THE USE OF SKILLED BIRTH ATTENDANT AT DELIVERY IN RURAL MYANMAR: A STUDY OF THANLYIN TOWNSHIP

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ABSTRACT

The use of skilled birth attendant (SBA) is an important issue since it has been set as an indicator for the MDG5 and the SDG3, and the target level in the use of skilled birth attendants has not been reached. In addition, there is persistent disparity between developed and developing countries and rural and urban areas, as well. Thus, this study aimed to explore the level of using skilled birth attendants and the factors associated with using SBA at delivery in one selected rural area in Myanmar. The study was community-based which employed data collected from the rural areas of Thanlyin Township and the sample included 191 mothers who had at least one child, the last delivery was within one year and those who had registered with the immunization program. The study found that 76.4 percent of the sample used skilled birth attendants at delivery and the association between the sociocultural factors, economic accessibility factors, physical accessibility factors were not significantly related with using skilled birth attendant. Only using skilled personnel at antenatal care for the last child was significantly associated with the use of skilled birth attendant in the delivery of the last child. The result of this study revealed that the percentage of using SBA in rural Thanlyin Township was higher than the average level of other rural areas at the national level since only 63 percent could use SBA but it was still lower than that of the urban areas where 89.6 percent could use the SBA. Therefore, the result of the study suggested that program intervention to encourage pregnant women to use SBA at antenatal care and delivery in rural area is still needed in order to ensure that all births are assisted by skilled health personnel. In addition, further study is needed to address those variables that were not considered by this study.

KEY WORDS: USE/ SKILLED BIRTH ATTENDANT/ RURAL//DE LIVERY

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LIST OF ABBREVIATIONS

AMW	Auxiliary Midwives
ANC	Antenatal Care
DOH	Department of Health
LHV	Lady Health Visitor
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MDR	Maternal Death Review
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
RHC	Rural Health Center
SBA	Skilled Birth Attendant
SDG	Sustainable Development Goals
TBA	Traditional Birth Attendant
UHC	Urban Health Center
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization

CHAPTER I
INTRODUCTION

1.1 Background of the Study

The Republic of the Union of Myanmar is divided administratively in 14 states and regions. It consist of 69 districts, 330 townships, 396 towns, 3045 wards, 13267 village tracts and 67285 villages. The total 2010-2011 population of Myanmar was 59.78 million; among them 70% of the population lived in rural areas and 30% of the population lived in urban areas. The growth rate of Myanmar is 1.1% and 2010-2011 population density of Myanmar is 88 per square kilometer(MOH, 2012).

Yangon Region, comprises four districts, namely, East, West, South and North Districts. These districts consist of 45 townships; among them Thanlyin Township is in the southern Yangon Region. In 2010, the total population of Yangon Region was 5,969,413 and 70% of total population was urban while 30% was rural (Regional Health Department, 2011).

Thanlyin Township is located on the bank of Pago and Yangon Rivers where they unite. Many branches of these two rivers flow in and around this area. Therefore, accessing Thanlyin Township is difficult (see Figure 1.1). In 2011, total population of this township was 184,479 with an urban population of 60,540 and rural population of 123,939. In all, 70% of the population resided in rural areas whereas the remaining 30% resided in urban areas (see Table 1.1).

Considering the crude birth rate and maternal mortality ratio in Myanmar, significant differences were found between the national level, Yangon Region and Thanlyin Township. The national crude birth rate was 19.6 per 1,000 people, 15.51 per 1,000 people in Yangon Region and 24.45 per 1,000 people in Thanlyin Township. The crude birth rate of Thanlyin Township was higher than both the national and regional levels, and the third highest crude birth rate among the 24 townships of Yangon Region in 2010 (Regional Health Department, 2011) . Comparing the maternal mortality ratio among these three levels, the national level was 142 per

100,000 live births, Yangon Region was 107 per 100,000 live births and Thanlyin Township was 177 per 100,000 live births. In Thanlyin Township, maternal mortality was higher than both the national and regional levels, and the fourth highest maternal mortality ratio in 45 townships of Yangon Region (Regional Health Department, 2011).

According to WHO, skilled birth attendants (SBAs) can help reduce the maternal mortality ratio to reach the target of Sustainable Development Goal (SDG) by 2030 if every birth was assisted by skilled health personnel (WHO, UNICEF, UNFPA, & WORLD BANK, 2016). However, the coverage by SBAs is still far behind targets in those regions. Only 70.6% of births in 2010 were assisted by skilled health personnel. Although the coverage of SBA at national level was known, no report on the coverage of SBAs at regional and township levels remains unreported. Therefore, increasing the coverage of SBAs in Thanlyin Township is necessary to decrease maternal mortality.

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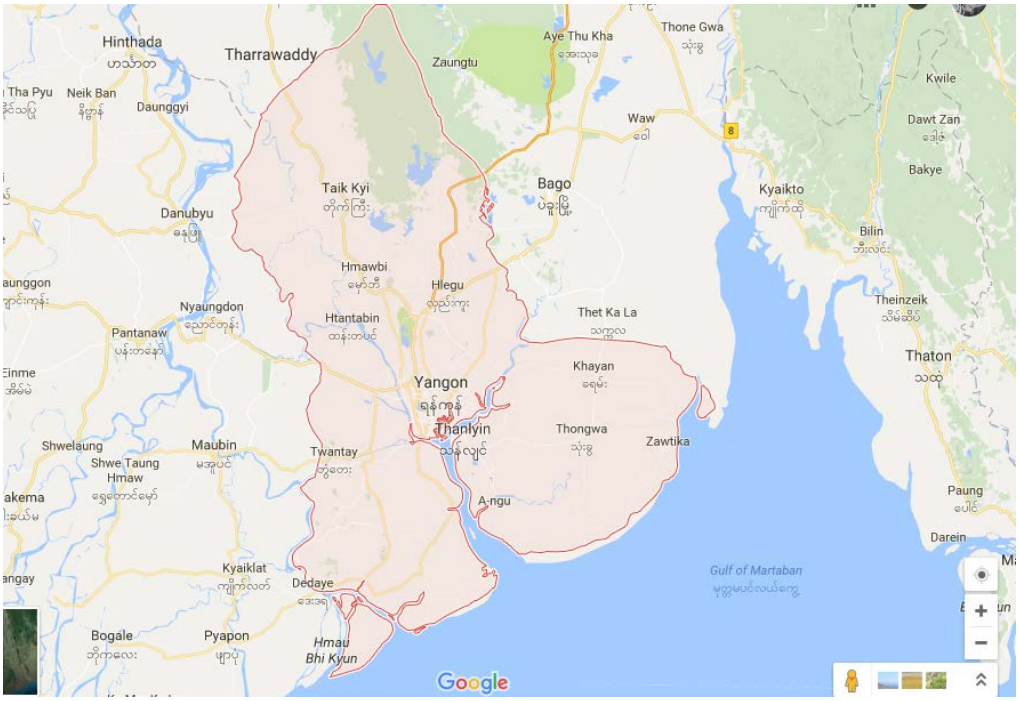


