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MATERNAL KNOWLEDGE, ATTITUDE ON IMMUNIZATION OF CHILDREN AGED 1 – 2 YEARS IN HLAINGTHARYAR TOWNSHIP, YANGON REGION, MYANMAR

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EMPA – 18 (16th Batch)

DECEMBER, 2019

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MATERNAL KNOWLEDGE, ATTITUDE ON IMMUNIZATION OF CHILDREN AGED 1 – 2 YEARS IN HLAINGTHARYAR TOWNSHIP, YANGON REGION, MYANMAR

A thesis submitted in partial fulfillment of the requirements for the Degree of

Master of Public Administration (MPA)

Supervised by

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This is to certify that this thesis entitled "**MATERNAL KNOWLEDGE, ATTITUDE ON IMMUNIZATION OF CHILDREN AGED 1 – 2 YEARS IN HLAINGTHARYAR TOWNSHIP, YANGON REGION, MYANMAR**" submitted as a partial fulfillment in the requirements for the degree of Master of Public Administration (MPA) has been accepted by the Board of Examiners.

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ABSTRACT

Immunization services in developing countries may suffer from low political commitment and under-investment, while immunization programmes are hampered by weak health service delivery systems. Under-vaccination has contributed to the current morbidity rate of vaccine preventable diseases in Myanmar. Therefore, this study was done in the urban slums of Yangon to know the existing gaps in the awareness of the people regarding immunization. The aim of the study was to determine the immunization status of children 1 – 2 years old and knowledge, attitude of mothers of children 1 – 2 years old lived in HlaingTharYar Township. A cross sectional study was conducted in this Township, Yangon Region, Myanmar, with the data collected from a sample of 350 mothers who were interviewed with structured questionnaires during 15th June 2019 to 4th July 2019. The result of the study revealed that 50% of children had incomplete immunization. Concerning knowledge of mothers to immunization status of children, nearly half had moderate knowledge (47.7%) and 52% of them had positive attitude towards immunization. Regarding factors associated with immunization status of children, age of mothers, education of mothers, monthly family income, number of siblings of children, knowledge of mothers about immunization, attitude of mothers toward immunization, source of information about childhood immunization and distance (time) to health facility were significant association with immunization status of children.

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LIST OF ABBREVIATIONS

AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
AIDS	Acquire Immune Deficiency Syndrome
BCG	Bacille-Calmette-Guerin
CEPI	Central Expanded Programme on Immunization
CMYP	Comprehensive Multi Year Plan
DPT	Diphtheria, Pertussis and Tetanus
DT	Diphtheria and Tetanus
EPI	Expanded Programme on Immunization
GAVI	Global Alliance for Vaccines and Immunizations
GIVS	Global Immunization Vision and Strategy
GPVI	Global Programme for Vaccines and Immunization
GVAP	Global Vaccine Action Plan
HBV	Hepatitis B Vaccine
HepB	Hepatitis B
Hib	*Haemophilus Influenzae* Type B
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
IMR	Infant Mortality Rate
IPV	Inactivated Polio Vaccine
JE	Japanese Encephalitis

JEV	Japanese Encephalitis Vaccine
KAP	Knowledge, Attitude and Practice
LB	Live Births
MCH	Maternal and Child Health
MCV	Measles-Containing Vaccines
MDG	Millennium Development Goal
MDHS	Myanmar Demographic and Health Survey
MMA	Myanmar Medical Association
MMC	Mass Measles Campaign
MMCWA	Myanmar Maternal and Child Welfare Association
MOH	Ministry of Health
MOHS	Ministry of Health and Sports
MR	Measles and Rubella
MSL	Measles
MWAF	Myanmar Women's Affair Federation
NGO	Non-Governmental Organization
NIDs	National Immunization Days
NNT	Neo-Natal Tetanus
OPV	Oral Polio Vaccine
PCV	Pneumococcal Conjugate Vaccine
Penta	Pentavalent Vaccine (Diphtheria, Pertussis, Tetanus, Hepatitis B and Hib Vaccines)
PHP	People Health Plan

RHC	Rural Health Center
SD	Standard Deviation
SDCU	Special Diseases Control Unit
SEA	South-East Asia
SEAR	South-East Asia Region
SIA	Supplementary Immunization Activity
SNID	Sub-National Immunization Day
SPSS	Statistical Package for Social Sciences (software)
TB	Tuberculosis
TMO	Township Medical Officer
TT	Tetanus Toxoid
UCI	Universal Child Immunization
UN	United Nations
UNFPA	United Nations Population Fund
UNGASS	United Nations General Assembly Special Session
UNICEF	United Nations Children's Fund
US	United States
VCMC	Visayas Community Medical Center
WHA	World Health Assembly
WHO	World Health Organization
WPV	Wild Types of Poliovirus

CHAPTER I
INTRODUCTION

1.1 Rationale of the study

Immunization programme has become a major public health programme in all nations because children are our future; they are our best hope; their suffering our worst fear. Immunization has been a great public health success story because the lives of millions of children have been saved by immunization. Immunizing the children is most successful and most cost effective of all health interventions saving more lives for the money invested than almost any other health intervention available today. Immunization is one of the most powerful weapons in child survival technology. Mortality and morbidity due to child killer diseases, Poliomyelitis, Measles, Diphtheria, Pertussis (Whooping cough), Neonatal Tetanus, Hepatitis B, H. Influenza type B infection, Japanese Encephalitis, Rubella, severe Pneumococcal diseases and severe Tuberculosis are major health problems in the world. But one-quarter of the world's children still have no protection from common preventable diseases. Almost two millions of children die every year due to vaccine preventable disease. It prevents illness, disability and death from vaccine preventable diseases and currently averts estimate 2 to 3 million deaths every year from vaccine preventable diseases (WHO, 2018).

Immunization is the process the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease (WHO, 2010).

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. An immunization campaign carried out by the World Health Organization from 1967 to 1977 based on success of smallpox. WHO launched the Expanded Program on

Immunization (EPI) in May 1974 with the goal of universal access to all relevant vaccines for all risk groups. The program aimed to achieve Universal Childhood Immunization of the six EPI vaccines: Bacillus Calmette Guerin (BCG), Diphtheria-Pertussis-Tetanus (DPT), Oral Polio Vaccine (OPV) and Measles with the aim of immunizing 80% of all children by 1990 (GPVI, 1996).

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 Hemophilic influenza type b (Hib) to routine infant immunization schedules and an increasing number are in the process of adding pneumococcal conjugate vaccine and rotavirus vaccines to their schedules (WHO, 2012).

Immunization services in developing countries may suffer from low political commitment and under-investment, while immunization programmes are hampered by weak health service delivery systems. These problems are further compounded by low levels of investment in the research and development of new vaccines that are urgently needed in developing countries. Immunization is a fundamental human right, one which government having acknowledged by signing a succession of treaties, including the 1989 UN convention on the Rights of the Child.

Coverage gaps persist between countries, as well as within countries. The average coverage with three doses of diphtheria-tetanus-pertussis-containing vaccine and with measles-containing vaccine in low-income countries was 16% and 15% below that of high-income countries in 2010, respectively. However, this represents a positive trend in comparison with the coverage gap of 30% for both vaccines in the year 2000. In some countries, coverage of measles-containing vaccine in rural areas is 33% lower than in urban areas. Similarly, the measles vaccine coverage rate for the richest fifth of the population in some countries is up to 58% higher than for the poorest fifth. Coverage can also be very low in settlements of the urban poor, especially in cities with transitory migrant populations, and in indigenous community (WHO, 2012).

In 2005, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) published the Global Immunization Vision and Strategy (GIVS) for the decade 2006-2015. With an overriding focus on the need to ensure equity in access to vaccine and immunization, the strategy sets out the steps that the community

needs to take in order to contribute fully to the attainment of the MDG mortality reduction targets. Since 2000, efforts have been scaled up to meet the MDGs and the supporting goals of the Global Immunization Vision and Strategy (GIVS). With financial support from the GAVI Alliance and other partners, more children are being immunized than ever before (The World Bank et al., 2009).

The vision of Global Vaccine Action Plan – GVAP (2011-2020) is all individuals and communities enjoy lives free from vaccine-preventable diseases. The mission of Global Vaccine Action Plan – GVAP (2011-2020) is to extend the full benefit of immunization to all people, regardless of where they are born, who they are or where they live (WHA, 2012).

The Global Vaccine Action Plan (GVAP) was a roadmap to prevent millions of deaths through more equitable access to vaccines by 2020. In addition, some funding agencies, such as the GAVI Alliance, often consider immunization coverage levels when reviewing applications for financial and technical support, although coverage estimates alone are insufficient to constitute a sole criterion for determining whether a national immunization program has achieved certain performance levels. (UNICEF and WHO, 2013).

In South-East Asia Region, BCG vaccine coverage is quite high whereas the other vaccines 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 SEAR according to WHO/UNICEF coverage estimates. Inspite the dramatic improvement in immunization, the immunization coverage in Myanmar is declining compare to Thailand. It may be due to the inadequate allocations of human and financial resources to implement plans at township level, weakness in supervision and data use at local level and also lack of access or infrastructure, civil conflicts and completing health priorities. The expanded programme on immunization was launched in Myanmar since 1978. At that time only 4 antigens were immunized such as BCG, DPT and TT. Measles and polio vaccines could be introduced only in 1987. The area coverage was expanded phase by phase, and now EPI programme covers almost all of townships.

The aims of the programme are ambitious. The objectives were to obtain at least eighty percent of immunization coverage for children under one year old, especially in developing countries.

Table 1.1: Immunization coverage of South East Asia Region in Percentage (2017)

Country	**BCG**			**DPT3**			**OPV3**			**MCV1**		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Bangladesh	99	99	99	97	97	97	97	97	97	94	94	94
Bhutan	99	99	99	99	99	98	98	98	97	97	97	97
DPR Korea	98	97	97	93	96	96	99	99	99	99	98	99
India	89	87	83	85	87	88	84	86	86	85	87	88
Indonesia	82	80	81	78	78	79	80	80	80	75	75	76
Maldives	99	99	99	99	99	99	99	99	99	99	99	99
Myanmar	92	94	88	88	89	90	88	89	89	88	84	91
Nepal	99	94	93	92	91	87	92	90	85	88	85	83
Sri Lanka	99	99	99	99	99	99	99	99	99	99	99	99
Thailand	99	99	99	99	99	99	99	99	99	99	99	99
Timor-	84	84	85	77	76	85	76	75	83	74	70	78
SEAR	90	88	89	86	87	88	85	87	87	85	86	87

Source: WHO/UNICEF estimates of National Immunization Coverage, July 2017 revision

World Health Organization (WHO) established the Expanded Programed on Immunization (EPI) in 1974. Through the 1980s, UNICEF worked with WHO to achieve Universal Childhood Immunization of the six EPI vaccines (BCG, OPV, DPT, and measles), with the aim of immunizing 80% of all children by 1990. Progress has continued since 2010 and (109) million children were vaccinated and global immunization rates were at 85%, with highest level ever.

In 1997 and 1998, installation of solar powered refrigerators and immunization teams were mobilized into hard to reach areas and remote border areas during open weather season to extend the vaccination coverage for under 3 years old children and women of child bearing age (Crash strategy) to achieve the objectives of 2000 goals.

To increase of EPI coverage, community participation in addition to mother's literacy and correct knowledge, attitude, practice act in as a powerful force. Health education is only way for dissemination of information, creation of awareness, leveling up knowledge, changing attitude and practice in long run.

Under-vaccination has contributed to the current morbidity rate of vaccine preventable diseases in Myanmar. The prevalence of the eleven vaccine preventable diseases is still high and fluctuates according to types of diseases and years. Although there is a growing concern about children immunization status, there has been few researches into assessing the reasons why mothers do not bring their child to receive immunization.

The reasons for non-fully immunization are complex. The barriers to immunization can be grouped into three categories such as 1) barriers in the organization and delivery system of health care; 2) barriers generated due to the health care provider; 3) barriers due to the knowledge, attitude and practices of parents such as fear about vaccine adverse reactions, lack of knowledge about the immunization schedule, low risk perception about vaccine preventable diseases.

The present study would attempt to determine maternal knowledge and attitude on immunization as well as to describe the source of information regarding immunization and accessibility to health services using a cross-sectional survey in HlaingTharYar Township, Yangon Region, Myanmar.

Therefore, this study was done in the urban slums of Yangon, the economic capital city of the country, to know the existing gaps in the awareness of the people regarding immunization. This study aimed at determining the reasons for such low coverage, examining the socio-demographic characteristics of mothers and health system factors such as health services barriers. More specifically, the study sought to assess the knowledge and attitudes of mothers associated with routine immunization in Yangon Region. And this study will provide valuable information for program planning and also contribute to significant level in implementing the program.

1.2 Objectives of the study

The objectives of the study are:

1) To measure knowledge of immunization and to assess attitude concerning immunization among mothers having children aged 1 – 2 years with regard to ongoing immunization program
2) To determine the factors in association with general characteristics, maternal knowledge of immunization, attitude towards immunization, source of information and accessibility to health services and immunization status of children

1.3 Method of study

This thesis was cross-sectional descriptive study on maternal knowledge, attitude on immunization of children aged 1 – 2 years. Quantitative approach was used to collect the primary data from a random sample of mothers who had children, aged 1 – 2 years in HlaingTharYar Township of Yangon Region, from randomly selected cluster survey and interviewed. Moreover, the secondary data utilized in this study are collected from Township Health Department, Yangon Region, Ministry of Health and Sports, central Expanded Programme on Immunization (cEPI), and literature books, research paper, various Vaccination/ Immunization Publications, Health journals and relevant issues from Yangon University of Economics, Kamaryut Campus and University of Public Health, Yangon and also websites.

1.3.1 Population and sample

Study population

The study population was mothers who had children aged 1 – 2 years in HlaingTharYar Township of Yangon Region, Myanmar.

Inclusion criteria

- mothers who have child age 1 – 2 years old and voluntarily participated
- in case of twin or two children 1 – 2 years old, collect data as one

Exclusion criteria

- mother who have child but not present at the time of survey

Sample size

$$n = \frac{Z^2_{\alpha/2}\, P\,(1-P)}{d^2} = \frac{(1.96)^2 * (0.64) * (0.36)}{(0.05)^2} = 350$$

n = estimated sample size (350)

$Z_{\alpha/2}$ = value from normal distribution associated with 95% confidence level (1.96)

Sampling technique

- total 12 clusters (villages/village tracts/wards) are selected from HlaingTharYar township
- 30 mothers of children aged 1 – 2 years selected from each villages/village tracts/wards as subjects
- 1st stage - 4 villages, 3 village tracts and 5 wards are selected randomly from 17 villages, 9 village tracts and 20 wards in township (Total 12 clusters)
- 2nd stage – 30 mothers randomly as a sample from 12 clusters

HlaingTharYar Township (17 Villages, 9 Village Tracts, 20 Wards)

↓ ← Simple Random Sampling

4 Villages/3 Village tracts/5 Wards

↓ ← Simple Random Sampling

30 mothers of children aged 1 – 2 years from each village, village tract and ward

1.3.2 Question setting

The research instrument of this study was a structured questionnaire consisted of general characteristics, knowledge on immunization, attitude concerning immunization, source of information and accessibility to health services and children immunization status.

Part I General characteristics

It was composed of age of mother, age of children, occupation and education of mothers, monthly family income, and number of siblings. There are 11 questions.

Part II Knowledge of mothers on immunization

It was consisted of knowledge of mothers about immunization, mode of transmission of diseases preventable by vaccines, side effects of immunization, their effectiveness. There are 15 questions.

Part III Attitude of mothers towards immunization

It included mothers feeling about vaccinating their children and thoughts of mothers with regard to their readiness to accept immunization. There are total 15 questions, 10 questions were positive questions and 5 were negative questions.

Part IV Source of information

There are 4 questions including the sources where mothers learn about the diseases preventable by vaccines and the advantages of immunization. (e.g. Mass media, friends, family and health personals, illness experience of family member)

Part V Accessibility to health services

It included 7 questions about distance from nearest health center, cost of transportation, time and convenience of transport.

Part VI Children immunization status

It included in immunization status and the reason for not taking to vaccine the child. There are 4 questions.

1.4 Scope and limitations of the study

This study mainly focuses on the maternal knowledge, attitude, health information and accessibility to immunization services of children aged 1 – 2 years in HlaingTharYar Township of Yangon Region. The study period is during March – August of 2019. This study reviews and analyzes the concept, association between general characteristics, knowledge on immunization, attitude towards immunization, source of information related to immunization and accessibility to health service. But some limitations still prevail in this study such as possibility of recall bias for knowledge and because of small sample size, the results obtained from this study cannot represent the KAP status of all mothers in our country.

1.5 Organization of the study

This study is organized into five chapters. Chapter one is presenting the introduction of the subject matter, which describes the rationale, objectives, method of study, scope and limitations and organization of the study. Chapter two presents the literature reviews. Chapter three is especially Myanmar overview, which include immunization status and activities, schedule in Myanmar, Myanmar National Health Plan and Policy, and based on the data available. Chapter four describes results which received from survey analysis on the data collected. Finally, findings and recommendations are presented in Chapter five.

CHAPTER II

LITERATURE REVIEW

Immunization is a core component of the human right to health and an individual, community and governmental responsibility. Protected from the threat of vaccine-preventable diseases, immunized children have better choice to thrive and realizing their full potential. These advantages are further increased by vaccination in adolescence and adulthood. As part of a comprehensive package of interventions for disease prevention and control, vaccines and immunization is an essential investment in a country's indeed, in the worlds-future (WHO, 2010).

2.1 Concept of immunization

Immunization means the kinds and doses of vaccines, which are necessary for children under 1 year of age, according to the EPI programme of Myanmar recommended by WHO.

Complete immunization means child who has received all the vaccines due to his/her age according to EPI schedule in Myanmar. There are three doses of OPV/ Penta/ PCV that started at 2 months of age with 2 months interval, BCG one dose at 2 months of age, Hepatitis B birth dose, IPV at 4 months of age, JE at 9 months of age and MR at the age of 9 months and 18 months. ›

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 Myanmar. (1 BCG, 3 OPV, 3 Penta, 3 PCV, 1 Hep B, 1 IPV, 1 JE and 2 MR)

Education of mothers is defined as the highest level of education attained by the mother.

Occupation of mothers means the work/job performed by the mother.

Monthly family income means total income earned by all family members.

Sibling of child means number of siblings of the child.

Knowledge on immunization is defined as knowing and understanding of mother about the vaccine's effectiveness, side effects, vaccine preventable diseases and consequences of un-immunization.

Attitude concerning immunization means mothers' feeling about vaccinating their children and thoughts of mothers with regard to their readiness to accept immunization. It can be traditional that transferred from one to the others, sometimes with no explanation.

Source of information about immunization means the sources where mothers learn about the diseases preventable by vaccines and the advantages of immunization. (e.g. Mass media, friends, family and health personals, illness experience of family member)

Accessibility to health services mean distance from home to immunization place, transportation expenditure, waiting time for services about child 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. 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 disease 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.

