

ASSOCIATION OF MATERNAL KNOWLEDGE AND HEALTH SERVICE TO
IMMUNIZATION STATUS OF MYANMAY MIGRANT CHILDREN AGED 1-2 YEARS IN TAK
PROVINCE THAILAND



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แรงงานข้ามชาติจากพม่า อายุ ๑-๒ ปี จังหวัดตาก ประเทศไทย



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ปัจจุบันการเสริมสร้างภูมิคุ้มกันในเด็กเล็กนับเป็นสิ่งที่มีความสำคัญและป้องกันการเสียชีวิตของเด็กจากโรคที่ป้องกันได้โดยวัคซีน ข้อมูลประชากรต่างชาติโดยสำนักงานสาธารณสุขจังหวัดตาก 2554 พบว่ามีประชากรต่างชาติประมาณ 2 แสนคน อาศัยอยู่ใน 4 อำเภอชายแดนด้านตะวันตกของประเทศไทยและพม่า ที่ยังไม่สามารถเข้าถึงบริการทางด้านสุขภาพได้อย่างทั่วถึง มีความครอบคลุมของการรับวัคซีนขั้นพื้นฐานที่ยังต่ำกว่าเกณฑ์มาตรฐาน (ร้อยละ 90) ทั้งยังมีอุบัติการณ์ของโรคที่ป้องกันได้โดยวัคซีน เช่น หัด และ คอตีบ ในกลุ่มประชากรดังกล่าวด้วย เพื่อเป็นการเพิ่มความครอบคลุมของการรับวัคซีนขั้นพื้นฐาน และพัฒนางานสร้างเสริมภูมิคุ้มกันในพื้นที่ดังกล่าว งานวิจัยนี้จึงได้ศึกษาความสัมพันธ์ของความรู้มารดาและบริการสร้างเสริมภูมิคุ้มกันต่อการรับวัคซีนขั้นพื้นฐานในกลุ่มเด็กแรงงานข้ามชาติจากพม่า อายุ 1-2 ปี จังหวัดตาก ประเทศไทย โดยได้ศึกษาร้อยละของความครอบคลุมวัคซีนพื้นฐาน 5 ชนิดคือ BCG HBV OPV DTP และ MCV (MMR) ทั้งภาพรวมและแยกตามชนิดของวัคซีน โดยวิธีภาคตัดขวางและการเลือกแบบสุ่ม เครื่องมือในการศึกษาคือแบบสัมภาษณ์ แบ่งออกเป็น 4 ส่วนคือ ข้อมูลทางสังคมและประชากรศาสตร์ ความรู้เกี่ยวกับการรับวัคซีนพื้นฐาน การให้บริการวัคซีนขั้นพื้นฐาน และความครอบคลุมของการรับวัคซีนขั้นพื้นฐาน อาสาสมัครที่เข้าร่วมการวิจัยครั้งนี้คือ มารดาแรงงานข้ามชาติจากพม่าในพื้นที่ 4 อำเภอชายแดนจังหวัดตาก จำนวน 386 คน ข้อมูลที่ได้นำมาวิเคราะห์ศึกษาความสัมพันธ์ระหว่างตัวแปรและแปลผลความสัมพันธ์อย่างมีนัยสำคัญทางสถิติที่ค่า p น้อยกว่า 0.05 ผลการศึกษาพบว่า ความครอบคลุมของการรับวัคซีนขั้นพื้นฐานในกลุ่มเด็กแรงงานข้ามชาติจากพม่าอายุ 1-2 ปี มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับ อำเภอที่อาศัย ระยะเวลาที่อยู่ในชุมชน อาชีพของมารดา ศาสนา สถานที่ที่มารดาคลอดเด็ก ระดับความรู้ของมารดาเกี่ยวกับวัคซีนขั้นพื้นฐาน แหล่งข้อมูลและเนื้อหา อุปสรรคทางภาษาในการรับข้อมูล การได้รับสุขศึกษาและเนื้อหาขณะรับบริการ และระยะทางที่ต้องเดินทางไปยังสถานที่ให้บริการ ร้อยละความครอบคลุมภาพรวมของการรับวัคซีนขั้นพื้นฐานในกลุ่มเด็กแรงงานข้ามชาติจากพม่าอายุ 1-2 ปี คือ 56.7 ส่วนร้อยละความครอบคลุมในการรับวัคซีนขั้นพื้นฐานแต่ละชนิด คือ BCG 98.4 HBV 82.9 OPV1 /DTP1/HBV1 95.1 OPV2 /DTP2/HBV2 82.4 OPV3 /DTP3/HBV3 68.4 และ MMR 66.1 ผลการศึกษาพบว่าร้อยละของความครอบคลุมในการรับวัคซีนขั้นพื้นฐานในเด็กแรงงานข้ามชาติจากพม่ายังต่ำกว่าเกณฑ์มาตรฐาน โดยเฉพาะ OPV3 /DTP3/HBV3 และ MMR การให้ความรู้เกี่ยวกับผลข้างเคียงของวัคซีนพื้นฐานโดยภาษาท้องถิ่น การพัฒนาระบบการให้บริการ ร่วมกันของสถานบริการทั้งในภาครัฐและภาคเอกชน ในประชากรแรงงานข้ามชาติในพื้นที่อย่างต่อเนื่องเป็นสิ่งที่สำคัญและจำเป็นในบริบทของพื้นที่ที่ทำการศึกษาในครั้งนี้

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DARAPORN PRAKUNWISIT: ASSOCIATION OF MATERNAL KNOWLEDGE AND HEALTH SERVICE TO IMMUNIZATION STATUS OF MYANMAY MIGRANT CHILDREN AGED 1-2 YESRS IN TAK PROVINCE THAILAND. ADVISOR: CHITLADA AREESANTICHAJ, Ph.D., 113 pp.

Immunization is one of the most powerful and cost effective protections in child survival technology. According to Tak Provincial Health Office data, the total migrant was approximately 200,000 living in four Thai-Myanmar border districts that could not fully access to health services and presented lower than global Expand Program on Immunization (EPI) standard coverage (90%) as well as reporting of vaccine preventable disease. To improve immunization coverage and service in these context, the study aimed to describe the association of maternal knowledge and health services of Myanmar migrant children aged 1-2 years in Tak and determine the coverage of under 1 year routine immunization (BCG , HBV, OPV,DTP and MCV (MMR) including the coverage of each type of the vaccines. A study was conducted by using a structured questionnaire and interviewed 386 Myanmar migrant mothers living in four Thai – Myanmar border district. The result found that district, occupation, place of delivery, level of knowledge regarding immunization, source of information, content of information, language barrier of receiving information, health education and its content during immunization service were significantly associate ($p < 0.05$) with immunization status of children. The overall coverage of under 1 year routine immunization was 56.7% ; by types of vaccine BCG, HBV at birth , first , second and third dose of OPV/DTP/HBV combine vaccine and MMR were 98.4%, 82.9%, 95.1%, 82.4%, 68.4%, 66.1% which is lower compared to immunization coverage of Thailand. The overall EPI coverage among Myanmar migrant age 1-2 years living in the study area still lower than global EPI standard coverage especially OPV3/DTP3/HBV3 and MMR. Knowledge regarding vaccine side effect and content in local migrant language should be introduced. Local service providers and private agencies need to aware of appropriate approach and services to differences characteristic in order to strengthen EPI program.

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LIST OF ABBREVIATIONS

BCG	Bacille de Calmette et Guerin
CCSDPT	Committee for Coordination of Services to Displace Persons in Thailand
DT	Diphtheria and Tetanus
DTP	Diphtheria and Tetanus and Polio
EPI	Expand Program on Immunization
FED	Foundation of Education and Development
GIVS	Global Immunization Vision and Strategy
HBV	Hepatitis B Vaccine
IOM	International Organization for Migration
IRC	International Rescue Committee
MCV	Measles Contain Vaccine
MMR	Mump Measles Rubella
MoPH	Ministry of Public Health
OPV	Oral Polio Vaccine
PDR	People's Democratic Republic
PHO	Provincial Health Office
PLE	Project for Local Empowerment
TB	Tuberculosis
TBBC	Thai Burma Border Consortium

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
VPD	Vaccine Preventable Vaccine
WHO	World Health Organization



CHAPTER I

INTRODUCTION

1.1 Background and Rationale

Immunization is a fundamental human right which governments having acknowledged by signing a succession of treaties, including the 1989 UN convention on the Rights of the Child and it is also one of the most powerful protections in child survival technology (1). Mortality and morbidity caused by child killer diseases (tuberculosis, poliomyelitis, diphtheria, whooping cough, neonatal tetanus, measles and hepatitis B) are major health problems in the world. Immunization against preventable childhood illnesses is very important for improving the health of children. Immunization campaigns are one of the most successful and cost-effective public health interventions available today. It has saved in the vicinity of twenty million lives in the last two decades (2). However, one fifth of the world's children, especially those in low-income countries, still were not fully vaccinated during the first year of life. In 2005, WHO and the United Nations Children's Fund (UNICEF) developed the Global Immunization Vision and Strategy (GIVS) to improve national immunization programs and decrease vaccine-preventable disease-associated morbidity and mortality. A goal was to reach a sustained national DTP3 coverage of 90% in all countries. Among 194 WHO member states, 130 (67%) achieved $\geq 90\%$ national DTP3 coverage. More than half of all incompletely vaccinated children (i.e., those who did not receive DTP3) lived in one of three countries: India (32%), Nigeria (14%), and Indonesia (7%) (3).

Strengthening routine immunization services, especially in countries with the greatest number of under vaccinated children, should be a global priority to help achieve the fourth Millennium Development Goal of reducing mortality among children aged < 5 years by two thirds from 1990 to 2011(4). Beyond the traditional four Expand Program on Immunization (EPI) vaccines, several newer vaccines are increasingly utilized by national immunization program(3). By the end of 2011, hepatitis B vaccine had been introduced into routine childhood vaccination

schedules in 180 countries and 94 countries recommended the first dose within 24 hours of birth to prevent perinatal transmission(3). Worldwide coverage with 3 doses of hepatitis B vaccine was 75% and ranged from 56% in the South-East Asia Region to 91% in the Western Pacific Region (4).

In South-East Asia Region, BCG vaccine coverage is quite high whereas the other vaccines such as DTP3 are still lower than the global average for routine immunization coverage. The overall coverage for children immunization in Thailand is higher than most of the countries in South East Asia Region according to WHO/UNICEF coverage estimate (5). Albeit the remarkable improvement in immunization, the immunization coverage in Myanmar is declining compare to Thailand. It may be attributable to the inadequate allocations of human and financial resources to implement plans at provincial and district level, limitation in supervision and data use, lack of infrastructure and civil conflicts. According to Annual Committee for Coordination of Services to Displaced Persons in Thailand (CCSDPT) health information report of Thai-Myanmar Border, border-wide under 5 mortality rate is 28.0. Comparing this rate to Thailand and Myanmar, the border-wide rate is higher than Thailand's rate of 21 and much lower than Myanmar's rate of 105 (per 1000 live births) (6). From the Burmese Migrant Maternal and Child Health Survey by Mark and Foundation for Education and Development, Thailand (FED) found that 23% of children may not be adequately vaccinated, 76% of women had vaccination cards for their children and 24% did not have vaccine card (6) . Unfortunately, in Yangon division, Khayan Township, there was a polio outbreak in April, 2007 (NIDs, 2007) as well as reporting of Measles outbreak in Tak temporary shelter.

It is estimated that 10% of migrants are legally registered and most do not use the Thai health services; as a result, children of migrant workers rarely receive immunizations (7). 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 (8). Tak is a north-western province of Thailand, which shares its western border with Myanmar. It located about 600 km. from Bangkok and close to Thai-Myanmar border. Tak is a relatively small province with a population of about half a million of Thai citizenship in addition to

305,871 migrants in nine districts (9). Thai Government maintains immunization records for all Thai children but not for migrant children living on the Myanmar border. The Thai district health authorities attributed this to difficulties completing immunization courses due to the mobile nature of these communities. By early of 2012 a based line survey conducted in four border districts of Tak-Myanmar; Ta Song Yang, Ma Ra Mad, Mea Sot and Phop Pra by the Project for Local Empowerment (PLE) under International Rescue Committee (IRC), data showed only 53.7% of Burmese migrant children age 1-2 years living in four border district in Tak fully immunized according to less than 1 year Thailand national immunization schedule. This revealed a big gap between global immunization coverage goal and the real migrant immunization status some specific area. Although there is a growing concern about children immunization status, there has been few research into assessing the reasons why mothers do not bring their child to receive immunization or why a child did not fully immunized in Myanmar migrant context. This study purposes to describe the association of maternal knowledge and health services to migrant children immunization status using a cross-sectional survey in Tak province, Thailand. This study attempts to provide baseline information and recommendation service provider.

1.2 Research Question

1. Does maternal knowledge associate to migrant children age 1 – 2 years immunization status?
2. Does health service associate to migrant children age 1 – 2 years immunization status?
3. What is immunization coverage of migrant children age 1 – 2 years in Tak province?
4. What are specific types of vaccine coverage for of migrant children age 1 – 2 years in Tak province?

1.3 Research Objective

1. To describe the association between and between maternal knowledge and migrant children aged 1 – 2 years immunization status.

2. To describe the association between health service and migrant children aged 1 – 2 years immunization status.
3. To determine immunization coverage of migrant children age 1 – 2 years in Tak province.
4. To determine specific type of vaccine coverage of migrant children age 1 – 2 years in Tak province.

1.4 Operational definitions

Immunization means the kinds and doses of vaccines, which are necessary for children under 1 year of age, according to the EPI program of Thailand.

Complete immunization means child who has received all the vaccines due to his/her age according to EPI schedule in Thailand. There are one dose of BCG and Hepatitis B at birth, three doses of OPV/ DPT/ HBV that started at eight weeks of age with eight weeks interval and MCV (MMR) one dose at the age of nine months (1 BCG, 3HBV, 3 DPT, 3 OPV and 1 MMR).

Incomplete immunization means child who have not received one or more vaccines due to his/her age or those who never achieved any vaccination according to EPI schedule in Thailand. (1 BCG, 3HBV, 3 DPT, 3 OPV and 1 MMR)

Maternal knowledge is defined as knowing and understanding of mother about the vaccine preventable diseases, vaccine side effects and immunization schedule.

Vaccine preventable diseases refer to names of disease that can be prevented by under one year immunization schedule which are Tuberculosis, Diphtheria, Pertussis, Poliomyelitis, Tetanus, Hepatitis B and Measles.

Vaccine's side effects are the common side effects of vaccination which are fever, redness, swelling and soreness.

Health service refers to information regarding immunization service, provider practice, waiting time and outreach clinic availability

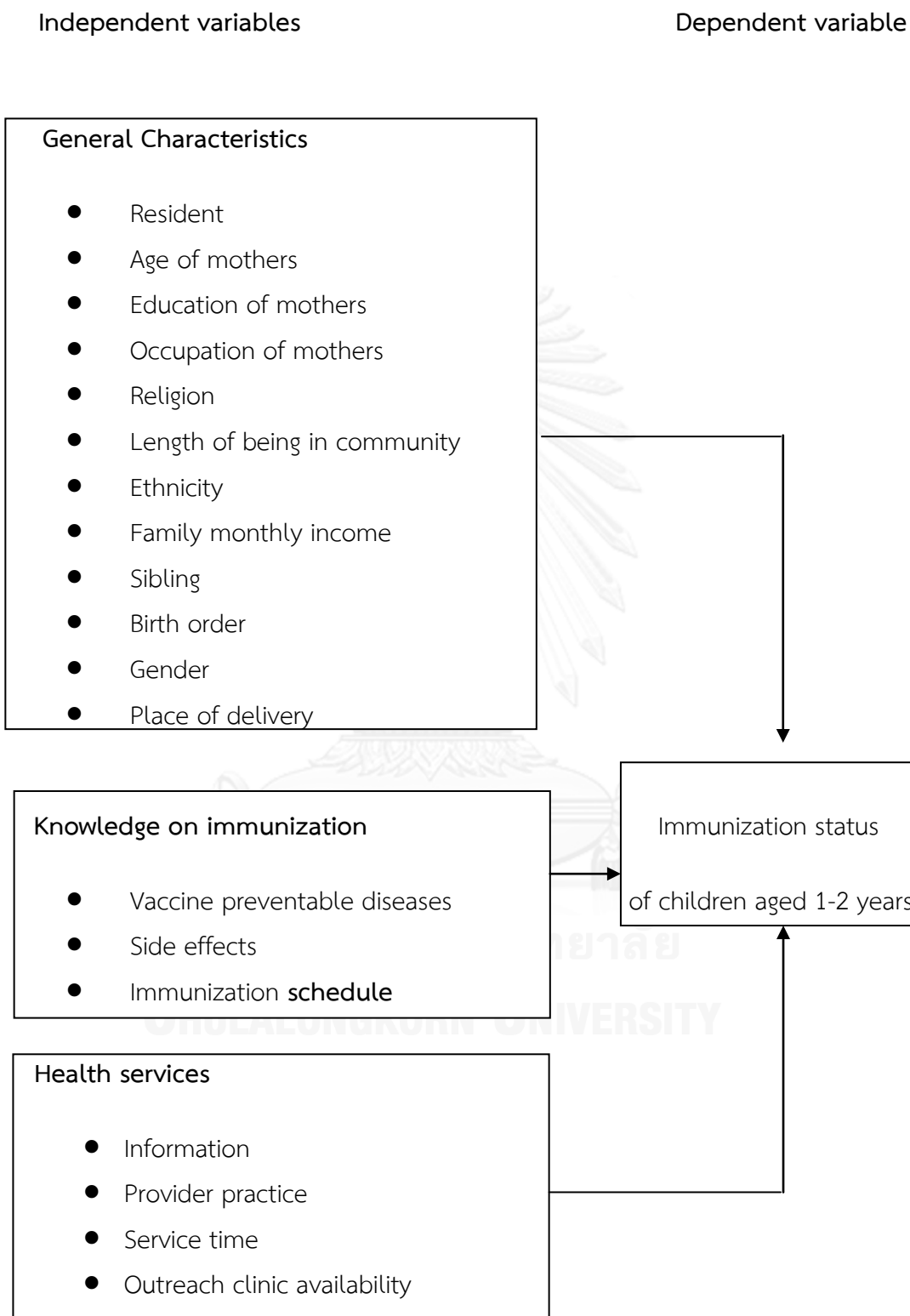
Information regarding immunization service refers to next appointment date and place, vaccine preventable disease, side effect of vaccine and consequences of unvaccination, additional reminder strategy to link the timing and venue of the return visit, language barriers for information providing.

Provider practice refers to home visit by health provider, health education regarding immunization during the service, vital sign screening, availability of interpreter during and availability of vaccination card.

Service time means time in minutes of children arrive health facility until all process at immunization place complete and time of receiving health education during the service.

Outreach clinic availability means availability of outreach immunization in community organized by local service provider

1.5 Conceptual framework



CHAPTER II

LITERATURE REVIEW

Proposes of chapter two are to describe immunization situation, related theories, concepts related to the research as following topics.

2.1 Situation of Expand Program on Immunization

2.2 Concept of immunization

2.3 Vaccine preventable disease

2.3.1 Tuberculosis (TB)

2.3.2 Diphtheria

2.3.3 Pertussis (Whooping cough)

2.3.4 Tetanus

2.3.5 Poliomyelitis (Polio)

2.3.6 Measles

2.3.7 Mump

2.3.8 Rubella

2.3.9 Hepatitis B

2.4 Concept of knowledge on immunization

2.5 Concept of immunization service

2.5.1 Immunization system and policy

2.5.2 Routine dose criteria

2.5.3 Provision of routine immunization service

2.5.3.1 Health facilities

2.5.3.2 Recording

2.5.3.3 Communication

2.5.3.4 Information

2.5.3.5 Reminder

2.5.3.6 Missed opportunity

2.5.3.7 Reduction of barriers to immunization

2.5.3.8 Theory Related research

2.7.1 General characteristic

2.7.2 Knowledge of immunization

2.7.3 Health service of immunization

2.7.3.1 Information

2.7.3.2 Provider practice

2.7.3.3 Waiting time

2.7.3.4 Outreach service

2.1 Situation of Expanded Program on Immunization

The expanded program of immunization activities was adopted in SEA regions emphasizing to be an essential component of maternal and child health and primary health care during the period of 1977 – 1984 with the goal of ensuring that by 1990 all the world's children are protected against six killer diseases: measles, poliomyelitis, diphtheria, pertussis (whooping cough), tetanus and tuberculosis.

Immunization coverage of South East Asia in 2011 revealed that there was a different between Thailand and Myanmar immunization coverage especially in

Hepatitis B vaccine. (See table 1) Thus it is useful to study the situation of immunization coverage in a specific area such as Thai Myanmar border which presents as an area with high migration of Myanmar migrants in to Thailand.