Figure 1.1 Map of Thanlyin Township

Source: https://www.google.co.th/?gws_rd=ssl#q=map+of+yangon+region

Table 1.1 Township Health Profile

Profile	**Thanlyin Township (2011)**
Total area	145.32 sq miles (378.4 sq-km)
Population	184479
Urban population	60540
Rural population	123939
Male	89195
Female	95284
Under one year population	4687
MMR	177 per 100,000 live births (2010)
IMR	14.63 per 1000 live births (2010)

1.2 Problem and Justification

SBAs can improve maternal and child health, immediately at birth or delivery. Thus, the use of SBAs at delivery plays a crucial role in the maternal and neonatal health because they can prevent or manage most obstetric complications (UNICEF, 2016).

The presence of SBAs at every delivery can reduce maternal morbidity and mortality, and reduce risk of stillbirths and intrapartum related complications about 20%. Among more than 130 million births annually, an estimated 303,000 mothers die, 2.8 million result in stillbirth, and 2.7 million newborns in the first 28 days of life experienced low-resource settings and lack of SBA during the pregnancy and delivery (UNICEF, 2016).

The World Health Organization has defined a SBAs as "an accredited professional – such as a midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns"(WHO, 2004). It has been recognized that SBAs play an important role in saving mother' and child' lives during pregnancy, deliver and postpartum period.

The Millennium Declaration was established and formulated eight Millennium Development Goals (MDG) where SBA was one of the indicators of MDG5, which emphasized improving maternal health with a target of reducing maternal mortality by three quarters between 1990 and 2015. The indicators to achieve such goals and set by the United Nations (UN) to measure its progress were maternal mortality ratio (MMR) and proportion of births attended by the skilled health persons (Harvey et al., 2007; WHO, 2015).

The progress of increasing the use of SBAs and reducing MMR could be observed starting 1990 through the end of MDG. In 1990, the global rate of using SBAs was 59% and increased to 71% in 2014 while MMR dropped from 380 per 100,000 live births in 1990 to 210 per 100,000 live births in 2013 or 45% during the same period (UN, 2015).

Although good progress was achieved in reducing MMR and increasing the use of SBAs, inequality still occurred among global regions as well as rural and

urban areas. In developing regions, the SBA rate was 57% in 1990, 60% in 2000 and 70% in 2014, and MMR was 430 per 100,000 live birth in 1990, 370 per 100,000 live births in 2000 and 230 per 100,000 live births in 2013. However, in developed countries the SBA rate was almost 100% and MMR was 26 per 100,000 live births in 1990, 17 per 100,000 live births in 2000 and 16 per 100,000 live births in 2013 (UN, 2015). Notably, in the Southeast Asia Region, the SBA rate was 49 in 1990, 66 in 2000 and 82 in 2014, and MMR was 320 per 100,000 live births in 1990, 220 per 100,000 live births in 2000 and 140 per 100,000 live birth in 2013 (UN, 2015).

Apart from inequality in SBA rates among global regions, inequality between urban and rural areas was also observed. The gap in using SBAs between rural and urban areas was 31% in developing regions and 17% in the Southeast Asia Region from 2010 to 2014. Expectedly, the rate of using SBAs in urban areas was higher than rural areas (UN, 2015).

The aforementioned phenomenon has also been observed in Myanmar where the use of a skilled attendants at delivery increased from 46% in 1991 to 71% 2009 to 2010 that could help to reduce MMR from 580 per 100,000 live births in 1990 to 200 per 100,000 live births in 2010 (Bhutta et al., 2010). Although Myanmar has made progress in using SBA at delivery and reducing MMR, the disparity within the country still persists. From 2009 to 2010 almost two thirds (63%) of deliveries in rural areas were assisted by SBAs compared with almost nine of ten (89.6%) of deliveries in urban areas. The lower use of SBAs in rural areas resulted in the higher MMR in rural areas than the MMR in urban areas (WHO et al., 2016). Persisting disparity in using SBAs is a major concern in public health, especially in terms of inequality of health care services in several countries (UNICEF, 2016). Without exception, Myanmar is also concerned with such disparity because of lower coverage of SBAs in rural areas (WHO et al., 2016).

Thus, this study aimed to explore the level or percentage of using SBAs at delivery as well as the factors associated with using SBAs at delivery in Thanlyin Township, where the birth rate and MMR was high, and the level of SBA coverage was unknown. The findings from the study may help in planning universal access to SBAs, particularly in the study area.

1.3 Research Questions

1. What is the percentage of using SBAs at delivery in the selected rural area of Myanmar?

2. What are the factors associated with the use of SBAs at delivery of the last child in rural areas of Myanmar?

1.4 Research Objectives

1. General Objective

To study the use of SBAs at delivery in a selected rural area of Myanmar

2. Specific Objectives

(1) To determine the percentage of using SBAs at delivery among infant mothers in rural areas of Thanlyin Township

(2) To explore the factors associated with the use of SBAs at delivery in rural areas of Thanlyin Township.

CHAPTER II
LITERATURE REVIEW

This chapter presents the literature review comprising four parts. It begins with a definition of SBA. The second portion comprises maternal health and SBA, and related analytical framework. The last portion of this chapter reviews four main factors related to using SBAs, namely, sociocultural factors, perceived need or benefit factors, economic accessibility factors and physical accessibility and supply side of using SBAs.