Successful national immunization programmes depend on up-to-date policies and effective strategies in order to achieve and sustain their goals. When EPI was established over 40 years ago, its focus was on vaccinating infants with a limited number of traditional vaccines. Today the vaccine world has changed dramatically. The development and availability of many new vaccines targeting a variety of age groups, the emergence of new technologies, the increased public focus on vaccine safety issues, the enhanced procedures for regulation and approval of vaccines, the need to expand the immunization schedule with consideration of all age groups and specific at-risk populations, are all demanding increased attention. Countries need to have strong mechanisms that enable informed decision-making about immunization priorities and the introduction of new programme strategies, vaccines and technologies (WHO, 2018).

Every infant in the world needs to be immunized to better protect their health, and vaccines are estimated to save the lives of 2–3 million children each year. Immunization represents one of the 10 greatest achievements in public health of the last century and is also highly cost effective. It costs less than US$1 to protect a child against measles for life. One and a half million children would not have died in 2011 had they been immunized. But one in five children is still not being reached with vital vaccines. Concerted efforts to immunize children have reduced or eliminated the incidence of devastating illnesses like smallpox which was eradicated in 1980. Polio was eliminated in India and is now endemic in only four countries: Pakistan, Nigeria, Afghanistan and Myanmar. Between 2000 and 2011, measles deaths dropped 71% worldwide. Twenty-nine countries eliminated neonatal tetanus between 2000 and 2013 (UNICEF, 2013).

Every year immunization averts 2 to 3 million infant deaths globally from deadly diseases such as diphtheria, hepatitis B, measles, mumps, pertussis, polio and tetanus. Vaccines save lives, but 1 in 5 children, an estimated 21.8 million infants worldwide, still miss out on basic vaccines (GAVI, 2011).

2.2 Vaccine preventable diseases

Expanded Program on Immunization has been implementing the reduction of morbidity and mortality due to vaccine preventable diseases among the children aged 1 to 5 years with the aim of reduction of under-five mortality by the year 2015, to the two-third of 1990, thereby achieving the MDG 4. Vaccine preventable diseases and disabilities have decreased drastically over the last several decades, resulting in healthier children and, subsequently, adults. Despite this progress, vaccine preventable diseases are still a major cause of morbidity and mortality in low- and middle-income countries and several studies have investigated barriers to vaccination in sub-populations with lower than normal vaccine coverage. (WHO, 2010).

2.2.1 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. TB is 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. Untreated pulmonary TB results in debility and death. This may be more rapid in persons infected with HIV/AIDS. Immunization of infants with *Bacille-Calmette-Guerin* vaccine (BCG) can protect against TB meningitis and other severe forms of TB in children less than five years old. BCG vaccine is not recommended after 12 months of age because the protection provided is variable and less certain.

2.2.2 Diphtheria

Diphtheria is a serious bacterial infection by the *Corynebacterium diphtheria*. Diphtheria typically causes a sore throat, fever, swollen glands and weakness. Even with treatment, diphtheria can be deadly — up to 3 percent of people who get diphtheria die of it. The rate is higher for children under 15 and death occurs in 5%–10% of people infected with diphtheria. 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. In most countries, diphtheria toxoid vaccine is given in combination with tetanus toxoid and pertussis vaccines (DPT vaccine). Diphtheria was once a greatly feared illness in the United States. In the 1920s, there were between 100,000 and 200,000 cases of diphtheria each year with 13,000 – 15,000 deaths. Because of widespread immunization and better living conditions, diphtheria is now rare in the United States. Vaccines are recommended for infants, children, teens and adults to prevent diphtheria worldwide (Markus MacGill, 2017).

2.2.3 Whooping cough (pertussis)

Whooping cough (pertussis) is a serious respiratory infection and contagious disease caused by the bacterium *Bordetella pertussis* (or *B. pertussis*). It mainly affects children under six months. For several decades, infant immunization program around the world have been highly successful in using pertussis vaccines of documented quality to prevent severe pertussis in infants. WHO estimates that in 2008 global vaccination against pertussis prevented approximately 687,000 deaths. The main aim of pertussis vaccination is to reduce the risk of severe pertussis in infancy. To this end, the ongoing priority of immunization program worldwide is to vaccinate at least 90 percent of infants with three doses of high-quality pertussis vaccine. Pentavalent (DPT-Hib-HepB) vaccine introduced in 2012 (Venkatachalam et al., 2015).

2.2.4 Tetanus

Tetanus is caused by a bacterium which grows in the absence of oxygen, for example in dirty wounds or in the umbilical cord if it is not kept clean. The spores of *Clostridium tetani* are present in the environment irrespective of geographical location. It produces a toxin which can cause serious complications or death. 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. People of all ages can get tetanus. But the disease is particularly common and serious in newborn babies. This is called neonatal tetanus. Most infants who get the disease die. The vaccine to prevent maternal and neonatal tetanus had been introduced in 106 countries by the end of

2016. An estimated 84% of newborns were protected through immunization. Maternal and neonatal tetanus persist as public health problems in 18 countries, mainly in Africa and Asia.

Based on National Plan of Action for Maternal and Neonatal Tetanus Elimination, SIAs for women of childbearing age (15 – 45 years) have been conducted since 1999. In the following years high-risk assessments were made by data review and TT SIA rounds were implemented in identified high-risk townships from 2003 to 2009, when Myanmar was in a position to claim the elimination status and prepared for validation (WHO, 2012).

Immunizing infants and children with DPT or DT and adults with TT prevent tetanus. WHO, UNICEF and UNFPA agreed to set the year 2005 as the target date for worldwide elimination of neonatal tetanus. This implied the reduction of neonatal tetanus incidence to below one case per 1000 live births per year in every district. This goal was revised in the United Nations General Assembly Special Session (UNGASS) in 2002. Because tetanus survives in the environment, eradication of the disease is not feasible and high levels of immunization have to continue even after the goal has been achieved.

To achieve the elimination goal, countries implement a series of strategies:

- Improve the percentage of pregnant women immunized with vaccines containing tetanus toxoid.
- Administer vaccines containing tetanus toxoid to all women of child bearing age in high-risk areas. This is usually implemented through a three round campaign approach.
- Promote clean delivery and childcare practices.
- Improve surveillance and reporting of neonatal tetanus cases.

2.2.5 Haemophilus influenzae type b

Haemophilus influenzae type b (Hib) causes meningitis and pneumonia usually infects the children younger than 5 years old. Each year, Hib infected millions of children worldwide and kills about 200,000. The number of children infected by Hib has greatly declined in the U.S. because of vaccination, but an unvaccinated child can still get infected. Hib vaccine had been introduced in 191 countries by the end of 2018 (WHO, 2018).

2.2.6 Hepatitis B

Hepatitis B is a viral infection that attacks the liver. Hepatitis B vaccine for infants had been introduced nationwide in 186 countries by the end of 2016. Global coverage with 3 doses of hepatitis B vaccine is estimated at 84% and is as high as 92% in the Western Pacific. In addition, 101countries introduced one dose of hepatitis B vaccine to newborns within the first 24 hours of life, and the global coverage is 39% in 2012. Hepatitis B vaccine for infants had been introduced nationwide in 186 countries by the end of 2016, and global coverage with 3 doses of hepatitis B vaccine was estimated at 84%. (WHO, 2016) Hepatitis infection can transmit by following ways:

- 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

It is recommended that all infants receive three doses of hepatitis B vaccine during the first year of life.

2.2.7 Poliomyelitis (Polio)

Poliomyelitis, or Polio, is a highly infectious viral disease that can cause irreversible paralysis. In 2016, 85% of infants around the world received three doses of polio vaccine. Targeted for global eradication, polio has been stopped in all countries except for Afghanistan, Pakistan, Myanmar and Nigeria. Polio-free countries have been infected by imported virus, and all countries especially those experiencing conflict and instability remain at risk until polio is fully eradicated.

Poliomyelitis Myanmar is conducting four strategies for polio eradication with very strong political commitment and tremendous community involvement. These strategies are:

1. Routine immunization to achieve high OPV coverage throughout the country.
2. Conducting SIAs: Myanmar has conducted 10 NIDs and nine Subnational Immunization Days (SNIDs).
3. Conducting mopping-up immunization in areas with wild polio virus transmission, and preemptively in high-risk areas, to boost immunity.
4. AFP surveillance.

In 2007, the AFP surveillance system detected 11 wild polio virus (WPV) cases in Maungdaw and Buthidaung townships of Rakhine state in the months of March, April and May (WHO, 2012).

2.2.8 Measles

Measles is a highly contagious disease caused by a virus, which usually results in a high fever and rash, and can lead to blindness, encephalitis or death. By the end of 2016, 85% of children had received one dose of measles vaccine by their second birthday, and 164 countries had included a second dose as part of routine immunization and 64% of children received two doses of measles vaccine according to national immunization schedules. (WHO, 2018)

The strategies recommended for reducing measles deaths include the following:

- A dose of measles vaccine should be provided to all infants at nine months of age or shortly thereafter through routine immunization services. This is the foundation of the sustainable measles mortality reduction strategy.
- All children should be provided with a second opportunity for measles immunization. This will assure measles immunity in children who failed to receive a previous dose of measles vaccine, as well as in those who were vaccinated but failed to develop such immunity routine immunization services or through periodic mass campaigns.
- Measles surveillance should be strengthened through the integration of epidemiological and laboratory information.
- The clinical management of measles should be improved.

2.2.9 Mumps

Mumps is a highly contagious virus that causes painful swelling at the side of the face under the ears (the parotid glands), fever, headache and muscle aches. It can lead to viral meningitis. Mumps vaccine had been introduced nationwide in 121 countries by the end of 2016.

2.2.10 Rubella

Rubella (sometimes called German measles) is a viral disease which is usually mild in children, but infection during early pregnancy may cause fetal death or congenital rubella syndrome, which can lead to defects of the brain, heart, eyes, and ears. Rubella vaccine was introduced nationwide in 152 countries by the end of 2016, and global coverage was estimated at 47%. (WHO, 2018)

2.2.11 Japanese B Encephalitis

Japanese B Encephalitis is a viral disease transmitted by mosquitoes. Over 50,000 cases are reported to occur each year. Most infections are mild (e.g., fever and headache) or without apparent symptoms or can cause severe encephalitis. The Japanese encephalitis virus (JEV) is endemic in many countries in southern Asia and the western

Pacific Rim, with new spread to previously unrecognized countries. It is an important cause of childhood neurological disease associated with permanent neurological squeal and death. Although it can cause significant morbidity and mortality, vaccine preventable disease and JE vaccine JE vaccine is effective in children living in endemic regions and the vaccine have been available for decade and currently used in most country and integrated into existing childhood vaccination programs. (Chin and Torresi, 2017)

2.3 Concept of knowledge, attitude and accessibility

Knowledge, attitude and accessibility model is a rational model in health education. It is based on the notion that increasing personal knowledge will influence behaviour change.

2.3.1 Concept of knowledge

Sowon B., defined knowledge as the first step of memory by cognizance, see or hear. This step of knowledge such as knows about definition, mean, true, rule, theory, structure and method are correct. This memory is not a complicated process.

Bloom BS., defined, knowledge as cognizance specially or general in process or situation stressing use of memory.

In conclusion, knowledge means what is known from studying, learning, experience, rule, place, thing, person, circumstance. Knowledge takes time and is not a complicated process.

Bloom and Sowon divided cognitive domain into six levels as followed:

- Knowledge or recall, which means the first step of memory about method, process, structure that can be used to describe definition, detail and truth;
- Comprehension or understanding, which mean practice or skill of translation, interpretations and extrapolation;

- Application defined practice or skill to understand and to correct problem by badaptation. Correct or demonstrate can be demonstrated in daily situation;
- Analysis defined procedure to break down component of problem, situation, according to conversation, rules and structure;
- Synthesis means ability to rebuild conclusion for new process;
- Evaluation means ability to decide using given rule and standard.

According to the concept of knowledge, the level of knowledge is the vital factor related to the change and upholding of health manners. Thus, this study will use the first and second level of knowledge (knowledge or recall and comprehension or understanding) of Bloom and Sowon theory in my study, in which divided into three levels – low, moderate and high levels of knowledge.

2.3.2 Concept of attitude

The number of definitions of "attitude" that have been proposed is vast — "...a mental and neural state of readiness exerting a directive influence upon individual's response to all objects and situations with which it is related."

An enduring system of three components centering about a single object — positive or negative evaluations or beliefs (cognitive component), emotional feelings (affective component, and disposition to take action (action tendency component).

Despite the apparent differences among the definitions, there are some common elements that run through most if not all of them.

The following are some important properties of attitudes:

1. Hypothetical or latent variable

   An attitude is not directly observable but rather is inferred. An attitude cannot be diagnosed from any one particular act or response but rather is abstracted from a large number of related acts or responses.

2. Measurement based on Response Consistency or Co-variation

As both Campbell and Green as well as others have pointed out, while the many definitions of attitude that have been proposed differ in various ways, they all imply that the concept of attitude involves a consistency or predictability of responses. Furthermore, co-variation among responses is basic to all the methods used to measure attitudes. Campbell proposed the following as an operational definition of attitude: ...a social attitude is (or is evidenced by) by consistency in response to social objects. Response may be measured by self-reports of past behavior toward the object of the attitude or by written or verbal statements about beliefs, feelings, or intentions involving the object presented in an interview or self-administered questionnaire. Regardless of the procedure used, the existence of a pattern of interrelationships among responses is typically the evidence used to diagnose an attitude. As will be seen shortly, the various attitude measurement and scaling techniques have approached the matter of "response consistency" in somewhat different ways.

3. Uni-dimensional Concept

The bipolarity implicit in most definitions of attitude suggests a simple uni-dimensional concept — like-dislike, favorable-unfavorable evaluation, pro-con action tendency. This is not to say that attitudes may not be multi-dimensional. Rather, researchers typically begin with a uni-dimensional conception of attitude and in developing measuring instruments they aspire to a one-dimensional scale, and treat the scale score as a measure of a single variable. If a scale is uni-dimensional, then people with the same score will have about the same attitude. However, if the scale measures say two components, then the same score can be obtained in several different ways. Whether or not a given attitude domain or scale is uni-dimensional is an empirical question that the researcher must consider.

4. Attitudes are learned or "residues of experience"

The concept of attitude was useful to expect mothers' attitude about immunization for their children. That is deep-seated for bringing their children for

getting immunization. Thus, this study will apply the level of attitude of mother related to immunization status of children among 1 – 2 years in which divided into two categories – positive and negative attitude.

2.3.3 Concept about accessibility

Cunningham, et al., offered a concept about accessibility to service based on the following:

1. Affordability – patient most pay cost of service. Without payment there is no treatment or service.

2. Convenient – service hours, location of hospital, and willing staffs to provide service.

3. Access to specialties – the length of time for transportation, appointment and waiting time.

Penchansky and Thomas gave specific areas or dimension of access as follows:

1. Accessibility, the relationship between the location of supply and the locations of clients, taking account of client transportation resources and travel time, distance and cost.

2. Accommodation, the relationship between the manner in which the supply resources are organized to accept client (including appointment systems, hours operation, walk-in facilities, telephone services) and the client's ability to accommodate to these factors and the client's perception of their appropriateness.

3. Affordability, the relationship of prices of services and providers insurance or deposit requirement to the client income, ability to pay, and existing health insurance. Client perception of worth relative to total cost is a concern here, as clients' knowledge of prices, total cost and possible credit arrangement.

From this concept about accessibility, this study focuses only on accessibility to determine the association between with immunization status of children.

2.4 Review on previous studies

The literature reviewed about variables include researches of immunization status, general characteristics of respondents, knowledge on immunization, attitude towards immunization, source of information and accessibility to health services.

2.4.1 Immunization status of children

Harahap J., studied in North Sumatra Province, Indonesia in 2000 revealed that 58.6% of incomplete immunization with 28.7% of BCG, 49.2% of DTP, 33.9% of OPV and 39.6% of Measles.

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. 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 DPT, 46.5% of OPV and 54.2% of Measles.

In Hlaing Thar Yar Township, Yangon Division, Myanmar, the study of Myint NW., in 2005 stated that 83.2% of children was completely immunized and 7.6% was incompletely immunized and 9.2% of children was unimmunized.

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 DPT and OPV complete 3 doses were very low with 27.3%.

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 DPT and OPV 59.6% and Measles vaccination 44.3%.

In the study of Malkar et al., 2013 in India assessment of socio-demographic factors affecting immunization status of children in age group of 12-23 months in a rural area of India, out of total 210 children surveyed, 165 (78.5%) were fully immunized, 43 (20.4%) were partially immunized and 2 (0.9%) were unimmunized.

In the cross-sectional survey at Yangon Children Hospital, among 580 studied children, (34%) of children were found to be fully immunized, (36%) were partially immunized and (30%) were not immunized yet. Altogether (66%) of the children missed immunization. BCG immunization coverage was (68.8%), DPT1 / OPV1 (67.9%), OPV2 / DPT2 (51.8%), OPV3 / DPT3 (44.1%), Measles1 (36.2%), Measles2 (17.7%), HepB1 (54.8%), HepB2 (39.6%) and HepB3 (33.4%) respectively. (Lynn H, 2017).

In a descriptive community-based cross-sectional household survey in Afghanistan, it was found that nationally, 51% of children participating in the survey received all doses of each antigen irrespective of the recommended date of immunization or recommended interval between doses. About 31% of children were found to be partially vaccinated. Reasons for partial vaccination included: place to vaccinate child too far (23%), not aware of the need of vaccination (17%), no faith in vaccination (16%), mother was too busy (15%) and fear of side effects (11%) (Mugali et al., 2017).

2.4.2 Age of mothers

The age of mother can influence the incomplete immunization of the children. No matter the age of mother, the practice of immunization for their child is different.

Vongkhamdy K., studied in Lao PDR in 1999, revealed that 43.9% in the group of mother more than 30 years old was incomplete immunization of child but no significant association between the age of mothers and immunization status of children.

A study in Indonesia by Harahap J., in 2000 found that the respondents' ages were between 15 – 49 years with the majority of 25 – 34 years of 56.9% but still showed no significant relationship between the age of mothers and immunization status of children.

The study of Keochanthala S., in Khammuane Province, Lao PDR, in 2002, showed that 17 – 50 years old respondents and the average age were 28 years with the highest percent of 20 – 29 years old. But there was no statistical significance between the age of mothers and immunization status of children.

Siharath D., studied in Lao PDR in 2003 also revealed that there was no significant relationship between the age of mothers and immunization status of children, revealing age group of mother more than 40 years had the lowest of 33.3% of incompletely immunized children.

In a study, Aye MY., conducted in Thailand in 2006, more than half of mothers were 26 – 49 years old with 64.4% of incomplete immunization of children. There was no significant relationship between age of the mothers and incomplete immunization of children.

Another study, Shahla R., et al, in Iran, 2006, the mean age of the mothers was 30 years and more than half of mothers were less than 30 years old (56.9%). Increasing age of mother was significantly related to vaccination delay.

Hlaing EE., in Thailand, 2007, revealed that above 25 years of aged group of mothers had 56.1% of incomplete immunization of children and there was statistically significant relationship between age of mothers and immunization status of children.

In sum up the previous studies, it is concluded that there is no significant association between the age of mothers and incomplete immunization of children in many studies while there is a significant association between the age of mothers and immunization status of children in two studies. Variable of age of mothers was still controversial and therefore, it was included in this study.