Table 1 Immunization coverage of South East Asia Region (9)

Country	BCG	DTP 1	DTP 3	OPV 3	MCV	HEP B 3
Cambodia	99	96	94	94	93	94
Indonesia	97	93	83	92	89	83
Laos	77	83	78	79	69	78
Thailand	99	99	99	99	98	98
Myanmar	93	88	86	90	88	38
Vietnam	98	97	95	96	96	95
Philippine	84	85	80	80	79	76
Singapore	99	98	96	96	95	96
Malaysia	99	95	95	95	95	95
Brunei	96	96	97	99	91	93
East Timor	N/A	N/A	N/A	N/A	N/A	N/A
South East Asia	88	86	75	74	79	56

Table 2 Immunization coverage of South East Asia Region (10, 11)

Age	Vaccines
Birth	BCG, HB
6 week	OPV 1 , DTP - HB 1, Hib1,Rota.1,Pneumococcal
10 week	OPV 2 , DTP - HB 2, Hib2, Rota.2, Pneumococcal
14 week	OPV 3 , DTP - HB 3, Hib3, Rota.3, Pneumococcal
9 months	MMR

Table 3 Myanmar under 1 year immunization schedule (10)

Age	Vaccines	Hepatitis B Vaccine *,**	
Birth		HB 1*	
6 weeks	BCG, DTP 1, OPV 1	HB 2*	HB 1**
10 weeks	DTP 2, OPV 2		HB 2**
14 weeks	DTP 3, OPV 3	HB 3*	HB 3**
9 months	Measles		

* Schedule A is recommended in Hospital delivery where newborns are at risk of being exposed to hepatitis B through their mothers

** Schedule B is recommended in community of Home deliveries

Ministry of Health in Myanmar set up a National immunization coverage level at least 85% of all infants in all townships by the years 2005(12). However, Ministry of Health did not meet the objectives especially in Hepatitis B vaccine which covered only 38% in 2011 is a big concern for Myanmar ministry of health.

Table 4 Total minimum sample from each district (13)

Age	Vaccines
Birth	BCG ,HB
8 weeks	OPV 1 , DTP 1- HB 1
16 weeks	OPV 2 ,DTP 2 - HB 2
24 weeks	OPV 3,DTP 3 - HB 3
9 months	MMR

WHO recommends *Hemophilus Influenza b*, Rotavirus and Pneumococcal vaccine should be included for infants national immunization programs schedule but not all countries are in a stage of included those vaccines in the national immunization schedule. Thailand and Myanmar schedule are different at timing of BCG and HB vaccination and both countries do not include Hlb b, Rotavirus and Pneumococcal vaccine in the national schedule. This study will be done in Thailand, thus Thailand national immunization schedule for children under 1 year will be used as reference (13).

2.2 Concept of immunization

Vaccine is an immuno-biological substance designed to produce specific protection against a disease. It stimulates the production of protective antibody and other immune mechanisms. Vaccines may be prepared from live modified organisms, inactivated or killed organisms, extracted cellular fractions, toxoids or combination of these (14). Host defenses against infection are at once local and systemic, non-specific and specific, and humoral and cellular. The specific defenses included two types,

1. Active immunity which an individual develops as a result of infection or by specific immunization and is usually associated with presence of antibodies or

cells having a specific action on the microorganism concerned with a particular infectious diseases or on its toxin.

2. When antibodies produced in one body (human or animal) are transferred to another to induce protection against diseases, it is known as passive immunity.

2.3 Vaccine Preventable Diseases

2.3.1 Tuberculosis (TB)

Tuberculosis is caused by the bacterium *Mycobacterium tuberculosis* which usually attacks the lungs, but can also affect other parts of the body including the bones, joints, and brain. In 2001, approximated two million people worldwide died of tuberculosis(15).TB spread from one person to another through the air often when a person with the disease coughs or sneezes. TB spreads rapidly, especially in areas where people are living in crowded conditions, have poor access to health care, and are malnourished.

The Bacille Calmette–Guerin (BCG) vaccine has existed for 80 years and is one of the most widely used of all current vaccines, reaching >80% of neonates and infants in countries where it is part of the national childhood immunization program. BCG vaccine has a documented protective effect against meningitis and disseminated TB in children. It does not prevent primary infection and, more importantly, does not prevent reactivation of latent pulmonary infection, the principal source of bacillary spread in the community. BCG vaccine is not recommended after 12 months of age because the protection provided is variable and less certain (16).

2.3.2 Diphtheria

Diphtheria is caused by the bacterium *Corynebacterium diphtheria*. Diphtheria affects people of all ages, but most often it strikes unimmunized children. In temperate climates, diphtheria tends to occur during the colder months. In 2000, 30,000 cases and 3, 000 deaths of diphtheria were reported worldwide (15). Diphtheria transmitted from person to person through close physical and respiratory

contact. The most effective way of preventing diphtheria is to maintain a high level of immunization in the community.

Diphtheria is still a significant child health problem in countries with poor EPI coverage. Where EPI coverage is high and natural boosting low, as in most industrialized countries, a large proportion of the adult population is gradually rendered susceptible to diphtheria as a result of waning immunity. In most countries, diphtheria toxoid vaccine is given in combination with tetanus toxoid and pertussis vaccines (DTP vaccine) have been a part of the WHO Expanded Program on Immunization (EPI) since its inception in 1974 (17, 18).

2.3.3 Pertussis (Whooping cough)

Pertussis, or whooping cough, is a disease of the respiratory tract caused by bacteria that live in the mouth, nose, and throat. Many children who contract pertussis have coughing spells that last four to eight weeks. The disease is most dangerous in infants. In 2000, an estimated 39 million cases and 297,000 deaths occurred worldwide, due to pertussis. Pertussis spreads easily from child to child in droplets produced by coughing or sneezing.

Prevention involves immunization with pertussis vaccine, which is usually given in combination with diphtheria and tetanus vaccines (DTP vaccine). For several decades, program using pertussis vaccines of documented quality to immunize infants have been highly successful in preventing severe pertussis in infants worldwide (19). More recently, some countries have been using a combination vaccine that includes vaccines for diphtheria, tetanus, pertussis, hepatitis B, and sometimes *Haemophilus influenzae* type B (Hib).

2.3.4 Tetanus

Tetanus is acquired through exposure to the spores of the bacterium *Clostridium tetani* which are universally present in the soil. People of all ages can get tetanus but the disease is particularly common and serious in newborn babies. The overwhelming majorities of tetanus cases are birth-associated and occur in developing countries among newborn babies or in mothers following unclean

deliveries and poor postnatal hygiene. This is called neonatal tetanus. Most infants who get the disease die. Neonatal tetanus is particularly common in rural areas where most deliveries are at home without adequate sterile procedures. Tetanus in children and adults following injuries may also constitute a considerable public health problem (17, 18). In 2000, WHO estimates that neonatal tetanus killed about 200,000 babies (15).

Tetanus is not transmitted from person to person. A person usually becomes infected with tetanus when dirt enters a wound or cut. Tetanus germs are likely to grow in deep puncture wounds caused by dirty nails, knives, tools, wood splinters, and animal bites. Women face an additional risk of infection if a contaminated tool is used during childbirth or during an abortion. Immunizing infants and children with DTP or DT and adults with TT prevents tetanus.

2.3.5 Poliomyelitis (Polio)

Poliomyelitis, or polio, is a crippling disease caused by any one of three related viruses, poliovirus types 1, 2 or 3. All members stated of WHO agreed in 1988 to eradicate polio and WHO aims to certify the world as free of the disease by 2005. Since the global initiative to eradicate polio was launched, the number of reported cases of polio has been reduced from an estimated 350,000 in 1988 to 483 cases associated with wild polio virus in 2001 (WHO,2002). The only way to spread poliovirus is through the fecal – oral route. Polio can be prevented through immunization with oral polio vaccine (OPV) or inactivated polio vaccine (IPV). OPV is composed of live, attenuated polioviruses derived by passage of their parent WPV strains in nonhuman cells to give the 3 vaccine strains (Sabin 1, Sabin 2, and Sabin 3) (20, 21).

In the 15 years since the Global Polio Eradication Initiative was launched, the number of cases has fallen by over 99% from an estimated 350,000 cases in 1988, to 1919 reported cases in 2002. The number of polio-infected countries has been reduced from more than 125 to just 7 in 2002 (20, 21)All children worldwide should be immunized against polio, and every country should seek to achieve and maintain high levels of coverage with polio vaccine (20, 21).

2.3.6 Measles

Measles is a highly infectious disease caused by a virus. In 2001, it was estimated that there were 30 million measles cases and 745,000 measles related deaths. Measles kills more children than any other vaccine preventable diseases (15). Measles is spread through contact with nose and throat secretions of infected people and in airborne droplets released when an infected person sneezes or coughs. It is highly transmissible; almost all non-immune children contract measles if exposed to infection. Measles can be prevented by immunization with measles vaccine.

A number of live, attenuated measles vaccines are available, either as monovalent vaccine or as measles-containing vaccine (MCV) in combination with rubella, mumps or varicella vaccines, or some combination of these. When using the combined measles–rubella vaccine, measles–mumps–rubella (MMR) vaccine, the protective immune responses to each individual vaccine antigen as well as vaccine-associated adverse events remain largely unchanged (1, 22).

2.3.7 Mumps

Mumps is a viral infection of humans, primarily affecting the salivary glands. Humans are the only known natural host for mumps virus, which is spread via direct contact or by airborne droplets from the upper respiratory tract of infected individuals. The incubation time averages 16–18 days with a range of 2–4 weeks. Although it is mostly a mild childhood disease, with peak incidence occurring among those aged 5–9 years, the mumps virus may also affect adults, among whom complications such as meningitis and orchitis are relatively more common.

By December 2005, 110 of the 193 (57%) WHO Member States had included mumps vaccine in their national immunization program, the vast majority using the combined MMR vaccine. In countries where large-scale immunization against mumps has been implemented, disease incidence has dropped dramatically (1, 22).

2.3.8 Rubella

Rubella is an acute, usually mild viral disease traditionally affecting susceptible children and young adults worldwide. Rubella infection occurring just before conception and during early pregnancy may result in miscarriage, fetal death, or congenital defects known as congenital rubella syndrome (CRS). Apart from the congenital infection, rubella is a mild self-limited illness that usually occurs during childhood. During the second week after exposure, there may be a prodromal illness consisting of fever $<39.0^{\circ}\text{C}$, malaise and mild conjunctivitis, which is more common in adults.

Regions that had achieved high coverage with rubella vaccine during 1996–2008 had reduced incidences of CRS. Large-scale rubella vaccination during the past decade has drastically reduced or practically eliminated rubella and CRS in many developed countries and in some developing countries.

Rubella vaccines are available either as monovalent formulations or in combinations with other vaccine viruses, as RCVs. Commonly used RCVs are combinations with vaccines against measles (MR), measles and mumps (MMR), or measles, mumps and varicella (MMRV) (3, 23).

2.3.9 Hepatitis B

Hepatitis B is caused by a virus that affects the liver. Adults who get hepatitis B usually recover. However most infants infected at birth become chronic carriers i.e. they carry the virus for many years and can spread the infection to others. In 2000, there were an estimated 5.7 million cases of acute hepatitis B infection and more than 521,000 deaths from hepatitis B related disease (15).

- Through an unsafe injection or needle stick
- Transmission of the virus by mothers to their babies during the birth process, when contact with blood always occurs
- Transmission during sexual intercourse through contact with blood or other body fluids

As of 2008, 177 countries had incorporated hepatitis B vaccine as an integral part of their national infant immunization program, and an estimated 69% of the 2008 birth cohort received 3 doses of hepatitis B vaccine. In 2006, approximately 27% of newborns worldwide received a birth dose of hepatitis B vaccine. In recent years, the significantly reduced price of hepatitis B vaccine in developing countries has facilitated its introduction into many more countries. Perinatal or early postnatal transmission is an important cause of globally hepatitis chronic infections. All infants should receive their first dose of hepatitis B vaccine as soon as possible (<24 hours) after birth even in low-endemicity countries (1, 22). The primary hepatitis B immunization series conventionally consists of 3 doses of vaccine (1 monovalent birth dose followed by 2 monovalent or combined vaccine doses at the time of DTP1 and DTP3 vaccine doses). However, 4 doses may be given for programmatic reasons (e.g. 1 monovalent birth-dose followed by 3 monovalent or combined vaccine doses with DTP vaccine doses), according to the schedules of national routine immunization program (1, 22).

2.4 Concept of knowledge on immunization

Privately counseling is the best way to give parents information on when and where to bring their child for the next vaccination. However, simply giving people information is not enough; the message must be understood and remembered. Always ask mothers/parents to repeat the information you have given them to increase chances that mothers will remember when to return. There are five essential messages that clients/parents should receive if they or their children are to be fully protected against the EPI diseases (24).

- 1) Explain what vaccines are to be given and the disease is that this vaccine will prevent. Tell the mother/parent and the illness the vaccine protects against. Emphasize the need to complete the schedule to ensure full protection for their children and themselves
- 2) Explain to the mother/parent that the expected side effects for each vaccine given and that they are normal. Those side effects are usually mild compared

to the disease the child can get if he/she is not immunized as well providing suggestion on how to relief side effects.

- 3) Tell the caretaker the place and time of the next immunization .It is important for the mother/parent to understand the place and time for the next immunization schedule. This is particularly important if you are changing locations as in outreach sessions. Inform the mother/parent about to attend the next immunization session, particular day and time of the next immunization. Explain this in a way that the mother/parent will understand. Be sure that the mother/parent repeats the time and date back to you so that you know she has understood.
- 4) Bring the child for immunization even if he/she is sick immunization is important even for a sick child. Inform the parent that if the child has a cold or is not feeling well that he/she should be brought to the health worker. It is especially important to immunize the sick or malnourished child because they are most vulnerable to catching serious childhood diseases.
- 5) Take good care of the immunization card and to bring it every time the mother and/or child come to a health facility. Remind the clients/parents of the importance of the immunization card/home health booklet that the immunization card is a record of services provided and services still needed to fully protect the client.

Each of the five messages should be given more than once. The likelihood of their being remembered increases if different health workers give them, e.g. the one giving immunizations and the one completing the paperwork at the exit point. Check clients' understanding by asking questions .Knowledge is an important variable to the change and supporting of health manners. Thus, this study will use the level of knowledge of mother on immunization status of children among 1 – 2 years in which divided into three levels – low, moderate and high levels of knowledge.

2.5 Concept of immunization service

The Expanded Program on Immunization (EPI) was established in 1974 through a World Health Assembly resolution to build on the success of the global smallpox eradication program, and to ensure that all children in all countries benefited from life-saving vaccines (3, 23). The first diseases targeted by the EPI were diphtheria, whooping cough, tetanus, measles, poliomyelitis and tuberculosis. Global policies for immunization and establishment of the goal of providing universal immunization for all children by 1990 were established in 1977, this goal was considered an essential element of the WHO strategy to achieve health for all by 2000.

In 2010, an estimated 85% of children less than one year of age globally had received at least three doses of DTP vaccine. Additional vaccines have now been added to the original six recommended in 1974. Most countries, including the majority of low-income countries have added hepatitis B and *Haemophilus influenzae* type b (Hib) to their routine infant immunization schedules and an increasing number are in the process of adding pneumococcal conjugate vaccine and rotavirus vaccines to their schedules (13, 25, 26). The Expanded Program on Immunization remains committed to its goal of universal access to all relevant vaccines for all at risk. The program aims to expand the targeted groups to include older children, adolescents and adults and work in synergy with other public health program in order to control disease and achieve better health for all populations, particularly the underserved populations.

2.5.1 Immunization system and policy

Appropriate policies and strong immunization systems are needed to ensure that potent vaccines are provided safely to every person who needs them. The main components of a well-functioning immunization system include: service delivery; capacity to maintain vaccines at the right temperature and distribute them through the system in a timely manner; monitoring and surveillance; trained health workers; and program planning and management (25, 26).

2.5.2 Routine dose criteria

Three criteria need to be met in order for immunization to be defined and counted as a routine dose (23).

1. Vaccination screen the child for age, vaccination history and contraindication using vaccination card and/or caregiver recall and makes the decision to vaccination only if the child is due according to the national immunization schedule.
2. The vaccination dose and the date it was administered is recorded on all of the following; Child health /Immunization card, register and session tally sheet. The vaccination dose is reported on the monthly summary.
3. The vaccination is reported in the local and national administration data collection system.

2.5.3 Provision of routine immunization services

2.5.3.1 Health facilities

There are several strategies for the routine delivery of immunization services in or from health facilities. Fixed facility refers to the regular delivery of vaccinations in a health facility on specified days of the week and hours of the day. Larger facilities may give vaccinations whenever eligible clients come.

Outreach is the delivery of services to people who cannot get to health facilities or who can do so only with difficulty and mobile strategy is usually describes trips of more than one day by district or regional health workers for the purpose of delivering services to people living in remote areas (27).

2.5.3.2 Record keeping

Patient records are of very importance in a medical practice. Maintaining these paper or electronic records is critical to providing optimal healthcare. Immunization records should meet all applicable legal requirements as well as requirements of any specific program (27).

Immunization records must be accurate. The active medical records must reflect which patients are actually in the practice; charts of persons who have moved or are obtaining services elsewhere should be clearly marked accordingly or removed. Records should be kept up-to date as new immunizations are administered, and all information regarding the vaccine and its administration should be complete.

2.5.3.3 Communication

Patients often receive vaccines at more than one provider office; communication between sites is necessary for maintaining complete and accurate immunization records. School-based, public health, and community based immunization sites should communicate with primary care personnel through quick and reliable methods (27).

2.5.3.4 Information

Recommendations to parents and reinforcement of the need to return is essential for immunization service delivery. The recommendation of a healthcare provider is a powerful motivator for patients to comply with vaccination recommendations. Parents of pediatric patients are likely to follow vaccine recommendation of the child's doctor, and even adults who were initially reluctant were likely to receive vaccination when the healthcare provider's opinion of the vaccine was positive (27).

Regardless of their child's true immunization status, many parents believe the child is fully vaccinated. Parents may not have been told or may not have understood that return visits are necessary. It is useful for patients to have the next appointment date in hand at the time they leave the provider's office. An additional reminder strategy is to link the timing of the return visit to some calendar event such as the child's birthday or an upcoming holiday. Even with written schedules or reminders, a verbal encouragement and reminder can be an incentive for a patient's completing the immunization series and can ultimately result in higher coverage levels.

2.5.3.5 Reminder

Patient reminders and recall message are messages to patients or their parents stating that recommended immunizations are due soon (reminders) or past due (recall messages) (27). The messages vary in their level of personalization and specificity. The mode of communication can be home visit, community announcement, postcard, letter or phone call. Both reminders and recall messages have been found to be effective in increasing attendance at clinics and improving vaccination rates in various settings.

2.5.3.6 Missed opportunity

A missed opportunity is a healthcare encounter in which a person is eligible to receive a vaccination but is not vaccinated completely. Missed opportunities occur in all settings in which immunizations are offered, whether routinely or not. Missed opportunities occur for several reasons. At the provider level, many nurses and physicians avoid simultaneous administration of four or even three injectable vaccines. Frequently stated reasons have included concern about reduced immune response or adverse events, and parental objection. These concerns are not supported by scientific data. Providers also may be unaware that a child is in need of vaccination (especially if the immunization record is not available at the visit) or may follow invalid contraindications. Some of the reasons for missed opportunities relate to larger systems such as a clinic that has a policy of not vaccinating at any visits except well-child care, or not vaccinating siblings.

Other reasons relate to large institutional or bureaucratic regulations, such as state insurance laws that deny reimbursement if a vaccine is given during an acute-care visit. The degree of difficulty in eliminating the missed opportunity may vary directly with the size of the system that has to be changed. Several studies have shown that eliminating missed opportunities could increase vaccination coverage by up to 20 percent (27).

2.5.3.7 Reduction of barriers to immunization

Despite efforts by providers to adhere to appropriate immunization practices, obstacles to patients' being vaccinated may exist within the practice setting, sometimes unknown to the provider. Barriers to immunization can be physical or psychological. Physical barriers might be such things as inconvenient clinic hours for working patients or parents, long waits at the clinic, or the distance patients must travel. Providers should be encouraged to determine the needs of their specific patient population and take steps, such as extending clinic hours or providing some immunization clinics, to address obstacles to immunization. Cost is also a barrier to immunization for many patients. In addition to evaluating their fee schedule for possible adjustments is useful for providers.

Psychological barriers to health care are often more subtle but may be just as important. Unpleasant experiences (fear of immunizations, being criticized for previously missed appointments, or difficulty leaving work for a clinic appointment) may lead clients to postpone receiving needed vaccinations. Concerns about vaccine safety are also preventing some parents from having their children immunized. Overcoming such barriers calls for both knowledge and interpersonal skills on the part of the provider—knowledge of vaccines and updated recommendations and of reliable sources to direct patients to find accurate information, and skills to deal with fears and misconceptions and to provide a supportive and encouraging environment for patients (27).