2.1 Definition of Skilled Birth Attendant (SBA)

The following definition of SBAs was revised by WHO, ICM (International Confederation of Midwives) and FIGO (the International Federation of Gynecology and Obstetrics) as "*an accredited health professional (doctor, nurse or midwife) who has been educated and trained to proficiency in the skills needed to manage uncomplicated pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns*". Skilled attendants can provide emergency obstetric first aid and facilitate prompt referral to emergency obstetric care services. The core skills for SBAs are monitoring the progress of labor, labor augmentation, conducting aseptic normal delivery, active management of the third stage of labor and newborn resuscitation (WHO, 2004).

WHO defined a SBA as "someone trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, child birth and immediate postnatal periods and in the identification, management and referral of complications in women and newborns". SBAs demonstrate enough skills and management for normal antenatal, natal and immediate postnatal periods and appropriate referral to access health facilities for all conditions and complications in mothers and newborns.

SBAs are important at every birth because timely management and treatment can make the differences between the life and death for both mother and her newborn (Harvey et al., 2007).

2.2 Maternal Health and SBA

Maternal health is important not only for the mother, but also for her baby. It also contributes to the output of her family, society and country. Maternal health means the health of the mother during antenatal, natal and postnatal periods (WHO, 2016). Maternal death is more common in rural than urban areas because of the difficulty in using SBAs during child birth. In urban areas, many SBAs or many skillful health persons take maternal health with latest medical technique and medical drugs. In developing countries, most of the maternal deaths are due to preventable causes such as inadequate nutrition, proper health care and absence of SBAs during delivery and emergency obstetric care (UNICEF, 2009).

The progress indicators to measure the millennium development goal (MDG) 5 are maternal mortality ratio and percentage of births that are assisted by SBAs was found but it needs to be continued. Sustainable Development Goal number 3 (SDG3) has been formulated in order to use SBA for all births as a crucial strategy to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 (UN, 2015).

It is known that most maternal deaths are preventable because there are well known solutions to prevent or manage maternal complications. The important factors were use antenatal care (ANC) in pregnancy, skilled care during delivery and supportive care during weeks after birth. Timely management and treatment provided by SBAs could decide the difference between life and death for both the mother and the baby.

It has been recognized that maternal death is due to lack of SBAs, which is the main health problems for mothers particularly in developing countries. Myanmar is a country which is involved in high maternal mortality list in the Southeast Asia Region. According to the Maternal Death Review (MDR) in Myanmar (2013), two-thirds of the deaths occurred during childbirth and after childbirth and it could be

reduced through the availability and use of SBAs (MOH, 2013). Although the proportion of SBAs in Myanmar is 72%, a disparity exists between urban and rural areas where the SBA rate is higher in urban compared with rural areas (MOH, 2014).

2.3 Related Analytical Frameworks

Three main analytical frameworks have been applied to the study of using SBAs. Firstly, the three delays framework was developed by Thaddeus and Maine in the mid-1990s. This framework focused on direct effects of seeking health care services (Thaddeus & Maine, 1994). Secondly, the framework of Say and Raine emphasized the effect of residential areas and socioeconomic status on care at delivery (Say & Raine, 2007). Lastly, Gybrysch and Cambell's analytical framework consisted of four main factors influencing the use of SBAs and was recommended to apply in countries with low and middle income levels (Gabrysch & Campbell, 2009).

In the first analytical framework, Thaddeus and Maine explained three delays experienced in seeking, reaching and accessing adequate care contributing to maternal deaths. The first delay involved deciding to seek care influence by sex, severity of condition, socioeconomic status and quality of care. The second delay emphasized reaching healthcare facilities including the availability of health facilities, distance to the closest heath facilities and transportation. The third delay was receiving adequate care focused on factors that increased the risk of maternal mortality at health facilities. These factors included shortage of health personnel, inadequate drugs and crucial supplies, lack of blood for transfusion, inappropriate management and delay in diagnosis (Thaddeus & Maine, 1994). Although this framework could explain the delays that caused maternal deaths, especially at delivery, it rarely explained such phenomena by sociocultural factors.

The second analytical framework was developed by Say and Raine which pointed out the importance of context of particular populations, especially context that related to socioeconomic status and place of residence. The context consisted of ethnicity, religion, culture and economic status. In addition, it also included the differences in accessibility, affordability, quality of care as well as sociocultural

aspects (Say & Raine, 2007). This framework was mainly based on the context of socioeconomic status and residential area but ignored some demographic variables.

The last analytical framework was Gybrysch's and Cambell's framework. This framework tried to integrate the first and the second analytical frameworks by providing major groups of factors related to using SBAs. It consisted of four main factors, namely, sociocultural factors, perceived need/benefit, economic accessibility and physical accessibility. Gybrysch and Cambell's framework is quite appropriate and recommended for studies in developing countries, in particular low and middle income countries. In addition, it provided the frequency of using each variable ranked from rarely used to sometimes used and usually used to explain the use of SBAs (Gabrysch & Campbell, 2009).

From aforementioned analytical frameworks, this study drew partly on Gybrysch and Cambell's framework because the study needed to explore the variables available in the data set.

2.4 Related Study on Factors with the Use of SBA

The four main factors are sociocultural, perceived need or benefit, economic accessibility and physical accessibility. All variables of the four factors were divided to usually use, sometimes use and rarely use.

Defining the type of variable was based on the frequency of using these variables in explaining the use of SBAs by reviewing 80 studies. The variables with the highest frequency in the use of SBAs for all studies were defined as commonly used variables. The variables used more frequently than rarely use variables in the 80 articles were characterized as sometimes used. In addition, rarely used variables were referred to as the least frequent among all variables for the use of SBAs (Gabrysch & Campbell, 2009).

2.4.1 Sociocultural Factors and Use of SBA

It has primarily been recognized that sociocultural factors influence decision making at individual and family levels. They included variables usually used, sometimes used and rarely used. Variables that were usually used to explain the use of

SBAs included maternal age, race and religion and mother's education, while sometimes used variables included marital status, husband's education and self-decision. Lastly, variables rarely used comprised family composition. The review began with variables that were usually used, followed by sometimes used and rarely used.