2.4.3 Family income

An association between the family income and immunization has been found in a number of demographic surveys conducted in developing countries.

A study on KAP related to Immunization of children 1-3 years old admitted to Yangon Children Hospital by Dr. Myint Myint Soe (1991) showed that there was no statically significant association between family income and immunization status (P=<0.207).

The study about mothers in Pakse district, Champasak province, Lao PDR by Vongkhamdy K., in 1999 found that 63.6% of children complete immunization was those with total monthly family less than 300,000 kip, and 72.7% with incomplete immunization were total income less than 300,000 kip. There was no significant relationship between immunization status of children and total family income.

Harahap J., studied in North Sumatra Province, Indonesia in 2000 revealed that 63.5% of low-income families had incompletely immunized children with significant association between the family income and immunization status of children.

The study of Siharath D., in SanakhaM District, Vietiane Province, Lao PDR in 2003 showed that incomplete immunization of children was 39.9% in low income, 32.9% in moderate income and 34.6% in high income groups with no significant relationship between family income and immunization status of children.

In a study conducted at Bangladesh by Senda T., in 2005 stated that there was a significant association between the family income and immunization status of children, with the result of low income with lower immunization status of children.

Aye MY., studied in Thailand in 2006 indicated the monthly income of 5,000 to 6,000 baht resulted in 50% of incomplete immunization of children with no statistical significance between family income and incomplete immunization of children.

The study of Hlaing EE., in Thailand, 2007 explored that mothers who insufficient monthly income had resulted in 60.8% of incomplete immunization of children and there was no significant association between monthly income and immunization status of children.

Higher household income also significantly increases the likelihood of full immunization by one of the studies of Hu *et al.,* 2013.

In conclusion, it is summarized that most of the previous studies showed that there was no significant association between family income and incomplete immunization of children while only three studies showed that there was significant association between the family income and immunization status of children. Variable about family income with immunization status of children was still notorious and therefore, it was included in this study.

2.4.4 Education of mothers

The delayed or incomplete immunization was affected with low socio-economic status especially related with maternal illiteracy.

The study of Vongkhamdy K., in Lao PDR in 1999 revealed that 65.9% of children complete immunization was in group of mothers' education secondary school and higher, but the groups of children incomplete immunization were only 42.4%. Their mothers' education level was secondary school and higher. There was significant relationship between immunization status of children and education of mother.

The study in Indonesia by Harahap J., in 2000 stated that 47.1% of mothers with primary school level were the highest group and 89.5% of never educated mothers had incompletely immunized child with significant relationship between the education of mothers and immunization status of children.

Teklay Kidanel, Michael Tekie et al (2000) studied the factors influencing child immunization coverage in rural district in Ethiopia showed the fully vaccinated coverage among children 12-23 months was higher for literate compare to illiterate mothers. In this study, maternal education is decisive to immunization status of the child.

According to a survey of in Lao PDR in 2002 by Keochanthala S., resulted in 52.2% of mothers with higher education and 68.8% of low education had incomplete immunization of child.

In the study of Sundara S., conducted in Vientiane Municipality, Lao PDR in 2002, the result was no association between the education of mothers and immunization status of children.

Siharath D., in Vietiane Province, Lao PDR in 2003 stated that the mothers of secondary and above 20.7% had incomplete immunization for the children with significant association between the education of mothers and immunization status of children.

The study of Aye MY., in Thailand in 2006 indicated that the result was no statistical significance between education level of mothers and incomplete immunization of children with maternal education of primary or lower had 78% of incomplete immunization of children.

Hlaing EE., in 2007 stated that primary or lower education of mothers had 74.3% of incomplete immunization of children whereas secondary or higher education level of mothers had 38.6%. There was association between education of mothers and immunization status of children.

The study of Malkar et al., 2013 in India showed immunization status of children went on significantly improving as their mother's education level increased ($p<0.05$).

In computation the previous studies, it is concluded that there is significant association between the education of mothers and immunization status of children in many studies while there is no significant association between the education of mothers and immunization status of children in only two studies. Variable of education status of mothers was still contentious and therefore, it was included in this study.

2.4.5 Occupation of mothers

A study on KAP related to Immunization of children 1-3 years old admitted to Yangon Children Hospital by Dr. Myint Myint Soe (1991) showed that there was no significant association between maternal occupation and immunization status ($P=<0.857$).

Vongkhamdy K., in Lao PDR in 1999 revealed that 65.2% of housewife had incompletely immunized children, 15.2% among farmers and 4.5% among government workers with the significant association between the occupation of mothers and immunization status of children.

In north Sumatra province, Indonesia, Harahap J., in 2000 stated the significant relationship between the occupation of parents and immunization status of children with mothers of non-agricultural workers had 44.8% of incomplete immunization of children whereas 49.7% in fathers.

The study of Sundara S., in Lao PDR in 2002 indicated that there was no association between the occupation of parents and immunization status of children.

Keochanthala S., conducted in Lao PDR in 2002, resulted in 33.3% of government officers had incomplete immunization of children and only 69.9% in farmers with statistical significance between the occupation of parents and immunization status of children.

The study in Bangladesh in 2005 by Senda T., and Thailand in 2006 by Aye MY., indicated that there was no association between the occupation of parents and immunization status of children.

In the study of Hlaing EE., in Thailand in 2007, the result indicated that mothers who work had resulted in 63.5% of incomplete immunization of children. There was no significant association between occupation of mothers and immunization status of children.

In another study on factors influencing full immunization coverage among 12–23 months of age children in Ethiopia, it was found that full immunization was no longer associated with maternal occupation (Lakew et al., 2015).

In Ghana. mother's employment was found to influence the utilization of the initial and successive doses of the vaccines. It was also found employed mothers to be more probable to utilize all the successive doses of vaccination for their children (Immurana and Arabi, 2016).

According to previous studies, it is concluded that the result indicated no significant association between the occupation of mothers and immunization status of children in some studies since there is a significant relationship between the occupation

of the mothers and immunization of children in some studies also. Variable of occupation of mothers was still arguable and therefore, it was included in this study.

2.4.6 Siblings of children

The study of Limtragool P., Thailand, 1987, which revealed that families with small numbers of children would go for immunization more than families with a lot of children and the number of siblings in family, was a significant factor towards the receipt of immunization.

The studies of Shahla R., et.al, Iran, 2006, increasing the number of children in family was significantly related to delay in immunization.

2.4.7 Knowledge of mothers

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 center, transportation and primary health activities had no effect on immunization coverage.

A study on factors affecting immunization coverage in Northeast Thailand by Petchsavai Limtragool, Faculty of Nursing, Khon Kaen university in 1987 showed that mother with high complete immunization receipt for their children were mothers who had a high level of knowledge about infectious diseases that can be prevented by vaccine and about preventive vaccination.

A study on factors affecting immunization acceptance amongst mothers of one-year old children in Kabinburi district, Prachinburi province, Thailand in 1989 by Ashraf Uddin Ahmed showed that mother's knowledge of vaccines as related to their child's age, vaccine dosage and the time interval between administrations had a significant association with the completion of immunization schedules.

Although the result of most of the studies showed significant association between knowledge of mother and immunization status, Naing NN., conducted in Thailand in

1992 resulted in no significance association between knowledge of mother and immunization status of children through mothers with adequate knowledge had 5.4% of incomplete immunization.

Angelillo IF, Ricciardi G., in 1999 studied knowledge, attitudes and behavior of mothers on immunization in Italy. The result of study showed that knowledge was significantly greater among mothers, with higher education level and among those who were older at the time of child birth. Respondents' attitudes towards the utility of vaccinations for preventing infectious diseases were very favorable.

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 ($P>0.05$).

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 leaded to 11.3% incomplete immunization of children comparing with poor knowledge to 50.9% incomplete immunization of children.

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 leaded to 95.5% incomplete immunization while the moderate and high to 4.5%.

Hlaing EE., 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.

There was association between maternal knowledge on immunization. Moreover, practice status of immunization is significantly associated with knowledge mothers (Minn-Thu, 2008).

Full immunization in urban children whose parents had knowledge about vaccines was 85% compared to children whose parents had no knowledge about vaccines with 67% which was statistically significant. In Rural area, children whose parents had knowledge about vaccines was 93% compared to children whose parents had no knowledge about vaccines was 80% which was statistically significant (Venkatachalam et al., 2015).

2.4.8 Attitude of mothers

A study on immunization-related knowledge, attitudes and practices of mothers in Kinshasa, Democratic Republic of the Congo (1995) by Mapatano MA, Kayembe K, Piripiri L and Nyandwe K showed mothers had positive attitudes towards immunization (98%). Coverage based on the immunization card, however, was as low as 37%, indicating a discrepancy between the high level of knowledge and positive attitudes, with the observed low immunization coverage. Virtually all the mothers had heard of immunization (99.8%). There was confusion in their minds as to which diseases were targeted by the EPI. Thus, many mothers attended immunization sessions without knowing exactly for which vaccines they were there.

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 there was a statistically association between overall beliefs and children immunization status ($P<0.05$).

An investigation by Keochanthala S., in Lao PDR in 2002 revealed that there was statistical significance between the attitude of mothers and immunization status of children.

A study on mothers and vaccination: Knowledge, attitudes, and practice in Iran (2006) by Shahla Roodpeyma, Zinat Kamali, Reza Babai and Zohreh Tajik showed a favorable attitude towards children immunization in 95.5% of respondents. Nearly half (51.4%) of mothers knew the name of the diseases against which their children were being vaccinated. About half of children (51.1%) experienced vaccination delay.

In Nyan Winn Myint (2005) findings, immunization status was statistically significant association with attitude towards immunization (P=0.037).

The study conducted by Aye MY., in Thailand in 2006 also stated that there was significant relationship between the attitude of mothers and immunization of children. It was found that the moderate and low levels resulted in 81.8% of incomplete immunization of children.

Mapatano and Kayembe (2008) stated immunization related knowledge, attitude and practice of mothers in Congo. The study showed mother had positive attitude towards immunization for very favorable (98%).

In a cross-sectional study on factors influencing immunization status of Myanmar migrant children among 1 – 5 years in Mahachai District, Samutsakorn Province, Thailand stated that incomplete immunization was 60.7% and complete immunization was 39.3%. The attitude of mother towards EPI had strong significant on the immunization status of children (p-value <0.05). Among poor attitude of mothers in Samutsakorn Province were statistically and significantly related to incomplete immunization status of children. Poor attitude of mother had a 4.22 times higher chance of incompletely immunized children than those with good perception (Munsawaengsub et al., 2011).

2.4.9 Sources of information

A study conducted in Lao PDR, Keochanthala S., in 2002 revealed that there was only knowledge about side effects of DPT/ Measles vaccines with a significant association of the children's immunization status. Nearly half (46.7%) of those who had children with complete immunization received information from VCMC, while more than one third of respondents (38.4% & 34.5%) received information from health care personnel and their experience respectively.

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.

A study conducted by Hlaing EE., 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).

An interesting approach to knowledge regarding the disease prevented by immunization (Alim and Jahan, 2010), showed that paramedical worker was the main source of information to the respondents of completely (52%) and partially immunized (48.5%) children and (4.3%) for unimmunized children.

In a study on factors influencing immunization status of Myanmar migrant children among 1-5 years in Mahachai District, Samutsakorn Province, Thailand stated that the immunization status of children had negative impact by source of information about immunization. (Munsawaengsub et al., 2011).

A total of 245 mothers having children up to two years were included in the study of knowledge, attitude and practice of mothers on expanded programme on immunization in rural area of Meikhtila Township, Myanmar. The study showed that there was inadequate information about immunization and main source of information was health workers (Thura W., 2012).

2.4.10 Accessibility to health services

Kanta Jamil showed that accessibility to all the health facilities is positively influence acceptance of immunization. Children in areas where out-reach were not held

within close were 30% less likely to be immunized compared to those who lived in communities where outreach center were within two miles.

A survey in the west Sumatra province, Indonesia found that 14.4% of incomplete immunization in children was due to far immunization places.

55.8% of those who took 20 minutes to reach the immunization site were completely immunized as compared to 64.1% of those who took more than 20 minutes (Alim and Jahan, 2010).

2.5 Building community support for immunization

It is very important to meet with the community to build strong support for immunization services.

1. Meeting with community leaders

   Arrange a meeting with each of the leaders in your community and find out what they already know about immunization; any concerns the leaders may have about immunization; any concerns families in their community may have; any traditional beliefs about disease or vaccination; what barriers their people may face in accessing services (e.g. distance, seasonal work commitments, traditional festivals or customs, lack of money for transport, unsuitable session days or times); number of families or households in the community; number of new births, special groups etc within the community; appropriate times and locations for sessions; if they already motivate parents to attend immunizations sessions and how; ideas on how to immunize more children in their community.

2. Meeting with religious leaders

   Religious leaders are similar to community leaders in many ways, but there are some important differences. Their position can make them the most effective influences of all. They may, however, hold strong views on some issues and, in a minority of cases, they may have religious concerns about immunization. In extreme cases they may even advise families not to immunize. Building good

relationships with the religious leaders of every group in our community in advance is essential and will bring the programme many benefits for years to come.

In addition to the questions for community leaders in general, find out the following from religious leaders:

- specific religious beliefs about disease or vaccination;
- any religious customs that may be a barrier to immunization;
- what special efforts can be made to provide immunization services to this religious group;
- if they will promote vaccinations sessions regularly at religious gatherings;
- if there are any volunteer groups willing to help with immunization efforts.

3. Meeting with parents

One of the most effective ways to get a range of opinions in a short space of time is to arrange small 'focus' or discussion groups, each of around ten people. Try to include a good cross-section of the community: especially include those you think may not regularly benefit from immunization. This might need to schedule separate sessions for men and women as in some communities, women may not talk freely in front of men.

First meet with the parents who visit the centre and find out about their experiences (good and bad) with the services provided. Note, however, that these parents will by and large be already convinced about immunization and have some trust in the services offered in the centre. It should therefore plan to reach those parents in the community who for one reason or another do not attend the health centre. Interview the mothers attending the centre first since they are

readily accessible and are often willing to talk about the services. In addition they may suggest ways of reaching those who do not use the centre.

When meeting with parents, find out: what they already know about immunization; what concerns they themselves may have about immunization; about traditional beliefs about disease or vaccination; about any constraints to accessing existing services; if the times and locations of sessions are appropriate; what they think about the quality of the service; how the service could be improved; and if they already motivate friends, relatives and neighbours to have immunizations and how.

4. Meeting with teachers

Teachers can be very useful allies. They can educate their students about immunization and encourage them to take this learning home to their parents. Older children will shortly be starting their own families, so it is vital they have good knowledge and skills about immunization. Many teachers may already serve as volunteers during national immunization days.

When meeting with teachers, find out: what immunization activities they have already been involved in; any concerns they themselves may have about immunization; if they already include health education sessions on diseases and immunization; if so, what they teach and to what age groups; if not, how this could be achieved; if students could be encouraged to remind parents about immunization when there are new babies in the family; and any ideas about how they could contribute further to improving immunization rates in the community.

5. Meeting with other groups (NGOs, Private health practitioners etc.)

Remember to meet with any other person or community group who can help to improve the service. This will depend on respective own community, but could include groups such as traditional birth attendants (TBAs), traditional healers, private health practitioners, local medical associations, volunteer groups and NGOs.

6. Meeting with special groups

    In community there may be some special groups who have been largely unreached by immunization services, or choose not to participate in them. In all cases this should include them in the meetings and planning process right from the start.

    Some examples of special groups are nomadic groups; migrant workers; ethnic or other minority groups; families that fear contact with government (for example if they lack proper documents); groups with difficult physical/geographical access; religious or traditional sects that refuse vaccination; refugees; homeless families or families in dense urban areas; street children.

There must involve the community to plan when and where to hold immunization sessions and who can help are parts of planning suitable immunization sessions.

1. When to hold immunization sessions

    - Try to schedule sessions at a convenient time for parents
    - If possible, organize an immunization session to coincide with market day when mothers are coming to the village centre anyway
    - Avoid any session clashes with religious services or important events such as sporting event. At the same time, a major event in the community can be an opportunity to inform people about immunization

2. Where to hold outreach sessions

    - Hold sessions in a place that is most convenient and accessible for the parents

3. Who can help you

    This need helpers to encourage parents to come for immunization, to educate them while they are waiting, and generally to help out during the

sessions. These helpers can include; older school children, as part of school project; local youth groups; local businessmen's clubs and community volunteers.

There are many ways to mobilize the community. The best idea is to use a mix of methods so that you can reach the widest range of people.

1. Use clear, simple and accurate messages

   Creating effective messages is not easy; this needs to give truthful, technical, practical and motivational information in a way that can be easily understood by the different audiences at different times. This must be very clear so that audiences cannot easily be misinterpreted.

2. Using suitable methods to mobilize the community

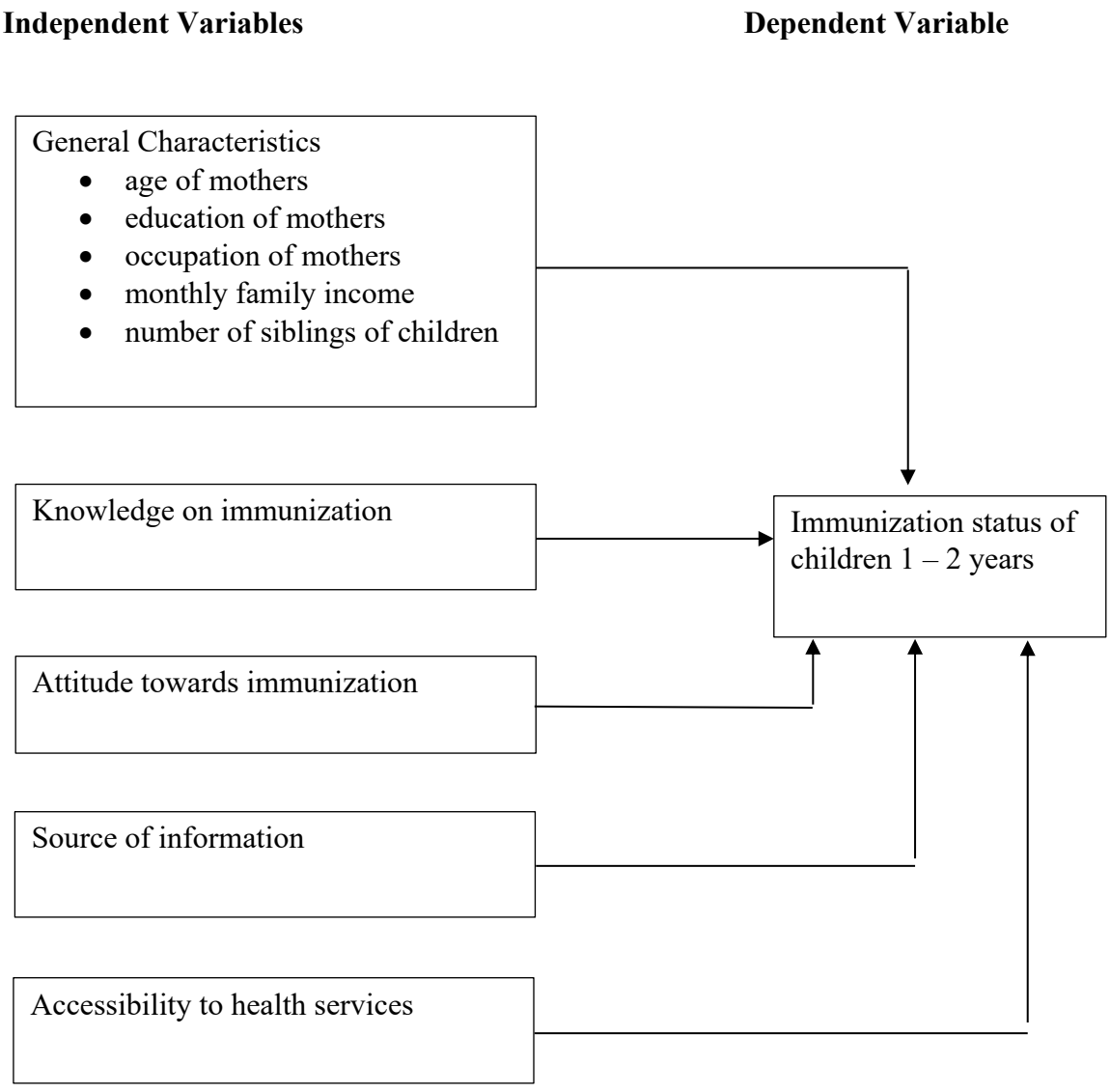
   - Methods to use with limited resources

     For district and health facilities staff with limited resources, the best method of communication is by personal interaction with the community. Sometimes it is helpful to have some prepared messages in written form, but it is always good to spend time discussing immunization face to face in order to make sure that the service meets the community needs.

