SPECIFY)

<p>Q108. Which ethnic group do you belong to?</p>	<p>A. BURMESE B. KAREN C. KARANI D. SHAN E. MON F. RAKHINE G. KACHIN X. OTHER</p> <hr/> <p>(SPECIFY)</p>
<p>Q109. What is your religion?</p>	<p>A. BUDDHISM B. CHRISTIANITY C. ISLAM D. HINDU E. ANIMISM X. OTHER</p> <hr/> <p>(SPECIFY)</p>
<p>Q110. What is your “level of education?”</p>	<p>A. ILLITERATE B. PRIMARY SCHOOL C. MIDDLE SCHOOL D. HIGH SCHOOL E. ATTENDED UNIVERSITY F. UNIVERSITY GRADUATE X. OTHER</p> <hr/> <p>(SPECIFY)</p>
<p>Q111. Which language/s can you speak? RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. THAI B. BURMESE C. KAREN D. KARANI E. SHAN F. MON G. RAKHINE H. KACHIN X. OTHER</p> <hr/> <p>(SPECIFY)</p>

<p>Q112. How is your Thai Language proficiency?</p>	<p>A. CANNOT SPEAK AT ALL B. CAN SPEAK A LITTLE C. CAN SPEAK MODERATELY D. CAN SPEAK FLUENTLY E. CAN READ AND WRITE</p>
<p>Q113. What is the current total family income per month?</p>	<p>BAHT [] [] [] [] []</p>

<p align="center">HEALTH INFORMATION AND HEALTH SEEKING PRACTICE</p>	
<p>Q201. During past month did you receive any health message in the language that you understand?</p> <p align="center"><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>IF “NO” SKIP TO “QUESTION 204”</p>	
<p>Q202. From whom do you receive health messages?</p> <p>RECORD ALL MENTIONED (DON’T READ OUT THE ANSWERS)</p>	<p>A. THAI GOVERNMENT HEALTH OFFICIAL B. RADIO C. COMMUNITY LOUD SPEAKER D. HEALTH BROCHURE/ POSTER E. COMMUNITY HEALTH VOLUNTEERS X. OTHER</p> <hr/> <p align="center">(SPECIFY)</p> <p>Z. DON’T KNOW</p>
<p>Q203. What health information did you receive during past month?</p> <p>RECORD ALL MENTIONED (DON’T READ OUT THE ANSWERS)</p>	<p>A. DIARRHOEA B. ACUTE RESPIRATORY INFECTIONS C. MALARIA D. DENGUE FEVER E. TUBERCULOSIS F. HIV/AIDS X. OTHER</p> <hr/> <p align="center">(SPECIFY)</p> <p>Z. DON’T REMEMBER</p>

<p>Q204. Whenever you feel common/minor illness (not serious), what will you do first?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. TAKING ANTIPYRETIC DRUGS AT HOME</p> <p>B. BUY MEDICINES FROM NEARBY SHOPS</p> <p>C. SEEK TREATMENT AT TRADITIONAL HEALER</p> <p>D. SEEK CONSULTATION AT HEALTH CENTERS/ HOSPITALS</p> <p>E. SEEK CONSULTATION AT PRIVATE CLINIC</p> <p>X. OTHER _____ (SPECIFY)</p> <p>Z. DON'T REMEMBER</p>
<p>KNOWLEDGE OF DIARRHEA</p>	
<p>Q 301. What are the causes for diarrhea?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. EATING UNCLEAN FOOD</p> <p>B. DRINKING UNCLEAN WATER</p> <p>C. EATING CONTAMINATED FOOD WITH FLIES</p> <p>X. OTHER _____ (SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>Q302. How will you give fluid to a person who got diarrhea? (CHOOSE ONE)</p>	<p>A. NO FLUID</p> <p>B. GIVE LESS FLUID</p> <p>C. GIVE FLUID AS USUAL</p> <p>D. GIVE FLUID MORE THAN USUAL</p> <p>X. OTHER _____ (SPECIFY)</p> <p>Z. DON'T KNOW</p>