1. Usually Used Variables

a) Maternal Age

Age of mother is widely recognized as influencing an individual's experiences in seeking health care services. Comparing between older and younger women, women with older age are more likely to be confident and have the basic skills in family that help them in terms of power in decision making to seek health care services (Gabrysch & Campbell, 2009). In addition, the risks of pregnancy and delivery are also linked to age; that is, a particular group of younger age and a certain older age group represent high-risk groups, especially, teenagers and women aged 35 and older with first time pregnancy (Lee et al., 2016).

Previous studies found that teenagers in Nepal were more likely to use SBAs at delivery (Sharma, Sawangdee, & Sirirassamee, 2007). In addition, women in a younger age group in Afghanistan also used SBAs more than women in older age groups (Mayhew et al., 2008). Apart from the above studies, Ethiopian teenage mothers also used SBAs at delivery more than women in other age groups (Mekonnen & Mekonnen, 2002).

Choice of place and attendant for delivery of women is also influenced by their age. Women aged 20 years or less preferred to deliver their child with SBAs more than women aged 35 or older (Eirini, 2012).

The use of maternal health services was associated with the age of mother. In the study of Gazali conducted in 2012 on the perception of provision of nursing care, age of patients was important in using skilled health personnel in Swedish society (Gazali, Muktar, & Gana, 2012). Another study also showed that mothers aged 25 to 29 were 40% less likely to use SBAs at delivery than those mothers aged 19 years old (Chang, 2008).

In one Afghanistan study, maternal age was significantly associated with the use of SBAs at delivery. Mothers aged 18 to 29 were more likely to use SBAs than other older age groups (Mayhew et al., 2008). One Ethiopian study also showed that mothers aged 25 to 34 years old were twice more likely to deliver with SBAs than other age groups (Fekadu & Regassa, 2014). In addition, another study in Southwest Ethiopia revealed that maternal age of 15 to 19 years and 20 to 34 years were 2.6 times and twice more likely to use SBAs at delivery than older age groups (Asres & Davey, 2015).

It can be noted that maternal age is an important factor for using SBAs, indicating that younger mothers were more likely to use SBAs than older mothers.

b) Mother's Education

Education has played a crucial role in health behaviors, especially in terms of negotiation skills and decision making in domestic and public spheres. SBA utilization rate and education of the mother were strongly associated with educational level. That is, subjects with increased education level were more likely to use SBAs at delivery (Furuta & Salway, 2006). Other studies have revealed that illiterate mothers used SBAs less at delivery than educated mothers (Bayu, Adefris, Amano, & Abuhay, 2015; Choulagai et al., 2013).

Lower education levels of women and their husbands and lack of decision making power influenced women to give birth without SBAs (Eirini, 2012). A study published in the Asia Pacific Journal also mentioned that socio demographic factors such as education level of the mother were related to the use of SBAs (Chamroonsawasdi, Soe, Charupoonphol, & Srisorrachatr, 2015). A study in Nepal also pointed out that women with higher education levels were more likely to use SBAs than those with lower education levels. Compared with women with no formal education, those with primary level and higher were more likely to use SBAs (Zangmo, 2006).

As educated women used SBAs more than uneducated, one half of the women without formal education delivered at home without skilled attendants. Compared with women without formal education, those with primary level

and higher were more likely to use SBAs. This study found that education was a significant factor affecting use of SBAs (Zangmo, 2006).

c) Race and Religion

Race and religion are viewed as cultural backgrounds that determine an individual's beliefs affecting care seeking behaviors (Nabyonga-Orem, Nanyunja, Marchal, Criel, & Ssengooba, 2014). In addition some minority and religious ethnic groups may live in a remote area with limited health access (Gabrysch & Campbell, 2009). Therefore ethnicity, religion and their beliefs influence the use of SBAs (Abera & Belachew, 2011; Gabrysch & Campbell, 2009).

It is also known that ethnic minorities were more likely to have a lower socioeconomic status that leads them to situations involving limited access to health care services (Guerrero & Kao, 2013).

2. Sometimes Used Variables

a) Marital Status

Marital status is important for mothers during their pregnancy because some single mothers were stigmatized while others reported more autonomy (Nabyonga-Orem et al., 2014). However, contrasting findings have been reported from related studies. That is, some studies found marital status was not associated with the use of SBAs (Gyimah, Takyi, & Addai, 2006; Mekonnen & Mekonnen, 2003; Nwakoby, 1994). Other studies have found that marital status had an effect on the choice of the delivery place (Duong, Binns, & Lee, 2004; Thind, Mohani, Banerjee, & Hagigi, 2008). Single or divorced mothers might have greater chance to decide to use SBAs than married mothers. One study revealed that young single mothers were more likely to take care of the first birth and more likely to use SBAs. However, they might prefer to deliver at home because of stigmatization (Gabrysch & Campbell, 2009).

b) Husband's education

Husband's education may improve level of knowledge and influence attitudes and earnings as well as to improve communication between the partners. Educated husbands understand more about the modern medicine, are socially acceptable toward skilled health workers and can decide their wives health services.

Husband's education can also be related to husband's occupation and household wealth (Gabrysch & Campbell, 2009).

Education level of husband affects the decision to use SBAs during delivery of woman. Findings from the Demographic and Health Survey conducted in Nepal between 2001 and 2006 showed a significant increased use of SBA with increased level of education of the husband (Karki, 2008). Another study in Northern Ghana pointed out that husband's education level was strongly associated with the use of SBAs at delivery (Sakeah et al., 2014).

One study in Myanmar also found that education level of the husband was strongly associated with the use of skilled attendants at birth. That is, women with a husband who completed primary education and was illiterate were less likely to use SBAs than women whose husbands had higher educational levels (Oo et al., 2012).

c) Decision Maker or Women's Autonomy

Women's autonomy means the self-decision making power of women or mothers, involving mobility and control over resources and increased accessibility and use. The effect of an authoritative position in the household, financial independence, mobility and decision making power represent various types of autonomy and affect the use of health facilities. Some women cannot decide to obtain health care on their own and most women depend on the decision of the husband and mother-in-law. Related studies found that several dimensions of autonomy affect the use of SBAs. These dimensions included freedom of movement, aspect of decision making, control over earnings, communication, sharing of housework with the husband, sex of the household head and presence of mother-in-law in the household (Gabrysch & Campbell, 2009).