   - Methods to use with extra resources available

     With the help of district/province staff, this could organize; community meetings, the diffusion of messages in religious places, loudspeaker messages for the community, discussion sessions at farmers' meetings, in the market place and other places, the distribution of material such as posters and leaflets, radio and TV spots, newspaper articles and drama show.

Figure 2.1 Conceptual framework



Source: Author

CHAPTER III

OVERVIEW OF IMMUNIZATION STATUS IN MYANMAR

3.1 Myanmar Health Vision 2030

Considering the rapid changes in demographic, epidemiological and economic trends, both nationally and globally, a long term (30 Years) health development plan has been drawn up to meet any future health challenges. The plan encompasses the national objectives (i.e. political, economic and social objectives of the country. This plan has 9 objectives and of which 4th objective is to ensure universal coverage of health services for entire nation. Maternal and Child Health (MCH) was one of the health services given to entire nation and immunization was its function.

In Myanmar women and children constitute about 60% of total population and they are major consumer of health services. Infant Mortality Rate (IMR) in 2000 showed 48.5 per 1000 live birth in urban and 50.2 in rural area. Through the proper immunization MCH made one of the objectives to reduce infant and childhood morbidity and mortality. One of the expected benefits of Myanmar Health Vision 2030 is infant mortality rate would be fall from the existing level of 59.7 per 1000 live births to 40 per 1000 live births at the end of first 10 years period, to 30 per 1000 live births at the end of 2nd 10 years period and 22 per 1000 live births at the end of the plan period, (MOH, 2006-2011).

According to Myanmar Demographic and Health Survey (2015-16), just over half (55%) of children age 12-23 months received all basic vaccinations-one dose each of BCG and measles and three doses each of DPT-containing vaccine and polio. Basic vaccination coverage is higher in urban areas (68%) than rural areas (50%) and ranges from 34% in Ayeyawaddy Region to 81% in Mandalay Region. Basic vaccination coverage increases with mother's education. Only 41% of children whose mothers have gone beyond secondary school. Eight percent of children aged 12-23 months have

received no vaccination. Eight percent of children age 12-23 months had not received any vaccinations. Forty-five percent of children age 12-23 months received all of the basic vaccinations before their first birthday. Regarding specific vaccinations, 88% of children age 12-23 months received the BCG vaccine, and 77% were vaccinated against measles. Vaccination coverage for the first doses of pentavalent and oral polio vaccine was high (87% and 90%, respectively). However, the percentage of children who received the third doses of the pentavalent and oral polio vaccines decreased to 62% and 67%, respectively. The differences between the percentages of children receiving the first and third doses were 25 percentage points for pentavalent and 23 percentage points for polio (MDHS 2015-16).

In Myanmar, the number of townships attaining more than 80% with penta3 coverage has increased over the past two years. However, gaps remain among the pockets of population with low utilization of service. In 2016, 93798 children were not vaccinated with 3rd dose of DPT. In 2016, the reported Measles coverage for first and second dose were 91% and 86% respectively. As Myanmar is aiming to eliminate measles by 2020, it is necessary to achieve coverage of both measles to be equal or above 95% (Myanmar EPI programme, 2016).

In Myanmar, coverage survey of immunization among 12-23 months children by vaccine confirmation method (card and history) shows BCG-93%, DPT1-75.9%, DPT3-83%, OPV1-96%, OPV2-90%, MCV-87% (Myanmar DHS,2014). In spite of wide coverage of EPI, there are sporadic cases of vaccine preventable disease emerged. WHO reported case of vaccine preventable disease in 2015 were Diphtheria (87), Pertussis (5), Neonatal tetanus (30), Measles (6), Rubella (34) and Japanese B Encephalitis (113) (WHO, 2016)

Coverage gaps persist between countries, as well as within countries. DPT 3 coverage highest in Kayah State and lowest in Ayeyarwaddy region (Myanmar DHS,2014). However, inadequate levels of immunization against childhood diseases remain a significant public health problem in resource-poor area especially in developing country (Chokchai Munsawaengsub et al., 2011)

Many barriers which disturb the immunization coverage are limitation of services delivery related to geographic and socioeconomic, seventy townships are identified as both physically and socioeconomically hard to reach, especially mountainous areas in the states and border areas and peri-urban communities in major cities. Limited access of health infrastructure particularly in relation to transport and logistics and health information system, health workforce motivation due to difficultly in transport for mobility, operational costs, incentives and large workload and weak collaboration and linked with other health interventions in partnership with immunization (Wangmo et al., 2017).

3.2 Immunization activities in Myanmar

1. Routine Immunization

It was started since People Health Plan 1 in (1978-82) during which 104 townships could be implemented. By 1995 it covered up to 305 townships. After 1998 on wards, installation of solar-power refrigerators makes increase immunization at the very hard to reach and remote border areas.

2. Crash Immunization

There are some difficult and hard to reach areas in some states and division where regular transport and communication is not available and electricity supply is poor or absent. Myanmar EPI programme conducted crash strategy during favorable season with the assistance of UNICEF. It was very successful but it needs regular supports. In 2002, some townships from 7 states and 4 division were carried and for crash immunization strategy (MOH, 2005).

3. National Immunization Days (NIDs)

National Immunization Days are days on which all children in the target age group are immunized with regard to their previous immunization status. Universally, one vaccine is used (usually oral polio vaccine) and no attempts made to complete the child record. On 8th NID was held in 10th February 2002 as first round with 98% coverage and 2nd round on 14th January 03 with 97% coverage.

4. Mopping up activities

Mopping-up activities are usually the last stage in polio eradication. The strategy of "mopping-up" involves door to door immunization in high risk districts, where wild polio virus is known or suspected to be still circulating.

5. Other Activities

A work shop was done on 14 – 15 March 2005 and the purpose is to discuss and obtain consensus on EPI (including UCI) strategy to be implemented and Myanmar for the coming five years (2006 – 2010) among the different partners involve. In this workshop, goal for measles immunization was adopted to reduce annual number of measles cases and death in Myanmar by 50% by 2010 relative to 1999 estimates.

Neonatal Tetanus elimination activities with NNT elimination guide line were drawn and high-risk approach strategy was established. High risk criteria are defined as an area of township with TT2 coverage less than 80% or NNT incidence of > 1 per 1000 live births based on 1997 or 1998 data. In 1999, 54 high risk townships in 9 states and division have been seen.

Overall and cause specific under five mortality survey was done in 2002-03 and 126,000 household from 120 townships including 778 caregivers of deceased children. Of the 778 under five deaths, (73%) are in the youngest age group (0 – 11 months) and 27% from (1 – 4 years). Under five deaths is higher in rural area (87%) compared to that of urban area (13%).

Immunization coverage was influenced by mainly two factors. These are health sector and community factor. Community factor mainly involve locally authorized person (heads of wards or villages), Voluntary Health Workers and mother who need good practice to get full immunization doses to her child or children.

3.3 Immunization schedule in Myanmar

Since the days of Jenner and Pasteur, inducing an immune response to infectious diseases by mean of vaccination has become a widely applied intervention to keep people and animals healthy.

The expanded programme 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.

Expanded Programme on Immunization was launched in May 1978 and with the commencement of PHP1 (1978-1982) 104 townships were implemented. During PHP2 (1982-1986), 72 townships could be extended by 18 townships per year. In 1995 it was covered up to 305 townships. In 1997, almost all area of all townships was covered. In Myanmar, although under 5 mortality rate reduce significantly during past decade. Infant Mortality Rate did not change significantly. The finding of under 5 mortality rate was 66.1 per 1000 LB and Infant mortality rate was 49.7 per 1000 LB in (2002-2003) under 5 mortality rate survey.

The objective of EPI is to reduce and eliminate the morbidity and mortality of vaccine preventable diseases. According to Global Immunization Vision and Strategy-GIVS, specific objectives of EPI included achievement of the coverage at least 80% in all townships and 95% nationally; sustained the country status of elimination and eradication of vaccine preventable diseases from the public health problem, achievement of polio eradication by the year 2013 and measles elimination by the year 2015 to be in line with regional goal and introduction of new appropriate vaccines by the year 2013. Thereby, the morbidity and mortality of under-five children was reduced by routine immunization schedule.

The main partners of the programed included WHO, UNICEF, Global Alliance for Vaccine (GAVI) and national and international Non-Governmental Organizations and Civil Service Organizations like Myanmar Maternal and Child Welfare Association (MMCWA), Myanmar Women Affairs' Federation (MWAF) and Myanmar Medical Association (MMA).

The EPI is administered by central-level staff assigned to the program and working through state/regional counterparts and TMOs and other public health staff at townships, RHCs and sub-rural health centers. Special Diseases Control Units (SDCUs) provide supervisory, monitoring and technical support to the Central EPI unit at state/regional level. Vaccination is delivered through a combination of approaches like fixed, outreach, mobile and crash.

Table 3.1: Immunization schedule Myanmar (2018)

Vaccine	Age of administration
BCG	At birth – 2 months
Hepatitis B	At birth
Pentavalent (DPT, Hib, Hep B)	2,4,6 months
OPV	2,4,6 months
PCV	2,4,6 months
MR	9, 18 months
IPV	4 months
JE	9 months

Source: cEPI, MOHS, Myanmar

In some townships, a special program called the crash program is implemented, whereby immunization services are provided to children younger than 3 years of age three to four times a year during “open” (or “favorable”) seasons in some part of the township, or in entire township where accessibility is an issue. During 2009, 93 townships from 12 states/ regions carried out the crash program in hard-to-reach areas within the townships. (WHO, 2012)

3.4 Expanded Programme on Immunization in Myanmar

Expanded Programme on Immunization (EPI), Myanmar has been launched in May, 1978. Since 2005, the routine immunization has been providing eleven antigens to children who are under one year of age against the most killing childhood diseases in Myanmar. Infants under full immunization are protected against Polio, Measles, Diphtheria, Pertussis, Tetanus, Hepatitis B, H. Influenza type B infection, Japanese Encephalitis, Rubella, severe Pneumococcal diseases and severe Tuberculosis. The pregnant women are given two doses of Tetanus Toxoid to prevent maternal and neonatal tetanus (MOH, 2011).

The main functions of central EPI are:

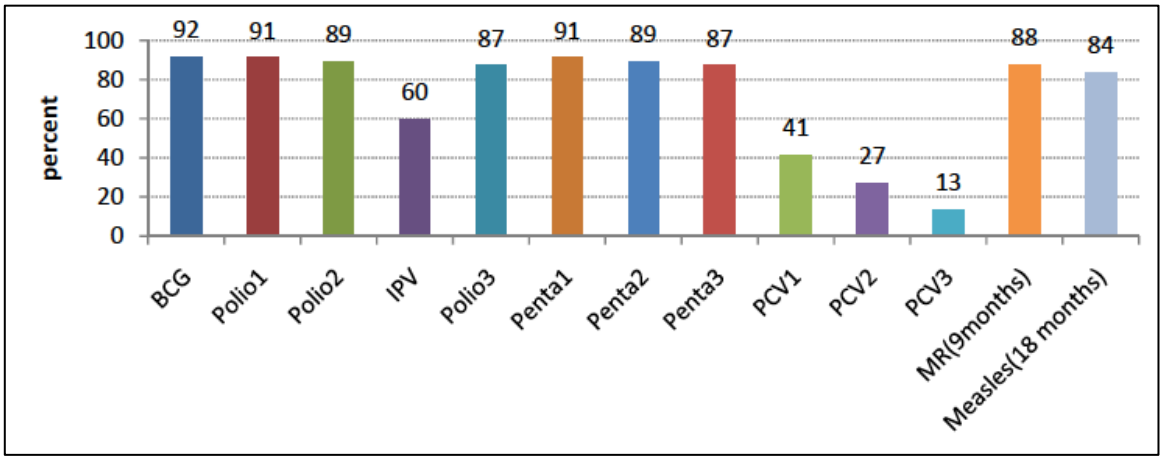
1. setting national immunization policy
2. making comprehensive multiyear plan in line with National Health Plan
3. monitoring of routine immunization activities and achievements
4. monitoring of crash immunization programme
5. management of vaccines, cold chain, supplies and logistics
6. responding the Vaccine Preventable Disease Outbreaks
7. deciding the national immunization activities
8. technical support and training to implementers
9. working with WHO, UNICEF and other UN and donor agencies
10. post vaccination/ post marketing surveillance
11. vaccine preventable diseases surveillance
12. AEFI surveillance
13. supervision, monitoring and evaluation

Routine vaccination is delivered by midwives, during the first a few days of every month, through combination approaches of fixed and outreach sessions. The fixed posts are usually at Maternal and Child Health Center (MCH) and Urban Health Centers in towns and at RHCs and public places in rural areas. Majority of immunization services are provided through outreach sessions in wards and villages. The core aptitudes of the mid-level managers of EPI who are Township Medical Officers are vital to meet the objectives of the programme.

A combination of fixed, outreach and crash immunization delivery systems were used to achieve the nation-wide coverage. Crash programme has been carried out in hard-to-reach and remote villages from (87) townships. In addition, supplementary immunization activities such as National Immunization activities have been conducted according to the needs and events of disease elimination and eradication status. The vision of the immunization programme during next five years, as reflected in Comprehensive Multi-year Plan for Immunization (CMYP) is to contribute towards reduction of under 5 morbidity and mortality, caused by vaccine preventable diseases, in reaching Millennium Development Goal 4 (MDG4) (MOH, 2011).

Regarding to immunization services, national level coverage was more than 90% in BCG, Polio1 and Penta1. Polio2 and Penta2 had 89% coverage and Polio3 and Penta3 showed 87% coverage; drop-out was about 4%. Proportion of under 1 children with measles rubella immunization was 88%. Inactivated polio vaccine(IPV) was launched throughout the country on 3rd December 2015 and Pneumococcal vaccine on 1st July 2016.

Figure 3.1: Immunization Coverage in percent (2016)



Source: Public Health Statistics Report (2014 – 2016)

3.5 Challenges of immunization coverage

The challenges to immunizing infants on a monthly basis are mostly systemic in nature and described below. Routine immunizations are delivered at fixed sites at MCH centers, urban health centers and township hospitals in urban areas, and at RHCs and sub-centers in the rural areas. The majority of immunization services are provided through outreach activities in wards and villages.

A study on challenges in access to health services and interim solutions in 20 Hard-to-Reach Villages in Myanmar stated that implementing the delivery of primary health service in hard-to-reach areas of Myanmar was uncovered and has large gaps and multiple challenges. For example, shortage and misdistribution of primary health workers, lack of essential medicines, equipment, infrastructure and allowances hampered the delivery of outreach and static primary health services. Only 7% of rural health centers met the 13-health workers standard; while 19% of sub centers did not have sheltered premises for service provision. Poverty, low education, financial, geographical and social barriers were key demand side barriers (Wangmo et al., 2017).

In conclusion, this study will attempt to explore maternal knowledge, attitude on immunization, source of information and accessibility to health services of childhood immunization in Yangon Region of Myanmar. It included in the relationship between

general characteristics, knowledge of mothers on immunization status of children, attitude toward immunization, source of information about immunization and accessibility to health services. Even though several researchers had studied the factors related to immunization status of children in different groups of population, there has been little research in Myanmar. From the review of related previous research studies, it was found that there was association or not between general characteristics, knowledge, attitude of mothers, source of information about immunization and accessibility to health services and immunization status of children.

CHAPTER IV

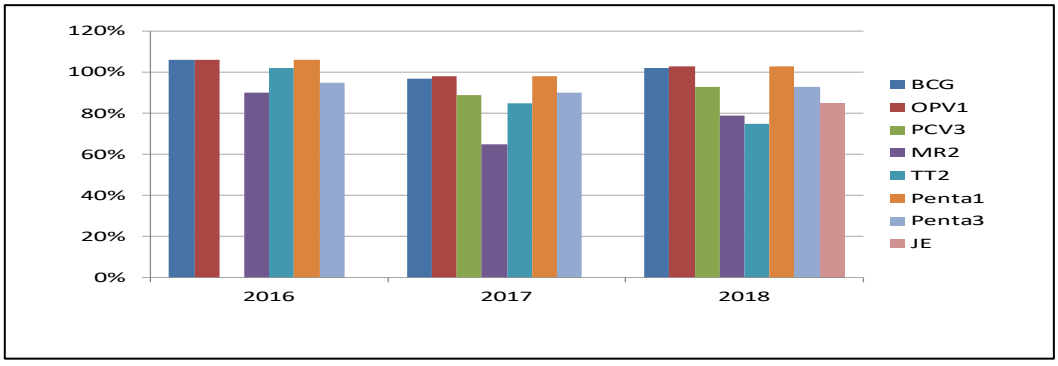
SURVEY ANALYSIS

4.1 Survey profile

HlaingTharYar Township is located in the western part of Yangon, Myanmar. It is one of the biggest township in country and it is also the most populated township. The township comprises 20 wards, 9 village tracts and 17 villages and shares borders with Htantabin Township in the north and west, Insein Township, Mayangone Township, and Hlaing Township in the east across the Yangon River, and Twante Township in the south. Total population is 670,350 which is 10% of Yangon Region population.

Immunization services are provided through 9 health facilities, with 29 vaccinators. In 2018, 153 immunization sessions per month was planned, with 9 fixed post and 28 outreach activities. Three years immunization coverage remains stable with most of the antigens are above 80%. However, MR2 has been below 80% for two years.