<p>Q303. Have you heard of ORS?</p> <p>IF YES, ask respondent to describe ORS preparation for you.</p> <p>Once respondent has provided a description, record whether he/she described correctly or incorrectly.</p> <p>CIRCLE 1 [CORRECTLY] IF THE RESPONDENT MENTIONED ALL 4 OF THE FOLLOWING:</p> <ol style="list-style-type: none"> 1) USE CORRECT AMOUNT OF CLEAN DRINKING WATER 2) USE THE ENTIRE PACKET 3) DISSOLVE THE POWDER FULLY 4) DISCARD THE ORS SOLUTION IF NOT FINISHED WITHIN 24 HOURS. 	<p><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>A. DESCRIBED CORRECTLY B. DESCRIBED INCORRECTLY</p>
<p>Q304. Do you know how to prevent diarrhea?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. DRINK CLEAN WATER B. COVER THE FOOD PROPERLY C. PROPER HAND WASHING D. USE FLY-PROOF LATRINES E. PROPER DISPOSAL OF GARBAGE X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>Q305. When should you take a patient with diarrhea go to health facility?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. DIARRHOEA WITH FEVER B. BLOODY DIARRHOEA C. REPEATED VOMITTING D. PATIENT NOT ABLE TO DRINK OR DRINK POORLY E. LETHARGY OR UNCONSCIOUS X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>

KNOWLEDGE OF MALARIA	
Q401. Have you ever heard about malaria? <div style="text-align: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO</div> IF "NO" SKIP TO "QUESTION 501"	
Q402. Do you know how malaria is transmitted? RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)	A. DRINKING SPRING WATER FROM FOREST B. TAKING BATH IN SPRING WATER AT FOREST C. MOSQUITO BITE D. EATING BANANA OR FRUITS FROM THE FOREST E. EATING INDIGESTIBLE FOOD F. FATIGUE G. CHANGE OF WEATHER X. OTHER <hr/> (SPECIFY) Z. DON'T KNOW
Q403. What are the signs and symptoms of simple malaria? RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)	A. FEVER WITH OR WITHOUT CHILLS AND RIGORS B. REGULAR RISE OF BODY TEMPERATURE C. UNCONSCIOUSNESS D. RESTLESSNESS E. CONVULSIONS F. PASSING BLACK URINE X. OTHER <hr/> (SPECIFY) Z. DON'T KNOW

<p>Q404. Do you know how to prevent malaria?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. NOT DRINKING STREAM WATER B. MOSQUITO REPELLENT COILS C. USING MOSQUITO NETS D. WEARING LONG SLEEVE SHIRTS E. SPRAYING INSECTICIDE X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>KNOWLEDGE OF DENGUE FEVER</p>	
<p>Q501. Have you ever heard about Dengue fever?</p> <p style="text-align: right;"><input type="checkbox"/>YES <input type="checkbox"/>NO</p> <p>IF "NO" SKIP TO "QUESTION 601"</p>	
<p>Q502. Do you know how dengue fever is transmitted?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p> <p>IF THE RESPONDENT DO NOT ANSWER (C), THROUGH MOSQUITO BITE, NO NEED TO ASK QUESTIONS 504, 505, AND 506.</p>	<p>A. AIR BORNE B. WATER BORNE C. MOSQUITO BITE D. DIRECT CONTACT X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>Q503. What are the signs and symptoms of dengue fever?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. FEVER B. BODY ACHES C. RED SPOTS ON THE SKIN D. ABDOMINAL PAIN E. COLD EXTREMITIES F. COFFEE GROUND COLOURED VOMITTING X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>

<p>Q504. Do you know how to protect from mosquito bite?</p>	<p>A. USING MOSQUITO NETS B. WEARING LONG SLEEVE SHIRTS/ TROUSERS C. MOSQUITO REPELLENT COILS/ CREAM X. OTHER</p> <hr/> <p>(SPECIFY) Z. DON'T KNOW</p>
<p>Q505. Do you know ways to reduce or eliminate mosquito breeding?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. CHANGING STORED WATER FREQUENTLY B. TURN CONTAINERS UPSIDE DOWN C. COVER WATER CONTAINERS D. SPRAYING INSECTICIDE E. PUTTING ABATE IN WATER CONTAINER X. OTHER</p> <hr/> <p>(SPECIFY) Z. DON'T KNOW</p>
<p>Q506. What are the possible breeding places of mosquito that carry dengue virus?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. FLOWER VASES B. WATER CONTAINERS C. OLD TYRES/ BROKEN POTS D. BLOCKED GUTTER X. OTHER</p> <hr/> <p>(SPECIFY) Z. DON'T KNOW</p>
<p>KNOWLEDGE OF INFLENZA –A H1N1</p>	
<p>Q601. Have you ever heard about Pandemic Influenza A (H1N1) known as swine flu? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>IF “NO” SKIP TO “QUESTION 605”</p>	