In developing and low income countries, the decision making of women was controlled and limited by socioeconomic factors (Osamor & Grady, 2016). One study in Nepal revealed that women controlled their own decision making and used health care services when they were in a better socioeconomic position (Furuta & Salway, 2006). Another study, conducted in Ghana, showed that the power of decision making by women was less than that of the husband, mother-in-law and other family members (Ganle et al., 2015).

3. Rarely Used Variables

a) Family Composition (Family members and family type)

Family composition is related to women's decision making power and being responsible for other children including the number of family members and the type of family (Gazali et al., 2012; Mujahid-Mukhtar, Mukhtar, & Abbink, 1991). In terms of decision making power, mothers in nuclear families were more likely to have decision making power than those in extended families (Mujahid-Mukhtar et al., 1991). On the other hand, mothers in nuclear families had difficulties accessing health care services because they had to take care of other children (Gazali et al., 2012). This kind of association between family size and use of SBAs was found significantly in one study in Nepal where women living in small households (less than four) used SBAs more than those living in big households (Karki, 2008).

As this study was based partly on the framework, almost all variables were included in the study except for traditional belief because this variable was not in this study's data set. The usually used variables, i.e., maternal age, race, religion and mother's education were included in this study. The sometimes used variables, including husband's education, marital status and decision maker were used in the analysis. In addition, variables on family composition that were recognized as rarely used were included in the present study.

2.4.2 Perceived Needs/Benefits Factors and Use of SBA

Secondly, perceived needs/benefits is another group of factors that reflects the perception of individuals to realize the benefits of using SBAs, especially at health facilities. The perceptions mostly concern the risk of women and newborns at health facilities resulting from previous experiences in using services from pregnancy through delivery. This factor also has an effect on the decision to seek health care services. The variables related to this factor included the number of children, ANC and complications during delivery of the last child (Gabrysch & Campbell, 2009). Variables concerning the number of children is defined as a usually used variable. Variables sometimes used included provider of ANC for the last child and birth complications was defined as a rarely used variable.

1. Usually Used Variable

a) Number of Children or Birth Order

The number of children reflects both experiences of delivery as well as lack of access to maternal health care services. The first delivery needs more help because of the lack of experience and the best care services from family members (Gabrysch & Campbell, 2009; Navaneetham & Dharmalingam, 2002). On the one hand, the higher the birth order the greater the lack of access to family planning. However, the significant effect of a high number of children indicates the high use of SBAs. Nepali women during their first child delivery were three times more likely to use SBAs than those with later second and more deliveries (Karki, 2008). Seeking care from skilled health personnel depends on parity. When women have low parity, fewer children, they are more likely to seek care from skilled health care provider particularly when complications occur especially at the time of delivery and immediately after delivery (Arif, 2005).

Moreover, one study presented that most women, being taken care of by SBAs during first pregnancy and births were likely to give birth alone at home at the next pregnancy. In addition, women in rural areas preferred to deliver at home because they could not leave their other children alone (Eirini, 2012).

2. Sometimes Used Variable

a) Type of Provider for Antenatal Care

Using ANC helps in getting familiar with the provider during ANC and causes the use of the similar providers at delivery time (Nabyonga-Orem et al., 2014). ANC coverage is important because it can save the mothers' and babies' lives. Women can prepare the delivery and understanding warning signs of pregnancy and birth during the ANC. ANC can provide immunization and medicine from the health center or SBAs such as micronutrient supplementation to treat diseases and to prevent malaria and other diseases (MOH, 2012). ANC with at least four visits for all pregnant women is recommended by the WHO. However, all pregnant women do not receive four ANC visits, only one half of them received such services (UNICEF, 2016).

One study in Uganda pointed out that pregnant women who had received ANC at health facilities were more likely to deliver at health facilities. That is 75% of women reported receiving ANC care during their last pregnancy at a health facility; among these, 58% reported they had delivered in a health facility (Asres & Davey, 2015)

3. Rarely Used Variable

a) Complications of the Delivery

The use of SBAs at the time of delivery could be influenced by the practice of seeking care for maternal health during pregnancy and experiences of complications. Women with higher parity need more or less professional care based on their previous complications at delivery. Those presenting no complications were less likely to use SBAs compared with those presenting complications (Stephenson & Tsui, 2002). For instance, one study in Ethiopia reported mothers with complications during the pregnancy and delivery time in obstetric history used SBAs more than mothers without complications (Bayu et al., 2015; Shivalli & Kaup, 2014).

According to the framework of the Gabrysch & Campbell, information availability, health knowledge, pregnancy wanted and perceived quality of care were not included in this study. Therefore, usually used variables included birth order or number of children while sometimes used variables included variables on ANC use or type of provider. For the rarely used variables, only complications during the delivery was included in the study's analysis.

2.4.3 Economic Accessibility Factors and Use of SBA

Thirdly, the factor concerning economic accessibility reflects affordability of individuals and family to pay for the cost of delivery and transportation. This factor consists of occupation of women and husbands and ability to pay or family income (Gabrysch & Campbell, 2009). For this factor, usually used variable comprised family income or ability to pay; sometimes used variable comprised husband's occupation and rarely used variable comprised mother's occupation.

1. Usually Used Variable

a)Ability to Pay or Family Income

Ability to pay or family income pointed out the economic disparity in accessing health care services where the poor were less likely to use because of unaffordability. For instance, richer Ethiopian women were more likely to use SBAs at delivery than poorer women (Wilunda et al., 2015). Economic status was also an important factor influencing women's choice of place and attendant for delivery. Rural women need money to pay for birth attended by SBAs and to have safe transportation to health facilities (Eirini, 2012). In addition, people from low income communities have limited access to the facility offering combined care (Guerrero & Kao, 2013).

Another study also pointed out that economic status was an important factor influencing women's choice of place and attendant for delivery. Furthermore, rural women needed money to pay for birth attended by SBAs and to have safe transportation to health facilities (Eirini, 2012).