2.6 Theory

2.6.1 Protection Motivation Theory (28).

Protection Motivation Theory (PMT; Rogers 1983) was originally developed to explain how people respond to fear-arousing health threat communications or 'fear appeals.' It can be regarded as an adaptation of the HBM. Protection motivation refers to the motivation to protect oneself against a health threat; it is usually defined operationally as the intention to adopt the recommended action. Of the determinants of intention specified by the model, the four that have received the most practical attention are vulnerability and severity (equivalent to perceived

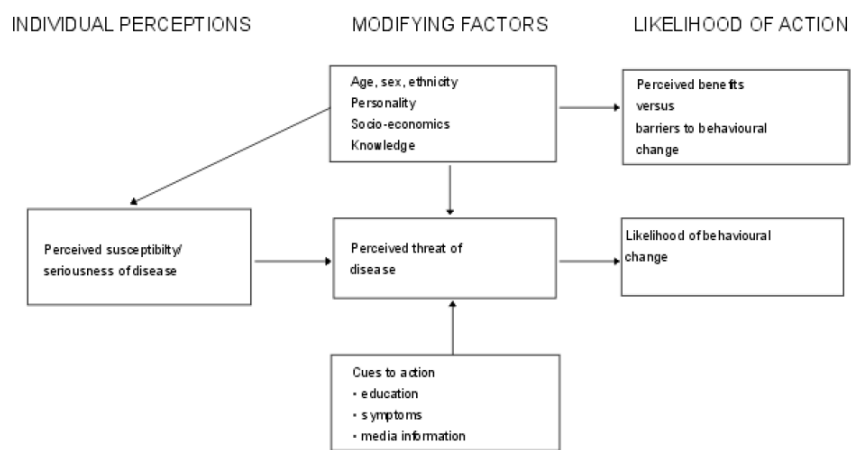
susceptibility and severity in the HBM), response efficacy (the belief that the recommended action is effective in reducing the threat), and perceived self-efficacy (the belief that one can successfully perform the recommended action; Bandura 1997). Thus, a person will be more motivated to protect himself or herself (have a stronger intention to adopt the recommended action) to the level that he or she believes that the threat is likely if the current course of action is continued, that the consequences will be serious if the threat occurs, that the recommended action is effective in reducing the likelihood or the severity of the threat, and that he or she is able to carry out the recommended action. In many studies using this model (Wurtele and Maddux 1987), specific PMT variables are experimentally manipulated in a factorial design and their effects on intention (and sometimes behavior) are measured. In fact, PMT is unique among social cognition models with respect to the relatively large number of experimental tests that have been conducted. To date, two meta-analyses of PMT studies have been conducted (Floyd et al. 2000, Milne et al. 2000). The analyses used different study inclusion criteria and different effect size measures. Floyd et al. analyzed 65 studies with about 30,000 research participants whereas Milne and colleagues included 27 studies with about 8,000 participants. There were only 12 studies in common. Both analyses found support for each of the main PMT variables as predictors of intentions and/or behavior. Self-efficacy had the strongest, most consistent, and most robust effect.

2.6.2 Health Belief Model (29).

The Health Belief Model (fig. 1) proposes that people make their health decisions based on their perceived susceptibility to disease, their perceived severity of the disease, their perception of benefits versus costs, and cues to action (Janz & Becker 1984). The perceived susceptibility to disease can be described as the subjective perceived risk of contracting a disease (Janz & Becker 1984). The perceived severity of disease is the subjective feeling concerning the seriousness of disease including medical and social consequences. The perception of benefits versus costs is the evaluation of the effectiveness of different actions that can be taken to reduce the disease threat (Janz & Becker 1984). Cues to action are those things which signal a person to take action in receiving care such as the advice of a friend, an ad in

the media, or the advice of a healthcare professional (Janz & Becker 1984). The “perceived barriers to care” part of the 4 model includes emotional, economic, or social, physical, etc. factors that prevent one from seeking care. It encompasses the tangible costs that influence decision to seek care (Janz & Becker 1984) Using the Health Belief Model, the decision to vaccinate can be seen as a “function of perceived susceptibility to and severity of disease as well as concern about vaccine benefits and risk” (Meszaros et al 1996). The Health Belief Model is also used to predict health behaviors. If people are seen as fitting certain characteristics, then it is believed that one can possibly predict their behavior.

Figure 1 Health Belief mode

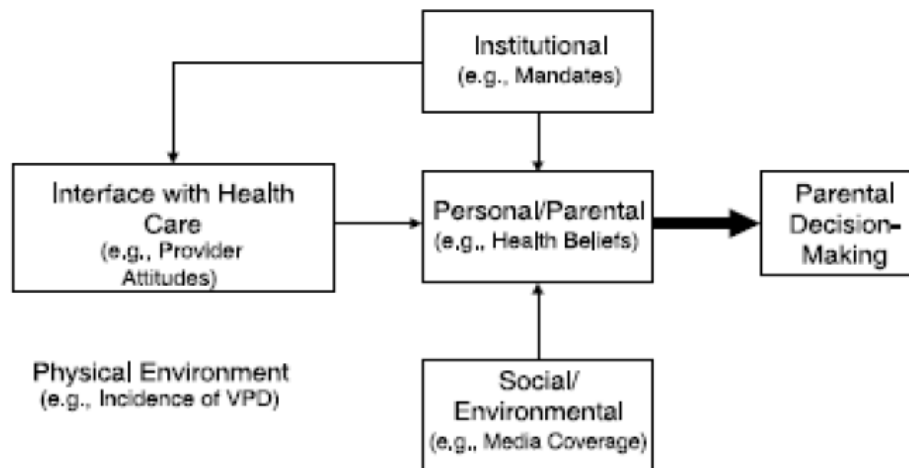


From Glanz ,et al 2002

Applied to vaccination choice, these theories and models can inform how and why parents make their choices. Vaccination is in most cases an effective and safe means of preventing the spread of infectious diseases, but for parents the decision that they make can be complicated. Parental vaccination decision is influenced by multiple factors. The perceived susceptibility of their child to illness, the perceived safety and efficacy of vaccines, their personal past experiences with vaccination and the experiences of others, the advice of professionals or their personal health beliefs all have an impact on a parent’s decision.

Making decisions on the behalf of their children can be difficult and many parents whether they support vaccination or not decide to make a mistake on the side of caution. (Fig.2)

Figure 2: Figure 2 Conceptual Model of Parental Decision Making



From Sturm et al, 2005

According to Health Belief Model core concept, immunization status of children totally depends on parental decision. Parental decision depends on their perceived susceptibility to disease, their perceived severity of the disease, their perception of benefits and cues to action or decision to take children to the immunization for this study. Knowledge leads to perceive changing then cues to action. Thus, health belief model is a theory this study referred.

2.7 Related research

2.7.1 Immunization status of children

In an urban area, Sisattanak District, Vientiane municipality, Lao PDR, the study of Sundara S., in 2002 stated that 29.1% of children was incompletely immunized.(30) But the study of Keochanthala S., in Khammuane Province, Lao PDR, in 2002 resulted in total 63% of incomplete immunization with 19.4% of BCG, 53.1% of DTP, 46.5% of OPV and 54.2% of Measles (31, 32). The study of Myanmar migrant children of Mahachi District, Samutsakorn Province, Thailand in 2006 by Aye MY.,

resulted in the 88% was incompletely immunized children with BCG and Measles immunization rates were quite high with 88% and 86.7% respectively while DTP and OPV complete 3 doses were very low with 27.3% (33).

A study conducted by Ei Ei Hlaing., in Mahachai district, Samutsakorn province, Thailand in 2007 showed that the incomplete immunization was 60.7% and the complete immunization was 39.3% with the percentage of BCG vaccination 96.7%, third dose of DTP and OPV 59.6% and Measles vaccination 44.3% (6).

2.7.2 Knowledge of mothers on immunization

A study on factors influencing the immunization of children 1 – 5 years of age a survey in Tumbol Nongrong, Panomtaun district, Kanchanaburi province, Thailand in 1987 by Sa – Nga Boonumrung showed that knowledge of immunizable diseases of parents, socio-economic status, distance to health centre, transportation and primary health activities had no effect on immunization coverage (34).

A study on factors affecting non-fully immunization among children aged 24 – 36 months in an urban area, Sisattanak district, Vientiane municipality, Laos in 2002 by Sisavanh Sundara showed that the overall knowledge was not found statically associated with the children immunization status ($P>0.05$) (32).

A study on social factors affecting the use of immunization in Indonesia, 1988 by results also show that knowledge of the disease-prevention function of the specific vaccines is important, and it is recommended that vaccines be given names which incorporate the name of the disease which they prevent.

Factors influencing attendance to immunization sessions for children in a rural district of Ghana The major factors hindering attendance were poor knowledge about immunization, Only 113 (26%) mothers had adequate knowledge of immunize able diseases; 82 (19%) did not know any. Although most mothers thought immunization was necessary for their children, their knowledge about EPI diseases and schedule was inadequate. They knew less than three immunize able diseases or exaggerated the protective benefits of immunization (35).

Siharath D., studied in Sanakham district, Vientiane province, Lao PDR in 2003 also resulted in significant relationship between knowledge mothers and immunization status of children. Mothers of good knowledge led to 11.3% incomplete immunization of children comparing with poor knowledge to 50.9% incomplete immunization of children (36).

In 2007, a study of Maekawa M. et al. on factors affecting routine immunization coverage among children aged 12-59 months in Lao PDR after regional polio eradication in Western Pacific Region result showed influential factors on fully immunized child was distance, literacy, possession of livestock; mothers knowledge of immunization target disease and measles immunization schedule.

The study in Thailand, conducted by Aye MY., in 2006 showed the significant relationship between the knowledge of the mothers and incomplete immunization of children because the low level of knowledge led to 95.5% incomplete immunization while the moderate and high to 4.5% (37).

Chokchai M. studied in Mahachai district, Samutsakorn province, Thailand in 2007 resulted as the overall knowledge of mothers were 63.4% with moderate knowledge, 29% with poor knowledge and 7.7% with good knowledge about immunization (6).

2.7.3 Health service

Health services include all services dealing with the diagnosis and treatment of disease, or the promotion, maintenance and restoration of health. They include personal and non-personal health services.

Health services are the most visible functions of any health system, both to users and the general public. Service provision refers to the way inputs such as money, staff, equipment and drugs are combined to allow the delivery of health interventions.

Improving access, coverage and quality of services depends on these key resources being available; on the ways services are organized and managed, and on incentives influencing providers and users (26).

2.7.4 Information

In a study of Budisuhardja D., in rural areas of Chonburi province, Thailand in 1995 described that 19.4% of mothers admitted that they had not received information about the true contraindication of immunization from the health care personnel whereas significant association between information of true contraindication on immunization and completeness of vaccination. But a significant association was not evident between completeness of vaccination and first appointment for giving the first dose of vaccine from health care personnel to mothers (38).

A study conducted by Chokchai M. in Mahachai district, Samutsakorn province, Thailand in 2007 stated that 87.4% received any information about immunization of children. Most of them (71.6%) received from health personnel and some of them (67.2%) received from leaflet/magazines. In addition, those who received information about immunization had 41.9% of complete immunization of children whereas 58.1% of incompletely immunized children comparing with those who did not received information. And there was no significant association between source of information about immunization and immunization status of children ($p=0.065$) (6).

From Riccardo F. study on Migrant's access to immunization in Mediterranean Countries, 2012 mentioned the presence of pockets of low immunization coverage, mostly among Roma/Sinti populations and irregular migrants, are reported in 14 countries. The main identified reasons for this lower access are: lack of information (85.7% of countries) (39).

2.7.5 Waiting time

William K. Bosu study on factors influencing attendance to immunization session for children in rural district of Ghana, 1997 mentioned the major factors hindering attendance were poor knowledge about immunization and lack of suitable venues and furniture at outreach clinics, financial difficulties, long waiting time,

transportation difficulties, poorly motivated service providers and weak inter sectorial collaboration (35).

There were various reasons adduced by the mothers for incomplete vaccination of their children. A study of Abdulraheem I. S. et al. among rural Nigerian in 2011 result about Reasons for incomplete vaccination and factors for missed opportunities among rural Nigerian children , mentioned long waiting time at the health facility (15.2%) as one of the reason for incomplete vaccination (40).

2.7.6 Provider practice

A study of PHAMIT 2005 in Thailand mentioned it was found that the factors that limited migrants' access to health services were language and cultural barriers (6).

Language barriers also mentioned in a study of Riccardo F., 2012 on migrant's access to immunization in Mediterranean Countries in south east Europe (16.7%) , Epi south region (28.6%) and south Europe (100%) (39).

Evidence suggests that at service delivery level the introduction of cultural mediators and social workers with clear roles and functions and training of health care workers on communication skills, cultural awareness and interaction with those additional professional figures has been beneficial in decreasing access barriers (6)

A study of Factors Influencing the Immunization Status of Children in a Rural Setting by Wilson T. in 2000 mentioned those with a primary health care provider, 70% stated that they relied on their primary health care provider for information and support (41).

From a study of Streefland P. about pattern of vaccination acceptance mentioned the results of ethnographic research show that users' relations with the health services and users' perceived quality of their work and personal contact style largely determine whether parents continue to have their children vaccinated (42).

2.7.7 Outreach clinic

From Hemata S. et al. study in Kabul, Afghanistan, 2009 on Health-care provision factors associated with child immunization coverage result showed fully immunized status was positively associated with close proximity to a health facility (odds ratio [OR] = 1.92, [95%CI, 1.08, 3.39]), and attendance at antenatal care (OR = 1.39, [95%CI, 1.00, 1.93]) in the city center, and outreach contact (OR = 11.6, [95%CI, 6.92, 19.4]) in the rural area after adjustment for demography, socio-economic factors, participation in health education and experiences of hardship (43).

A study of Immunization status and risk factors of migrant children in densely populated areas of Beijing, China, 2012 by Sun M. et al. result reported factors included: the child's migrant characteristics; the primary caregiver's awareness of the importance of vaccination, and outreach services provided by immunization clinics including notification services and supplementary immunization activities (SIAs) (44).

CHAPTER III

Methodology

Chapter three proposes to describe research methodology for studying the relationship between immunization status and maternal knowledge and health service regarding immunization as well as determining the overall immunization and specific vaccine type coverage of migrant children age 1 – 2 years in Tak province as follow topics.

3.1 Research design

This is a cross sectional analytical study to study the association of maternal knowledge and health service to immunization status of Myanmar migrant children aged 1-2 years in Tak, Thailand.

3.2 Study site

Tak is a north-western province of Thailand which shares 560 km. of western border with Myanmar with 520,000 of Thai citizenship and addition 305,871 of migrants (9). Most of Myanmar migrants live in 4 border district; Phop Pra, Ta Song Yang and Mae Ra Mad who earn their living by daily labor in agriculture farms own by native Thai people or factories worker. Migrants in Mae Ra Mad are living in isolation area whereas Ta Song Yang, Phop Pra and Mea Sot are mixing with local Thai population.

3.3 Study population

Tak Provincial Health Office survey in October 2011 reported 297,560 of registered and unregistered migrant population living in four border districts. Among total migrants number, there were 2,814 migrant children with age of under one year during survey period who will be age 1-2 years by the time of study. Thus, number migrants mothers with child aged 1-2 years old can be assumed from the number of migrant children with mentioned age under the assumption of one mother would have one child aged 1-2 years in a year. The latest Infant Mortality Rate (IMR) in

Thailand among non-Thai language user was 23.0 per 1000 live birth (5) Accordingly, estimated migrants children ages 1-2 years of four border district in Tak during the study would be 2,750.

3.4 Sample size

The population selected in the four border districts was 2,705 and based on Krejcie and Morgan's sample size calculation formula, sample size was calculated as follow:

$$\text{Sample size} = \frac{X^2 NP (1-P)}{d^2 (N-1) + X^2 P (1-P)}$$

X^2 = table value of chi-square at degree of freedom = 1 for desire confidence level 0.05 (3.8416)

N= Population size (2,750)

P= Population proportion (assumed to be 0.50)

d= Degree of accuracy expressed as proportion (0.05)

$$\begin{aligned} \text{Sample size} &= \frac{(3.8416) (2750) (0.5) (1-0.5)}{(0.05)^2 (2750-1) + (3.8416) (0.5) (1-0.5)} \\ &= 338 \end{aligned}$$

Therefore, approximately 338 participants were required for this study.

3.5 Sampling technique

Provincial Health Office survey in October 2011 reported 202,762 migrants in Mae Sot, 63,564 in Phop Pra, 28,197 in Ta Song Yang and 3,037 in Mae Ra Mad (Tak PHO, 2011. This study proposes to conduct in these four districts since there are 97% of migrant in Tak living in mentioned districts.

The sample size from each district was proportionately selected according to the population size in different districts. Twenty samples were collected in case of any district sample calculation less than 10. Total minimum sample from four districts needed to be collected in this study were 351. (Table 5)

Table 5 Total minimum sample from each district

No.	Migrant Cluster	Population (N _i)	Sample size (n) $n_i = \frac{N_i \times 338}{2,750}$
1	Mea Sot	1,144	141
2	Phop Pra	1,008	123
3	Ta Song Yang	543	67
4	Mae Ra Mad	55	20
	Total	2,750	351

3.6 Inclusion and exclusion criteria

Inclusion criteria

- a) Myanmar migrant mothers living in study area for at least six months
- b) Myanmar migrant mothers with child age 1-2 years
- c) Willing to participate in the study
- d) In case of migrant mothers have more than one child aged 1-2 years; information from the youngest children will be taken.
- e) Only under 1 year immunization schedule will be recorded and studied.

Exclusion criteria

- a) Myanmar migrant mothers who does not have the vaccination record.
- b) Myanmar migrant mothers who has universal scheme coverage insurance.
- c) Myanmar migrants mothers living in study are who were serving as community health volunteers or working with health organization

3.7 Measurement tool

The research instrument was a structure questionnaire asking questions regarding knowledge and health service on immunization of children. The questionnaire consists of 4 main parts.

Part 1 Socio-demographic characteristic of mother

There are 15 questions asking about Socio-demographic characteristic of mother.

Part 2 Knowledge of Mother regarding Immunization

Knowledge questionnaire was adjusted from a study of Maternal knowledge and attitude of children aged 1-2 years in Insein township, Yangon division, Myanmar, 2009 by Khant Soe with 0.73 of validity (10). Total score of 15 for 15 questions with 1 score for each question. Each answer was given as "0" for wrong answer and don't know and "1" for correct answer. Total score range from 0 to 15 points. From the overall assessment of knowledge, total score of each sample was calculated. The criteria of knowledge level were made based on percentage of knowledge scores.

- Low knowledge - less than 60% of ranked score (<9 scores)
- Moderate knowledge - 60 – 79 % of ranked score (9 – 12 scores)
- High knowledge - more than or equal 80% of ranked score (≥13 scores)

Part 3 Health service

There are 21 questions asking about health service.

Part 4 Child Immunization status

There are 2 questions asking about child immunization status.

3.8 Validity and Reliability test

Validity test

Questionnaire was reviewed by 3 experts in aspects of content validity. Index of Objective Congruence (IOC) was 0.87.

Reliability test

Questionnaire was tested by the respondents who were comparable to the targeted respondents. The reliability of questionnaire was statistically tested with the Cronbach's alpha and reliability of this questionnaire was 0.71.

3.9 Data Collection

- 3.1.1 Developed the structure questionnaire
- 3.1.2 Tested questionnaire validity by 3 experts for validity.
- 3.1.3 Submitted the draft questionnaire to ethical committee for edition.
- 3.1.4 Tested questionnaire with 30 participants who are comparable to the target samples for reliability test
- 3.1.5 Edited the questionnaire
- 3.1.6 Trained all interviewers for questionnaire structure, meaning of questions and interviewing skill
- 3.1.7 Listed prospective participants in each district and divided by the number of sample size to obtain the sampling interval
- 3.1.8 Selected the first participant by choosing randomly one number.
- 3.1.9 Chose subsequent people by adding the sampling interval to the random number until reach the sample size
- 3.1.10 Informed District Health Office and community leader for data collection.
- 3.1.11 Collected data by structured questionnaires and combined for statistical analysis for studying the association of independent and dependent variables by chi square (SPSS 16).

3.10 Data Analysis

Descriptive statistic was used for describing the general characteristic. Chi square will be used to examine the association of immunization status and socio-demographic (age of mothers , education of mothers , occupation of mothers , religion, length of being in community , ethnicity , family monthly income , sibling , birth order , gender , place of delivery , health insurance) , maternal knowledge on immunization (vaccine preventable disease , side effects and immunization schedule) and health service which were (information , provider practice , service time , outreach clinic availability) . The significant level in the study was at $p < 0.05$.

3.11 Ethical Consideration

The study protocol was reviewed and approved by the Ethics Review Committee of the Chulalongkorn University (COA No.059/2013).



CHAPTER IV

RESULT

This study was conducted to describe the association of maternal knowledge and health service to immunization status of Myanmar migrant children aged 1-2 years in Tak, Thailand. Data collection was conducted among migrant mothers from Myanmar with 1-2 years old child living in migrant communities of four Thai-Myanmar border districts by using a structure questionnaire. The results of the study are presented as follow.

4.1 Socio demographic characteristics

Respondents were 386 Myanmar migrant mothers living in Mae Sot (n=157), Phop Pra (n=137), Mae Ra Mad (n=20) and Ta Song Yang (n=73). Ages of respondents were ranged from 19 to 47 years with the mean aged of 29 years. All respondent has been live in community at least for 6 months and 36.0 % of them have been stayed in community for 3-7 years. Majority of respondents in Mae Sot and Phop Pra are Burmese but Mae Ra Mad and Ta Song Yang is Karen. Most of them (81.1%) are Buddhism and half of respondents (51.6%) studied in primary school as the highest level of education and 32.6% were illiterate. Most of respondents (58.5%) especially in Mae Sot and Phop Pra district have no job and income but had to rely on their husband or other family member's income.