Figure 4.1: Reported coverage in percent for routine immunization (2016 – 2018)



Source: MOHS GAVI Mission, HlaingTharYar Township (2019)

4.2 Survey Design

The research was cross-sectional study on maternal knowledge, attitude on immunization of children aged 1 – 2 years. This study was conducted in HlaingTharYar Township of Yangon Region in Myanmar. Variables include are:

Dependent variable

1) Immunization status of children aged 1 – 2 years

Independent variables

1) General Characteristics
    i. Age of mothers
    ii. Education of mothers
    iii. Occupation of mothers
    iv. Monthly family income
    v. Number of siblings of children
2) Knowledge on immunization
3) Attitude towards immunization
4) Source of information about immunization
5) Accessibility to health services

4.2.1 Validity and reliability of research instrument

The content validity of the questionnaire was created and revised according to the reference text books and approved by experts before data collection. Pretest was be used to find out the problems concerning the structure, component, wordings used to be clearly understood by the interviewers and respondents and to revise the draft of questionnaires. Then it was pretested with

30 mothers nearby the research site who shared similar characteristics with the study subjects. The Cronbach's Alpha Coefficient test for knowledge of mothers was 0.732 and attitude of mothers was 0.711 respectively. After that, the operational questionnaires were finalized and set ready for data collection.

4.2.2 Data collection

Before data collection, the permission to carry out this study was gained from the Director of Health Department, Yangon Region, Myanmar. The original questionnaire was in Myanmar version. Four staffs from Yangon Regional Health Department were trained for supervisors. They received one day training in order to understand the research objectives, how to interview and fill up the questionnaire in the community. Before start interviewing, researcher was introduced himself, brief shortly about the purpose of coming, brief that approximately 30 minutes needed to complete the interview and asking about the suitability of mother for this period. The researcher also briefed the mother that there will be no direct benefit to mother and child from the study. However, their contribution would be an asset saving the life of children and help the policy maker to address the unmet issues. They would also be informed that their statement was kept confidential. After briefing all, mothers were filling out the informed consent form before going to fill out questionnaire. In case of any inconvenience during interviewing, mother would be discontinued and another mother would be chosen by replacement method for the next child. If randomly selected child was not found, replacement strategy from the child line listing was applied choosing the target children of the cluster.

4.2.3 Data analysis

Scoring and classification criteria

a) **Knowledge of mothers about immunization of children**

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)

b) **Attitude of mothers about immunization of children**

There were 15 questions which include rating scales of "Agree, Uncertain and Disagree". Positive attitude questions have the scores of 3 for "Agree", 2 for "Uncertain" and 1 for "Disagree" whereas negative attitude of 1 for "Agree", 2 for "Uncertain" and 3 for "Disagree". Total score is 45. And classified into high and low accordingly based on total score of the attitude.

Positive attitude - those who scored above mean in this study (≥38 scores) and

Negative attitude - those who scored below mean in this study (<38 scores).

c) **Immunization status of children**

There were 4 questions. And immunization status of children was checked from the immunization booklets and records from township medical office.

4.2.4 Statistical techniques

- Data was edited, coded and entered accurately in computer and was cleaned, verified in the field and each day after collecting data done by using SPSS data software of version 23.
- Descriptive statistics was generated from the structured questionnaire that was administered with selected mothers who has child aged 1 – 2 years. Frequencies, means, median, mode, range and standard deviations were calculated where appropriate for each factor.
- Chi-square was used to identify association between variables and immunization status of children.

4.3 Survey Results

This study was conducted among mothers who had among 1 – 2 years children living in HlaingTharYar Township, Yangon Region, Myanmar. The results of the study are presented as follow:

1. General characteristics of mothers
2. Knowledge of mothers towards immunization status of children
3. Attitude of mothers towards immunization status of children
4. Source of information about immunization
5. Accessibility to health service for immunization
6. Association between general characteristics, knowledge of mothers towards immunization of children, attitude of mothers towards immunization of children, source of information about immunization, accessibility to health service for immunization and immunization status of children
7. Immunization status of children

4.3.1 General characteristics of respondents

As regards to children, age was between 1 – 2 years old with mean age of 18 months and nearly 70% of them had less than 2 siblings. With respect to age of mothers 54.5% were aged of 30 years and above with the average aged 30.53 years. Nearly all 93.1% of mothers were married. Average family income is 120,028 kyats range between 30,000 to 300,000 kyats. More than half of mothers (64.9%) had sufficient monthly income for family expenditure. About 70% of mothers received education at high school level (37.4%) and graduate level (31.7%). Nearly half of mothers were housewife 44.9% and some were Government employee 25.1%. 68% of family is nucleus type and 64.6% owned their house. Nearly half 47.7% were lived in wooden house. The results were shown in the table as below.

Table 4.1: Number and percentage of general characteristics of mothers of children aged 1 – 2 years (n=350)

General Characteristics	Number of the Respondent	Percent
Siblings of children		
< 2	243	69.4
≥ 2	107	30.6
Mean ± SD		2 ± 1
Range		1 – 6
Age of mothers (Years)		
< 30	159	45.5
≥ 30	191	54.5
Mean ± SD		30.53 ± 5.48
Range		17 – 45
Marital Status		
Married	326	93.1
Divorced	15	4.3
Widow	9	2.6

Table 4.1: Number and percentage of general characteristics of mothers of children aged 1 – 2 years (Cont.)

General Characteristics	Number of the Respondent	Percent
Total family monthly income (Kyat)		
< 100,000	153	43.7
100,000 – 199,999	139	39.7
≥ 200,000	58	16.6
Mean ± SD	120,028 ± 60,898	
Range	30,000 – 300,000	
Median	100,000	
Sufficiency of monthly income		
Sufficient	227	64.9
Insufficient	123	35.1
Education of mothers		
Able to read and write	7	2.0
Primary level	37	10.6
Secondary level	64	18.3
High school	131	37.4
Graduate	111	31.7
Occupation of mothers		
Housewife	157	44.9
Government employee	88	25.1
Company employee	40	11.4
Self-employed	24	6.9
Others	20	5.7
Labours	17	4.9
Farmer	4	1.1

Table 4.1: Number and percentage of general characteristics of mothers of children aged 1 – 2 years (Cont.)

General Characteristics	Number of the Respondent	Percent
Type of family		
Nucleus type	238	68.0
Extended type	112	32.0
House ownership		
Own	226	64.6
Rent	124	35.4
Housing type		
Wooden	167	47.7
Brick & Wooden	104	29.7
Brick	54	15.4
Hut (Thatch)	22	6.3
Others	3	0.9

Source: Author, Survey

4.3.1.1 Association between general characteristics of mothers and immunization status of children

General characteristics included number of siblings of children, mother's age, education, occupation of mothers, monthly income of whole family, type of family and house ownership.

On the subject of number of siblings of children, more than 2 siblings 67.3% of incomplete immunization and less than 2 was 42.4% of incomplete immunization. There was a statistically association between number of siblings and immunization status of children. ($p = <0.001$)

The mother's aged <30 years had 56.6% of complete immunization of children and 43.4% of incomplete immunization of their children. The result revealed that there

was significant association between age of mothers and immunization status of children. ($p = 0.024$)

Mothers who had education level of secondary and lower had 21.3% of complete immunization of children and 78.7% of incomplete immunization of their children. The result showed statistically significant association between education of mothers and immunization status of children. ($p = <0.001$)

Mothers who are housewives had 47.8% of complete immunization of children and 52.2% of incomplete immunization of children comparing with all kinds of workers. The result revealed that there was no significant association between occupation and immunization status of children. ($p = 0.452$)

Sufficient monthly income of whole family had 70.9% of complete immunization of children and 29.1% of incomplete immunization of children. The result showed significant association between monthly family income and immunization status of children. ($p = <0.001$)

Nucleus type of family had 52.5% of complete immunization of children and 47.5% of incomplete immunization of children compared with extended type of family. There was no significant association between type of family and immunization of children. ($p = 0.169$)

For house ownership, owners had 64.2% of complete immunization of children and 35.8% of incomplete immunization status of their children. There was significant association between house ownership and immunization status of children. ($p = <0.001$)

The results are shown in table 4.2.

Table 4.2: Association between general characteristics and immunization status of children (n=350)

General characteristics	No. of Respondent	Immunization status				P-value[1]
		Incomplete		Complete		
		n	(%)	n	(%)	
Number of siblings						
< 2	243	103	42.4	140	57.6	<0.001
≥ 2	107	72	67.3	35	32.7	
Age of mothers (Years)						
< 30 years	159	69	43.4	90	56.6	0.024
≥ 30 years	191	106	55.5	85	44.5	
Education of mothers						
Secondary and lower	108	85	78.7	23	21.3	<0.001
High school and higher	242	90	37.2	152	62.8	
Occupation of mothers						
Housewife	157	82	52.2	75	47.8	0.452
Workers (all others)	193	93	48.2	100	51.8	
Monthly income						
Sufficient	227	66	29.1	161	70.9	<0.001
Insufficient	123	109	88.6	14	11.4	

Source: Author, Survey [1] Pearson Chi-square Test

In this study, more than half of mothers were the age group above 30 years (54.5%). Nearly half of them 43.7% of mothers' family income per month was less than 100,000 kyat and 64.9% of mothers had sufficient monthly income. About 70% of mothers had high school level and graduate level education. Nearly half of mothers were housewife (44.9%) and some were government employee 25.1%, company employee

11.4%. And 68% of family is nucleus type. Number of siblings of the children for less than 2 was 69.4%.

In terms of age of mothers, more than 30 years of aged group of mothers had 55.5% of incomplete immunization of children when comparing with those who were less than 30 years old had 43.4% of incompletely immunized children. There was statistically significant relationship between age of mothers and immunization status of children ($p = 0.024$). Thus, the elder aged of mothers, the higher percentage of incomplete immunization status of children. This is similar with the result of Hlaing EE., Mahachai district, Samutsakorn province, Thailand revealed that there was significant relationship between immunization status of children and age of mother ($p = 0.041$). And also similar with the result of Shahla R., et.al, Iran, 2006, revealed that increasing age of mother was also significantly related to vaccination delay ($p = 0.001$). It is different from the result of other studies like Vongkhamdy K., Harahap J., Siharath D., Aye MY., in which there was no association between age of mothers and immunization status of mothers.

The mothers who had sufficient monthly income had 29.1% of incomplete immunization of children comparing with those who had insufficient monthly income resulted in 88.6% of incomplete immunization of children. And there was a significant association between monthly income and immunization status of children ($p = <0.001$). This finding is differed from previous studies like Soe MM., Siharath D., Aye MY., Hlaing EE., in which there was no association between monthly family income and immunization status of children. Mothers who had low- and insufficient-income family could not take the child to vaccinate their child because they have to work whole day and cannot go to health facility during the business hours.

Regarding education status of mothers, the finding showed that secondary and lower education of mothers had 78.7% of incomplete immunization of children whereas high school and higher education of mothers had 37.2%. Additionally, there was association between education of mothers and immunization status of children ($p = <0.001$). Therefore, the more educated mother, the more chance of complete immunization of children had. Education helps more participation in decision-making

process and increase maternal role with regard to immunization of their children. The result is quite similar with the result of Vongkhamdy K., in Lao PDR revealed that 65.9% of children complete immunization was in group of mother's education secondary school and higher, but the groups of children incomplete immunization were only 42.4%. The finding is also similar to the previous study Hlaing EE., in Thailand, which found that mothers with primary or lower education had 74.3% of incomplete immunization of children and secondary or higher education level of mothers had 38.6% of incomplete immunization. The study of Malkar et al., showed immunization status of children is statistically significance with their mother's education level. They also noticed that there was an association between immunization status of children and education of mothers.

Concerning occupation of mothers, the result indicated that nearly similar incomplete immunization rate between housewife and mothers who had work 52.2% and 48.2% respectively. There was no significant association between occupation of mothers and immunization status of children ($p = 0.452$). Although they need to go to work or stay at home, they could have got the vaccination of their children. The finding was similar to previous studies Sundara S., Aye MY., Hlaing EE., Lakew et al., when it is not corresponded with the result of Keochanthala S., conducted in Khammuane Province, Lao PDR in 2002, resulted in 33.3% of government officers had incomplete immunization of children and 69.9% in farmers with statistical significance between the occupation of parents and immunization status of children.

For number of siblings of children, 42.4% of mothers with less than 2 siblings had incomplete immunization of their children and 67.3% of those with more than and equal to 2 siblings had incomplete immunization of the children. There was an association between number of siblings and immunization status of children. This is similar with the previous studies of Shahla R., et.al, Iran, 2006, increasing the number of children in family was significantly related to delay in immunization ($p = 0.001$). And the result was similar to the study of Limtragool P., 1987, which revealed that families with small numbers of children would go for immunization more than families with a lot of children and the number of siblings in family was a significant factor towards the receipt of immunization.

4.3.2 Knowledge of mothers towards immunization status of children

The overall knowledge of mothers was 47.7% with moderate knowledge, 27.4% with low knowledge and 24.9% with high knowledge towards immunization of their children. (Table 4.3)

Table 4.3: Knowledge of mothers about immunization of children (n=350)

Levels of knowledge	Number	Percent
Low knowledge (<9)	96	27.4
Moderate knowledge (9 – 12)	167	47.7
High knowledge (>12)	87	24.9

Source: Author, Survey

The result showed that 100% knew about National Immunization Days, 97.1% knew the purpose of children vaccination. 90.9%, 84.3% knew that the diseases preventable by vaccine. 65.4%, 48.6% had the knowledge about the mode of transmission of diseases, 56%, 49.4% knew the common side-effects of vaccination, 31.1%, 24.6% knew that did not give the vaccination if they were ill, and 85.7% knew the benefit of NIDs. (Table 4.4)

Table 4.4: Number and percent of correct answer to each item of knowledge of mothers (n=350)

Statements	Correct Answer	
	Number	Percent
Do you know National Immunization Days?	350	100.0
Immunization can prevent the childhood diseases.	340	97.1
The child will be protected from polio by receiving vaccination.	318	90.9
Polio can be prevented by taking immunization on NID.	300	85.7
The child will be protected from measles by injecting vaccine.	295	84.3
The child should be completely immunized at the age of 9 months.	279	79.7
BCG vaccine can prevent your child from TB.	246	70.3
Measles can be transmitted by close contact.	229	65.4
The children should get 4 immunization at least.	226	64.6
Soreness/abscess at the site of injection after vaccination is common side effect.	196	56.0
The child should get 3 times of immunization of OPV at least.	191	54.6
Mild fever is a common after receiving immunization.	173	49.4
Whooping cough can be transmitted by infectious air.	170	48.6
Diarrhea is contraindication to vaccination.	109	31.1
If a child has high fever, the vaccination can receive.	86	24.6

Source: Author, Survey

4.3.2.1 Association between knowledge of mothers toward EPI and immunization status of children

According to table 4.9, mother with low and moderate knowledge level about immunization of children resulted in 42.6% of complete immunization of children and 57.4% of incomplete immunization of children compared with high level of knowledge resulted in 72.4% of complete immunization and 27.6% of incomplete immunization of children. And the result showed that there was significant association between knowledge of mothers about immunization and immunization status of their children. ($p = <0.001$)

The result showed that 24.9% of mothers had high level of knowledge about immunization of children. Nearly cent percent 97.1% of mothers gave correct answer about immunization can prevent childhood diseases. In addition, more than half of mothers knew about the purpose of children vaccination, type of vaccines and the common side-effects of vaccination. Almost all mothers knew about National Immunization Days and the benefit of NIDs. Myanmar now plans and implements for maintaining the eradication status of polio, every year NIDs are held country wide. This can affect to increase the knowledge level of studied mothers about immunization of their children.

Despite the fact that they had moderate and good levels of knowledge, they could not have attractive high consciousness over the mode of transmission of vaccine preventable diseases and they did not give the vaccination if the child was ill.

The study revealed that mother with low and moderate knowledge level about immunization of children resulted in 42.6% of complete immunization of children and 57.4% of incomplete immunization of children compared with high level of knowledge resulted in 72.4% of complete immunization and 27.6% of incomplete immunization of children. And the result showed that there was significant association between knowledge of mothers about immunization and immunization status of their children. ($p = <0.001$)

The similar result of significant association between knowledge of mothers and immunization status of children can be seen in the study of Ahmed AU., Vongkhamdy K., Keochanthala S., Siharath D., Aye MY., which resulted in significant relationship

between knowledge of mothers and immunization status of children. In the study of Siharath D., mothers of good knowledge leaded to 11.3% incomplete immunization of children comparing with poor knowledge to 50.9% incomplete immunization of children. And Aye MY., stated that low level of knowledge leaded to 95.5% incomplete immunization whiles the moderate and high to 4.5%.

The difference is found in the study of Naing NN., mothers with adequate knowledge had 5.4% of incomplete immunization and Hlaing EE., mothers with moderate and good level of mothers had 57.7% of incomplete immunized children whereas 42.3% of complete immunized children. And there was no significance association between knowledge of mothers and immunization status of children.

4.3.3 Attitude of mothers towards immunization status of children

The levels of attitude was divided into two levels, according to mean, positive attitude was 52% and negative attitude was 48% respectively. (Table 4.5)

Table 4.5: Attitude of mothers about immunization of children (n=350)

Levels of attitude	Number	Percent
Negative attitude (<38) below mean	168	48
Positive attitude (≥38) above mean	182	52

Source: Author, Survey

According to table 4.6, the findings showed that 88.3% of mothers agree that it is necessary to vaccinate a healthy child while 4.3% disagree and 7.4% uncertain for this. Then 86.3% of mothers agree on children less than two year's old age is in vulnerable group to communicable diseases and 81.7% agreed complete immunization is better than incomplete immunization but 8% disagree for this statement. Also 72.6% agreed the child would get higher immunity after vaccination while 20.9% giving uncertain answers. More than half of the respondents, 63.4% agreed on if their children had fully immunized, their children will be free from all kind of childhood diseases and 14.9% had disagreed.

Table 4.6: Percentage of each item of mother's attitude about child's immunization (n=350)

Statements	Levels of Agreement (Percent)		
	Agree	Uncertain	Disagree
It is necessary to vaccinate a healthy child.	88.3	7.4	4.3
Children less than two year's old age are in vulnerable group to communicable diseases.	86.3	11.1	2.6
To immunize the child completely is better than incomplete immunization	81.7	10.3	8.0
Immunity of child will get higher after vaccination.	72.6	20.9	6.6
If your child has fully-immunized he/she will be free from all kinds of the diseases.	63.4	21.7	14.9
If some cases of polio appeared in your local area, your child will get it.	62.3	31.1	6.6
Vaccination could be able to reduce diarrhea and malnutrition status of your child.	52.3	39.7	8.0
The diseases preventable by vaccine are highly fatal if infected.	49.1	30.6	20.3
Measles can cause severe pneumonia and diarrhea.	44.6	47.4	8.0
A child should have OPV vaccine since Tuberculosis infection is very common.	31.1	13.1	55.7
Pertussis is a disease with prolonged coughing a child will lack of oxygen.	26.9	68.0	5.1
A child can still be prevented from polio if incomplete doses of OPV are given.	22.3	50.6	27.1
If your child has coughing or nasal discharge, you cannot bring your child to receive any vaccination.	19.4	35.1	45.4
Giving injection can cause the child to be paralysis.	5.7	22.9	71.4
A child might be paralyzed if 3 doses of OPV are given.	0.9	24.9	74.3

Source: Author, Survey

Out of the total respondents, 26.9% agreed that pertussis is a disease, which during prolonged coughing a child will suffer lack of oxygen when 68% of mothers gave uncertain answer. Then, 22.3% agreed that a child can still be prevented from polio if incomplete doses of OPV are given while 27.1% disagreed to this answer. Again, 45.4% disagreed that if the child has coughing or nasal discharge, they cannot bring their child to receive any vaccination and 71.4%, 74.3% disagreed that giving injection can cause the child to have paralysis and a child might be paralyzed if 3 doses of OPV are given while 22.9%, 24.9% had uncertain answer.