2. Sometimes Used Variable

a) Husband's Occupation

Occupation affects higher income, higher financial resources and some occupations have health insurance and in some cases increased health service provision (Nabyonga-Orem et al., 2014). Related studies have revealed an association between occupation of husband and the use of SBAs. For instance, a study in Cambodia proved that husband's education was associated with the use of SBAs at delivery. That is, wives of farmers were less likely use SBAs at child birth while wives of merchants and government were more likely use SBAs at child birth (Yanagisawa, Oum, & Wakai, 2006) In addition, one study also indicated that women whose husbands worked in the agricultural sector rarely used SBAs compared with husbands working in other sectors (Karki, 2008).

3. Rarely Used Variable

a) Mother's Occupation

Occupation or employment bring increased economic autonomy and health status because of mindfulness raising and well behavior through statements made among their work companions and the public (Ravi, 2013). Occupation of women helped improved the decision making power of the women and led them to use SBAs. The study of Timor Leste by Vishnu Khanal showed that working mothers were more likely to use SBA than dependent mothers (Khanal, da Cruz, Mishra, Karkee, & Lee, 2015). Similarly, women who worked in the professional service sector were more likely to use SBAs than those worked in the agricultural sector (Karki, 2008).

Regarding economic accessibility factor, all types of variables from the framework were included in the analysis.

2.4.4 Physical Accessibility Factors and Use of SBA

Lastly, the factor on physical accessibility had direct and indirect effects on the use of SBAs. This factor included only sometimes used of variables on time taken from health facility and type of transport to the health facility (Gabrysch & Campbell, 2009).

1. Sometimes Used Variables

a) Time to and Type of Transport to the Health Facility

Distance to health facilities was recognized as creating barriers to access healthcare services and discourage women to seek health care services (Gabrysch & Campbell, 2009). One study revealed that time taken or distance to the health facility was negatively associated with using SBAs at delivery time (Wilunda et al., 2015). For instance, Nepalese women who spent less than 30 minutes from home to health center were more likely to use maternal and child health services (Choulagai et al., 2013).

Accessibility factors such as distance to reach health facility and type of transportation were negatively associated with the use of health facility and skilled health personnel to attend delivery. The study in Nepal illustrated that

availability of transportation and distance to the health facility are significant influencing factors for the use of SBAs for delivery (Baral, Lyons, Skinner, & Van Teijlingen, 2012).

One study found that lack of transportation and poor roads may lengthen the time accessing the health facility (Thaddeus & Maine, 1994). In Gambia, one study also found that lack of transportation and prolonged transportation could delay accessing the health center (Cham, Sundby, & Vangen, 2005).

Based on the framework, this study included variables on time taken from the health facilities and type of transport to the health facility. These comprised sometime used variables.

2.5 Supply Side of Using SBA

Although this study focused on the demand side, some variables on the supply side played a role in the use of SBAs. They are, namely, quality of care and health personnel as well as adequacy of SBA and availability of health facilities.

Quality of maternal and child care services and health personnel is known as an indicator to achieve MDG5 and SDG3 to guarantee that pregnant women could receive proper care and good management during pregnancy, childbirth and the postpartum period. One study from Nepal pointed out that qualifications of SBAs in terms of knowledge to manage services could increase the use of SBAs (Ekirapa-Kiracho et al., 2011; Onta et al., 2014). In addition, knowledge on drug management during delivery of care providers also helped in preventing complications of labor and delivery particularly postpartum hemorrhage (Mir, Wajid, & Gull, 2012).

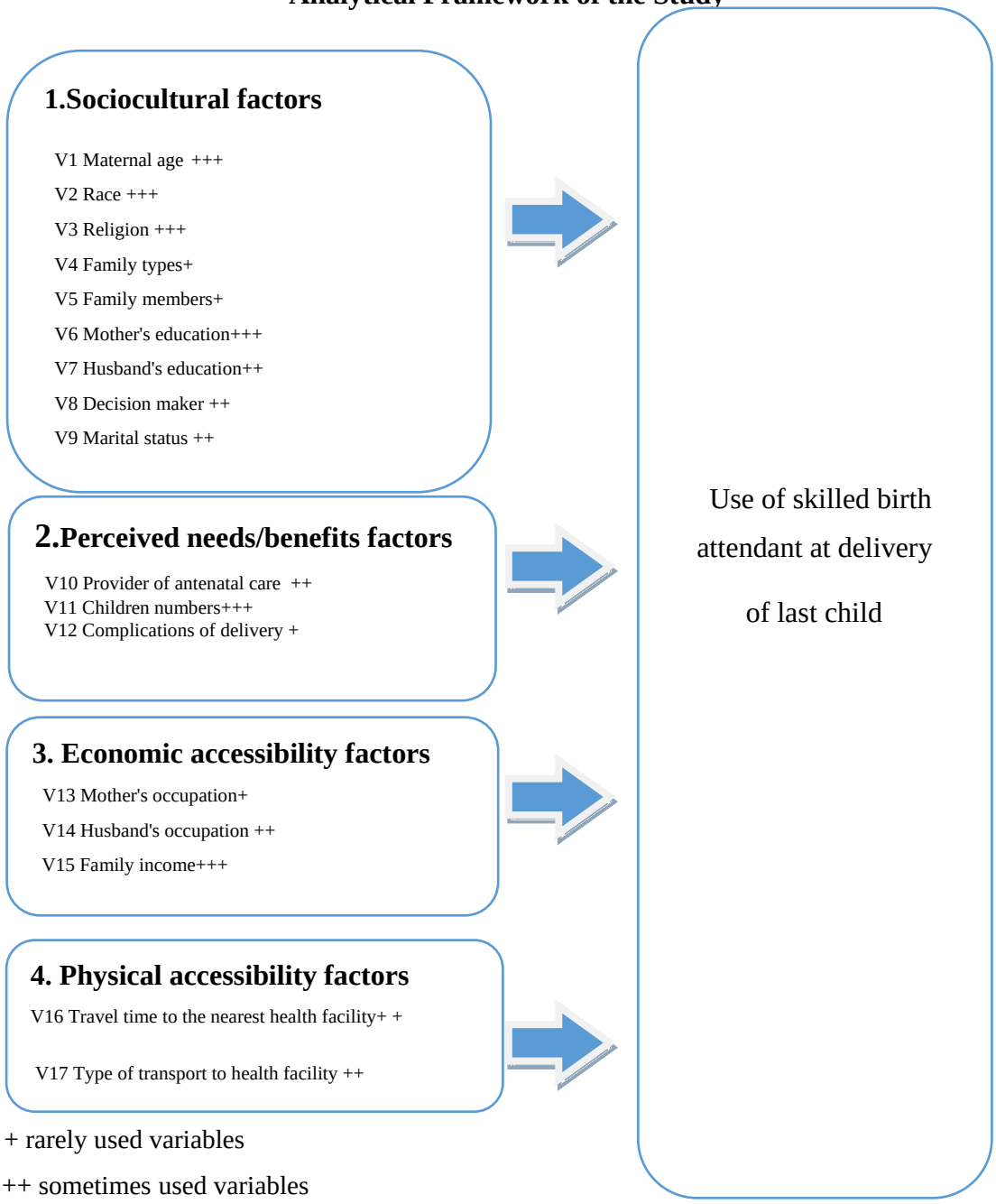
Adequacy of SBAs was also another factor on supply side indicating that pregnant women could easily access the SBAs near their place. The study in Nepal confirmed this, that is, the district area providing adequate SBAs induced the use of SBAs more than in the rural setting lacking SBAs; it reduced the use of SBAs (Okeke et al., 2016; Onta et al., 2014).