<p>Q602. How do you think pandemic influenza A (H1N1) is spread?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. COUGH AND SNEEZING</p> <p>B. CLOSE CONTACT WITH INFECTED PERSON</p> <p>C. BLOOD TRANSFUSION</p> <p>D. EATING PORK</p> <p>E. TOUCHING OBJECTS PREVIOUSLY HANDLED BY INFECTED PERSONS</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>Q603. Do you think that pandemic influenza A (H1N1) can be prevented or not? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> DON'T KNOW</p> <p>(If NO, skip to Question No 605.)</p>	
<p>Q604. How do you think pandemic influenza A (H1N1) can be prevented? Explain the ways of protection.</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. FREQUENT HANDWASHING</p> <p>B. COVER MOUTH AND NOSE WHEN COUGH AND SNEEZE</p> <p>C. AVOID CROWDED PUBLIC PLACES IF POSSIBLE</p> <p>D. NOT SPITTING IN THE PUBLIC</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>Q605. What are the danger signs in a person with fever, sneezing and cough?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. CANNOT EAT OR DRINK</p> <p>B. HIGH FEVER</p> <p>C. FAST BREATHING</p> <p>D. DIFFICULT BREATHING</p> <p>E. VOMITTING</p> <p>F. CONVULSIONS</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>KNOWLEDGE OF TUBERCULOSIS (TB)</p>	

Q701. Have you ever heard about TB? <input type="checkbox"/> YES <input type="checkbox"/> NO IF “NO” SKIP TO “QUESTION 801”	
Q702. Do you know how TB is transmitted? RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)	A. SMOKING B. ALCOHOL DRINKING C. FATIGUE D. DROPLET INFECTION FROM PATIENT DURING COUGHING/ SNEEZING E. GENETIC F. WEAKNESS X. OTHER _____ (SPECIFY) Z. DON'T KNOW
Q703. What are the signs and symptoms of TB? RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)	A. COUGH MORE THAN TWO WEEKS B. LOW GRADE FEVER C. SPUTUM PRODUCTION D. LOSS OF WEIGHT E. NIGHT SWEATS F. COUGH WITH BLOOD X. OTHER _____ (SPECIFY) Z. DON'T KNOW
Q704. Who are more susceptible to TB infection? RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)	A. HIV PATIENTS B. SMOKERS C. FAMILY MEMBERS, COLLEAGUES AT WORK, AND CLASSMATES AT SCHOOLS WITH TB PATIENTS WITHOUT TREATMENT D. PEOPLE LIVING IN OVERCROWDED CONDITIONS X. OTHER _____ (SPECIFY) Z. DON'T KNOW
Q705. Is Tuberculosis curable? (CHOSE THE CORRECT ONE)	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> DON'T KNOW

<p>Q706. How can TB be treated?</p> <p>(CHOOSE THE CORRECT ONE)</p>	<p>A. TAKING DRUGS FROM HEALTH CENTER</p> <p>B. TAKING HERBAL MEDICINES</p> <p>C. TAKING DRUGS FROM STORES</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>KNOWLEDGE OF HIV/AIDS</p>	
<p>Q801. Have you ever heard about HIV/ AIDS?</p> <p style="text-align: center;"><input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>IF “NO” , SAY “THNAK YOU AND END THE INTERVIEW</p>	
<p>Q802. How HIV/AIDS can be transmitted from person to person?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. HAVING SEX WITH SOMEONE WHO IS INFECTED WITHOUT CONDOM</p> <p>B. SHARING OF PIERCING EQUIPMENTS (E.G. NEEDLE, RAZORS, ETC) WITH SOMEONE WHO IS INFECTED</p> <p>C. SHARING NEEDLES AND SYRINGES IN CASE OF INJECTIONS WITH SOMEONE WHO IS INFECTED</p> <p>D. THROUGH INFECTED BLOOD TRANSFUSION</p> <p>E. HIV (+) MOTHER TO BABY</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>Q803. How does a person can confirm that he/she has HIV/AIDS?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. PHYSICAL APPEARANCE</p> <p>B. STOOL TEST</p> <p>C. BLOOD TEST</p> <p>D. X- RAY</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>