4.3.3.1 Association between attitude of mothers toward EPI and immunization status of children

Concerning to attitude of mothers on immunization, mothers with negative attitude had 35.7% of complete immunization of children and 64.3% of incomplete immunization of children whereas positive attitude mothers resulted in 63.2% of complete immunization of children and 36.8% of incomplete immunization of children. Thus, there was also a significant association between maternal attitude on immunization and immunization status of children. ($p = <0.001$) (Table 4.9)

The result in this study showed that mothers with negative attitude had 64.3% of incomplete immunization of children when it was resulted in 35.7% of complete immunized children. For positive attitude mothers, resulted in 36.8% of incomplete immunization and 63.2% of complete immunization of children. Additionally, there was significant association between attitude of mother and immunization status of children ($p = <0.001$). For that reason, it has been observed that the mothers with positive attitude toward immunization had more chance of complete immunization status of children than those with negative attitude.

The finding was dependable with previous study like Sundara S., Keochanthala S., that low and moderate levels of attitude were more likely to get incomplete immunization of children and high attitude mothers was to be expected to get complete immunization of their children. They also pointed out that there was an association between attitude of mothers and immunization status of children. The study conducted by

Aye MY., in Thailand in 2006 also stated that there was significant relationship between the attitude of mothers and immunization of children. It was found that the moderate and low levels resulted in 81.8% of incomplete immunization of children. And the study investigated by Hlaing EE., in Thailand in 2007 discovered that low level of attitude towards immunization resulted in 66.7% of incomplete immunization of children when it was resulted in 33.3% of completely immunized children. The study conducted by Munsawaengsub et al., in Thailand in 2011 showed that poor attitude of mother towards immunization had a 4.22 times higher chance of incompletely immunized children than those with good attitude ($p = <0.05$).

Maternal attitude towards immunization of children can be regarded as a good sign for immunization program because they will participate eagerly to save their children.

4.3.4 Source of information about immunization of children

The findings revealed that 94.9% of mothers had ever received information about immunization while 5.1% had not received it. 88.3% got from health volunteer/personnel, 42.2% from posters, 37.3% from neighbors, 34.6% from village leader, 23.5% from television, 15.4% from journals, and 12.7% from relatives respectively.

The messages they received was timing of vaccination 87.3%, protect child against 11 diseases 50.6% and consequences of un-vaccination 25.3%.

Thus, 75% of mothers were received clarification about immunization from service provider. (Table 4.7)

Table 4.7: Number and percentage distribution of source of information (n=350)

Source of information	Number	Percent
Ever received any information about immunization	332	94.9
Source of information about immunization *		
Health volunteer/personnel	293	88.3
Posters	150	42.2
Neighbors	124	37.3
Village leader	115	34.6
Television	78	23.5
Journals	51	15.4
Relatives	42	12.7
Messages heard *		
Timing of vaccination	290	87.3
Protect child against diseases	168	50.6
Consequences of un-vaccination	84	25.3
Service providers explain about immunization (Yes)	262	74.9

Source: Author, Survey * Multiple response

4.3.4.1 Association between source of information about EPI and immunization status of children

On the subject of source of information about immunization of children and immunization status of children, it was grouped into 2 groups to fulfill the criteria for the chi-square as 1). media source, which include radio, television, poster and journal, and 2). human source, which include health personnel, village leader, relatives and neighbors. The mother who received information from media source about immunization of children had 65% of complete immunization of their children and 29.3% of complete immunization of children who not received information from media source. And the

mother who received information from human source had 54.8% of complete immunization of their children while 8.3% of complete immunization who not received information from human resources. Both were a statistically significant association between source of information about immunization and immunization status of children. ($p = <0.001$) (Table 4.9)

In the study, it was found that 94.9% received any information about immunization of children. Most of them 88.3% received from health personnel/volunteer, 42.2% from posters and 37.3% from neighbors. In addition, those who received information from media source about immunization had 35% of incompletely immunized children comparing with those who did not receive information had 70.7% of incompletely immunized children. And those who received information from human source had 45.2% of incomplete immunized children while those who did not receive information had 91.7% of incompletely immunized children. There was a significant association between source of information about immunization and immunization status of children. ($p = <0.001$)

When they ever heard information from health personnel, volunteer, neighbors and media aids such as poster, leaflets, pamphlets, radio and television, they took their children to vaccinate while if they not received information about immunization or they didn't understand clearly the timing of vaccination and time and place of immunization, they had not gone to health facility for immunization of their children.

The finding was found in similar with the previous study, Keochanthala S., who stated that nearly half 46.7% of mothers who had children with complete immunization received information from health centers and found that a significant association of the children's immunization status. Budisuhardja D., Chonburi province, Thailand in 1995 and Thura W., Meikhtila Township, Myanmar in 2012 explored that significant association between information on immunization and completeness of vaccination.

But the finding was different from the study conducted by Hlaing EE., in Mahachai District, Samutsakorn Province, Thailand stated that 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 didn't received information. And there was no association between source of information about immunization and immunization status of children. (p = 0.065)

4.3.5 Accessibility to health services for childhood immunization

Concerning the place of vaccination, 48.4% were given vaccination by MCH center and 46% were immunized at RHC clinic. Out of total respondents, 77% experienced less than 30 minutes to go to health facility for their children vaccination. More than half of them 58.2% walked to health facility to get immunization and 22.7% used trishaw and others including car, public transport and motor-cycle were 18.2% respectively. More than three-fourth of respondent, 76.7% of mothers could accept for their waiting time to get vaccination at health facility. Lastly, 65.7% of mothers had no experience to give money to service provider for vaccination and 34% had no response on giving money and only 0.3% had experienced on giving money for vaccination. (Table 4.8)

Table 4.8: Number and percentage distribution of accessibility to health services (n=335)

Accessibility to health services	Number	Percent
Place of vaccination		
MCH center	162	48.4
RHC clinic	154	45.9
Hospital	19	5.7
Distance (time) to health facility		
Less than 30 minutes	258	77.0
30 – 60 minutes	73	21.8
More than 60 minutes	4	1.2

Table 4.8: Number and percentage distribution of accessibility to health services (cont.)

Accessibility to health services	Number	Percent
Mode of transportation		
Walk	195	58.2
Trishaw	76	22.7
Others	61	18.2
Motorcycle carry	3	0.9
Waiting time (Minutes)		
Mean ± SD		13 ± 7
Range		5 – 40
Median		10
Acceptable	257	76.7
Not acceptable	20	6.0
No response	58	17.3
Ever experienced paying money for vaccination		
Yes	1	0.3
No	220	65.7
No response	114	34.0

Source: Author, Survey

4.3.5.1 Association between accessibility to health services and immunization status of children

For accessibility to health services, distance (time) to health facility for immunization, mothers who accessed less than 30 minutes had 57.8% of complete immunization of children and 42.2% of incomplete immunization of children. There was an association between distance (time) to health facility for immunization of children and immunization status of children. (p = <0.001) (Table 4.9)

For mothers who went to health facility for childhood immunization by walking had 50.3% of complete immunization of children and 49.7% of incomplete immunization of children compared with mothers who used one type of vehicles. There was no significant association between them and immunization status of children. (p = 0.914) (Table 4.9)

In this study, 48.4% were received vaccination at Maternal and Child Health center and 46% were immunized at Rural Health Center. 77% experienced less than 30 minutes to go to health facility for their children vaccination and more than half of them 58.2% walked to health facility to get immunization. Mothers who went to health facility within 30 minutes distance had 42.2% of incomplete immunization while more than 30 minutes distance had 66.2% of incomplete immunization. The result showed that there was a significant association between accessibility to health services according to distance (time) to health facility and immunization status of children. (p = <0.001)

When the health facility is within a walking distance, mothers can easily access to health facility and staffs for their children immunization and other health associated condition like ante natal care. If the accessibility to health center is too far to go or difficult to go, the utilization of that facility become decreased. Therefore, it is very important to consider for easily accessible to health facility before establish health center.

The study was similar with previous study of Kanta Jamil who showed that accessibility to all the health facilities is positively influence acceptance of immunization. Children in areas where outreach were not held within close were 30% less likely to be immunized compared to those who lived in communities where outreach center were

within two miles. A survey conducted by Agusti L., in the west Sumatra province, Indonesia found that 14.4% of incomplete immunization in children was due to far immunization places. Another study conducted at Maharat Nakhonratchasima Hospital, Nakhonratchasima province, Thailand in 1991 showed that there was an association between distance (time) to health facility and immunization status ($p = 0.004$).

But for mothers who went to health facility for childhood immunization by walking had 49.7% of incomplete immunization of children and mothers who used vehicles had 50.3% of incomplete immunization. And there was no significant association between them and immunization status of children ($p = 0.914$).

Table 4.9: Association between knowledge, attitude, source of information and accessibility to health services and immunization status of children (n=350)

General characteristics	Total sample	Immunization status				P-value[1]
		Incomplete		Complete		
		n	(%)	n	(%)	
Knowledge of mothers about immunization						
Low and moderate	263	151	57.4	112	42.6	<0.001
High	87	24	27.6	63	72.4	
Attitude of mothers on immunization						
Negative	168	108	64.3	60	35.7	<0.001
Positive	182	67	36.8	115	63.2	
Heard about child's immunization from media						
Yes	203	71	35.0	132	65.0	<0.001
No	147	104	70.7	43	29.3	
Heard about child's immunization from human source						
Yes	314	142	45.2	172	54.8	<0.001
No	36	33	91.7	3	8.3	
Accessibility to health services						
Less than 30 min	258	109	42.2	149	57.8	<0.001
More than 30 min	77	51	66.2	26	33.8	
Walk	195	97	49.7	98	50.3	0.914
Vehicles used	155	78	50.3	77	49.7	

Source: Author, Survey

[1] Pearson Chi-square Test

4.3.6 Immunization status of children

The finding showed that 50% out of the children had complete immunization whereas 50% also of children had incompletely immunized. For 175 children who had incomplete vaccination, 31.4% of mothers did not take their children for vaccination because they were too busy and some of the mothers 24% had previous vaccine's adverse reaction. The reason was most of mothers had low family income and low and moderate level of knowledge on immunization and vaccine preventable diseases. Therefore, they did not know timing of vaccination, consequences of un-vaccination and frequency of vaccines needed before one year of age.

They received the immunization from MCH and RHC centers. During the post-natal period, most of the mothers had regular visits to basic health staff and centers and during that time, they received vaccination for their children as their first dose. And other episodes of vaccination did not take because they can't go to health facility at the time of vaccination because they were too busy to give an attention for children's immunization and some were due to previous vaccine's adverse reaction and illness of child at that time.

The results revealed that 94.9% received BCG and HBV11, 94% received Penta1/OPV1/PCV1, 73.1% received Penta2/OPV2/PCV2 and IPV, 62.6% received Penta3/OPV3/PCV3, 64.9% received MR1 and JE vaccine and 52.9% received MR2 vaccine. (Table 4.10)

Table 4.10: Number and percentage distribution of immunization status of children (n=350)

Immunization status of children	Number	Percent
Immunization		
Yes	330	94.2
No	17	4.9
Don't know	3	0.9
Immunization status		
Complete	175	50.0
Incomplete	175	50.0
Reasons for incomplete immunization (n-175)		
Too busy	55	31.4
Previous vaccine's adverse reaction	42	23.9
Illness of child	24	3.7
Inconvenience	15	8.6
Illness of mother	14	8.0
Long waiting time	8	4.6
Too far	5	2.9
Place and time unknown	5	2.9
Not enough money for transportation	1	0.6
Others	6	3.4
Received type of immunization		
BCG	332	94.9
Hepatitis B	332	94.9
Penta1/OPV1/PCV1	329	94.0
Penta2/OPV2/PCV2	255	73.1
Penta 3/OPV3/PCV3	218	62.6
IPV	255	73.1
JE	227	64.9
MR1	227	64.9
MR2	185	52.9

CHAPTER V

CONCLUSION

5.1 Findings

This cross-sectional study was conducted at HlaingTharYar Township, Yangon Region, Myanmar with the aim to examine the immunization status of children 1 – 2 years old and determining the factors such as general characteristics, knowledge, attitude, source of information influencing immunization status of children and accessibility to health service for immunization of their children. In this study, 350 mothers were interviewed from 15th June 2019 to 4th July 2019 through structured questionnaires. Total 12 clusters were selected from HlaingTharYar Township by simple random sampling and 30 mothers of children aged 1 – 2 years were selected from each village as subjects. Data were edited, coded, entered accurately and calculated by chi-square to identify the association between independent variables and immunization status of children.

Among the 350 mothers, 54.5% were aged of more than 30 years. Nearly all 93.1% were married. The highest percentage of total family monthly income 43.7% was less than 100,000 kyat. Most of mothers 64.9% had sufficient monthly income for family expenditure. Approximately more than half of mothers 69.1% were high school and higher education. Most of them 55.1% were workers and some of them 44.9% were housewives. 68% had nucleus type of family and 64.6% had own house. Nearly half of them 47.7% were lived in wooden house.

Nearly all 94.9% of mothers received information about immunization. Most of them received information from health personnel/volunteer 88.3% about timing of vaccination 87.3%. 74.9% of mothers got clarification about immunization from service providers. 48.4% were giving vaccination by MCH center and 46% were immunized at RHC clinic. More than half of them 58.2% walked to health center to get immunization

of their children. 76.7% of mothers could accept for their waiting time to get vaccination at health facility. And only 0.3% had experienced on giving money for vaccination.

The result in this study showed that 50% had incomplete immunization and 31.4% of mothers did not take their children for vaccination because they were too busy. BCG, HBV1, Penta1, OPV1 and PCV1 immunization rates received quite high 94.9% and 94% when Penta3, OPV3 and PCV3 and MR2 vaccines were low percentage 62.6% and 52.9%.

Regarding factors association between independent variables and immunization status of children, the result revealed that the immunization status of children were significant associated with age of mothers ($p = 0.024$), education of mothers ($p = <0.001$), monthly family income ($p = <0.001$), house ownership ($p = <0.001$), knowledge of mothers about immunization ($p = <0.001$), attitude of mothers toward immunization ($p = <0.001$), source of information ($p = <0.001$), distance (time) to health facility to get immunization ($p = <0.001$) and waiting time at health facility for immunization of their children ($p = <0.001$). However, the occupation of mothers ($p = 0.452$), type of family ($p = 0.169$), years lived in that community ($p = 0.503$) and type of getting health facility (by walking or by using vehicles) ($p = 0.914$) indicated no statistically significant association with immunization status of children.

5.2 Recommendations

5.2.1 For implementation

Based on the findings in this study, it is recommended in order to make high EPI coverage and to ensure the completeness of immunization.

As a whole still there is dismal need of information, education and communication (IEC) program on immunization among community for awareness raising and basic health facility and staffs for promoting primary health care including immunization coverage and vaccine preventable diseases control.

The audio-visual aids such as posters, journals, television with sample subjects of physically and mentally healthy children due to complete immunization should be

introduced and explained to the mothers/caretakers in order to encourage them to have clear understanding on EPI program. A clear appointment on the date of vaccination should be clearly made after disseminating health education.

For increasing the performance of basic health staffs and volunteers, refresher training, role play, continuous medical education should be done to strengthen the performance.

In this study, it was also shown that most of mothers got vaccination for their children from MCH center and RHC and the main reason for incomplete immunization of their children was the mothers were too busy to bring their children to get vaccination. It is necessary to strengthen the activities of MCH center and RHC and staffs. And also need to develop mobile clinic and motivate them to achieve better level of immunization coverage. However, health care providers should pay more attention on the low education groups to meet their special needs. It is also important to improve the economic condition for most of the families who are in low economic status.

Knowledge of mothers about immunization is so important to their children's immunization status that the government has to emphasize on health education and improve MCH activities in the communities. Therefore, attitude of mothers towards immunization may increase according to their knowledge, and this can increase complete immunization coverage and decrease dropout rate. It is recommended that authorities from Regional Health Department should reemphasize on the incomplete immunization group with new policies and strategy.

5.2.2 For further research

Some techniques of qualitative research such as in-depth interview or focus group discussion should be carried out to study among mother groups who's their children received incomplete immunization and its more details related to social and cultural factors.

Many concepts beyond the conceptual framework in this study could be examined. Therefore, it is recommended that for the further study it would be desirable to include some additional variables like factors associated with health care providers such

as inadequate numbers, mobile clinics, outreach programs, in order to confine the whole aspect that may influence immunization status of children.

Their farm duties in health activities related to EPI program, the role of health volunteers, NGOs on the EPI program and the evaluation on the performance of basic health staffs on EPI should be studied in details in future research.

Similar studies should also be conducted among caretakers in other areas to draw out more representative samples and carry out to determine the most appropriate methods to increase immunization coverage and decrease dropout rate of children.

REFERENCES

Agusti L. Factors Influencing drop out of immunization coverage in Baso subdistrict, Agam district, west Sunmatera province, Indonesia; 1985.

Ahmed AU. Factors affecting immunization acceptance amongst mothers of one-year old children in Kabinburi District, Prachinburi Province, Thailand. Bangkok: Mahidol University; 1989.

Alim F and Jahan F. 2010. Impact of prenatal checkup of mother and immunization on the health of children (0 – 3 years): A study in rural areas of Aligarh District, Uttar Pratesh. *The Online Journal of Health and Allied Sciences* vol 9.

Angelillo IF RG, Rossi P, Pantisano P, Langiano E, Pavia M. Mother and Vaccination: Knowledge, attitudes and behavior in Italy. *Bulletin of the World Health Organization* 1999;77(3):77.

Aye MY. Factors related to incomplete immunization among 1 - 5 years Myanmar migrant children of Mahachi District, Samut Sakorn Province, Thailand. Bangkok: Mahidol University; 2006.

Bloom BS DR, Benjamin S, Bertram BM, editor. Taxonomay of education objectives the classification of educational goals. New York; 1975.

Boonshuyar C. Research methods in health science, module 3 page: 83 -89, Mahidol University, Bangkok. In press 2008.

Boonumrung SN. Factors influencing the immunization of children 1 - 5 years of age a survey in Tumbol Nongrong, Panomtaun District, Kanchanaburi Province, Thailand. Bangkok: Mahidol University; 1987.

Budisuhardja D. Factors influencing immunization coverage in children under five years of age in rural areas of Chonburi Province, Thailand. Bangkok: Mahidol University; 1995.

Campbell DT. Social attitudes and other acquired behavioral dispositions. [Psychology: A Study of Science]; 1963 [updated 1963; cited 6]; 94-172]. Available from: http://www.archive.org/stream/notesonapplicati00silk/notesonapplicati00silk_djvu.txt. (Accessed 2008 December 14)

Central Expanded Programme on Immunization, MoH. National Immunization Days (NIDs). Nay Pyi Taw; 2007.