Availability of health facilities plays a role as to guarantee pregnant women easy access to the SBAs near their houses. Related studies have revealed that using the SBAs near the house could reduce time and travel costs to health facilities (Ekirapa-Kiracho et al., 2011; Onta et al., 2014).

2.6 Analytical Framework

Because some reviewed variables were not available in the data set, the analytical framework of this study was based partly on Gybrysch and Cambell's framework as described below.

Analytical Framework of the Study



+ rarely used variables

++ sometimes used variables

+++ usually used variables

Figure 2.1 Analytical Framework of the Study

CHAPTER III
RESEARCH METHODOLOGY

This chapter presents the research method including data source, study area, population and sampling, methods and data analysis and operational definition of variables.

3.1 Data Source

This study employed community-based data regarding mothers with babies from the rural area of Thanlyin Township in Myanmar which was collected by the Department of Population and Family Health, University of Public Health (Yangon), Ministry of Health and Sports in the Republic of the Union of Myanmar during the period from 10 August to 11 September 2011. This data contains questions on demographic characteristics, socio-economic characteristics, obstetrics history, accessibility to health facility and information on the last child.

3.2 Study Area

Thanlyin Township is located in southern Yangon Region. The total area is 145.32 square miles (378.4 sq-km) and total population is 184,479. Urban rural ratio is 1:2 and male female ratio is 1:1.1. A total of 4,687 comprise under one-year-old children in that township. Three Rural Health Centers (RHCs) are located in Thanlyin Township, namely, Let Yet Sann, ThapyayKan and Kalawei. Each RHC has four sub-centers. MMR for 2010 is 177 per 100,000 live births and IMR is 14.63 per 1000 live births. The study area consisted of the catchment areas of six sub-centers under three RHCs of that township (Township Health Department, 2011).

3.3 Population and Sampling

The original study began with stratified sampling strategy by dividing RHCs in three strata. Subsequently, two sub-centers from each RHC were selected. Thus, the six sub-centers were randomly selected.

Mothers obtained from immunization registration system comprised the sampling frame. On average, 25 to 30 mothers registered within each sub-center. During the data collection period, only 200 mothers came to the sub-center for their child's immunization. Thus, all mothers were interviewed.

Mothers included in this study accounted for 10% of total mothers in the study area because the data showed that three rural health centers had approximately 1,901 mothers with children aged under one year (Township Health Department, 2011).As three rural health centers had 12 sub-centers, each sub-center had approximately 158 mothers by calculating from the total live birth of 2010 data. However, only 200 mothers were interviewed, because the study area was in a very difficult environment with many river branches, poor socio-economic status and where most mothers worked on their farm or other works. This made the majority of mothers unable to access the immunization registration system.

The interviews were conducted face-to-face using semi-structured questionnaires. Before data collection, a pretest was conducted in one village (about 10% of the sample) with semi-structured questionnaires to ensure the validity of measurement. Although the original sample totaled 200, the missing data regarding some variables occurred. Finally, only 191 mothers' data sets were available for this analysis.

3.4 Method of Data Analysis

The analysis was conducted using both descriptive and analytical statistics. Sociocultural factors, perceived needs/benefits, economic accessibility and physical accessibility were described and explored as a percentage distribution using univariate analysis.

Associations between independent and dependent variables were analyzed using bivariate analysis with Chi-square test.

3.5 Operational Definition of Variables

3.5.1 Dependent Variable

Use of SBA at Delivery

Use of SBA refers to whether the respondents had used skilled health care providers including a midwife, lady health visitor (LHV) or doctor having skills for managing pregnancy and child birth.

The questionnaire explored who assisted the last child delivery. Depending on the type of assistance, a dichotomous variable was developed to use as SBAs were well trained health personnel, including midwife, LHV, nurse or doctor. Those respondents assisted traditional birth attendants (TBAs), Auxiliary midwives (AMWs) and others such as relatives, categorized as not accessible to SBAs.

3.5.2 Independent Variables

The independent variables in this study included four factors, namely, sociocultural factors, perceived needs/benefits, economic accessibility and physical accessibility factors.

1. Sociocultural Factors

Maternal Age

Age was measured as completed years of age of the mother at the time of the study conducted within reproductive age between 18 and 49 years. Age of mother was recoded in three groups, namely, 1) less than 25, 2) 25 to 34 and 3) more than 35 year groups.

Marital Status

Marital status refers to single, married, divorced, separated and widowed**.** Marital status was divided in two groups, i.e., married and all other statuses.

Religion

Religions included different types of religions such as Buddhism, Islam, Hinduism, Christianity and others. They were recoded in two groups. The first group was Buddhism and the second group comprised Islam, Hinduism, Christianity and others.