Total family income ranged from 400 to 19,000 baht. The average numbers of children in each family are 2-3. Under 1 year immunization schedule were taken from 218 (56.5%) boys and 168 (43.5%) girls who aged between 1 and 2 years. Majority of them (62.7%) attended health facility based delivery while 37.3% attended home based delivery. Mae Sot presented 89.1% health facilities based delivery while Phop Pra showed the lowest percentage at 37.2%. None of the mothers have universal coverage insurance

Table 6 Socio demographic characteristics

Socio demographic	District				Total
	MS	PP	MRM	TSY	
	156 Cases	137 Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Age					
19-23	30 (19.2)	24 (17.5)	7 (35.0)	25 (34.2)	86 (22.3)
24-28	38 (24.4)	45 (32.8)	6 (30.0)	24 (32.9)	113 (29.3)
29-33	47 (30.1)	32 (23.4)	5 (25)	14 (19.2)	98 (25.4)
34-38	22 (14.1)	19 (13.9)	2 (10.0)	4 (5.5)	47 (12.1)
≥39	19 (12.2)	17 (12.4)	0 (0.0)	6 (8.2)	42 (10.9)
Living in community					
< 3 years	33 (21.2)	36 (26.3)	6 (30.0)	7 (9.6)	82 (21.2)
3-7 years	52 (33.3)	70 (51.1)	9 (45.5)	8 (11.0)	139 (36.0)
8-12 years	34 (21.8)	25 (18.2)	4 (20.0)	11 (15.1)	74 (19.2)
13-17 years	8 (5.1)	6 (3.6)	1 (5.0)	10 (13.7)	24 (6.2)
18-22 years	19 (12.2)	1 (0.7)	0 (0.0)	13 (17.8)	33 (8.5)
> 22 years	10 (6.4)	0 (0.0)	0 (0.0)	24 (32.9)	34 (8.8)
Ethnicity					
Burmese	117 (75)	127 (92.7)	1 (5.0)	1 (1.4)	246 (63.7)
Karen	37 (23.7)	8 (5.8)	18 (90)	72 (98.6)	135 (35.0)
Other (Mon/Shan)	2 (1.3)	2 (1.5)	1 (5.0)	0 (0.0)	5 (1.3)
Religion					
Buddhism	109 (69.9)	128 (93.4)	20 (100.0)	56 (76.7)	313 (81.1)

Table 6 Continued

Non	47 (30.1)	9 (6.6)	0 (0.0)	17 (23.3)	73 (18.9)
Buddhism					
Education					
Illiterate	53 (34.0)	21 (15.3)	12 (60.0)	40 (54.8)	126 (32.6)
Primary	70 (44.9)	93 (67.9)	8 (40.0)	28 (38.4)	199 (51.6)
Middle	29 (18.6)	15 (10.9)	0 (0.0)	4 (5.5)	48 (12.4)
> middle	4 (2.6)	8 (5.8)	0 (0.0)	1 (1.4)	13 (3.4)
Occupation					
Unemployed	88 (56.4)	89 (65.0)	2 (10.0)	47 (64.4)	226 (58.5)
House maid	11 (7.1)	4 (2.9)	0 (0.0)	21 (28.8)	36 (9.3)
Contractual	32 (20.5)	1 (0.7)	2 (10.0)	0 (0.0)	35 (9.1)
Plantation	14 (9.0)	36 (26.3)	16 (80.0)	5 (6.8)	71 (18.4)
Factory	9 (5.8)	6 (4.4)	0 (0.0)	0 (0.0)	15 (3.9)
Selling	2 (1.3)	1 (0.7)	0 (0.0)	0 (0.0)	3 (0.8)
Mother income					
No income	88 (56.4)	89 (65.0)	2 (10.0)	47 (64.4)	226 (58.5)
<1000	6 (3.8)	2 (1.5)	9 (45.0)	12 (16.4)	29 (7.5)
1000-1999	23 (14.7)	4 (2.9)	8 (40.0)	8 (11.0)	43 (11.1)
2000-2999	13 (8.3)	18 (13.1)	1 (5.0)	2 (2.7)	34 (8.8)
3000-3999	14 (9.0)	21 (15.3)	0 (0.0)	3 (4.1)	38 (9.8)
≥ 4000	12 (7.7)	3 (2.2)	0 (0.0)	1 (1.4)	16 (4.1)
Family income					
<2000	7 (4.5)	3 (2.2)	0 (0.0)	6 (8.2)	16 (4.1)
2000-3999	44 (28.2)	57 (41.6)	19 (95.0)	32 (43.8)	152 (39.4)
4000-5999	46 (29.5)	49 (35.8)	1 (5.0)	20 (27.4)	116 (30.1)
6000-7999	35 (22.4)	21 (15.3)	0 (0.0)	6 (8.2)	62 (16.1)

Table 6 Continued

8000-9999	14 (9.0)	5 (3.6)	0 (0.0)	5 (6.8)	24 (6.2)
≥10000	10 (6.4)	2 (1.5)	0 (0.0)	4 (5.5)	16 (4.1)
Family expenses					
< 2000	7 (4.5)	1 (0.7)	1 (5.0)	14 (19.2)	23 (6.0)
2000-3999	55 (35.5)	64 (46.7)	18 (90.0)	37 (50.7)	174 (45.1)
4000-5999	47 (30.1)	52 (38.0)	1 (5.0)	17 (23.3)	117 (30.3)
6000-7999	34 (21.8)	16 (11.7)	0 (0.0)	5 (6.8)	55 (14.2)
≥8000	13 (8.3)	4 (2.9)	0 (0.0)	0 (0.0)	17 (4.4)
Number of children					
1	63 (40.4)	52 (38.0)	5 (25.0)	27 (37.0)	147 (38.1)
2-3	68 (43.6)	57 (41.6)	12 (60.0)	26 (35.5)	163 (42.2)
4-5	21 (13.5)	23 (16.8)	2 (10.0)	13 (17.8)	59 (15.3)
≥6	4 (2.5)	5 (3.6)	1 (5.0)	7 (9.6)	17 (4.4)
Birth order					
1	64 (41.0)	54 (39.4)	5 (25.0)	26 (35.6)	149 (38.6)
2-3	65 (41.7)	54 (39.4)	12 (60.0)	28 (38.4)	159 (41.2)
4-5	23 (14.7)	25 (18.2)	2 (10.0)	12 (16.4)	62 (16.1)
≥6	4 (2.6)	4 (2.9)	1 (5.0)	7 (9.6)	16 (4.1)
Gender of children					
Male	92 (59)	77 (56.2)	11 (55.0)	38 (52.1)	218 (56.5)
Female	64 (41.0)	60 (43.8)	9 (45.0)	35 (47.9)	168 (43.5)
Place of delivery					
Home based	17 (10.9)	86 (62.8)	10 (50.0)	31 (42.5)	144 (37.3)
Health facility based	139 (89.1)	51 (37.2)	10 (50.0)	42 (57.5)	(62.7)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.2 Knowledge regarding immunization

4.2.1 Knowledge on vaccine preventable diseases

Regarding vaccine preventable disease in table 7, migrant mothers mentioned Poliomyelitis, Measles and Tuberculosis as top three vaccine preventable diseases; 64.8%, 46.1% and 41.7% respectively. Tetanus, Diphtheria, Hepatitis B infection and Pertussis were mentioned 40.2%, 29.5%, 20.5% and 18.9% respectively. Other diseases such as Small pox, Influenza, Japanese Encephalitis were also mentioned with percentage of 6.2%.

Table 7 Vaccine preventable disease mentioned by migrant mothers

Vaccine Preventable Diseases (multiple answer)	District				Total
	MS	PP	MRM	TSY	
	156 Cases	137 Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Tuberculosis	59 (37.8)	87 (63.5)	9 (45.0)	6 (8.2)	161 (41.7)
Diphtheria	43 (27.6)	69 (50.5)	1 (5.0)	1 (1.4)	114 (29.5)
Tetanus	66 (42.3)	79 (57.7)	2 (10.0)	8 (11.0)	155 (40.2)
Poliomyelitis	114 (73.1)	100 (73.0)	18 (90.0)	18 (24.7)	250 (64.8)
Pertussis	59 (37.8)	10 (7.3)	2 (10.0)	2 (10.0)	73 (18.9)
Measles	80 (51.3)	67 (48.9)	5 (25.0)	26 (35.6)	178 (46.1)
Hepatitis B	47 (30.1)	28 (20.4)	1 (5.0)	3 (4.1)	79 (20.5)
Did not answer	31 (19.9)	9 (6.6)	1 (5.0)	22 (30.1)	63 (16.3)
Other (Small pox, Influenza, JE and all diseases)	12 (7.7)	10 (7.3)	1 (5.0)	5 (6.8)	24 (6.2)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.2.2 Overall knowledge regarding vaccine preventable disease, vaccine side effect and vaccine schedule

The overall knowledge levels regarding immunization of migrant mothers were 47.5% with moderate knowledge, 38.3% with low level of knowledge and 14.2% with high level of knowledge. (Table 9)

Regarding vaccine preventable diseases, the result showed that 86.0% of mothers knew that immunization can prevent childhood diseases. Poliomyelitis, hepatitis B viral infection, whooping cough and measles were correctly answered as vaccine preventable diseases by 81.9%, 51.0%, 45.1% and 34.7% of mothers respectively.

Concerning to vaccine side effects, there were 85.0% and 82.4% of mothers knew that mild fever and soreness at the site of injection are the common side-effects of vaccination respectively and 35.0% knew that diarrhea is not the side effect of routine immunization. There were 59.3% of mothers knew that vaccination should not be given when a child had high fever.

Related to immunization schedule, 65.0% of mothers knew that BCG and first dose of HBV should be given at birth, 61.1% knew that OPV should be at least given 3 times under one year of age, 56.7% knew that MMR/ Measles vaccine should be given at nine month of age, 52.3% knew that there are five types of vaccine should be given to a child and 41.7% knew that a child should be completely immunized at nine months of age.

Table 8 Knowledge regarding immunization of migrant mothers

Variables	386 Cases
Knowledge regarding immunization	n (%)
Low (less than 9)	148 (38.3)
Moderate (9-12)	183 (47.5)
High (more than 13)	55 (14.2)

4.2.3 Overall knowledge regarding vaccine preventable disease, vaccine side effect and vaccine schedule by district

Overall knowledge regarding immunization by district result presents majority of mother in Mae Sot, Phop Pra and Ta Song Yang district had moderate level of knowledge regarding immunization ;43.6%, 55.5% and 53.5% respectively while 100% of mothers in Mae Ra Mad has low level of knowledge regarding immunization (table 9).

Table 9 Knowledge regarding immunization of migrants mothers by district

	District				Total
	MS	PP	MRM	TSY	
Knowledge level	156 Cases n (%)	137 Cases n (%)	20 Cases n (%)	73 Cases n (%)	386 Cases n (%)
Low (< 9)	63 (40.4)	46 (33.6)	20 (100.0)	19 (26.0)	148 (38.3)
Moderate (9-12)	68 (43.6)	76 (55.5)	0 (0.0)	39 (53.5)	183 (47.5)
High (> 13)	25 (16.0)	15 (10.9)	0 (0.0)	15 (20.5)	55 (14.2)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.2.4 Information regarding immunization outside immunization place

Regarding information about immunization, 72.3% of respondents had ever received used to receive information about immunization outside the immunization place from different sources of information. There were 100% and 91.2% of mothers in Mae Ra Mad and Phop Pra received information respectively (table 10).

Table 10 Receiving of information regarding immunization outside immunization place by district

Receive information	District				Total
	MS	PP	MRM	TSY	
	156 Cases n (%)	137 Cases n (%)	20 Cases n (%)	73 Cases n (%)	386 Cases n (%)
Yes	84 (53.8)	125(91.2)	20 (100.0)	50 (68.5)	279 (72.3)
No	72 (46.2)	12 (8.8)	0 (0.0)	23 (31.5)	107 (27.7)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.2.5 Source of information and contents received outside immunization place by district

Among 279 mothers who used to receive information regarding immunization from different sources of information which are health providers, neighbors, relatives, community loud speaker, village leader and information board. Table 11 showed that the main source of information for most of mothers in all four border district is from health providers.

Regarding content of information, mothers in Mae Sot and Mae Ra Mad mostly received about side effect of vaccine and timing of vaccination while mothers in Phop Pra mostly received about vaccine preventable diseases. Most of mothers in Ta Song Yang received about side effect (74.0%) but only 2% received about timing of vaccination (table 11).

Table 11 Source of information and contents regarding immunization by district

Variables	District				Total
	MS	PP	MRM	TSY	
	84 Cases n (%)	125 Cases n (%)	20 Cases n (%)	50 Cases n (%)	279 Cases n (%)
Source of information (multiple answer)					
Loud speaker	20 (23.8)	12 (9.6)	0 (0.0)	5 (10.0)	37 (13.3)
Village Leader	12 (14.3)	7 (5.6)	2 (10.0)	1 (2.0)	22 (7.9)
Neighbor	36 (42.9)	54 (43.2)	3 (15.0)	12 (24.0)	105 (37.6)
Relatives	20 (23.8)	17 (13.6)	0 (0.0)	3 (6.0)	40 (14.3)
Information board	10 (11.9)	6 (33.3)	0 (0.0)	2 (4.0)	18 (6.5)
Home visit by Health provider	54 (64.3)	99 (79.2)	19 (95.0)	32 (64.0)	204 (73.1)
Other (Teacher and leaflet and health facilities staff)	24 (28.6)	3 (2.4)	0 (0.0)	0 (0.0)	27 (9.7)
Information content (multiple answer)					
-Vaccine Preventable Disease	34 (40.5)	86 (68.8)	1 (5.0)	13 (26.0)	134 (48.8)
-Side effect	61 (72.6)	43 (34.4)	16 (80.0)	37 (74.0)	157 (56.3)
-Timing of vaccination	57 (67.9)	70 (56.0)	19 (95.0)	1 (2.0)	147 (52.7)

Table 10 Continued

-Consequences of un-vaccination	26 (31.0)	15 (12.0)	2 (10.0)	1 (2.0)	44 (15.8)
-Place of vaccination	37 (44.0)	45 (36.0)	18(90.0)	0 (0.0)	100 (35.8)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.2.6 Reminded for next immunization

Among all respondents, there were 232 (60.1%) mothers had been reminded by service provider for the next immunization. The highest percentage was from Mae Ra Mad with 73.7 % while only 42.9% of mother in Mae Sot had been reminded (table 13).

Table 12 Migrant mothers been reminded for next immunization by district

Reminded for next immunization	District				Total
	MS	PP	MRM	TSY	
	156 Cases n (%)	137 Cases n (%)	20 Cases n (%)	73 Cases n (%)	386 Cases n (%)
Yes	67 (42.9)	101 (73.7)	15 (75.0)	49 (67.1)	232 (60.1)
No	89 (57.1)	36 (26.3)	5 (25.5)	24 (32.9)	154 (39.9)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.2.7 Language barrier for information receiving

According to table 13, only 23.3% of migrant mothers had language barriers for receiving information regarding immunization. Most of mother who had language barriers were from Phop Pra (54%) because most of them were a group of newly arrival migrants and stayed in Phop Pra for a while before moving forward to Mae Sot or labors needed provinces of Thailand. Conversely with Ta Song Yang and Mae Ra

Mad that showed the low percentage of language barriers since most of mother were longer stayed in communities compare to Phop Pra and Mae Sot as well health providers are local people who able to speak local migrant language.

Table 13 Language barrier for information receiving by district

Language barriers	District				Total
	MS	PP	MRM	TSY	
	156 Cases	137 Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Yes	10 (6.4)	74 (54.0)	2 (10.0)	4 (5.5)	90 (23.3)
No	146 (93.6)	63 (46.0)	18 (90.0)	69 (94.5)	296 (76.7)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.3 Provider practice

4.3.1 Home visits, interpretation availability and body temperature screening conducted by health provider

Table 14 showed 48.7% of respondents were visited by health providers during the last four weeks. Obviously seen by Mae Ra Mad which presented 100% of mothers was visited by health providers during the last four weeks and 78.5 % in Phop Pra, 67.1% in Ta Song Yang and 62.2% in Mae Sot respectively.

Regarding availability of interpreter during immunization, 95% of mother in Mae Ra Mad and 92.7% of mothers in Phop Pra mentioned that health facilities they attended for immunization have interpreters for local migrant languages.

Only 32.4% of mothers mention body temperature screening conducted by service provider before immunization especially Mae Ra Mad which presented only 15% conducted the body temperature screening. This can create vaccine advert reaction incase children already has fever but was not aware by health care provider.

Table 14 Provider practice; home visiting, availability interpretation at health facilities during immunization and performing of body temperature screening by district

Variables	District				Total
	MS	PP	MRM	TSY	
	156 Cases	137 Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
-Health worker visited during last 4 weeks	56 (35.9)	88 (64.2)	19 (95.0)	25 (34.2)	188 (48.7)
-Interpreters during immunization	133(85.3)	127 (92.7)	19 (95.0)	27 (37.0)	306 (79.3)
-Temperature screening	47 (30.1)	71 (51.8)	3 (15.0)	32 (43.8)	153 (39.0)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.3.2 Health education provided by service provider during immunization service

Among 386 respondents, 273 (70.7%) respondents received health education during taking their child to immunization service. Mae Ra Mad showed the highest number of mothers receiving health education during the service followed with Phop Pra, Ta Song Yang and Mae Sot respectively (table 15).

Table 15 Health education provided by service provider during immunization service

Health education provided	District				Total
	MS	PP	MRM	TSY	
	156 Cases n (%)	137Cases n (%)	20 Cases n (%)	73 Cases n (%)	386 Cases n (%)
Yes	97 (62.2)	107 (78.1)	20 (100.0)	49 (67.1)	273 (70.7)
No	59 (37.8)	30 (21.9)	0 (0.0)	24 (32.9)	113 (29.3)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.3.3 Health education contents provided by health provider during immunization service

Among 273 mothers who received health education during taking their child to immunization, more than eighty percent of mothers living in Mae Sot, Mae Ra Mad and Ta Song Yang received content related to side effects of vaccine except Pho Pra that showed only 32.7% of received content about side effect of vaccine .Conversely, most of mothers in Phop Pra (68.2%) mentioned advantages of immunization as a content they received from health provider during immunization service.

Table 16 Health education contents provided by service provider during immunization service

Health education content (multiple answer)	District				Total
	MS	PP	MRM	TSY	
	97 Cases n (%)	107 Cases n (%)	20 Cases n (%)	49 Cases n (%)	273 Cases n (%)
-Immunization advantages	48 (49.5)	73 (68.2)	9 (45.0)	10 (20.4)	140 (51.3)
-Consequences of un-vaccinated	36 (37.1)	29 (27.1)	1 (0.0)	1 (0.0)	67 (24.5)
-Side effect of vaccination	82 (84.5)	35 (32.7)	18 (90.0)	40 (81.6)	175 (64.1)
-Vaccination schedule	33 (34.0)	30 (28.0)	11 (55.0)	0 (0.0)	74 (27.1)
-Don't know/ Did not remember	1 (1.0)	5 (4.7)	0 (0.0)	0 (0.0)	6 (2.2)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.4 Service time

4.4.1 Total service time and service time acceptable

Regarding total service time, most respondents had to spend 30 to 90 minutes starting from arriving immunization place until all processes at immunization place completed. Ninety four percent 94.0% of them accept total service time (table 17).

Table 17 Total service time at last immunization visit and total service time acceptability by district

Variables	District				Total
	MS	PP	MRM	TSY	
	156Cases	137Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Total service time					
- < 30 mins.	25 (16.0)	43 (31.4)	1 (5.0)	0 (0.0)	69 (17.9)
- 30 – 90 mins.	123 (78.8)	89 (65.0)	19 (95.0)	70 (95.9)	301 (78.0)
- 1.5-3.0 hrs.	6 (3.8)	5 (3.6)	0 (0.0)	2 (2.7)	13 (3.4)
- > 3 hrs.	2 (1.3)	0 (0.0)	0 (0.0)	1 (1.4)	3 (0.8)
Acceptable of total service time	141(90.4)	135 (98.5)	19 (95.0)	71 (97.3)	366 (94.8)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.4.2 Health education during last immunization visit

Two hundred and forty six (63.7%) of respondents received health education during the last immunization. The highest percentage was mothers living in Mae Ra Mad with 100% and lowest were Mae Sot with 54.5% (table 18).

Table 18 Health education during last immunization visit

Health education during last immunization	District				Total
	MS	PP	MRM	TSY	
	156Cases	137Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Received	85 (54.5)	94 (68.6)	20 (100.0)	47 (64.4)	246 (63.7)
Did not received	71 (45.5)	43 (31.4)	0 (0.0)	26 (35.6)	140 (36.3)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.4.3 Duration of health education during last immunization visit

Table 19 showed that 92.6% of mother in Phop Pra and 90.0% of mothers in Mae Ra Mad spent approximately 10 to 30 minutes for health education during their last immunization visit while majority of mother in Maesot (56.5%) and Ta Song Yang (91.5%) spent less than 10 minute.

Table 19 Duration of health education during last immunization visit

Duration of health education	District				Total
	MS	PP	MRM	TSY	
	85 Cases n (%)	94 Cases n (%)	20 Cases n (%)	47 Cases n (%)	246 Cases n (%)
< 10 mins.	48 (56.5)	1 (1.1)	1 (1.1)	43 (91.5)	93 (37.8)
10-30 mins.	37 (43.5)	87 (92.6)	18 (90.0)	4 (8.5)	146 (59.3)
> 50 mins.	0 (0.0)	6 (6.4)	1 (5.0)	0 (0.0)	7 (2.8)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.5 Outreach clinic

4.5.1 Place of immunization

Regarding to place of immunization, 53.4% of mothers in Ta Song Yang mention they attended immunization service at SDPHH under the administration of the local government health sector. All respondent in Mae Ra Mad rely on outreach immunization under local government district hospital while 58.3% of mothers in Mae Sot mentioned they attended immunization service at clinics. The result showed only 14.8% attended immunization at hospital.

Concerning distance to immunization place by setting, 58.3% of mother in Ta Song Yang, 50.4% of mother in Phop Pra and 60.0% of mother in Mae Ra Mad had to take approximately 1 to 5 km. to immunization place but most of mother in Ta Song Yang had to take 5 to 10 km. to immunization place. The result showed that 78.8%

of all respondents affordable for going to immunization but 44.6% of mother in Mae Sot , 27.0% of mother in Phop Pra and 12.3% of mother in Ta Song Yang mentioned they was not affordable for traveling to immunization place (table 20).