Chaw Su Yin. Reasons for incomplete immunization or no immunization among children aged 12 – 23 months in Hsipaw Township, Northern Shan State: University of Public Health, Yangon; 2017.

Chin R. and Torresi J., 2017, Japanese B Encephalitis: An Overview of the Disease and Use of Chimerivax-JE as a Preventative Vaccine. *Springer Health Care.*

Cunningham W, Hays RD, Williams KW, Beck KC, Dixon WJ, Shapiro MF. Access medical care and health relate quality of low income persons with symptomatic HIV. *Medical Care*. 1997;33:739-45.

Davey S. State of the world's vaccines and immunization. Geneva 27, Switzerland: Department of vaccines and biologicals of the world health organization; 2002 [updated 2002]; pages 39 - 63]. Available from: http://www.who.int/vaccines-documents/DocsPDF02/www718.pdf. (Accessed 2008 December 14)

Department of Epidemiology MoH. EPI review, National Immunization Programme, Myanmar. In: DoH, editor.; 2007.

Ei Ei Hlaing. Factors influencing immunization status of Myanmar migrant children among 1 - 5 years in Mahachai District, Samutsakorn Province, Thailand. Bangkok: Mahidol University; 2007.

GAVI 2011. Strategy for Sustainable Immunization Service, updated 18 Sep 2011. http://www.gavi.org/immunizationeverychild [cited 7 Aug 2012]

Green BF. Handbook of social psychology journal [serial on the Internet]. 1954 Date; 1: Available from: http://www.archive.org/stream/notesonapplicati00silk/notesonapplicati00silk_djvu.txt. (Accessed 2008 December 14)

Global programme for vaccines and immunization, March 1996 http://www.who.ch/programmes/gpv/documents

Harahap J. Factors affecting childhood immunization in North Sumatra Province, Indonesia. Bangkok: Mahidol University; 2000.

Hu Y. et al., Determinants of Childhood Immunization Uptake among Socio-Economically Disadvantaged Migrants in East China. *Int J Environ Res Public Health*. 2013 Jul; 10(7): 2845–2856. Published online 2013 Jul 9. doi: 10.3390/ijerph10072845

Htet Lynn. Determinants of completion of childhood immunization in HlineThaya township and Dagon Myothit (East) Township, Yangon: University of Public Health, Yangon; 2017.

Immurana M and U A. Socio-economic determinants of successive polio and pentavalent vaccines utilization among under-five children in Ghana. *American Journal of Preventive Medicine and Public Health,* 2018 Vol 2, No. 1, Pages 18–29 10.5455/ajpmph.20171129072443

Kanta Jamil, Abbas Bhuiya, Kim Streatfield, Chakrabarty N. The immunization programme in Bangladesh: Impressive gain in coverage, but gaps remain. Health policy and planning. 1999;14(1):49-58.

Keochanthala S. Knowledge and perception of mothers with children under 2 years of age immunization status in Khammuane Province, Lao PDR. Bangkok: Mahidol University; 2002.

Lakew Y, Bekele A and Biadgilign S. 2015. Factors influencing full immunization coverage among 12-23 months of age children in Ethiopia: evidence from the national demographic and health survey in 2011. *BMC Public Health* 15 728.

Limtragool P. Factors affecting immunization coverage in Northeast Thailand: Khon Kaen University 1987.

Malker VR, Hrishikesh K, Rajesh N, Lakde, Umesh SJ and Sonali G, 2013, Assessment of Socio-Demographic Factors Affecting Immunization Status of Children in Age Group of 12 – 23 Months in a Rural Area, *Indian Medical Gazette*, pp. 164-169.

Mapatano MA KK, Piripiri L, Nyandwe K. Immunization-related knowledge, attitudes and practices of mothers in Kinshasa, Democratic Republic of the Congo. 1995;50(2):6.

Markus MacGill. Everything you need to know about diphtheria; 2017. https://www.medicalnewstoday.com/articles/159534.php

Merriam-Webster's Collegiate Dictionary. 10th ed.; 1995. p. 646-7.

Ministry of Health 2005. *National EPI Programme*. Pp-2 Union of Myanmar.

Ministry of Health 2006, 'National Health Plan (2006-2011), Myanmar.

Ministry of Health 2011, *Health in Myanmar*. Union of Myanmar.

Ministry of Health and Sports 2017. Department of Public Health: 'Public Health Statistics' (2014 – 2016): p-29.

Ministry of Health and Sports 2017. 'Myanmar Demographic Health Survey (2015-2016), Myanmar.

Minn Thu. Knowledge, attitude and practice of mothers on universal childhood immunization in Loikaw Township: Defence Services Medical Academy, Mingalardon; 2008.

Mugali RR. Et al., 2017. Improving immunization in Afghanistan: results from a cross-sectional community-based survey to assess routine immunization coverage. *BMC Public Health* 17(1).

Munsawaengsub C, Hlaing EE and Nanthamongkolchai S. 2011. Factors influencing immunization status of Myanmar migrant children among 1-5 years in Mahachai District. *Journal of Medicine and Medical Science*. 2(9) pp.1093-1099.

Myint Myint Soe. 1991. A Study of Maternal KAP Related to Immunization of Children 1 – 3 years old admitted to Yangon Children's Hospital, pp-72-74. Dissertation for Degree of Master of Medical Science in Pediatrics, Institute of Medicine (1).

Naing NN. Factors related to incomplete immunization in children under 2 and child bearing age mothers who attended curative care at Maharat Nakhornratchasima Hospital, Thailand. Bangkok: Mahidol University 1992.

Nyan Win Myint. Maternal knowledge, attitude and behaviour on immunization of children under one year in Hlaing Thar Yar Township. Yangon: Institute of Medicine (2); 2005.

Park K, editor. Park's text book of preventive and social medicine. 18th ed. India: Banarsidas Bhano; 2005.

Penchansky R TJ. The concept of access definition and relationship to consumer satisfaction. Medical Care. 1981;19(2):127-40.

Senda T. Factors related to EPI coverage in Brahmanbaria Sadar Upazila, Brahmanbaria District, Bangladesh: Faculty of Public Health, Mahidol University, Bangkok; 2005.

Shahla Roodpeyma ZK, Reza Babai, Zohreh Tajik. Mothers and vaccination: Knowledge, attitudes, and practice in Iran. Journal of pediatric infectious diseases. 6 November 2006;2:6.

Siharath D. Utilization of immunization services among mothers of with children 2-5 years of age in Sanakham District, Vietiane Province, Lao PDR. Bangkok: Mahidol University; 2003.

Silk AJ. Notes on the application of attitude measurement and scaling techniques in marketing research Sloan School of Management Massachusetts Institute of Technology Cambridge, M.I.T.; 1969 [updated 1969]; 409-69 [Consumers -- Attitudes; Influence (Psychology)]. Available from: http://www.archive.org/stream/notesonapplicati00silk/notesonapplicati00silk_djvu.txt. (Accessed 2008 December 14)

Streefland P CA, Ramos-Jimenez P. Patterns of vaccination receptance. Social and Medicine. 1999;49:705-16.

Sundara S. Factors affecting non-fully immunization among children aged 24-36 months in an urban area, Sisattanak District, Vientiane Municipality, Lao PDR. Bangkok: Mahidol University; 2002.

Teklay Kidanel et al., 2000. Factor influencing child immunization coverage in rural District of Ethiopia. [Online]. Available from; Ethiopia. J Health Dev. 2003; 17(2) [cited 11 July 2008]

The World Bank's Partnership with the GAVI Alliance, 2009: Immunization, Vaccines and Biologicals; May 2012. https://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/

UNICEF. The state of world children. 2007 [updated 2007]; Available from: http://www.unicef.org/sowc07/. (Accessed 2008 November 10)

UNICEF and WHO, Immunization summary: A statistical reference containing data through 2013: https://www.who.int/immunization/monitoring_surveillance/Immunization_Summary_2013.pdf

Venkatachalam B., Aparna A., Manjul B., Vinod Kumar R., and Suryaprabha M.L., 2015. Factors Influencing Immunization Coverage among Children.

Vongkhamdy K. Knowledge and attitude on the immunization preventable diseases of mothers with children 6 - 24 months old and completeness of their children's immunization in Pakse District, Champasack Province, Lao PDR: Primary Health Care Management, Faculty of Graduate Studies, Mahidol University, Bangkok 1999.

Waddington H. Encyclopedia of educational technology. New York: SDSU Educational Technology; 2000 [updated 2000;]; Available from: http://coe.sdsu.edu/eet/Articles/surveyquest/index.htm. (Accessed 2008 December 3)

Wangmo S, Patcharanarumol W, Nwe ML and Tangeharoensathien V. 2017. Hard to reach villages in Myanmar challenges in access to health services and interim solutions. *Quality in Primary Care* 25 (4): 187-192

WHA, Global Vaccine Action Plan (2011 – 2020); https://www.unicef.org/immunization/files/GVAP.pdf

WHO 2004. editor. Immunization in practice (A practical resource guide for health worker). http://www.who.int/vaccines-documents/iip/PDF/Module8.pdf ed. CH-1211 Geneva 27 Switzerland: Department of Immunization, Vaccines and Biologicals; 2004. (Accessed 2008 November 22)

WHO 2005. SEARO. EPI fact sheet.

WHO 2008. Childhood Immunization Schedule. 2008 [updated 2008]; Available from: http://www.who.int/immunization/sage/2_Childhood_Schedule.pdf]. (Accessed 2008 December 14)

WHO 2010. Immunization, 2010; https://www.who.int/topics/immunization/en/

WHO 2012. The immunization landscape today: page 10 – 21; 2012: https://www.who.int/immunization/global_vaccine_action_plan/GVAP_Introduction_and_Immunization_Landscape_Today.pdf

WHO 2016. EPI Fact Sheet. *World Health Organization SEARO/FGL/IVD*.

WHO 2018. Global Immunization Coverage, 2018: https://www.who.int/news-room/fact-sheets/detail/immunization-coverage

WHO 2018. Immunization coverage. January 2018. (Accessed March 19, 2018)

Win Thura, Knowledge, attitude and practice of mothers on expanded programme on immunization in rural area of Meikhtilar Township: Defence Services Medical Academy, Yangon; 2012

World Bank, United Nations Children's Fund, World Health Organization 2009, 'State of the world's vaccine and immunization', 3rd edition.

APPENDICES

မေးခွန်းလွှာ

မြန်မာနိုင်ငံ၊ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်တွင် နေထိုင်သော အသက် (၁) နှစ် မှ (၂) နှစ်အတွင်းရှိ ကလေး မိခင်များ၏ ကာကွယ်ဆေးနှင့် ပတ်သက်သော အသိပညာ၊ သဘောထားများကို လေ့လာခြင်း။

အမှတ်စဉ် ..... အိမ်အမှတ် .....

ကျေးရွာ ☐ ရပ်ကွက် ☐

ကျေးရွာ၊ ရပ်ကွက် အမှတ် .....

မေးခွန်းမေးသူ၏အမည် ..... နေ့စွဲ .....

ကလေး၏ အသက် ..... အမှတ်စဉ် .....

အပိုင်း (၁) ယေဘူယျ မေးခွန်းများ

၁။ ကလေး အမေ၏ အသက် ..... နှစ်

၂။ ကလေး၏ ညီအကိုမောင်နမ အရင်းများ - စုစုပေါင်း ..... ကျား ..... မ .....

၃။ အိမ်ထောင်ရေး အခြေအနေ -

☐ ၁၊ အိမ်ထောင်သည် ☐ ၂။ အိမ်ထောင်ကွဲ ☐ ၃။ မုဆိုးမ

၄။ မိသားစု လစဉ်ဝင်ငွေ (စုစုပေါင်း) ..... ကျပ်

၅။ မိသားစုလစဉ်ဝင်ငွေသည် မိသားစု တစ်ခုလုံးအတွက်

☐ ၁၊ လုံလောက်ပါသည်။ ☐ ၂။ မလုံလောက်ပါ။

၆။ ကလေးအမေ၏ ပညာ အရည် အချင်း

☐ က၊ စာမတတ်
☐ ခ၊ ရေးတတ်၊ ဖတ်တတ်
☐ ဂ၊ မူလတန်း
☐ ဃ၊ အလယ်တန်း
☐ င၊ အထက်တန်း
☐ စ၊ ဘွဲ့ရ
☐ ဆ၊ အခြား .....

၇။ အလုပ်အကိုင်

☐ က၊ အိမ်ရှင်မ
☐ ခ၊ အထွေထွေ လုပ်သား
☐ ဂ၊ လယ်သမား
☐ ဃ၊ ကိုယ်ပိုင် အလုပ်
☐ င၊ ကုမ္ပဏီ ဝန်ထမ်း
☐ စ၊ အစိုးရ ဝန်ထမ်း
☐ ဆ၊ အခြား .....

၈။ အိမ်ထောင်စု ပုံစံ

☐ ၁။ မိသားစုတစ်ခုတည်း ☐ ၂။ အခြားမိသားစုနှင့်အတူတူနေ

၉။ အိမ်ပိုင်ဆိုင်မှု အခြေအနေ

☐ ၁၊ ကိုယ်ပိုင်အိမ် ☐ ၂၊ ငှားရမ်းနေထိုင်သည်

၁၀။ အိမ် အနေအထား

☐ ၁၊ အုတ်ခံအိမ် ☐ ၂၊ အုတ်နှင့် သစ်သားအိမ်

☐ ၃၊ သစ်သားအိမ် ☐ ၄၊ တဲအိမ် (ဓနိသက်ကယ်မိုး)

☐ ၅၊ အခြား .....

၁၁။ ဤဒေသတွင် သင်နေထိုင်သည်မှာ မည်မျှ ကြာပါပြီလဲ။ ..... နှစ်

အပိုင်း (၂) ကလေးကာကွယ်ဆေးနှင့် ပတ်သက်သော အမေ၏ အသိပညာဆိုင်ရာ မေးခွန်းများ

စဉ်	မေးခွန်းများ	မှန်	မှား	မသိပါ
၁	ကလေးကာကွယ်ဆေးထိုးခြင်းသည် ရောဂါများကို ကာကွယ်နိုင်သည်။			
၂	ကလေးအသက် (၁၈)လ/ (၁)နှစ်ခွဲ တွင်ကာကွယ်ဆေးအားလုံး ထိုးပြီးရမည်။			
၃	ဘီစီဂျီ ကာကွယ်ဆေးသည် သင့်ကလေးအား တီဘီရောဂါကို ကာကွယ်ပေးနိုင်သည်။			
၄	ကလေးကာကွယ်ဆေးသောက်ခြင်းဖြင့် ပိုလီယို ရောဂါကို ကာကွယ်ပေးသည်။			
၅	ကလေးကာကွယ်ဆေးထိုးခြင်းဖြင့် ဝက်သက်ရောဂါကို ကာကွယ်ပေးသည်။			
၆	ကလေးတစ်ယောက်ကို အနည်းဆုံးကာကွယ်ဆေး (၄) မျိုး ထိုးရမည်။			
၇	ကလေးတစ်ယောက်သည် ပိုလီယို ကာကွယ်ဆေးအနည်းဆုံး (၃) ကြိမ် ရရှိရမည်။			
၈	ရက်တစ်ရာချောင်းသည် ရောဂါပိုးရှိသော လေကို ရှူမိလျှင် ကူးစက်နိုင်သည်။			
၉	ဝက်သက်ရောဂါသည် ရောဂါရှိသူနှင့် အနီးကပ်နေခြင်းဖြင့် ကူးစက်နိုင်သည်။			
၁၀	ကလေး ကာကွယ်ဆေးထိုးပြီး အဖျားငွေ့ငွေ့ရှိခြင်းသည် ပုံမှန်ဖြစ်ပါသည်။			
၁၁	ကလေးကာကွယ်ဆေးထိုးပြီး ဆေးထိုးသည့်နေရာတွင် နာခြင်း၊ ပြည်တည်ခြင်းတို့ ဖြစ်တတ်ပါသည်။			
၁၂	ကလေးဝမ်းသွားနေလျှင် ကာကွယ်ဆေး ထိုးရန် မသင့်ပါ။			

၁၃	ကလေး ဖျားနေလျှင် ကာကွယ်ဆေးထိုး၍ ရပါသည်။			
၁၄	အမျိုးသားကာကွယ်ဆေးတိုက်နေ့များကို သင်သိပါသလား။			
၁၅	ကာကွယ်ဆေးတိုက်နေ့များတွင် ဆေးတိုက်ခြင်းဖြင့် သင့်ကလေးကို ပိုလီယိုရောဂါမှ ကာကွယ်နိုင်ပါသည်။			

အပိုင်း (၃) ကလေးကာကွယ်ဆေးနှင့် ပတ်သက်သော အမေ၏ ယူဆချက်ဆိုင်ရာ မေးခွန်းများ

စဉ်	အချက်အလက်များ	သဘောတူ	သဘောမတူ	မသေချာ
၁	ကျန်းမာနေသော ကလေးကို ကာကွယ်ဆေးထိုးရန် လိုအပ်သည်။			
၂	တီဘီရောဂါသည် အလွန်အဖြစ်များသောကြောင့် ကလေးအား ပိုလီယို ကာကွယ်ဆေး တိုက်ကျွေးသင့်ပါသည်။			
၃	နှစ်နှစ်အောက် ကလေးများသည် ကူးစက်ရောဂါများ အလွယ်တကူ ကူးစက်လွယ်ပါသည်။			
၄	မိမိနေထိုင်သောဒေသတွင် ပိုလီယို ရောဂါဖြစ်သော ကလေးရှိလျှင် ၄င်းဒေသတွင်းရှိ ကလေးများကို ကူးစက်နိုင်ပါသည်။			
၅	ကာကွယ်ဆေး မထိုးခဲ့၍ ၄င်းရောဂါများ ကလေးတွင် ဖြစ်ခဲ့လျှင် သေစေနိုင်ပါသည်။			
၆	ကာကွယ်ဆေးထိုးခြင်းသည် သင်၏ကလေးအား အကြောသေစေနိုင်ပါသည်။			
၇	ပိုလီယိုကာကွယ်ဆေး (၃) ကြိမ်တိုက်ကျွေးလျှင် ကလေးတွင် အောင်ဆီဂျင် မရှိဘဲ ဖြစ်တက်ပါသည်။			
၈	ရက်တစ်ရာချောင်းဆိုးရောဂါ ကြာရှည်ဖြစ်ပွားလျှင် ကလေးတွင် အောက်ဆီဂျင်မရှိဘဲ ဖြစ်တက်ပါသည်။			
၉	ဝက်သက်ရောဂါသည် အပြင်းအထန်အဆုတ်ရောဂါနှင့် ဝမ်းလျှော ရောဂါတို့ကို ဖြစ်စေပါသည်။			
၁၀	သင်၏ ကလေးကို ကာကွယ်ဆေးပြည့်စုံ မှန်ကန်စွာထိုးခဲ့ပါက သင့်ကလေးသည် ၄င်းရောဂါများမှ ကင်းဝေးနိုင်ပါသည်။			

၁၀	ကာကွယ်ဆေးထိုးပြီးလျှင် ကလေး၏ ခုခံအား ပိုမိုကောင်းလာသည်။			
၁၂	ကလေးကာကွယ်ဆေးပြည့်စုံစွာထိုးခြင်းသည် ကာကွယ်ဆေး မပြည့်စုံခြင်းထက် ပိုမိုကောင်းမွန်သည်။			
၁၃	ပိုလီယို ကာကွယ်ဆေး (၃) ကြိမ် မပြည့်သော်လည်း ပိုလီယို ရောဂါ ဖြစ်ခြင်းမှ ကာကွယ်နိုင်ပါသည်။			
၁၄	ကာကွယ်ဆေးထိုးခြင်းဖြင့် ဝမ်းပျက်ဝမ်းလျောခြင်း၊ အစာအာဟာရ ပျက်ခြင်းတို့ကို လျော့နည်းစေပါသည်။			
၁၅	ကလေးနာစေး ချောင်းဆိုးဖြစ်နေလျှင် ကာကွယ်ဆေးထိုးရန် မဖြစ်နိုင်ပါ။			

အပိုင်း (၄) သတင်းအချက်အလက်ဆိုင်ရာ မေးခွန်းများ

၁။ ကာကွယ်ဆေးနှင့်ပတ်သက်သော သတင်းအချက်အလက်များ သင်ရရှိဘူးပါသလား။

☐ ရရှိဘူးပါသည်။ ☐ မရရှိဘူးပါ။ (မေးခွန်း နံပါတ် ၄ သို့)

၂။ အကယ်၍ ရရှိခဲ့ဘူးလျှင် မည်ကဲ့သို့ ရရှိခဲ့ပါသနည်း။

○ ရေဒီယိုမှ ○ တယ်လီဗေးရှင်းမှ ○ ကျန်းမာရေး ဝန်ထမ်းထံမှ

○ ရွာသူကြီးထံမှ ○ အိမ်နီးနားချင်းထံမှ ○ ဆွေမျိုးများထံမှ

○ ဂျာနယ် စာစောင်မှ ○ ပိုစတာများ ○ အခြား .....