<p>Q804. How do you think HIV/AIDS can be prevented?</p> <p>RECORD ALL MENTIONED (DON'T READ OUT THE ANSWERS)</p>	<p>A. LIMIT SEX TO ONE PARTNER ONLY</p> <p>B. HAVE SEX WITH CONDOM IN EXTRAMARITAL RELATIONS</p> <p>C. AVOID NEEDLE/ PIERCING EQUIPMENTS (E.G. RAZORS) SHARING</p> <p>D. AVOID UNNECESSARY INJECTION</p> <p>E. TREAT HIV (+) PREGNANT MOTHER DURING ANTENATAL CARE</p> <p>X. OTHER</p> <hr/> <p>(SPECIFY)</p> <p>Z. DON'T KNOW</p>
<p>END OF INTERVIEW – THANK YOU</p>	

Appendix L

Self Esteem and Self Efficacy Questions for Migrant CHV

CLUSTER NAME: _____ DISTRICT _____ RESPONDENT NO. _____ INTERVIEW DATE AND TIME: _____
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SOCIO-DEMOGRAPHIC INFORMATION	
Q1. Age	_____ YEARS
Q.2 Gender	MALE [] FEMALE []
Q. 3. Marital status	A. Single B. Married C. Divorced D. Separated E. Widow/ Widower X. Other _____ <div style="text-align: center;">(SPECIFY</div>
Q4. Duration of stay in Thailand	_____ YEARS AND _____ MONTHS
Q5. Duration of stay in this community	_____ YEARS AND _____ MONTHS
Q6. Migrant status in Thailand	F. REGISTERED WORKER G. UNREGISTERED WORKER H. COLOR CARD HOLDER X. OTHER _____ <div style="text-align: center;">(SPECIFY)</div>
Q7. Occupation	A. factory worker B. agricultural farm worker C. Dependent X. Other _____
Q8. Ethnicity	A. BURMESE B. KAREN

	<p>C. KARANI D. SHAN E. MON F. RAKHINE G. KACHIN • OTHER _____ (SPECIFY)</p>
Q9. Religions	<p>A. BUDDHISM B. CHRISTIANITY C. ISLAM D. HINDU E. ANIMISM • OTHER _____ (SPECIFY)</p>
Q10. Level of education	<p>A. PRIMARY SCHOOL B. MIDDLE SCHOOL C. HIGH SCHOOL D. UNIVERSITY LEVEL E. GRADUATE • OTHER _____ (SPECIFY)</p>
Q11. Language/s spoken	<p>A. THAI B. BURMESE C. KAREN D. KARANI E. SHAN F. MON G. RAKHINE H. KACHIN • OTHER _____ (SPECIFY)</p>
Q12. Thai Language proficiency	<p>A. CANNOT SPEAK AT ALL B. FAIR IN SPEAKING (ENOUGH TO DO</p>

	SHOPPING) C. WELL IN SPEAKING (ENOUGH TO COMMUNICATE WITH EMPLOYERS REGARDING WORK) D. FLUENT IN SPEAKING E. CAN READ AND WRITE
Q13. Current total family income per month	BAHT [] [] [] [] []

SELF ESTEEM QUESTION FOR CHVS

(Please check \checkmark in the column that reflects your feeling.)

Variables	Always	Often	Sometimes	Rarely	Never
1. I am important person for my community health care.					
2. I feel that I can help my friends/co-workers and neighbors.					
3. On the whole, I am satisfied with myself.					
4. I am respectful in my community.					
5. I feel confident to support the social activities in my community.					
6. I am able to do things as well as most other people.					
7. I feel I do not have much to be proud of.					
8. I often unable to solve my problems.					
9. I feel that I have a number of good qualities.					
10. I am important person to respond to my family health care.					