Table 20 Place and distance of immunization service and affordable of travelling to immunization by district

Variables	District				Total
	MS	PP	MRM	TSY	
	156Cases	137Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Place of immunization					
(multiple answer)					
- SDHPH	44 (28.2)	63 (46.0)	1 (5.0)	39 (53.4)	147 (38.1)
- Outreach clinic	50 (32.1)	63 (46.0)	20 (100.0)	8 (11.0)	141 (36.5)
- Hospital	20 (12.8)	7 (5.1)	1 (5.0)	29 (39.7)	57 (14.8)
- Clinic	91 (58.3)	10 (7.3)	1 (5.0)	2 (2.7)	104 (26.9)
Distance to immunization					
< 1 km.	28 (17.9)	34 (24.8)	8 (40.0)	9 (12.3)	79 (20.5)
1-5 km.	91 (58.3)	69 (50.4)	12 (60.0)	24 (32.9)	196 (50.8)
5-10 km.	32 (20.5)	34 (24.8)	0 (0.0)	33 (45.2)	99 (25.6)
> 10 km.	5 (3.2)	0 (0.0)	0 (0.0)	7 (9.6)	12 (3.1)
Affordable to travel	119 (76.3)	100 (73.0)	20 (100.0)	64 (87.7)	303 (78.5)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.5.2 Need of outreach clinic

There were 83 mothers who were not affordable to travel to immunization place and 92.8% of them mentioned they need outreach clinic in order to be able to facilitate them to take their child to immunization (table 21).

Table 21 Need of outreach clinic organized by health provider of each district

Outreach clinic	District			Total
	MS	PP	TSY	
	37 Cases	37 Cases	9 Cases	83 Cases
	n (%)	n (%)	n (%)	n (%)
Yes	36 (97.3)	32 (86.5)	9 (100.0)	77 (92.8)
No	1 (2.7)	5 (13.5)	0 (0.0)	6 (7.2)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.6 Immunization status

4.6.1 Under 1 year schedule immunization status

The finding showed that 56.7% of Myanmar migrant children aged between 1 -2 years was completely immunized whereas 43.3% was incompletely immunized. Mae Sot had the highest coverage of completely less than 1 year immunization with 75% but Phop Pra presented only 29.9% of completely under 1 year immunization coverage while Mae Ra Mad and Ta Song Yang revealed the coverage at 65.0% and 65.8% respectively .(table 22)

Table 22 Under 1 year schedule immunization status

Variables	District				Total
	MS	PP	MRM	TSY	
	156Cases	137Cases	20 Cases	73 Cases	386 Cases
	n (%)	n (%)	n (%)	n (%)	n (%)
Immunization status					
Complete	117(75.0)	41 (29.9)	13 (65.0)	48 (65.8)	219 (56.7)
Incomplete	39 (25.0)	96 (70.1)	7 (35.0)	25 (34.2)	167 (43.3)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.6.2 Immunization coverage by type of vaccine

Regarding immunization coverage by type of vaccines, 98.4% received BCG, 82.9% received HBV, 95.1% received DTP1/OPV1/HBV1 combined vaccine 78.1%, 82.4% received DTP2/OPV2/HBV2, 68.4 % received DTP3/OPV3/HBV3 and 66.1% received MMR or Measles vaccine. The result in table 24 obviously shows the later dose of immunizations the decreasing of coverage (table 23). DTP3/OPV3/HBV3 and MMR present the lowest coverage since the doses should be provided at the age of sixth and ninth month of age.

Table 23 Immunization coverage by type of vaccine

Individual vaccine coverage	District				Total
	MS	PP	MRM	TSY	
	156 Cases n (%)	137Cases n (%)	20 Cases n (%)	73 Cases n (%)	386 Cases n (%)
BCG	156(100.0)	135 (98.5)	18 (90.0)	71 (97.3)	380 (98.4)
HBV0	153 (98.1)	86 (62.8)	16 (80.0)	65 (89.0)	320 (82.9)
DTP1/OPV1/HBV1	149 (95.5)	132 (96.4)	20 (100.0)	66 (90.4)	367 (95.1)
DTP2/OPV2/HBV2	139 (89.1)	97 (70.8)	19 (95.0)	63 (86.3)	318 (82.4)
DTP3/OPV3/HBV3	127 (81.4)	67 (48.9)	15 (75.0)	55 (75.3)	264 (68.4)
Measles / MMR	120 (76.9)	63 (46.0)	17 (85.0)	55 (75.3)	255 (66.1)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.6.3 Reason for incomplete immunization

Among 166 children who had incomplete immunization, 98.2% of them trust in immunization but there were many reasons behind the absence of taking their child to immunization. Majority of them (67.9%) of mothers mentioned that they did not take their children to immunization because they were busy or need to work during immunization. There were 26.9% of mothers mentioned the place to

immunization is too far especially in Mae Sot and Phop Pra with 41% and 28.1% respectively. Some mother in Phop Pra (19.8%) mentioned that they did not know the place of immunization at the beginning and 9.4% of them travel back to Myanmar during immunization time. There were 28.6% of mother in Mae Ra Mad mention that previous vaccine adverse reaction made them hesitate to take their child to the next immunization. There were 15.4% of mother in Mae Sot mention the long waiting time and 10.3% mentioned that they were afraid of police on the way to immunization place because some of them do not have legal status (table 24).

Table 24 Reason for incomplete immunization

Reason for incomplete immunization	District				Total
	MS	PP	MRM	TSY	
	39 Cases n (%)	96 Cases n (%)	7 Cases n (%)	25 Cases n (%)	167 Cases n (%)
-Don't know the place	2 (5.1)	19 (19.8)	0 (0.0)	8 (32.0)	29 (17.4)
-Previous vaccine reaction	9 (23.1)	14 (14.6)	2 (28.6)	1 (4.0)	26 (15.6)
-Do not trust in immunization	1 (2.6)	2 (2.1)	0 (0.0)	0 (0.0)	3 (1.8)
-Place is too far	16 (41.0)	27 (28.1)	0 (0.0)	2 (8.0)	45 (26.9)
-Inconvenient time	5 (12.8)	16 (16.7)	4 (57.1)	1 (4.0)	26 (15.6)
-Long waiting time	6 (15.4)	4 (4.2)	0 (0.0)	0 (0.0)	10 (6.0)
-Not enough money for transportation	11 (28.2)	9 (9.4)	0 (0.0)	2 (8.0)	22 (13.2)
-Mother was busy / had to work	31 (79.5)	65 (67.7)	6 (85.7)	10 (40.0)	112 (67.1)

Table 24 Continued

-Illness of mother	0 (0.0)	4 (4.2)	0(0.0)	0 (0.0)	4 (2.4)
-No vaccinator	0 (0.0)	1 (1.0)	1 (14.3)	1 (4.0)	3 (1.8)
-Child got sick	0 (0.0)	2 (2.1)	0 (0.0)	3 (12.0)	5 (3.0)
-Forgot appointment	1 (2.6)	0 (0.0)	1 (14.3)	2 (8.0)	4 (2.4)
-Moving their resident	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.0)	1 (0.6)
-Afraid of police	4 (10.3)	1 (1.0)	0 (0.0)	0 (0.0)	5 (3.0)
-Travel to Myanmar	0 (0.0)	9 (9.4)	0 (0.0)	0 (0.0)	9 (5.4)

Remark: MS (Mae Sot), PP (Phop Pra), MRM (Mae Ra Mad) and TSY (Ta Song Yang)

4.7 Relationship between immunization status and socio demographic characteristic

Relationship of between immunization status and socio demographic characteristic were analyzed by chi-square test and p-value of selected variables was calculated and present in table 25. District, length of staying in community, religion, occupation and place of delivery were statistically significant ($p < 0.05$) with immunization status of children.

By district that mother was staying, Mothers in Mae Sot more likely to have completed immunized children. Among complete immunization group, there were 53.4%, 21.9%, 18.7% and 5.9% of mother from Mae Sot, Ta Song Yang, Phop Pra and Mae Ra Mad respectively. There was a significant association between immunization status and district that the mothers was living ($p < 0.001$).

There was a significant association between immunization status and length of staying in community ($p < 0.05$). Among complete immunization group, there were 29.2% of mother who stays in community for 3-7 years. Mother was more likely to have completed immunized children.

Mother of Buddhist religion was more likely to have completed immunized children compare to non-Buddhist group. Among complete immunization group, there were 60.3% of mother who were Buddhist. There was a significant association between immunization status and district occupation of mothers ($p < 0.05$).

Among complete immunization group, there were 56.6% of mother who had no job, 12.8% of mother who were contractual worker and 15.5% of mother who were plantation worker. There was a significant association between immunization status and occupation of mothers ($p < 0.05$).

Mother who delivered their child at health facilities based was more likely to have completed immunized children. Among complete immunization group, there were 76.7% of mother who attended health facilities based delivery. There was a significant association between immunization status and district occupation of mothers ($p < 0.001$).

There are no significantly associated between immunization schedule and mother's education and income , family income or expenses , number of children in family , birth order and sex of the child.

Table 25 Relationship between immunization status and socio demographic characteristic

Variables	Immunization status		χ^2	p-value
	Complete	Incomplete		
Socio demographic	219 cases	167 cases		
	n (%)	n (%)		
District				
Mae Sot	117 (53.4)	39 (23.4)	64.288	<0.001**
Phop Pra	41 (18.7)	96 (57.5)		
Mae Ra Mad	13 (5.9)	7 (4.2)		
Ta Song Yang	48 (21.9)	25 (15.0)		

Table 25 Continued

Age				
19-23	57 (26.0)	29 (17.4)	4.754	0.313
24-28	64 (29.2)	49 (29.3)		
29-33	51 (23.3)	47 (28.1)		
34-38	24 (11.0)	23 (13.8)		
≥39	23 (10.5)	19 (11.4)		
Living in community				
Less than 3 years	38 (17.4)	44 (26.3)	15.973	0.007*
3-7 years	79 (36.1)	60 (35.9)		
8-12 years	36 (16.4)	38 (22.8)		
13-17 years	17 (7.8)	7 (4.2)		
18-22 years	22 (10.0)	11 (6.6)		
More than 22 years	27 (12.3)	7 (4.2)		
Ethnicity				
Burmese	132 (60.3)	114 (68.3)	2.626	0.269
Karen	84 (38.4)	51 (30.5)		
Other (Shan & Mon)	3 (1.4)	2 (1.2)		
Religion				
Buddhism	167 (76.3)	146 (87.4)	7.708	0.005*
Non Buddhism	52 (23.7)	21 (12.6)		
Education				
Illiterate	65 (29.7)	61 (36.5)	2.979	0.395
Primary school	119 (54.3)	80 (47.9)		
Middle school	29 (13.2)	19 (11.4)		
Above middle school	6 (2.7)	7 (4.2)		

Table 25 Continued

Occupation				
Unemployed	124 (56.6)	102 (61.1)	12.649	0.026*
House maid	21 (9.6)	15 (9.0)		
Contractual worker	28 (12.8)	7 (4.2)		
Plantation worker	34 (15.5)	37 (22.2)		
Factory worker	11 (5.0)	4 (2.4)		
Selling	1 (0.5)	2 (1.2)		
Mother income				
No income	124 (56.6)	102 (61.1)	10.225	0.069
<1000	15 (6.8)	14 (8.4)		
1000-1999	31 (14.2)	12 (7.2)		
2000-2999	18 (8.2)	16 (9.6)		
3000-3999	18 (8.2)	20 (12.0)		
≥ 4000	13 (5.9)	3 (1.8)		
Family income				
<2000	8 (3.7)	8 (4.8)	7.704	0.173
2000-3999	75 (34.2)	77 (46.1)		
4000-5999	70 (32.0)	46 (27.5)		
6000-7999	38 (17.4)	24 (14.4)		
8000-9999	17 (7.8)	7 (4.2)		
≥10000	11 (5.0)	5 (3.0)		
Family expenses				
< 2000	13 (5.9)	10 (6.0)	2.883	0.578
2000-3999	92 (42.0)	82 (49.1)		
4000-5999	68 (31.1)	49 (29.3)		
6000-7999	36 (16.4)	19 (11.4)		

Table 25 continued

≥8000	10 (4.6)	7 (4.2)		
Number of children				
1	94 (42.9)	53 (31.7)	5.645	0.130
2-3	88 (40.2)	75 (44.9)		
4-5	29 (13.2)	30 (18.0)		
≥6	8 (3.7)	9 (5.4)		
Birth order				
1	94 (42.9)	55 (32.9)	0.4665	0.198
2-4	86 (39.3)	73 (43.7)		
4-5	32 (14.6)	30 (18.0)		
≥6	7 (3.2)	9 (5.4)		
Gender of children				
Male	126 (57.5)	92 (55.1)	0.230	0.631
Female	93 (42.5)	75 (44.9)		
Place of delivery				
Home based	51 (23.3)	93 (55.7)	42.529	<0.001**
Health facility based	168 (76.7)	74 (44.3)		

*Significant at $p < 0.05$ ** Significant at $p < 0.001$

4.8 Relationship between immunization status and knowledge regarding immunization

Among complete immunization group, there were 45.7% of mothers with moderate level of knowledge regarding immunization and 31.5% of mother with low level of knowledge and 22.8% of mother with high knowledge. There was a

significant association between knowledge of mothers regarding immunization of children ($p < 0.001$). (table 26)

Table 26 Relationship between immunization status and knowledge regarding immunization

Knowledge regarding immunization	Immunization status		χ^2	p-value
	Complete	Incomplete		
	219 cases	167 cases		
	n (%)	n (%)		
Low (less than 9)	69 (31.5)	79 (47.3)	32.661	<0.001**
Moderate (9-12)	100 (45.7)	83 (49.7)		
High (more than 13)	50 (22.8)	5 (3.0)		

*Significant at $p < 0.05$

** Significant at $p < 0.001$

4.9 Relationship between immunization status and health service

The immunization status of children was significantly associated with sources of information outside immunization place and its contents, language barriers for receiving information, information providing during services and its contents ,duration of health education at immunization serviced , place of immunization , distance to immunization and affordable for traveling to immunization.

4.9.1 Relationship between immunization status and information regarding immunization receiving

Among complete immunization group, there were 70.3% mothers who received information regarding immunization outside immunization and there was no significant association between immunization status and information regarding immunization receiving (table 27).

Table 27 Relationship between immunization status and information regarding immunization receiving outside immunization place

Receive information	Immunization status		X ²	p-value
	Complete	Incomplete		
	219 cases	167 cases		
	n (%)	n (%)		
Yes	154 (70.3)	125 (74.9)	0.971	0.325
No	65 (29.7)	42 (25.1)		

*Significant at $p < 0.05$

** Significant at $p < 0.001$

4.9.2 Relationship between immunization status and information content

There was an association between immunization status and source of information. Mother who received information through community loud speaker was less likely to have completely immunized children. Among incomplete immunization group, there were 83.1% of mother who received information regarding immunization from loud speaker. The result revealed that there was significant association immunization status of children and information content ($p < 0.05$). Regarding content of information among complete immunization group, mothers who received information content related to vaccine side effect more likely to have completely immunized children. Among complete immunization group, there were 66.2% of mother who received information content related to vaccine side effect. The result revealed that there was significant association immunization status of children and information content ($p < 0.001$). Mother mothers who received information content related to vaccine preventable disease less likely to have completely immunized children. Among complete immunization group, there were 44.2% of mother who received information content related to vaccine preventable disease. The result revealed that there was significant association immunization status of children and information content ($p < 0.05$) (table 28).

Table 28 Relationship between immunization status and information content

Variables	Immunization status		χ^2	p-value
	Complete	Incomplete		
	219 cases n (%)	167 cases n (%)		
Source of information (multiple answer)				
Loud speaker				
Yes	26 (16.9)	11 (8.8)	3.919	0.048*
No	128 (83.1)	114 (91.2)		
Village Leader				
Yes	13 (8.4)	9 (7.2)	0.146	0.702
No	141 (91.6)	116 (92.8)		
Neighbor				
Yes	51 (48.6)	54 (51.4)	2.989	0.084
No	103 (59.2)	71 (40.8)		
Relatives				
Yes	21 (13.6)	19 (15.2)	0.137	0.711
No	133 (86.4)	106 (84.8)		
Information board				
Yes	11 (7.1)	7 (5.6)	0.272	0.602
No	143 (92.9)	118 (94.4)		
Home visit by health provider				
Yes	112 (72.7)	92 (73.6)	0.027	0.870
No	42 (27.3)	33 (26.4)		
Information content (multiple answer)				
-Vaccine Preventable Disease				

Table 28 Continued

Yes	65 (42.2)	69 (55.2)	4.666	0.031*
No	89 (57.8)	56 (44.8)		
-Side effect				
Yes	102 (66.2)	55 (44.0)	13.861	<0.001**
No	52 (33.8)	70 (56.0)		
-Timing of vaccination				
Yes	80 (51.9)	67 (53.6)	0.076	0.783
No	74 (48.1)	58 (46.4)		
-Consequences of un-vaccination				
Yes	28 (18.2)	16 (12.8)	1.504	0.220
No	126 (81.8)	109 (87.2)		
-Place of vaccination				
Yes	50 (32.5)	50 (40.0)	1.702	0.192
No	104 (67.5)	75 (60.0)		

*Significant at $p < 0.05$ ** Significant at $p < 0.001$

4.9.3 Relationship between immunization status and appointment reminding and language barrier

There was no significant association between immunization status and appointment reminding. Among completely immunization group, there were only 18.7% of mothers who had language barriers for receiving information regarding compare to 81.3% mothers who had no language barriers. The result revealed that there was significant association language barriers of mother and immunization status of children ($p < 0.05$) (table 29).

Table 29 Relationship between immunization status and reminding to next immunization by health provider and language barrier for receiving information

Variables	Immunization status		χ^2	p-value
	Complete	Incomplete		
	219 cases n (%)	167 cases n (%)		
Reminded for next immunization				
Yes	134 (61.2)	98 (58.7)	0.248	0.619
No	85 (38.8)	69 (41.3)		
Language barriers for receiving information				
Yes	41 (18.7)	49 (29.3)	5.977	0.014*
No	178 (81.3)	118 (70.7)		

*Significant at $p < 0.05$

** Significant at $p < 0.001$

4.9.4 Relationship between immunization status and home visit, interpretation and temperature screening conducted by service provider

Health provider visiting during the last 4 weeks, availability of interpreter during immunization and temperature screening before immunization showed no significant association with immunization status.

Table 30 Relationship between immunization status and home visit, interpretation and temperature screening conducted by service provider

Variables	Immunization status		χ^2	p-value
	Complete 219 cases n (%)	Incomplete 167 cases n (%)		
Health worker visited during last 4 weeks				
Yes	111 (59.0)	77 (41.0)	0.795	0.373
No	108 (54.5)	90 (45.5)		
Interpreters during immunization				
Yes	178 (58.2)	128 (41.8)	1.237	0.266
No	41 (51.2)	39 (48.8)		
Temperature screening				
Yes	81 (52.9)	72 (47.1)	1.487	0.223
No	138 (59.2)	95 (40.8)		

*Significant at $p < 0.05$

** Significant at $p < 0.001$

4.9.5 Relationship between immunization status and health education during service and the content

There was a significant association between immunization status and receiving information during the service content of the health education provided at the service (table 31).

Among a group of completely immunization, there were 75.3% of mothers who received health education during the service likely to have more completely immunized children than those who did not received health education during the service. There was a significant association between immunization status and health education providing during immunization service ($p < 0.02$).

Regarding the health education content, mothers who received information about side effect of vaccination during the service likely to have more completely immunized children than those who did not received this content .Among complete immunization group , there were 72.7% of mothers who received information about side effect of vaccination during the service .There was a significant association between immunization status and health education during immunization service content ($p < 0.001$) .However , information about immunization advantages , Consequences of un-vaccinated and schedule of vaccine were not significant associate with immunization status of children.

This revealed that health education regarding immunization providing during the service is important and the important content is about vaccine side effect since 15.6% of mothers especially in Mae Ra Mad with incomplete immunized children mentioned that side effect of previous vaccine made them vacillate to take their child to the next immunization.

Table 31 Relationship between immunization status and health education and the content during immunization service

Variables	Immunization status		χ^2	p-value
	Complete 219 cases n (%)	Incomplete 167 cases n (%)		
Health education during service				
Yes	165 (75.3)	108 (64.7)	5.212	0.022*
No	54 (24.7)	59 (35.3)		
Health education content multiple answer (273 cases†)				
-Immunization advantages				
Yes	85 (51.5)	55 (50.9)	0.009	0.924
No	80 (48.5)	53 (49.1)		

Table 31 Continued

-Consequences of un-vaccinated				
Yes	38 (23.0)	29 (26.9)	0.515	0.473
No	127 (77.0)	79 (73.1)		
-Side effect of vaccination				
Yes	120 (72.7)	55 (50.9)	13.483	<0.001**
No	45 (27.3)	53 (49.1)		
-Vaccination schedule				
Yes	46 (27.9)	28 (25.9)	0.126	0.723
No	119 (72.1)	80 (74.1)		

*Significant at $p < 0.05$ ** Significant at $p < 0.001$

†Only those who received health education during immunization service

4.9.6 Relationship between immunization status and total service time

According to table 32, the result shows that there was no significant association between immunization status of children and total service time of immunization.