၃။ ၎င်း သတင်းအချက်အလက်များမှာ အောက်ပါတို့ဖြစ်ပါသည်။

○ ကာကွယ်ဆေးသည် ကလေးများအား ရောဂါများမှ ကာကွယ်ပေးပါသည်။

○ ကာကွယ်ဆေး မထိုးနှံခဲ့ခြင်း၏ အပြစ်များ။

○ ကာကွယ်ဆေးထိုးနှံတိုက်ကျွေးရမည့် အချိန် နေ့ရက်များ။

○ မသိ မမှတ်မိပါ။

○ အခြား .....

၄။ ကျန်းမာရေးဝန်းထမ်းက သင့်အား မည်သည့်အချိန်တွင် သင်၏ကလေး ကာကွယ်ဆေးထိုးနှံတိုက်ကျွေး ရမည်ကို ရှင်းပြပြောဆိုပါသလား။

☐ ပြောပြပါသည်။ ☐ မပြောပြပါ။ ☐ မဖြေလိုပါ၊ မသိပါ။

အပိုင်း (၅) ကျန်းမာရေးစောင့်ရှောက်မှု ရရှိနိုင်မှုဆိုင်ရာ မေးခွန်းများ

၁။ သင့်ကလေး ကာကွယ်ဆေးထိုးခဲ့သည့်နေရာ

☐ မိခင်ကလေးဌာန ☐ ဒေသန္တရ ဆေးခန်း ☐ ဆေးရုံ

☐ ပြင်ပဆေးခန်း ☐ အခြား .....

၂။ ကာကွယ်ဆေးထိုးရန် နေရာသို့သွားလျှင် ကြာမြင့်ချိန်

☐ မိနစ် ၃၀ အတွင်း ရောက်ရှိနိုင်ပါသည်။

☐ မိနစ် ၃၀ မှ ၆၀အတွင်း ရောက်ရှိနိုင်သည်။

☐ တစ်နာရီ ထက်ကျော်ပါသည်။

၃။ မည်ကဲ့သို့ သွားရပါသနည်း။

☐ လမ်းလျှောက် ☐ စက်ဘီး ☐ ဆိုက်ကယ်ကယ်ရီ

☐ လှေ ☐ အခြား .....

၄။ ဆေးခန်းတွင် ကာကွယ်ဆေးထိုးနှံတိုက်ကျွေးရန်အတွက် မည်မျှ စောင့်ဆိုင်းရပါသနည်း။

..... မိနစ်

၅။ ဆေးခန်းတွင် ကာကွယ်ဆေးထိုးနှံတိုက်ကျွေးရန် စောင့်ဆိုင်းရခြင်းသည် သင့်အတွက်အဆင်ပြေပါသလား။

☐ ပြေပါသည်။ ☐ မပြေပါ။ ☐ မဖြေဆိုလိုပါ။

၆။ သင်၏ကလေးကာကွယ်ဆေးထိုးရန်အတွက် ကျန်းမာရေးဝန်ထမ်းအား ငွေကြေးလက်ဆောင် ပေးရပါသလား။

☐ ပေးရပါသည်။ ☐ မပေးရပါ။ ☐ မဖြေဆိုလိုပါ။

၇။ အကယ်၍ ပေးရပါလျှင် သင် အဆင်ပြေပါသလား။

☐ ပြေပါသည်။ ☐ မပြေပါ။ ☐ မဖြေဆိုလိုပါ။

အပိုင်း (၆) ကာကွယ်ဆေးထိုးပြီး ဆိုင်ရာမေးခွန်းများ

၁။ ကလေး အသက် (၁) နှစ်ခွဲအတွင်းတွင် ကာကွယ်ဆေး

☐ ထိုးပါသည် ☐ မထိုးပါ။ (မေးခွန်း နံပါတ် ၃)

☐ မမှတ်မိပါ။

၂။ အကယ်၍ ကာကွယ်ဆေး ထိုးနှံတိုက်ကျွေးခဲ့ပါလျှင် ပြည့်စုံစွာ ထိုးနှံခဲ့ပါသလား။

☐ ထိုးနှံခဲ့ပါသည်။ (မေးခွန်း နံပါတ်၄) ☐ မထိုးနှံခဲ့ပါ။

၃။ အဘယ်ကြောင့် ကလေးအား ကာကွယ်ဆေး လုံးဝ (သို့) အပြည့် မထိုးနှံ မတိုက်ကျွေးခဲ့ပါသနည်း။

(တစ်ခုသာဖြေရန်)

- ☐ ကာကွယ်ဆေးတိုက်ကျွေးထိုးနှံသည့် အချိန်နှင့် နေရာမသိ၍
- ☐ ပထမအကြိမ်တိုက်ကျွေးပြီးစဉ်က ကလေးဖျားနာခဲ့၍
- ☐ ကာကွယ်ဆေးကို အယုံအကြည်မရှိ၍
- ☐ ကာကွယ်ဆေးတိုက်ကျွေးသည့်နေရာသည် အရမ်းဝေးသဖြင့်
- ☐ ကာကွယ်ဆေးတိုက်ကျွေးသည့်အချိန်သည် အဆင်မပြေသဖြင့်
- ☐ ဆေးခန်းတွင် အကြာကြီး စောင့်ဆိုင်းရသဖြင့်
- ☐ ဆေးခန်းသို့သွားရန် ငွေကြေးအလုံအလောက်မရှိသဖြင့်
- ☐ ကာကွယ်ဆေးတိုက်သည့် အချိန်တွင် ကလေး အမေ အလုပ်များနေပါသဖြင့်
- ☐ ကာကွယ်ဆေးတိုက်သည့် အချိန်တွင် ကလေး အမေ နေမကောင်းပါသဖြင့်
- ☐ ကာကွယ်ဆေးတိုက်သည်အချိန်တွင် ကလေးဖျားနေအပါသဖြင့်
- ☐ ကာကွယ်ဆေးတိုက်မည့် ကျန်းမာရေးဝန်ထမ်းမရှိသောကြောင့်
- ☐ အခြားရှိလျှင် (ဖော်ပြရန်) .....

၄။ ရရှိခဲ့ဘူးသော ကာကွယ်ဆေးများ

ကာကွယ်ဆေး	ရရှိခဲ့	မရရှိခဲ့	အသက်
တီဘီ (ဘီစီဂျီ)	☐	☐	
အသည်းရောင် အသားဝါ (ဘီ) မွေးမွေးခြင်း	☐	☐	
ပိုလီယိုရောဂါ၊ ပြင်းထန်အဆုတ်ရောင်ရောဂါ နှင့် ငါးမျိုးစပ် ကာကွယ်ဆေး ပထမ အကြိမ်	☐	☐	
ပိုလီယိုရောဂါ၊ ပြင်းထန်အဆုတ်ရောင်ရောဂါ နှင့် ငါးမျိုးစပ် ကာကွယ်ဆေး ဒုတိယ အကြိမ်	☐	☐	
ပိုလီယိုရောဂါ၊ ပြင်းထန်အဆုတ်ရောင်ရောဂါ နှင့် ငါးမျိုးစပ် ကာကွယ်ဆေး တတိယ အကြိမ်	☐	☐	
ပိုလီယို ကာကွယ်ဆေး ထိုးဆေး	☐	☐	
ဂျပန်ဦးဏှောက်အမြှေးရောင် ကာကွယ်ဆေး	☐	☐	
ဝက်သက် ရောဂါ၊ ဂျိုက်သိုးရောဂါ ကာကွယ်ဆေး ပထမ အကြိမ်	☐	☐	
ဝက်သက် ရောဂါ၊ ဂျိုက်သိုးရောဂါ ကာကွယ်ဆေး ဒုတိယ အကြိမ်	☐	☐	

သင်၏ ပူးပေါင်းပါဝင်မှုကို ကျေးဇူးအထူးတင်ရှိပါသည်။

Questionnaire

Maternal Knowledge, Attitude on Immunization of Children aged 1 – 2 years in HlaingTharYar Township, Yangon Region, Myanmar

Cluster Number: …… Household Number: ……

Village ☐ Ward ☐

Village/Ward Number: …….

Name of Interviewer: …… Date of Data Collection: ……

Age of Child …… Serial Number: ……

Part I General Characteristic of Mother

1. Age of mother (year at last birthday) ……. Years
2. Total number of children: Total …… Male ……. Female ……..
3. Marital status

   ☐ 1. Married ☐ 2. Divorced ☐ 3. Widow
4. Family income per month in Kyats ……
5. Monthly income for the whole family is

   ☐ 1. Sufficient ☐ 2. Insufficient
6. Educational attainment of mother

   ☐ a. Illiterate
   ☐ b. Read and Write
   ☐ c. Primary level
   ☐ d. Secondary level
   ☐ e. High school
   ☐ f. Graduate
   ☐ g. Others (Specify) ……..

7. Occupation of mothers

   ☐ a. Housewife
   ☐ b. Labours
   ☐ c. Farmer
   ☐ d. Self-employed
   ☐ e. Company employee
   ☐ f. Government employee
   ☐ g. Others (Specify) ……
8. Type of family

   ☐ 1. Nuclear type ☐ 2. Extended type
9. House ownership

   ☐ 1. Own ☐ 2. Rent

10. Housing

- ☐ 1. Brick
- ☐ 2. Brick and Wooden
- ☐ 3. Wooden
- ☐ 4. Hut (Thatch)
- ☐ 5. Other (Specify) …….

11. How long have you been living here? …… years

Part II Knowledge of Mother regarding Immunization

No	Statements	Yes	No	Don't know
1.	Immunization can prevent the childhood diseases.			
2.	The child should be completely immunized at the age of 18 months.			
3.	BCG vaccine can prevent your child from TB.			
4.	The child will be protected from polio by receiving vaccination.			
5.	The child will be protected from measles by injecting vaccine.			
6.	The children should get 4 immunizations at least.			
7.	The child should get 3 times of immunization of OPV at least.			
8.	Whooping cough can be transmitted by infectious air.			
9.	Measles can be transmitted by close contact.			
10.	Mild fever is a common after receiving immunization.			
11.	Soreness/abscess at the site of injection after vaccination is common side effect.			
12.	Diarrhea is contraindication to vaccination.			
13.	If a child has high fever, the vaccination can receive.			

14.	Do you know National Immunization Days?			
15.	Polio can be prevented by taking immunization on NID.			

Part III Mother's Attitude toward Immunization

No	Statements	Agree	Disagree	Uncertain
1.	It is necessary to vaccinate a health child.			
2.	A child should have OPV vaccine since Tuberculosis infection is very common.			
3.	Children less than 2 year's old age are vulnerable group to communicable diseases.			
4.	If some cases of polio appeared in your local area, your child will get it.			
5.	The diseases preventable by vaccine are highly fatal if infected.			
6.	Giving injection can cause the child to be paralysis.			
7.	A child might lack of oxygen if 3 doses of OPV are given.			
8.	Pertussis is a disease with prolonged coughing a child will lack of oxygen.			
9.	Measles can cause severe pneumonia and diarrhea.			
10.	If your child has fully-immunized he/she will be free from all kinds of the diseases.			

11.	Immunity of child will get higher after vaccination.			
12.	To immunize the child completely is better than incomplete immunization.			
13.	A child can still be prevented from polio if incomplete doses of OPV are given.			
14.	Vaccination could be able to reduce diarrhea and malnutrition status of your child.			
15.	If your child has coughing or nasal discharge, you cannot bring your child to receive any vaccination.			

Part IV Source of Information

1. Have you ever receive any information about immunization?

☐ Yes ☐ No (go to Question No. 4)

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

○ Radio	○ Television	○ Health volunteers
○ Village Leader	○ Neighbour	○ Relatives
○ Journals	○ Posters	○ Others ……..

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

○ Protect child against vaccine preventable diseases

○ Consequences of un-vaccination

○ Timing of vaccination

○ Don't know

○ Others .....

4. Do service providers explain you when you should take your child to get immunization?

☐ Yes ☐ No ☐ Don't know/No response

Part V Accessibility to health services

1. Where did you get immunization?

☐ MCH center ☐ RHC clinic ☐ Hospital

☐ Private clinic ☐ Others ……..…

2. Distance (time) to go to health facility

☐ Less than 30 minutes

☐ 30 – 60 minutes

☐ More than 60 minutes

3. How to you go to vaccination site?

☐ Work ☐ Bicycles ☐ Motor cycle/Carry

☐ Boat ☐ Others ……..…

4. How much time did you spend waiting for vaccination?

…… minutes

5. Is the waiting time acceptable?

☐ Yes ☐ No ☐ No response

6. Have you ever experienced paying money for vaccination?

☐ Yes ☐ No ☐ No response

7. If yes, was it affordable to you?

☐ Yes ☐ No ☐ No response

Part VI Child Immunization Status

1. Did you immunize your child?

☐ Yes ☐ No (go to Question No. 3)

☐ No response/ Don't know

2. If yes, completely immunized or not?

☐ Yes, (go to Question No. 4) ☐ No

3. Why was the child not immunized? (answer only one)

- ☐ Unknown place and time of immunization
- ☐ Previous vaccine's adverse reaction
- ☐ No trust in immunization
- ☐ Places of vaccination too far to go
- ☐ Time of vaccination inconvenient
- ☐ Long waiting time at clinic
- ☐ Not enough money for transportation
- ☐ Mother too busy
- ☐ Illness of mother
- ☐ Illness of child
- ☐ No vaccinator
- ☐ Others (specify) ……

4. Vaccine received

Vaccines	Yes	No	Age of children at the time of vaccination (months)
BCG	☐	☐	
Hepatitis B Birth dose	☐	☐	
OPV 1, PCV 1, Penta 1	☐	☐	
OPV 2, PCV 2, Penta 2	☐	☐	
OPV 3, PCV 3, Penta 3	☐	☐	
IPV	☐	☐	
Japanese B Encephalitis (JE)	☐	☐	
Measles Rubella (MR1)	☐	☐	
Measles Rubella (MR2)	☐	☐	

Thank You For Your Cooperation!

APPENDIX B

<u>အသိပေး သဘောတူညီမှု အကြောင်းကြားစာ</u>

စာတမ်းခေါင်းစဉ်။ ။ မြန်မာနိုင်ငံ၊ ရန်ကုန်တိုင်းဒေသကြီး၊ လှိုင်သာယာမြို့နယ်တွင် နေထိုင်သော အသက် (၁) နှစ်မှ (၂) နှစ်အတွင်းရှိ ကလေးမိခင်များ၏ ကာကွယ်ဆေးနှင့် ပတ်သက်သော အသိပညာ၊ သဘောထားများကို လေ့လာခြင်း။

တာဝန်ရှိသောသူ - ဒေါက်တာခန့်စိုး
ကျောင်းသားအမှတ်စဉ် - 18, EMPA (16th Batch)
ပြည်သူ့ရေးရာ စီမံခန့်ခွဲမှု မဟာဝိဇ္ဇာဘွဲ့
အသုံးချဘောဂဗေဒဌာန၊ စီးပွားရေးတက္ကသိုလ်
ကမာရွတ်နယ်မြေ၊ ရန်ကုန်တိုင်းဒေသကြီး။

နေ့စွဲ။ ..... (ရက်၊လ၊နှစ်)

အိမ်အမှတ် ..... လမ်း .....ရပ်ကွက်/ရွာ.....
မြို့နယ် ..... တွင် နေထိုင်သော ကျွန်တော်၊ ကျွန်မ .....သည် ဤသဘောတူညီမှုပုံစံတွင် ပါဝင်သော အချက်အလက်များကို ဖတ်ရှုပြီး နားလည်ပါသည်။ ကျွန်တော်၊ ကျွန်မကို သုတေသန၏ ရည်ရွယ်ချက်များ၊ လုပ်ကိုင်ပုံ နည်းလမ်းများနှင့် သုတေသနတွင် ပါဝင်ကူညီခြင်း၏ ကောင်းကျိုး၊ ဆိုးကျိုးများကို သေချာစွာ ရှင်းပြခဲ့ပါသည်။ အဖြေအားလုံးသည် သုတေသနပြုလုပ်သူမှ လွဲ၍ အခြားမသက်ဆိုင်သူများဆီ သတင်းမပေါက်ကြားရန်အတွက်လည်း ထိန်းထိန်းသိမ်းသိမ်း ထားရှိပါမည်ဟု နားလည်ပါသည်။

အထက်ပါအကြောင်းအရာများကို ကျွန်တော်၊ ကျွန်မ သဘောတူညီကြောင်း လက်မှတ် ရေးထိုးပါသည်။

ကျွန်တော်၊ ကျွန်မသည် မည်သည့်ဆိုးကျိုးများမှ မရှိစေဘဲ မေးခွန်းဖြေဆိုခြင်းမှ အချိန်မရွေး နုတ်ထွက်ခွင့် ရှိကြောင်းကိုလည်း သိရှိပါသည်။

(ကျွန်တော်၊ ကျွန်မသည် စာမဖတ်တတ်သော်လည်း မေးခွန်းမေးသူသည် သုတေသနတွင် ပါဝင်သော အချက်အလက်များကို နားလည်သည်အထိ သေချာစွာ ရှင်းလင်းဖတ်ကြား၍ လက်ဗွေနှိပ်စေပါသည်။)

လက်မှတ် သို့မဟုတ် လက်ဗွေ..... (ဖြေဆိုသူ)

(.....)

လက်မှတ် ..... (သုတေသနပြုသူ/ မေးခွန်းမေးမြန်းသူ)

(.....)