SELF EFFICACY QUESTION FOR CHV**(Please check \surd in the column that reflects your feeling.)**

Variables	Always	Often	Sometimes	Rarely	Never
1. I am confident to give Health education on common infectious diseases in my community.					
2. I am confident to advise or take sick people to health centers or hospital.					
3. I am able to teach how to use ORS when people get diarrhea.					
4. I am able to evaluate danger signs in patients with respiratory infections or diarrhea.					
5. I am able to persuade my community members to cooperate with me for the community health.					
6. I am able to participate and present my opinion in meetings with Thai government health officials.					
7. If someone opposes me regarding health issue, I can find ways to get what I can do.					
8. If I am in trouble, I can usually think of a solution to solve the problem.					
9. I can solve most problems if I invest the necessary effort.					
10. I am able to stick my aims and accomplish my goals.					

Appendix M

Questions for Focus Group Discussion with Community members

(Aim: to assist the assessment of CHV activities in the community)

1. How long have you been in the community?
2. Do you know the community health volunteers (the persons who provide health education) in your community?
3. What kind of health information or health services did you receive from the community health volunteers?
4. Have you ever notice that the community health volunteers have been involved in health related activities with Thai community health volunteers? If YES, please describe those activities.
5. How do you think about the value of community health volunteers in your community?

Appendix N

Questions for In-Depth Interview with Factory or Farm owner/ manager

(Aim to access the usefulness of CHVs in the factory/ farm based community)

1. How long have the migrant community health volunteers working for your factory/ farm?
2. How do you think about the usefulness of trained migrant community health volunteers for your factory/ farm?
3. Have you ever notice that the migrant community health volunteers have been involved in health related activities with Thai community health volunteers and government health staffs? If YES, please describe those activities.
4. Do you have any suggestion how to empower and sustain migrant community health volunteers working in your factory/ farm?

Appendix O

Questions for In-Depth Interview with Government Health Staffs

(Aim to assess the usefulness of CHVs in migrant health system)

1. How do you think the trained migrant community health volunteers are supportive for diseases prevention and control activities?
2. What kind of health related activities in which the migrant community health volunteers are working with government health staffs?
3. How do you think about motivational factors for the migrant community health volunteers to carry out the tasks willingly?
4. Do you have any suggestion how to improve the empowerment and sustainability of community health volunteers in Myanmar migrant community?

Appendix P

Migrant Community Health Volunteer (CHV) Training Module

Duration of training – 2 days

No	Topic	Learning Objectives	Day and Duration	Scope of Content
Day 1				
1.	Introduction of the training facilitators and CHV trainees Introduction of the training course	<ul style="list-style-type: none"> - To keep the training facilitators and CHV trainees closer and friendly - To attain the basic idea of the training 	Day 1 15 min	<ul style="list-style-type: none"> - Training facilitator has to introduce themselves, and let the CHV trainees introduce each other by giving own particulars.
2.	Roles of CHV in the migrant community	<ul style="list-style-type: none"> - To identify the roles of CHVs in migrant community by themselves 	Day 1 45 min	<ul style="list-style-type: none"> - Value of CHV in the migrant community (role model, leadership, involvement in disease prevention) - Sharing of health knowledge in the community - Communication with Thai hospitals and health centers - Referral of patients to the clinic/ hospital
3.	Common health problems in the migrant community	<ul style="list-style-type: none"> - To identify the common health problems in different migrant communities by the participants 	Day 1 45 min	<ul style="list-style-type: none"> - Concept of communicable and non-communicable diseases