Table 32 Relationship between immunization status and total service time

Variables	Immunization status		χ^2	p-value
	Complete	Incomplete		
	219 cases n (%)	167 cases n (%)		
Total service time				
Less than 30 mins.	31 (44.9)	38 (55.1)	5.000	0.172
30 – 90 mins.	179 (59.5)	122 (40.5)		
1.5-3.0 hrs.	7 (53.8)	6 (46.2)		
More than 3 hrs.	2 (66.7)	1 (33.3)		

*Significant at $p < 0.05$ ** Significant at $p < 0.001$

4.9.7 Relationship between immunization status and receiving of health education in the last immunization and duration of health education

Among complete immunization group, there was 50.3% of mother who spend 10 -3 minutes for health education service, 40.9% who spent less than 10 minutes and 0.7% spent more than 30 minutes respectively. The result revealed that there was significant association between receiving health education during the service and immunization status of children ($p < 0.001$) (table 33).

Table 33 Relationship between immunization status and receiving of health education in the last immunization and duration of health education

Variables	Immunization status		χ^2	p-value
	Complete	Incomplete		
	219 cases	167 cases		
	n (%)	n (%)		
Health education during last immunization				
Yes	147 (67.1)	99 (59.3)	2.521	0.112
No	72 (32.9)	68 (40.7)		
Duration of health education (246 cases†)				
Less than 10 mins.	72 (49.0)	21 (21.2)	23.079	<0.001**
10-30 mins.	74 (50.3)	72 (72.7)		
More than 30 mins.	1 (0.7)	6 (6.1)		

*Significant at $p < 0.05$

** Significant at $p < 0.001$

†Those who received health education during last immunization service

4.9.8 Relationship between immunization status and acceptable of service time

Table 34 showed no significant association between immunization status of children and acceptable of service time. Ninety four point one among completely immunized group and 95.8% among incompletely immunized group accept the total service time.

Table 34 Relationship between immunization status and acceptable of service time

Acceptable of total service time	Immunization status		χ^2	p-value
	Complete	Incomplete		
	219 cases n (%)	167 cases n (%)		
Yes	206 (94.1)	160 (95.8)	0.587	0.444
No	13 (5.9)	7 (4.2)		

*Significant at $p < 0.05$

** Significant at $p < 0.001$

4.9.9 Relationship between immunization status and place, distance of immunization and affordable of traveling to immunization and need of outreach clinic

There is no significant association between immunization status of children and the place that mothers took their children to attend the immunization service. Among completed immunization group there were 55.3% of mother who had to travel for 5 to 10 km. to immunization place. The result revealed that there was significant association between distance to immunization service and immunization status of children ($p < 0.001$)

Among completely immunization group, mothers who affordable for traveling to immunization place more likely to have completely immunized children. Among completed immunization group there were 95.8% of mother who mentioned they were affordable to travel to immunization place. The result revealed a strong and

significant association between affordable of mother for going to immunization service of mother and immunization status of children ($p < 0.001$) (table 35).

Table 35 Relationship between immunization status and place and distance of immunization and affordable of traveling to immunization

Variables	Immunization status		χ^2	p-value
	Complete 219 cases n (%)	Incomplete 167 cases n (%)		
Place of immunization (multiple answer)				
SDHPH				
Yes	85 (38.8)	62 (37.1)	1.114	0.735
No	134 (61.2)	105 (62.9)		
Outreach clinic				
Yes	81 (37.0)	60 (35.9)	0.046	0.831
No	138 (63.0)	107 (64.1)		
Hospital				
Yes	39 (17.8)	18 (10.8)	3.720	0.054
No	180 (82.2)	149 (89.2)		
Clinic				
Yes	67 (30.6)	37 (22.2)	3.427	0.064
No	152 (69.4)	130 (77.8)		
Distance to immunization				
Less than 1 km.	53 (24.2)	26 (15.6)	17.796	<0.001**
1-5 Km.	121 (55.3)	75 (44.9)		
5-10 Km.	39 (17.8)	60 (35.9)		
More than 10 km.	6 (2.7)	6 (3.6)		

Table 35 Continued

Affordable to travel to immunization place				
Yes	195 (89.0)	108 (64.7)	33.339	<0.001**
No	24 (11.0)	59 (35.3)		
Outreach clinic (83 cases†)				
Need	23 (95.8)	54 (91.5)	0.472	0.492
Don't need	1 (4.2)	5 (8.5)		

*Significant at $p < 0.05$ ** Significant at $p < 0.001$

†Those who was not affordable for traveling

CHAPTER V

DISCUSSION, CONCLUSION AND RECCOMENDATION

This study purposed to describe the association of maternal knowledge and health services of Myanmar migrant children aged 1-2 years in Tak, Thailand and attempt to provide valuable information for local program planning and also contribute to significant level in implementing the program for health organizations working for the migrants. The study was conducted by interviewing 386 Myanmar migrant mothers form Mae Sot, Phop Pra, Mae Ra Mad and Ta Song Yang Thai-Myanmar border districts. This chapter composed of the discussion, conclusions and recommendations regarding the research findings.

5.1 Discussion

5.1.1 Socio demographic and immunization status

This study result revealed the significant associations between immunization status and district, length of staying in community, religion, occupation and place of delivery.

The study presented the association between district and immunization status of children ($p < 0.001$) which similar to a study on maternal factors related to immunization status of preschool children in Italy reported the higher coverage in mother residency in Northern part of country [OR=1.74; CI 1.32-2.30]. The reason could be form optional vaccines available free of charge in that region (45).

This study showed association between Length of staying in community and immunization status of children ($p < 0.05$). Mothers who have been living in communities between 3 - 7 years were the major group (36.1%) among completely immunization status of children compare to 17.4% of those who stayed in community less than 3 years. Similarly to a study in Istanbul found that children whose both parents are living in Istanbul at least for twenty years are vaccinated 3.4 times more than those whose living in Istanbul less than this time (46).

The study result showed the association between region and immunization status of children ($p < 0.001$). A systematic reviewed of 202 literatures related reasons underlying non and under vaccinate in low and middle income countries mentioned that religious beliefs against vaccinations were reported but while religious backgrounds were occasionally associated with low vaccine uptake, particularly in Pakistan, India, and Nigeria but it was not always clear whether this association was due to specific religious convictions opposing vaccination or rather to perceived barriers, such as belonging to a minority ethnic or linguistic group.

Occupation of mother was significantly associate ($p < 0.05$) with immunization status of children. Unemployed mothers were the major group in complete immunized. Similar to a study in southern district of Nigeria resulted higher coverage among unemployed or housewife mother (47). There was a possibility that unemployed mother have higher chance to follow immunization appointment than those who has to work.

Health facility based delivery presents 69.4% of completely immunized children while home based delivery presented 35.5% and showed the relationship between immunization status of children and place of delivery with significant association ($p < 0.001$) which similar to a study in Vientiane province; Lao PDR which mentioned accessibility to health service was significant associate with immunization status of children (48). But this study result presented the opposed result with a study in Oudomxay province, Lao PDR that reported no significant association between immunization status and place of delivery in the study of factor affecting routine immunization converge among children in 12-59 months. (49). A possible reason behind this difference could be from Oudomxay province only studied the coverage of BCG, DTP, OPV and Measles and not included HB at birth or booster.

5.1.2 Maternal knowledge regarding immunization

Regarding maternal knowledge relation to children immunization status, table 27 showed that among a group of complete immunization, moderate level of knowledge was a major group and there was a significantly association between knowledge and immunization status.

Level of knowledge was significantly associated with immunization status in the study area ($p < 0.00$). A study in Vientiane province, Lao PDR also reported a relationship between mother's knowledge and immunization status of children (36) as well as a result of a study among Myanmar migrants in Mahachai, Thailand showed the association between knowledge of the mother and incomplete immunization of children. The low level of knowledge led to 95.5% incomplete immunization while the moderate and high to 4.5% (36).

5.1.3 Health service regarding immunization

Health service of this study referred to information regarding immunization service, provider practice, waiting time and outreach clinic availability.

This study revealed an association between immunization status and information content regarding vaccine preventable disease ($p < 0.05$) which is similar to a study of factors affecting routine immunization coverage among children aged 12-59 months in Lao PDR. Knowing immunization preventable disease increased the chance of having fully immunized children ($p < 0.01$) (49). Side effect as information content was also significantly associated with immunization status by this study ($p < 0.001$). The main barriers identified by a study of barriers to immunization among migrant children from Myanmar qualitatively studied in Tak was fear of the side effects. (50) Unpleasant experiences, concerns of vaccine safety may lead clients to postpone or even prevent some parents from receiving needed vaccinations to their children. (27)

Language barrier was also one of an obstacle for migrants to receive effective information in this study. Information providers should be aware of providing messages in local migrant languages. A study in Thailand found that language and cultural barriers were factors that limited migrants' access to health services as well as a study among migrants in Mediterranean Countries in south east Europe also recommended to provide communication skill training for immunization service delivery health care workers (39).

Health education content and duration in this study were significant associate of education with immunization status of children ($p < 0.001$) in this study which was similar to a study among rural Nigerian in 2011 also mentioned long waiting time at the health facility was one of the reasons for incomplete vaccination and factors for missed opportunities (40). Long health education duration lead to longer service time and when the service time was too long, it can also prevent some parents from talking their children to immunization.

There was no association between place that migrant mothers took their children for immunization and immunization status of children in this study but there was an association between distance to immunization place and immunization status of children. The result conform with a study on factors affecting routine immunization coverage among children aged 12-59 months in Lao PDR which reported distance as an influential factors on fully immunized status in children (49) and a study in Kabul, Afghanistan about health-care provision factors associated with child immunization coverage resulted fully immunized status was positively associated with close proximity to a health facility ([OR] = 1.92, [95%CI, 1.08, 3.39]) (43).

5.1.4 Immunization coverage in migrant children

A Global under 1 year routine immunization coverage targeted at >90% and this study result presented 56.7% of under 1 routine immunization coverage among Myanmar migrant children age 1-2 years of Tak province, Thailand . The coverage by type of vaccines was 98.4% of BCG, 82.9% of HBV, 95.1% of DTP-HB1, OPV1, 82.4% of DTP-HB2, OPV2, 68.4 % of DTP-HB3, OPV3 and 66.1% of MMR which obviously showed the continuing decrease of coverage at later immunization doses especially DTP-HB3, OPV3 (6 months) and MMR (9 months). The same coverage pattern was also presented by a study of Hlaing E. in Mahachai migrant context presented 96.7% of BCG, 81.9% of DTP1/OPV1, 78.1% of DTP2/OPV2, 59.6% of DTP3/OPV3 and 44.3% of MMR (6)

Follow up and communication between health centers for information sharing in order to reflect clients practice would be an option to increase

immunization coverage especially in later doses (27). Different approaches such as outreach clinic or children health insurance promoting may need to be considered in the study areas (43).

Regarding immunization status of migrant children in Phop Pra, overall complete immunization coverage was only 29.9% which disclose a large difference to 75.0% in Mae Sot. Mothers living in Phop Pra are likely to be novel to Thai health system and accessibility to health facilities as well as language barriers for receiving information regarding immunization in Phop Pra showed 54.0%. Community approach by health providers or networks that can use local migrant language may be needed

Mae Sot is basically a center of health supports from either government or private agencies that provide services to migrants. Barriers of migrant mothers in Mae Sot was the difficulty regarding expenses for transportation to immunization place and 15.4% of them mention too long waiting time during the service since Mae Sot had the highest density of migrant population compare other 3 districts and limitation of human resources were also raised by health care providers. There were 10.3% of mother in Mae Sot mentioned that they were afraid of police on the way to immunization which similar with a study of barriers to immunization among children of migrant workers from Myanmar living in Tak province that fearing of being arrested was a finding unique to this context (50).

Ta Song Yang and Mae Ra Mad district presented 65.8% and 65.0% of completed immunization coverage among migrant children respectively. Barrier for 28.6% migrant mothers in Mae Ra Mad who did not take their children to immunization was adverse reaction if previous immunization. Emphasizing to provide knowledge on side effect and basic home care for mild side effect would be useful for minimizing the barrier of incomplete vaccinated children in this area. There were 67.1% of mothers with incomplete immunized children in all settings mentioned that they did not take their children to immunization because they need to work during immunization and 26.9% mentioned the place to immunization is too far. Reconsidering service timing and frequency at health facilities and outreach clinic with particular approach in each setting may be needed

5.2 Benefits of the Study

The result of this study can be used beneficially for local government or non-government health provider to get the baseline information as well as evaluate the work effectiveness regarding immunization among migrant communities at border context infirmity with the established project activities, budgeting and human resources allocation based on the findings. EPI program design in study areas such as activities, frequency, timing as well as budgeting and human resources allocation can be estimate or planed based on the study findings.

Thai and Myanmar Ministry of Public Health could further plan for key performance indicators as well as for reconsidering reasons for the already established plan or activities which in turn will create a positive result in border health master plan.

5.3 Limitation of the study

This study was conducted in migrant communities in four Thai Myanmar border districts in Tak Province .Therefore the socio demographic characteristic, level of knowledge about immunization and health services regarding immunization may not reflect or generalized to the whole Myanmar migrant community in Thailand. The conceptual frame work of this study only focused and recruited Myanmar migrant mothers with a child age 1-2 years and first year of life immunization data was collected and studied.

5.4 Recommendation

5.4.1 Recommendation for implementer

Local health service providers and related agencies should discuss about responsible area to avoid duplication of services providing in migrant community. Health facilities based delivery should be promoted especially in Phop Pra district.

Information providing to migrant mothers should be prepared in and provide under deliberation of avoiding the language barriers by using local migrant language. Knowledge about a measles , whooping cough , common side effect of vaccination

and a child should complete under 1 immunization by the aged of 9 months should be strengthen.

Health education during immunization is essential and needed especially the clear content of side effects with appropriate duration especially at SDHPH and outreach clinic and outreach clinic should be organized in low immunization coverage area as well as reconsidering timing and frequencies to minimize missed opportunity due to distance and inconvenience timing.

5.4.2 Recommendation for further research

In-depth interview or focus group discussion should be perform among mothers with incomplete immunized children to study more detail such as barriers of receiving health education, role and responsibilities area of both government and non-government health provider should be assess prior implementation. Community health volunteer role could be additional included and examined by further study to confine the whole aspect that may influence immunization status.

Similar studies should be also conducted among migrants in other areas or in different aged groups (under 5 years old or school aged) to draw out more representative samples and carry out to determine the most appropriate methods to increase immunization coverage of Myanmar migrant children living in Thailand.

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APPENDIX

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Appendix A

Thai informed consent form

หนังสือแสดงความยินยอมเข้าร่วมการวิจัย

ทำที่.....

วันที่.....เดือน.....พ.ศ.

เลขที่ ประชากรตัวอย่างหรือผู้มีส่วนร่วมในการวิจัย.....

ข้าพเจ้า ซึ่งได้ลงนามทำหนังสือนี้ ขอแสดงความยินยอมเข้าร่วมโครงการวิจัย

ชื่อโครงการวิจัย การศึกษาความสัมพันธ์ของความรู้มารดาและบริการสร้างเสริมภูมิคุ้มกันต่อ
การรับ วัคซีนชั้นพื้นฐานในกลุ่มเด็กแรงงานข้ามชาติจากพม่า อายุ 1-2 ปี จังหวัดตาก
ประเทศไทย

ชื่อผู้วิจัย นางสาวดารารพร พระคุณวิเศษ

ที่อยู่ติดต่อ องค์การอินเตอร์เนชันแนล เรสคิว คอมมิตตี หมู่บ้านแม่สอดวิลล่า เลขที่ 9/445
ซ.17 ถ.อินทรีศรี ต.แม่สอด อ.แม่สอด จ.ตาก 63110 โทรศัพท์ + 66 (0)55 802 290, โทรสาร
+66 (0)55 802 283 มือถือ 081 952 1885 Email: pdaraporn@hotmail.com

ข้าพเจ้าได้รับทราบรายละเอียดเกี่ยวกับที่มาและวัตถุประสงค์ในการทำวิจัย
รายละเอียดขั้นตอนต่างๆ ที่จะต้องปฏิบัติหรือได้รับการปฏิบัติ ความเสี่ยงอันตราย และ
ประโยชน์ซึ่งจะเกิดขึ้นจากการวิจัยเรื่องนี้ โดยได้อ่านรายละเอียดในเอกสารชี้แจงผู้เข้าร่วมการ
วิจัยโดยตลอด และได้รับคำอธิบายจากผู้วิจัย จนเข้าใจเป็นอย่างดีแล้ว

ข้าพเจ้าจึงสมัครใจเข้าร่วมในโครงการวิจัยนี้ ตามที่ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมการ
วิจัย โดยข้าพเจ้ายินยอมตอบแบบสอบถามโดยการสัมภาษณ์

ข้าพเจ้ามีสิทธิถอนตัวออกจากการศึกษาเมื่อใดก็ได้ตามความประสงค์ โดยไม่ต้องแจ้ง
เหตุผล ซึ่งการถอนตัวออกจากการวิจัยนั้น จะไม่มีผลกระทบในทางใดๆ ต่อข้าพเจ้าทั้งสิ้น

ข้าพเจ้าได้รับคำรับรองว่า ผู้วิจัยจะปฏิบัติต่อข้าพเจ้าตามข้อมูลที่ระบุไว้ในเอกสารชี้แจง ผู้เข้าร่วมการวิจัย และข้อมูลใดๆ ที่เกี่ยวข้องกับข้าพเจ้า ผู้วิจัยจะเก็บรักษาเป็นความลับ โดยจะนำเสนอข้อมูลการวิจัยเป็นภาพรวมเท่านั้น ไม่มีข้อมูลใดในการรายงานที่จะนำไปสู่การระบุตัวข้าพเจ้า

หากข้าพเจ้าไม่ได้รับการปฏิบัติตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมการวิจัย ข้าพเจ้าสามารถร้องเรียนได้ที่คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย ชั้น 4 อาคารสถาบัน 2 ซอยจุฬาลงกรณ์ 62 ถนนพญาไท เขตปทุมวัน กรุงเทพฯ 10330 โทรศัพท์ 0-2218-8147 โทรสาร 0-2218-8147

E-mail: eccu@chula.ac.th

ข้าพเจ้าได้ลงลายมือชื่อไว้เป็นสำคัญต่อหน้าพยาน ทั้งนี้ข้าพเจ้าได้รับสำเนาเอกสารชี้แจงผู้เข้าร่วมการวิจัย และสำเนาหนังสือแสดงความยินยอมไว้แล้ว

ลงชื่อ..... ลงชื่อ.....

(นางสาวดารารพร พระคุณวิเศษ) (.....)

ผู้วิจัยหลัก

ผู้มีส่วนร่วมในการวิจัย

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Appendix B

English informed consent form

Address.....

Date

Code number of participant

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

Title “Association of maternal knowledge and health service to immunization status in Myanmar migrant children aged 1-2 years in Tak Province Thailand”

Principle researcher’s name

Contact address ...Miss Daraporn Prakunsiwit**Telephone** ...081-952-1885.....

I have **(read or been informed)** about rationale and objective(s) of the project, what I will be engaged with in details, risk/harm and benefit of this project. The researcher has explained to me and I **clearly understand with satisfaction.**

I willingly **agree** to participate in this project and consent the researcher to questionnaires.

I have **the right** to withdraw from this research project at any time as I wish with no need to **give any reason.** This withdrawal **will not have any negative impact upon.**

Researcher has guaranteed that procedure(s) acted upon me would be exactly the same as indicated in the information. Any of my personal information will be **kept confidential.** Results of the study will be reported as total picture. Any of personal information which could be able to identify me will not appear in the report.

If I am not treated as indicated in the information sheet, I can report to the Ethics Review Committee for Research Involving Human Research Subjects,

Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4 Floor,
Soi Chulalongkorn 62,

Phyathai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail:
eccu@chula.ac.th,

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

Sign

(.....)

Researcher

Sign

(.....)

Participant

Sign

(.....)

Witness



จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

Appendix C

Burmese informed consent form

သဘောတူညီချက်ရယူသည့်လျှောက်လွှာ

အမှတ်တံဆိပ်စာ _____

အမှတ် _____

ပိုင်ကူညီသူ၏နံပါတ် _____

ကျွန်တော်၊ ကျွန်မ သည်အောက်ပါ စိတ်ပိုင်းဆိုင်ရာနှင့် ခုခံအားပံ့ပိုးမှုဆိုင်ရာ အသိပညာ ကို တာဝန်ခံရိုင်း၊ ထိုင်နိုင်ရိုင်း၊ တွင်ရှိသော ရွှေ့ပြောင်းအလုပ်သမားများ၏ ၁-၂ နှစ်အတွက်ကလေးငယ်များအားပေးမည့် သုတေသနလုပ်ငန်းအားပိုင်ကူညီပါမည်။

သုတေသနလုပ်သူအမည် _____

ဆက်သွယ်ရန်လိပ်စာ _____

ဖုန်းနံပါတ် _____

ဤသုတေသနလုပ်ငန်း ကို သုတေသန လုပ်သူမှအသေးစိတ်ရှင်းပြထားသောကြောင့် ကျွန်ုပ်တို့ရှင်းရှင်းလင်းလင်းနားလည်သဘောပေါက်၍ ဤလုပ်ငန်းအားအတုတကွပိုင်ကူညီမည်ဖြစ်ပါသည်။

သုတေသနလုပ်သူ၏ မေတ္တာများကိုစိတ်ရှည်လက်ရှည်ဖြေကြားပေးပါမည်။

ဤ သုတေသနလုပ်ငန်းသည်ကျွန်ုပ်တို့အားတင်တိုက်တန်းပြီးပါစင်နိုင်သည်မဟုတ်ပါ။ အကယ်၍ကျွန်ုပ်တို့နှင့်သက်လွှင့် အချိန်မရွေးပြင်ပယ်သည့်ကျောက်လွှာပေးပို့နိုင်ပါသည်။

ဤသို့ပြုလုပ်လျှင်မည်သည့်ဆိုးကျိုးများရှိမည်မဟုတ်ပါ။ သုတေသနလုပ်သူသည်ကျွန်ုပ်တို့ကိုယ်ရေးကိုယ်တာကိစ္စများကိုလျှို့ဝှက်စွာထားမည်ဟုတ်ဝမ်းကတိပေးထားသည်။ ထို့နောက်

ရလဒ်အခြေများကိုလည်းကျွန်ုပ်တို့သဘောတူညီချက်ကိုရယူပြီးမှပေးပြန်မည်ဖြစ်ပါသည်။ အကယ်၍ သဘောတူညီချက်နှင့်မကိုက်ညီပါက အောက်ပါအဖွဲ့အစည်းကိုတိုင်တန်းနိုင်ပါသည်။

(Ethics Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). Institute Building 2, 4 Floor, Soi Chulalongkorn 62, Phyat hai Rd., Bangkok 10330, Thailand, Tel: 0-2218-8147 Fax: 0-2218-8147 E-mail: ecru@chula.ac.th)

သုတေသနမှရရှိလာမည့် အခြေများကိုလည်းကျွန်ုပ်တို့လက်ခံရရှိမည်ဖြစ်ပါသည်။

ထိုမြို့လက်မှတ် _____

ထိုမြို့လက်မှတ် _____

← သုတေသနလုပ်သူ

← ပိုင်ကူညီသူ

ထိုမြို့လက်မှတ် _____

← မျက်မြင်သက်သေ

Appendix D

Thai questionnaire

หมายเลขแบบสอบถามเลขที่.....

การศึกษาความสัมพันธ์ของความรู้มารดาและบริการสร้างเสริมภูมิคุ้มกันต่อการรับ

วัคซีนขั้นพื้นฐานในกลุ่มเด็กแรงงานข้ามชาติจากพม่า อายุ 1-2 ปี จังหวัดตาก ประเทศไทย

กรุณาทำเครื่องหมาย ✓ ในช่องว่าง ตามข้อมูลที่เป็นจริง

อ.แม่สอด อ.พบพระ อ.แม่ระมาด อ.ท่าสองยาง

วันที่เก็บข้อมูล: เวลา:

บ้านเลขที่:ชื่อมารดา.....

ส่วนที่ 1: ข้อมูลทางสังคมและประชากรศาสตร์ (กรุณาทำเครื่องหมาย ✓ ลงในช่อง หรือเขียนคำตอบลงในช่องว่าง)

- ท่านอายุเท่าใด ปี
- ท่านอาศัยอยู่ในชุมชนนี้มานานเท่าใด ปี.....เดือน
- ท่านเป็นชนเผ่าใด

พม่า กะเหรี่ยง ไทยใหญ่ มอญ

อื่นๆ (โปรดระบุ).....
- ท่านนับถือศาสนาใด

พุทธ คริสต์ อิสลาม ฮินดู

นับถือผี อื่นๆ (โปรดระบุ).....
- ท่านจบการศึกษาสูงสุดระดับใด (หมายเหตุ: ตามระบบการศึกษาในประเทศไทยพม่า)

ไม่ได้รับการศึกษา ประถมศึกษา (อนุบาล ถึง ป.6)

มัธยมศึกษาตอนต้น มัธยมศึกษาตอนปลาย

(ม.1- ม.3 หรือ เกรด 5 - 8)

(ม.4-6 หรือ เกรด 9 และ10)

อนุปริญญา ปริญญาตรีหรือสูงกว่า

อื่นๆ (โปรดระบุ).....

6. ท่านประกอบอาชีพอะไร

แม่บ้าน คนงานก่อสร้าง คนงานสวน / ไร่ คนงานในโรงงาน

คนงานในฟาร์มเลี้ยงสัตว์ ลูกจ้างในร้านอาหาร ลูกจ้างในร้านแผงลอย

อื่นๆ (โปรดระบุ).....

7. รายรับต่อเดือนของท่านบาท

8. รายรับต่อเดือนของครอบครัวบาท

9. รายจ่ายเดือนของครอบครัว.....บาท

10. จำนวนบุตรทั้งหมดของท่านคน บุตรชาย =คน บุตรหญิง =คน

11. วันเกิดของบุตรคนที่อายุอยู่ระหว่าง 1-2 ปี

12. เพศของบุตรคนที่อายุอยู่ระหว่าง 1-2 ปี.....

13. ลำดับการเกิดบุตรคนที่อายุอยู่ระหว่าง 1-2 ปี.....

14. สถานที่เกิดของบุตรคนที่อายุอยู่ระหว่าง 1-2 ปี

15. ท่านมีสิทธิในหลักประกันสุขภาพถ้วนหน้าหรือไม่

มี

ไม่มี

ไม่ทราบ

ส่วนที่ 2: ความรู้ของมารดาเกี่ยวกับการรับวัคซีนพื้นฐาน (กรุณาทำเครื่องหมาย ✓ ลงในตาราง)

16. กรุณาบอกชื่อโรคที่ป้องกันได้โดยวัคซีน (ตอบได้มากกว่า 1 โรค)

หมายเหตุ : ผู้สัมภาษณ์ระบุลำดับชื่อโรคที่ตอบก่อน-หลัง

_____ วัณโรค _____ ไอกรน _____ บาดทะยัก _____ โปлио
 _____ คอตีบ _____ หัด _____ ตับอักเสบนิต ปี _____ ไม่ทราบ

_____ อื่นๆ (โปรดระบุ).....

ข้อ	คำถาม	ใช่	ไม่ใช่	ไม่ทราบ
17.	วัคซีนพื้นฐานสามารถป้องกันโรคติดต่อซึ่งป้องกันได้โดยวัคซีนในเด็กเล็กได้			

18.	เด็กเล็กต้องได้รับวัคซีนพื้นฐานครบเมื่อมีอายุครบ 9 เดือน			
19.	การได้รับวัคซีนไวรัสตับอักเสบบี (H BV) สามารถป้องกันการติดเชื้อไวรัสตับอักเสบบีชนิดบีได้			
20.	เราสามารถป้องกันโรโปลิโอในเด็กเล็กผ่านโดยการรับวัคซีนพื้นฐาน			
21.	เด็กเล็กสามารถได้รับการป้องกันโรคหัดโดยการรับวัคซีนพื้นฐาน			
22.	เด็กเล็กควรได้รับวัคซีนพื้นฐานอย่างน้อย 5 ชนิดเป็นอย่างน้อย			
23.	เด็กเล็กควรได้รับวัคซีนโปลิโอ (OPV) อย่างน้อย 3 ครั้งก่อนอายุครบ 1 ปีบริบูรณ์			
24.	โรคไอกรนเป็นโรคทางระบบทางเดินหายใจ			
25.	โรคหัดเป็นโรคที่ติดต่อได้ยาก			
26.	การมีไข้อ่อนๆ เป็นอาการข้างเคียงที่เกิดขึ้นได้ทั่วไปหลังจากได้รับวัคซีนพื้นฐาน			
27.	อาการปวดบริเวณที่ฉีดวัคซีนหลังจากการได้รับวัคซีนพื้นฐานเป็นอาการข้างเคียงที่ปกติ			
28.	เด็กเล็กที่มีอาการอุจจาระร่วงไม่ควรได้รับวัคซีน			
29.	เด็กเล็กที่มีไข้สูงสามารถรับวัคซีนพื้นฐานได้			
30.	เด็กเล็กควรได้รับวัคซีนป้องกันวัณโรค (BCG) และเข็มแรกของวัคซีนป้องกันไวรัสตับอักเสบบี (HBV) เมื่อแรกคลอด			
31.	เด็กเล็กต้องได้รับเข็มแรกของวัคซีนโรคหัด(MMR) เมื่ออายุครบ 9 เดือน			

ส่วนที่ 3: การบริการวัคซีนขั้นพื้นฐาน (กรุณาทำเครื่องหมาย ✓ ลงในช่อง หรือเขียนคำตอบลงในช่องว่าง)

ข้อมูล

32. ท่านเคยได้รับข้อมูลเกี่ยวกับวัคซีนขั้นพื้นฐานหรือไม่
 เคย ไม่เคย (ข้ามไปข้อที่ 35)
33. ท่านได้รับข้อมูลเกี่ยวกับวัคซีนขั้นพื้นฐานผ่านช่องทางใด (ตอบได้มากกว่า 1 ข้อ)
 หมายเหตุ : ผู้สัมภาษณ์ระบุลำดับชื่อโรคที่ตอบก่อน-หลัง
 _____ เสียงตามสาย _____ ผู้นำชุมชน _____ เพื่อนบ้าน
 _____ ญาติ _____ บอร์ดให้ความรู้ _____ บุคลากรด้านสุขภาพมาเยี่ยมบ้าน
 _____ อื่นๆ (โปรดระบุ).....
34. ท่านได้รับข้อมูลอะไรเกี่ยวกับวัคซีนขั้นพื้นฐานบ้าง (ตอบได้มากกว่า 1 ข้อ)
 โรคที่สามารถป้องกันได้โดยวัคซีน อาการข้างเคียงของการรับวัคซีน
 วันที่และเวลาในการรับวัคซีนขั้นพื้นฐาน ผลจากการไม่ได้รับวัคซีนขั้นพื้นฐาน
 สถานที่ในการรับวัคซีนขั้นพื้นฐาน ไม่ทราบ / จำไม่ได้
 อื่นๆ (โปรดระบุ).....
35. ท่านเคยได้รับการติดตามจากบุคลากรด้านสุขภาพเพื่อให้ไปรับวัคซีนขั้นพื้นฐานครั้งถัดไปหรือไม่
 เคย ไม่เคย ไม่ทราบ
36. อุปสรรคด้านภาษาเป็นปัญหาในการเข้ารับบริการวัคซีนขั้นพื้นฐานของท่านหรือไม่
 เป็น ไม่เป็น ไม่ทราบ

ผู้ให้บริการ

37. บุคลากรด้านสุขภาพได้มาเยี่ยมเยียนท่านในเดือนที่ผ่านมาหรือไม่
 มา ไม่มา ไม่ทราบ
38. มีบุคลากรด้านสุขภาพที่แปลภาษาให้ท่านขณะรับบริการรับวัคซีนขั้นพื้นฐานหรือไม่
 มี ไม่มี ไม่ทราบ
39. ท่านได้รับข้อมูลด้านสุขภาพเกี่ยวกับวัคซีนขั้นพื้นฐานขณะรับบริการรับวัคซีนขั้นพื้นฐานหรือไม่
 ได้ ไม่ได้ (ข้ามไปข้อที่ 41) ไม่ทราบ

40. ท่านได้รับข้อมูลอะไรเกี่ยวกับวัคซีนขั้นพื้นฐานขณะรับบริการบ้าง (ตอบได้มากกว่า 1 ข้อ)

- การป้องกันเด็กจากโรค ผลจากการไม่ได้รับวัคซีนขั้นพื้นฐาน
 อาการข้างเคียงของการรับวัคซีน ตารางการมารับวัคซีนขั้นพื้นฐาน
 ไม่ทราบ อื่นๆ (โปรดระบุ).....

41. บุตรของท่านได้รับการตรวจอุณหภูมิร่างกายก่อนการรับวัคซีนขั้นพื้นฐานหรือไม่

- ได้ ไม่ได้ ไม่ทราบ

ระยะเวลาบริการ

42. ท่านใช้เวลาทั้งหมดในการรับบริการวัคซีนขั้นพื้นฐานครั้งล่าสุดเท่าใด.....นาที

43. ท่านได้รับข้อมูลสุขศึกษาในการรับบริการวัคซีนขั้นพื้นฐานครั้งล่าสุดหรือไม่

- ได้ ไม่ได้ (ข้ามไปข้อที่ 48) ไม่ทราบ

44. ท่านใช้เวลาในการรับฟังข้อมูลสุขศึกษาในการรับบริการวัคซีนขั้นพื้นฐานครั้งล่าสุดเท่าใด.....นาที

45. ท่านพึงพอใจในระยะเวลาในการรับบริการวัคซีนขั้นพื้นฐานหรือไม่

- พอใจ ไม่พอใจ ไม่ทราบ

หน่วยบริการเคลื่อนที่

46. ท่านรับบริการวัคซีนขั้นพื้นฐานที่ไหน (ตอบได้มากกว่า 1 ข้อ)

- รพ. สต. (อนามัย) หน่วยบริการเคลื่อนที่ โรงพยาบาล คลินิกเอกชน
 อื่นๆ (โปรดระบุ).....

47. ระยะทางในการเดินทางไปรับบริการวัคซีนขั้นพื้นฐาน

- ประมาณ <1 กม. ประมาณ 1-5 กม. ประมาณ 5-10 กม. ประมาณ >10 กม.

48. ท่านสะดวกในการไปรับบริการวัคซีนขั้นพื้นฐานหรือไม่

- สะดวก (ข้ามไปส่วนที่ 4) ไม่สะดวก ไม่ทราบ

49. ท่านมีความประสงค์ให้มีหน่วยบริการวัคซีนขั้นพื้นฐานเคลื่อนที่ในชุมชนของท่านหรือไม่

- มี ไม่มี ไม่ทราบ

ส่วนที่ 4: การรับวัคซีนขั้นพื้นฐาน (กรุณาทำเครื่องหมาย ✓ ลงในช่อง หรือเขียนคำตอบลงในช่องว่าง)

50. ท่านมีสมุดหรือบัตรบันทึกการรับวัคซีนของบุตรหรือไม่?

- มี ไม่มี ไม่ทราบ

หมายเหตุ : ผู้สัมภาษณ์ต้องบันทึกวัน เดือน ปี ที่ได้รับวัคซีนจากสมุดหรือบัตรบันทึกการรับวัคซีน

วัคซีนขั้นพื้นฐาน	วัน-เดือน-ปี
BCG (ภายใน 7 วันหลังคลอด)	
DTP1	
DTP2	
DTP3	
OPV1	
OPV2	
OPV3	
HBV (ภายใน 7 วันหลังคลอด)	
HBV1	
HBV2	
HBV3	
Measles	

51. ได้รับวัคซีนพื้นฐาน

- ครบ (สิ้นสุดสัมภาษณ์และกล่าวขอบคุณ)
- ไม่ครบ

52. อะไรเป็นสาเหตุให้บุตรของท่านไม่สามารถไปรับวัคซีนพื้นฐานได้ครบ (ตอบได้มากกว่า 1 ข้อ)

- ไม่ทราบสถานที่ให้บริการ บุตรมีอาการข้างเคียงจากการรับวัคซีน
- ไม่เชื่อว่าวัคซีนป้องกันโรคได้ สถานที่ให้บริการไกล
- เวลาในการให้บริการไม่เอื้ออำนวย ระยะเวลาในการรอรับบริการนาน
- ค่าเดินทางไม่เพียงพอ มารดาไม่สะดวก
- มารดาไม่สบาย ไม่มีผู้ให้บริการ
- อื่นๆ (โปรดระบุ).....

ขอบคุณท่านสำหรับความร่วมมือ

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Appendix E

English questionnaire

Questionnaire No.....

ASSOCIATION OF MATERNAL KNOWLEDGE AND HEALTH SERVICE

TO IMMUNIZATION STATUS OF MYANMAR MIGRANT CHILDREN AGED 1-2 YEARS

IN TAK PROVINCE THAILAND

Please put ✓ mark where applicable in

Mae Sot Phob Pra Mae Ra Ma Tha Song Yang

Date of Data Collection: Time:

Name of Interviewer: Household Number:

Part I Socio-demographic characteristic of mother (Put ✓ mark where applicable or fills in the blank)

1. Age of mother Years.....Month
2. How long have you been living in this community? years.....months
3. Ethnicity

Burmese Karen Shan Mon

Other (Specify).....
4. What is your religion?

Buddhism Christianity Islam Hindu

Animism Other (Specify).....
5. Highest educational attainment of mother

Illiterate Primary school (kindergarten to standard 4)

Middle school (standard 5 to 8) High school (standard 9 and 10)

Diploma University or higher

Others (specify).....

6. Occupation of mothers

- Housewife Contractual worker Plantation worker
 Factory worker Farm worker Restaurant helper
 Selling Others (specify).....

7. Mother income per monthBaht

8. Family income per month.....Baht

9. Family expenses per month.....Baht

10. Total number of children: Total Male = Female =

11. Birth day of child aged 1-2 years.....

12. Sex of child aged 1-2 years

13. Birth order of child aged 1-2 years.....

14. Place of birth of child aged 1-2 years.....

15. Do you have Universal Coverage health insurance?

- Yes No Don't know/No response

Part II Knowledge of mother regarding immunization (Put ✓ mark where applicable)

16. What are diseases can be prevented by vaccine? (multiple answers with ranking)

- _____ Tuberculosis _____ Diphtheria _____ Tetanus _____ Poliomyelitis
 _____ Pertussis _____ Measles _____ Hepatitis B _____ Don't know
 _____ Other (specify).....

No	Statements	Yes	No	Don't Know/No response
17.	Immunization can prevent childhood vaccine preventable diseases.			
18.	The child must be immunized according to routine immunization schedule by the age of 9 months.			
19.	Hepatitis B vaccine can prevent your child from hepatitis B viral infection.			
20.	The child will be protected from polio by receiving vaccination.			
21.	The child will be protected from measles by injecting vaccine.			
22.	The children should get 5 types of vaccination at least.			
23.	The child should get 3 times of immunization of Polio (OPV) at least under 1 year of age.			
24.	Whooping cough is a disease of respiratory tract.			
25.	Measles is a highly infectious disease.			
26.	Mild fever is a common after receiving immunization.			
27.	Soreness at the site of injection after vaccination is a common side effect.			

28.	Diarrhea is a side effect of routine immunization schedule.			
29.	Vaccination can be given when a child has high fever.			
30.	Vaccine for TB (BCG) and first dose of Hepatitis B (HBV) should be given at birth.			
31.	First dose of Measles/MMR vaccine must be given at the age of 9months.			

Part III Health service (put ✓ mark where applicable or fills in the blank)

Information

32. Have you ever receive any information about Immunization?

- Yes No (Skip to 35)

33. If yes, how do you know about immunization information? (multiple answers with ranking)

- _____ Loud speaker _____ Village Leader
 _____ Neighbor _____ Relatives
 _____ Information board _____ Home visit by health provider
 _____ Other (Specify).....

34. What were the messages that you have heard? (multiple answers)

- Vaccine preventable diseases Side effect of vaccination
 Timing or date of vaccination Consequences of un-vaccination
 Place of vaccination Don't know / Did not remember
 Others (specify).....

35. Were you ever been reminded by practice provider for the next immunization?

- Yes No Don't know/No response

36. Are there any language barriers for receiving information regarding immunization?

- Yes No Don't know/No response

Provider practice

37. Does the health worker visit your house during last 4 week?

- Yes No Don't know/No response

38. Are there any interpreters available during immunization service?

- Yes No Don't know/No response

39. Are there any health message regarding immunization provided during immunization service?

- Yes No (Skip to 41) Don't know/No response

40. If yes, what is the information about? (multiple answers)

- Protect child against diseases Consequences of un-vaccination
 Side effect of vaccination Vaccination schedule
 Don't know others (Specify).....

41. Did child's body temperature screening was conducted before immunization?

- Yes No Don't know/No response

Waiting time

42. How much time did you spend for the latest immunization session?

..... Minutes

43. Did you receive any health information during the latest immunization session?

- Yes No (Skip to 48) Don't know/No response

44. How much time did you spend for health education during last immunization session?.....minutes

45. Is the service time acceptable for you?

- Yes No Don't know/No response

Outreach clinic

46. Where did you get immunization?

- Health center Outreach clinic Hospital Private clinic
 Others

47. Approximately distance to health facility for immunization

- <1 km. 1-5 km. 5-10 km. >10 km.

48. Are you affordable for going to immunization session?

- Yes No Don't know/No response

49. If no, do you expect an outreach clinic?

- Yes No Don't know/No response

Part IV Child Immunization (put ✓ mark where applicable or fills in the blank)

50. Do you have vaccination card with appointment?

- Yes (Record immunization date from vaccination card)
 No / Don't know/No response (Thank you and end the interviewing)

Vaccine	Date /Month /Year
BCG within 7 days	
DTP1	
DTP2	
DTP3	
OPV1	
OPV2	
OPV3	
HBV within 7 days	

HBV1	
HBV	
HBV3	
Measles	

51. Fully immunized

Yes (Thank you and end the interview)

No (If no, go to question 52)

52. Why was the child not immunized? (multiple answers)

Place and time of immunization unknown Previous vaccine's reaction

No trust in immunization Places of vaccination too far

Time of vaccination inconvenient Long waiting time

Not enough money for transportation Mother too busy

Illness of mother No vaccinator

Others (specify).....