4.	Diarrhea	<ul style="list-style-type: none"> -To understand the causes of diarrhea -To know how to prepare ORS correctly -To identify the danger signs of diarrhea -To understand how to prevent diarrhea 	Day 1 45 min	<ul style="list-style-type: none"> - Giving extra fluids and food, continue breastfeeding during diarrhea - Dangers of dehydration - Preparation of ORS - Proper disposal of faeces - Good hygiene practices
5.	Acute Respiratory Infections and Influenza A – H1N1,)	<ul style="list-style-type: none"> - To understand the modes of transmission -To understand how to prevent ARI including influenza A H1N1 -To identify the danger signs -To understand how to count respiratory rate 	Day 1 45 min	<ul style="list-style-type: none"> - Encourage to eat and drink - Danger signs of ARI - Risk factors for ARI - Preventive ways of ARI
6.	Malaria	<ul style="list-style-type: none"> - To know the cause and mode of transmission - To identify the danger signs of malaria - To understand the prevention against malaria 	Day 1 45 min	<ul style="list-style-type: none"> - Cause and transmission - Getting the treatment at health centers/ hospitals - To protect against mosquito bite

7.	Feed Back and CHV presentation on Diarrhea, Influenza A H1N1, Malaria	- To make sure that CHV has the quality to give health education on the 3 diseases focusing on mode of transmission, symptoms of the diseases, danger signs and preventive measures	Day 1 90 Min	- Group presentation of CHV on each topics - One group consists of 4-5 CHV - Trainers has to check the correctness of the health information provided by CHV
Day 2				
1.	Dengue Fever	-To understand the cause - To know the signs of dengue fever - To know the ways of prevention against dengue fever	Day 2 45 min	- Cause and mode of transmission - Danger signs of dengue fever - Prevention of mosquito bite during daylight - Reduction of mosquito breeding places
2.	Tuberculosis	- To know the cause of mode of transmission - To know the symptoms of TB - To get the concept of treatment compliance - To understand how to prevent TB	Day 2 45 min	- Cause and mode of transmission - Major Signs of TB (cough more than 2 weeks) - TB is treatable disease and seek treatment at health center/ hospital - Treatment compliance and

				proper follow up - Prevention against TB
3.	HIV/AIDS	- To understand the cause and modes of transmission - To understand the preventive ways against HIV/AIDS	Day 2 45 min	- HIV infection and AIDS - Mode of transmission - High risks for HIV transmission - Blood test to confirm diagnosis - Protection of HIV/AIDS
4.	Presentation of CHV on Dengue, Tuberculosis and Malaria	- To make sure that CHV has the quality to give health education on the 3 diseases focusing on mode of transmission, symptoms of the diseases, danger signs and preventive measures	Day 1 90 in	- Group presentation of CHV on each topics - One group consists of 4-5 CHV - Trainers has to check the correctness of the health information provided by CHV
5.	Communication and Health education in migrant community	- To understand how to develop trust building - To know ways of disseminating health knowledge among the migrant community	Day 2 45 min	- Trust Building - Dissemination of health education in the migrant community - Health information adapted to local context

6.	Conclusion, feedback on the training and planning for activities in migrant community by CHV themselves	<ul style="list-style-type: none"> - To develop the ways of disseminating health information in the migrant community - To build up community action plan to increase the health knowledge and accessibility of migrants to health services 	Day 2 60 min	<ul style="list-style-type: none"> - Planning of CHV activities in own migrant community - Develop goals and objectives of activities - Brainstorming for different ways to implement their activities, possible problems and solutions
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VITAE

NAME: Aung Kay Tu
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EDUCATION:

M.C.T.M	Clinical Tropical Medicine	Mahidol University, Thailand
D.T.M&H	Tropical Medicine and Hygiene	Mahidol University, Thailand
M.B., B. S.	Medicine	Institute of Medicine, Mandalay, Myanmar.

WORK EXPERIENCE:

Medical Training Coordinator	International Rescue Committee (IRC), Tak, Thailand	24/09/2008 to present
Medical Trainer	Aide Medicale Internationale (AMI), Tak, Thailand	01/10/2007 to 31/5/2008
Medical Officer	International Rescue Committee (IRC), Mae Hong Son, Thailand	01/04/2007to 30/09/2007
Program Manger (Psychosocial Dept)	International Rescue Committee (IRC), Mae Hong Son, Thailand	01/06/2006 to 31/03/2007
Health Officer	International Rescue Committee (IRC), Bangkok, Thailand	01/03/2003 to 31/03/2005
General Practitioner	Mandalay, Myanmar	01/04/2000 to 31/03/2002
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