Thank You for participation

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Appendix F

Burmese Questionnaire

<p>မေးခွန်းများ</p> <p>အမှတ်စဉ်.....</p>
--

ထိုင်းနိုင်ငံတွင် ဧနုထိုင်သော မြန်မာရွှေ့ပြောင်းအလုပ်သမားတို့၏ မိခင်နှင့်ကလေးများ အသက် ၁ နှစ်မှ ၂ နှစ်အတွင်း ကာကွယ်ဆေးနှင့် ပက်သတ်သော အသိပညာ သဘောထားများကိုလေ့လာခြင်း။

ဤနယ် များကို (✓)ဖြင့် ထဲတွင်အမှတ်အသားဖြင့်ခြစ်ပေးပါ။

ဝဲဆောက်မြို့ ဝိုးဖလ မယ်လမတ် ထာ့ဆောင်ရန်

သတင်းအချက်အလက်ပေးသည့် နေ့စွဲ ----- မေးခွန်းပေးသူ၏ အမည် -----

ပိသားစု အရေအတွက် -----

အပိုင်း (၁) လူမှုရေးဆိုင်ရာ မိခင်များ၏ အချက်အလက်များ (သက်ဆိုင်သည့်နေရာတွင် ✓ အမှတ်ဖြင့် ထဲတွင် မှတ်သားပေးပါ (သို့) ကွက်လပ်နေရာတွင် အဖြေများဖြည့်ပေးပါ။)

- ၁။ မိခင်၏မွေးဖွားသည့်သက္ကရာဇ်(ခုနှစ်) ----- လ ----- ရက် -----
- ၂။ ဤရပ်ကွက်တွင် သင်မည်မျှကြာနေထိုင်လာခဲ့ပြီနည်း။ (နှစ်ပေါင်း) ----- (လပေါင်း) -----
- ၃။ လူမျိုး
 - မြန်မာ ကရင် ရှမ်း မွန်
 - တခြား (ဖော်ပြပါ) -----
- ၄။ သင်ဘယ်ဘာသာကို ကိုးကွယ်ပါသလဲ။
 - ဗုဒ္ဓဘာသာ ခရစ်ယာန်ဘာသာ အစ္စလာမ် ဟိန္ဒူ
 - နတ် တခြား (ဖော်ပြပါ) -----
- ၅။ မိခင်၏ အမြင့်ဆုံးပညာ အရည် အချင်း

<input type="checkbox"/> စာမတက်သူ (ကျောင်းမတက်ခဲ့ဖူးသူ)	<input type="checkbox"/> မူလတန်း (ပျက်ကြဲတန်းမှ ၄ တန်းထိ)
<input type="checkbox"/> အလယ်တန်း (၅တန်းမှ ၈ တန်းထိ)	<input type="checkbox"/> အထက်တန်း (၉ တန်းမှ ၁၀ တန်းထိ)
<input type="checkbox"/> ဒီပလိုမာ	<input type="checkbox"/> တက္ကသိုလ် (သို့) ဘွဲ့လွန်
<input type="checkbox"/> တခြား (ဖော်ပြပါ) -----	

၆။ ။ မိခင်၏ အလုပ်အကိုင်

- အိမ်ရှင်မ
- ဆောက်လုပ်ရေးအလုပ်သမား
- စိုက်ပျိုးရေးအလုပ်သမား
- စက်ရုံအလုပ်သမား
- တစ်စုံတစ်ရာမျှမျှရေး အလုပ်သမား
- စားသောက်ဆိုင်အလုပ်သမား
- ရေအိုင်ရောင်းအလုပ်သမား
- တခြား (ဖော်ပြပါ) _____

၇။ ။ မိခင်၏ လစဉ် ဝင်ငွေ _____ ဘတ်။

၈။ ။ မိသားစု၏ လစဉ် ဝင်ငွေ _____ ဘတ်။

၉။ ။ မိသားစု၏ လစဉ် ကုန်ကျစရိတ် သုံးငွေ _____ ဘတ်။

၁၀။ ။ ကလေးအရေအတွက် - စုစုပေါင်း- _____ ကျား- _____ မ - _____

၁၁။ ။ ကလေး ၁ နှစ် မှ ၂ နှစ် အတွင်းမွေးသည့် ကလေး၏ မွေးနေ့ _____

၁၂။ ။ ကလေး ၁ နှစ် မှ ၂ နှစ် အတွင်း ကလေး၏ လိင်အမျိုးအစား _____

၁၃။ ။ ကလေး ၁ နှစ် မှ ၂ နှစ် တို့၏ မည်သည့်မြောက်မွေးသည့် ကလေး၏ မွေးနေ့ _____

၁၄။ ။ ကလေး ၁ နှစ် မှ ၂ နှစ် အတွင်း ကလေး၏ မွေးသည့် နေရာ _____

၁၅။ ။ သင်တွင် ကျန်းမာရေး အာမခံ ရှိပါသလား ။

- ရှိသည်။
- မရှိပါ။
- မသိပါ။ မပြောလိုပါ။

အပိုင်း (၂) ကလေးကာကွယ်ရေးနှင့် ပတ်သက်၍ မိခင်၏ အသိပညာဆိုင်ရာမေးခွန်းများကို သက်ဆိုင်ရာ အပိုင်းတွင် (✓) ဖြင့် ထဲတွင်အမှတ်အသားခြင်းဖြစ်ပေးပါ။

၁၆။ ။ ကလေး ကာကွယ်ရေးဆိုင်ရာဖြင့် မည်သည့်ရောဂါများကို ကာကွယ်ပေးနိုင်ပါသနည်း။

- _____ တီဘီရောဂါ
- _____ ကြွက်ညှာဆုံဆုံနာ
- _____ မေဆိုင်ရောဂါ
- _____ ဖိုလီယို
- _____ တစ်ရာချောင်း
- _____ ဝက်သက်ရောဂါ
- _____ အသည်းရောင်အသားထိ ဘီ
- _____ မသိပါ
- _____ တခြား (ဖော်ပြပါ) _____

စဉ်	မေးခွန်းများ	မှန်	မှား	မသိပါ/ မပြောလိုပါ။
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၁၇။	ကလေး ကာကွယ်ဆေးထိုးခြင်းသည် ကာကွယ်ဆေးထိုးခြင်းကြောင့် ဖြစ်ပေါ်သောကလေးရောဂါများကို ကာကွယ်နိုင်သည်။			
၁၈။	ကလေးအသက်(၉) လတွင် ကာကွယ်ဆေးအားလုံးထိုးပြီးရမည်။			
၁၉။	အိတ်စ်ဘီ ကာကွယ်ဆေးသည် သင့်ကလေးအား အသည်းရောင်အသားထဲ ဘီဗီး ရောဂါမှ ကာကွယ်ပေးနိုင်သည်။			
၂၀။	ကလေးကာကွယ်ဆေးသောက်ခြင်းဖြင့် ပိုလီယိုရောဂါကို ကာကွယ်ပေးသည်။			
၂၁။	ကလေးကာကွယ်ဆေးထိုးခြင်းဖြင့် ဝက်သက်ရောဂါကို ကာကွယ်ပေးသည်။			
၂၂။	ကလေးတစ်ယောက်ကို အနည်းဆုံး ကာကွယ်ဆေး(၅) မျိုးထိုးရမည်။			
၂၃။	၁ နှစ်အောက် ကလေးတစ်ယောက်ကို အိုဘီစီ ပိုလီယိုကာကွယ်ဆေး အနည်းဆုံး (၃) ကြိမ် ရရှိရမည်။			
၂၄။	ရက်တစ်ရာချောင်းသည် အသက်၅လမ်းကြောင်းတွင် ရောဂါ ကူးစက်ခြင်းကြောင့်ဖြစ်သည်။			
၂၅။	ဝက်သက်ရောဂါသည် အလွယ်တကူ ကူးစက်နိုင်သောရောဂါမျိုး မဟုတ်ပါ။			
၂၆။	ကလေး ကာကွယ်ဆေးထိုးပြီးအဖျားငွေ့ငွေ့ရှိခြင်းသည် ပုံမှန်ဖြစ်ပါသည်။			
၂၇။	ကလေး ကာကွယ်ဆေးထိုးပြီး ဆေးထိုးသည့်နေရာတွင် နာခြင်း ဖြစ်တက်ပါသည်။			
၂၈။	ကလေး ဝမ်းသွားနေလျှင် ကာကွယ်ဆေး ထိုးရန်မသင့်ပါ။			
၂၉။	ကလေး ဖျားနေလျှင် ကာကွယ်ဆေး ထိုး၍ ရပါသည်။			
၃၀။	ဘီစီရိုနှင့် ပထမအကြိမ် အိတ်စ်ဘီ ဘီဗီး ကာကွယ်ဆေးတို့သည် ကလေးမွေးမွေးခြင်း ထိုးသင့်သည်။			
၃၁။	ပထမအကြိမ် အိတ်စ်ဘီအား ကာကွယ်ဆေးသည် ကလေးအသက် (၉) လထိုးပြီးရမည်။			

အပိုင်း (၃) ကျွမ်းမာရေး ဝန်ဆောင်မှု (သက်ဆိုင်သည့်နေရာတွင် ✓ အမှတ်ဖြင့် ထဲတွင် မှတ်သားပေးပါ (သို့) ကွက်လပ်နေရာတွင် အဖြေများဖြည့်ပေးပါ။)

သတင်းအချက်အလက်ဆိုင်ရာ ဖေ့စ်ဘွဲ့များ

၃၂။ ။ ကာကွယ်ဆေးနှင့် ပတ်သက်သော သတင်းအချက်အလက်များ သင်ရရှိဖွဲ့ပါသလော။

- ရရှိဖွဲ့ပါသည်။ မရရှိဖွဲ့ပါ။ (ဖေ့စ်ဘွဲ့ ၃၅ သို့)

၃၃။ ။ အကယ်၍ ရရှိခဲ့ပါလျှင် မည်ကဲ့သို့ ရရှိခဲ့ပါသနည်း။ (ဖေ့စ်ဘွဲ့များစွာ ဖြေနိုင်သည်။)

မှတ်ချက်။ ။ ဖေ့စ်ဘွဲ့ပေးသူသည် ဖြေကြားမှုပေါ်မူတည်၍ ဆောက်ပါ ကွက်လပ်အဖြေများအား အမှတ်စဉ်အလိုက် မှတ်သားပေးပါ။

- _____ အသံချွတ်မှု _____ ရုပ်ကွက်လွှဲကြိမ် _____ အိမ်နီးချင်း
- _____ ဆွေမျိုး _____ ကျွမ်းမာရေးကြေငြာသင်ပုဂ္ဂိုလ် _____ ကျွမ်းမာရေးဝန်ထမ်း
- _____ တခြား

၃၄။ ။ မည်သည့် သတင်းအချက်အလက်များကို ကြားသိရပါသနည်း။ (ဖေ့စ်ဘွဲ့များစွာဖြေနိုင်သည်။)

- ကာကွယ်ဆေးသည် ရောဂါများမှ ကာကွယ်ပေးသည်။ ကာကွယ်ဆေး၏ တုံ့ပြန်မှုများ။
- ကာကွယ်ဆေးထိုးမည့် အချိန်/နေ့ /ရက်။ ကာကွယ်ဆေးမဝင်ခြင်း၏ အပြစ်များ။
- ကာကွယ်ဆေးထိုးသည် နေရာ မသိပါ။
- တခြား

၃၅။ ။ ကျွမ်းမာရေးဝန်ထမ်းမှ သင့်အားမည်သည့်အချိန်တွင် ကလေးအားကာကွယ်ဆေးထိုးနှံတိုက်ကျွေးရမည်ကို ရှင်းပြ အသိပေးပါသလော။

- ပြောပြပါသည်။ မပြောပြပါ။ မသိပါ/ မဖြေလိုပါ။

၃၆။ ။ ကာကွယ်ဆေးသတင်းရရှိရှိရန် သင့်အတွက် ဘာသာစကားနှင့် ပတ်သတ်သည့် အခက်အခဲများရှိပါသလော။

- ရှိပါသည်။ မရှိပါ။ မသိပါ/မဖြေလိုပါ။

လက်ရှိပုံစံအနုပညာများ

၃၇။ ။ ဒီလပိုင်းအတွင်း ကျွမ်းမာရေးဝန်ထမ်းသည် သင့်အိမ်သို့လာရောက်လည်ပတ်ပါသလော။

- လာပါသည်။ မလာပါ။ မမှတ်မိပါ/ မသိပါ။

၃၈။ ။ ကာကွယ်ဆေးနှင့် ပက်သတ်သည့် ဝန်ဆောင်မှုရယူချိန်တွင် ဘာသာ စကားပြန် ပေးမှုများရှိပါသလော။
 ရှိသည်။ မရှိပါ။ မသိပါ/ မဖြေဆိုပါ။

၃၉။ ။ ကလေးကာကွယ်ဆေးဝန်ဆောင်မှု ခံယူနေချိန်တွင် တခြားကာကွယ်ဆေးသတင်းနှင့်ပက်သတ်သည့် အကြောင်းများကို ပေးပါသလော။
 ပေးပါသည်။ မပေးပါ။ (ပေးခွန်း ငှာသို့) မသိပါ/ မဖြေဆိုပါ။

၄၀။ ။ အကယ်၍ဆွေးနွေးပါက၊ မည်သည့်အကြောင်းအရာများဆွေးနွေးပါသနည်း။ (အခြေများစွာ ဖြေနိုင်သည်)
 ရောဂါတိုက်ဖျက်ခြင်းနှင့် ကလေးကာကွယ်ခြင်း။ ကာကွယ်ဆေးမထိုးခြင်း၏ အပြစ်များ။
 ကာကွယ်ဆေး၏ တုံ့ပြန်မှုများ။ ကာကွယ်ဆေးအချိန်စာယာ။
 မသိပါ/ မမှတ်မိပါ။ တခြား (ဖော်ပြပါ) _____

၄၁။ ။ သင့်အားကာကွယ်ဆေး ထပ်ထိုးရန် ရက်ချိန်းကပ်ပေးပါသလော။
 ပေးပါသည်။ မပေးပါ။ မသိပါ/ မဖြေဆိုပါ။

၄၂။ ။ ကာကွယ်ဆေးမထိုးခင်တွင် ကလေးကိုယ်ပူတိုင်းခြင်းများ ကျန်းမာရေးဝန်ဆောင်မှုလုပ်ပေးပါသလော။
 လုပ်ပေးပါသည်။ မလုပ်ပေးပါ။ မသိပါ/ မဖြေဆိုပါ။

၄၃။ ။ သင့်၏ကလေးသည် ကာကွယ်ဆေးကုန်သွား၍ မထိုးလိုက်ခြင်းအပြစ်အပျက်များကြုံတွေ့ဖူးပါသလော။
 ကြုံဖူးပါသည်။ မကြုံဖူးပါ။ မသိပါ/ မဖြေဆိုပါ။

၄၄။ ။ သင့်၏ကလေးသည် ဆေးဘက်ဆိုင်ရာပစ္စည်းများ မရှိပါသဖြင့် ကာကွယ်ဆေးမထိုးလိုက်ခြင်း အပြစ်အပျက်များကြုံဖူးပါသလော။
 ကြုံဖူးပါသည်။ မကြုံဖူးပါ။ မသိပါ/ မဖြေဆိုပါ။

စောင့်ဆိုင်းရသည့်အချိန်

၄၅။ ။ နောက်ဆုံးအကြိမ် ကာကွယ်ဆေးပြီးပြည့်စုံသည်အထိ ထိုးရရှိရန် သင်မည်မျှစောင့်ဆိုင်းရသနည်း။
_____မိနစ်/ နာရီ

၄၆။ ။ နောက်ဆုံးအကြိမ် သင်သည် ကာကွယ်ဆေးထိန်းဆောင်မှုဥက္ကဋ္ဌအဖွဲ့ဝင်၊ ကျန်းမာရေးထိန်းသိမ်းမှု ကာကွယ်ဆေးနှင့် သက်ဆိုင်သည့် အသိပညာကို ဆေးခန်းတွင်သင် လက်ခံရပါသလော။

- ရပါသည်။ မရပါ။ (မေးခွန်း ၄၈ သို့) မသိပါ။

၄၇။ အကယ်၍ ရှိပါက မည်မျှကြာပေးသနည်း။

_____ရက်/ နာရီ

၄၈။ ။ ကာကွယ်ဆေးထိုးရန် ကျန်းမာရေးထိန်းဆောင်မှုပေးသည့် အချိန်သည် သင့်အတွက်အဆင်ပြေပါသလော။

- အဆင်ပြေပါသည်။ အဆင်မပြေပါ။ မသိပါ/မဖြေလို့ပါ။

ဝေသန္တရဆေးခန်း

၄၉။ ။ ကာကွယ်ဆေးကို သင်ဘယ်နေရာတွင် သွားရောက် ရယူပါသနည်း။

- ကျန်းမာရေးဌာန ဝေသန္တရဆေးခန်း ဆေးရုံ
 မူကလိဂ် ဆေးခန်း တခြား _____

၅၀။ ။ ကျန်းမာရေးဌာနသို့ အကွာအဝေး

- ၁ ကီလိုမီတာ ၁ မှ ၅ ကီလို ၅ မှ ၁၀ ကီလို ၁၀ ကီလိုအထက်

၅၁။ ။ သတ်မှတ်ထားသည့်ကာကွယ်ဆေးထိုးရန်သင့်အတွက် တက်နိုင်ပါသလော။

- တက်နိုင်ပါသည်။ (အပိုင်း ၄၁၆) မတက်နိုင်ပါ။ မသိပါ/မဖြေလို့ပါ။

၅၂။ ။ အကယ်၍မတက်နိုင်ပါက ဝေသန္တရဆေးခန်း ရှိရှိရန် သင်မျှော်လင့်ချက်ရှိပါသလော။

- ရှိပါသည်။ မရှိပါ။ မသိပါ/ မဖြေလို့ပါ။

အပိုင်း (၄) ကလေးကာကွယ်ဆေး ဆိုင်ရာမေးခွန်း ကွက်လပ်နေရာတွင် ✓ ဖြင့်မှတ်ပေးပါ သို့ အဖြေများဖြည့်ရေးပေးပါ။ မှတ်ချက်။ မေးခွန်းပေးသူသည် ကာကွယ်ဆေးကော် (သို့) မှတ်တမ်းစာအုပ်ထဲမှ အချက်အလက်များအား ကွက်လပ်တွင် ဖြည့်ဖြည့်ပေးပါ။

ကာကွယ်ဆေး	ရက်၊ လ၊ နှစ်
BCG တီဘီရောဂါကာကွယ်ဆေး (၇ ရက်အတွင်း)	
DTP1 ကြက်ညှာဆုံဆို့ရောဂါကာကွယ်ဆေး ပထမအကြိမ်	
DTP2 ကြက်ညှာဆုံဆို့ရောဂါကာကွယ်ဆေး ဒုတိယအကြိမ်	

DTP3	ကြက်ညှာဆုံဆို့ရောဂါကာကွယ်ဆေး၊ တတိယအကြိမ်	
OPV1	ပိုလီယိုရောဂါကာကွယ်ဆေး၊ ပထမအကြိမ်	
OPV2	ပိုလီယိုရောဂါကာကွယ်ဆေး၊ ဒုတိယအကြိမ်	
OPV3	ပိုလီယိုရောဂါကာကွယ်ဆေး၊ တတိယအကြိမ်	
HBV1	အသံယောင်အသားဝါရောဂါကာကွယ်ဆေး၊ ပထမအကြိမ်	
HBV 2	အသံယောင်အသားဝါရောဂါကာကွယ်ဆေး၊ ဒုတိယအကြိမ်	
HBV3	အသံယောင်အသားဝါရောဂါကာကွယ်ဆေး၊ တတိယအကြိမ်	
Measles	မေဆိုင်ရောဂါကာကွယ်ဆေး	

၅၂။ ။ ကာကွယ်ဆေးပြီးပြည့်စုံသည်အတိုင်းထိုးပါသလော။

- ထိုးပါသည်။ (အကယ်၍ထိုးရမိက မေ့ရန်များအောင်လုံးပြီးဆုံးဖြတ်ပါသည်။ ကျေးဇူးတင်စကားပြော၍ မေ့ရန်မိတ်လိုက်ပါ။)
- မထိုးရပါ။

၅၃။ ။ ကလေးဘာကြောင့်ကာကွယ်ဆေးမထိုးရပါသလဲ။ (အခြေများခွာခြစ်နိုင်သည်)

- ကာကွယ်ဆေးထိုးရန်နေရာနှင့် အချိန်ကိုမသိခြင်း။
- ထိုးပြီးခဲ့သည့်ကာကွယ်ဆေး၏ တုံ့ပြန်ခြင်းကြောင့်။
- ကာကွယ်ဆေးအပေါ်ယုံကြည်မှုမရှိခြင်းကြောင့်။
- ကာကွယ်ဆေးထိုးရန်နေရာနှင့် အလုပ်ဆေးခြင်းကြောင့်။
- ကာကွယ်ဆေးထိုးသည့်အချိန် အဆင်မပြေမှု ရှိခြင်းကြောင့်။
- အချိန်ကြာစောင့်ဆိုင်းခြင်းကြောင့်။
- သွား၊ ခွံရန် လမ်းဆီရေမိတ်လုံလောက်မှု မရှိခြင်းကြောင့်။
- မိခင်၏ အလုပ်အကိုင်ခြင်းကြောင့်။
- မိခင်များနားခြင်းကြောင့်။
- ကာကွယ်ဆေးမရှိတော့ခြင်းကြောင့်။
- တခြား (ဖော်ပြပါ) _____

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Education background

2001 – 2004: Associate Medical Science-Medical Technology, Chiang
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1998 – 2001: Mont Fort College, Chiang Mai

1990 – 1998: Secret Heart College, Chiang Mai

1989 – 1990: Dara Academy School, Chiang Mai

1988 – 1989: Waree Kindergarten, Chiang Mai

Professional working experience

March 2012 - Current Border Health Manager - Project for Local Empowerment

International Rescue Committee (IRC)

November 2010 - April 2012 Laboratory Quality Assurance and trainer

International Rescue Committee (IRC)

April 2007 - October 2010 Laboratory supervisor & Avian Influenza officer
International Rescue Committee (IRC)

May 2004 - March 2007 Laboratory technician Kwai River Christian Hospital (KRCH) Co –
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March 2003 - January 2004 Term Paper “Red blood cell parameters in heterozygote
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