Race

Race consisted of Myanmar, Chinese, Indian and others, which was also recoded in two groups, namely, the Myanmar group and the other group containing Chinese, Indian and other races.

Family types

Type of family was categorized according to family members who lived together in the same shelter. A household consisting of only husband, wife and their children, was categorized as nuclear type. Three generations including parents of the couple and relatives of the couple living in that household was categorized as extended family.

Family members

This variable refers to the number of people living in the same house and related by blood or social or legal contract, categorized in two groups, ≤5 numbers or >5 numbers

Mother's education

This variable refers to the educational attainment level of mothers and was categorized as 1) illiterate, can read and write up to Grade 5, 2) middle (Grades 6 to 9), 3) high (Grades 10 to 11), university student (1^{st} – final year) and graduate (holding a degree). To analyze, data was categorized in three groups, namely, 1) primary school and lower, 2) middle or secondary school and 3) high school and above.

Husband's education

Education level of husband refers to the highest attainment of husband's education. To analyze, data was categorized in three groups, namely, 1) primary school and lower, 2) middle or secondary school and 3) high school and above.

Decision maker

Decision maker is defined based on the person who chose the provider to seek care during child birth of respondents, categorized as 1) self, 2) husband, parents, in-laws, relatives, friends and others.

2. Perceived Needs/Benefits Factors

Provider of antenatal care

This measured the type of provider who had delivered care during pregnancy of the last child of respondent whether they were SBAs or not. ANC provider was categorized in two groups, namely, 1) SBAs including midwife, LHV, nurse or doctor, and 2) non-skilled birth attendants consisting of the traditional birth attendant and auxiliary midwife.

Complications of delivery

This measure was asked about complications during the delivery of the last child and data was divided in two groups, that is, having complications during the delivery of last child and not having.

Children numbers

This measure refers to the number of living children that the respondents had at the time of interview. To analyze, the data was categorized in three groups, i.e., one child, two children and more than two children.

3. Economic Accessibility Factors

Mother's occupation

Occupation refers to the working status of mothers who could earn income before the delivery of the last child. The study presumed dependent mothers comprised women without income. This nominal scale of working status of mothers could be categorized as 1) unemployed or nonpermanent job meaning dependent on others or part-time work and 2) employed comprising manual worker, skilled worker, farmer, government employee, company employee or own business.

Husband's occupation

This variable refers to the working status of husbands of respondents. A nominal scale was used to measure and the data was categorized as the mother's occupation. They were two groups, namely, unemployed and employed.

Family income

This variable refers to the total monthly family income measured in local units of currency (Kyat). The three groups comprised less than 80,000 kyat, 80,000 to 150,000 kyat and more than 150,000 kyat. **(1$= 1200 Kyats)**

4. Physical Accessibility Factors

Travel time to the nearest health facility

Time taken from home to reach the nearest health facility on foot (walking time) was originally measured using an interval scale and data was categorized using an ordinal scale, that is, 1) within 30 min or up to one half hour, 2) more than 30 min or more than one half hour consisting of between one half hour to one hour, between one hour and one and one half hour and more than one hour to one half hour.

Type of transport to the health facility

This refers to the availability of type of transport to reach the nearest health facility, categorized in two groups, namely, 1) on foot and 2) vehicle including trishaw, by cart and by vehicle such as trawlergi/motorcycle/car etc.

3.5.3 Operational Definition and Scale of Measurement of Variables

Table 3.1 Operational Definition and Scale of Measurement of Variables

Dependent Variable			
1.	Use of SBA at delivery of last child	Respondents who had been attended by skilled health care providers including midwife, LHV or doctor who have skills for child birth Use of SBAs during delivery of last child = 1 Use of non-SBA during delivery of last child = 2	Nominal
Independent Variables			
1.Sociocultural Factors			
1.	Maternal age	Completed years of age of mothers at the time of the study categorized as less than 25 years = 1 , 25 to 34 years = 2 more than 35 years = 3	Ordinal
2.	Marital status	Marital status of the respondent is categorized as Other = 1, Married = 2	Nominal
3.	Race	Same culture and language of one group of people and categorized as race Myanmar = 1, Others = 2	Nominal
4.	Religion	Particular system of belief in one or more gods and categorized as Buddhist = 1, Others = 2	Nominal

Table 3.1 Operational Definition and Scale of Measurement of Variables (cont.)

Independent Variables			
1.Sociocultural factors			
5.	Family type	Family is categorized according to members of family living together in the same shelter categorized as Nuclear (husband, wife and their children) = 1 Extended (2 + relatives of the couple) = 2	Nominal
6.	Family members	Family size refers to people living in the same house who are related by blood or social or legal contract categorized in 2 groups, namely, 1 = less than or equal to 5 , 2 = more than 5	Ordinal
7.	Mother's education	Educational attainment level of mother categorized as Primary school and lower = 1, middle school = 2 high school and above = 3	Ordinal
8.	Husband's education	Educational attainment of husband and categorized as Primary school and lower = 1, middle school = 2 high school and above = 3	Ordinal
9.	Decision maker	Person in the family who decides on type of care provider during child birth of respondent Self = 1, Others = 2	Nominal

Table 3.1 Operational Definition and Scale of Measurement of Variables (cont.)

Independent Variables			
2. Perceived needs/benefits factors			
10.	Provider of antenatal care	Type of provider giving care throughout the last pregnancy period categorized as SBA = 1, non SBA = 2	Nominal
11.	Children numbers	Number of children that a woman has at the time of interview categorized as 1 child = 1, 2 children = 2 and 3 children or more = 3	Ordinal
12.	Complications of delivery	Complications during the delivery of last child categorized as Yes = 1, No = 2	Nominal
3. Economic accessibility factors			
13.	Mother's occupation	Working status of mother, which can earn money, before the delivery of last child categorized as Unemployed or nonpermanent job = 1, employed = 2	Nominal
14.	Husband's occupation	Working status of husband who can earn money categorized as Unemployed or nonpermanent job = 1, employed = 2	Nominal
15.	Family income	Total income of family per month in Kyat categorized as < 80,000 kyat = 1, 80,000 to 150,000 kyat = 2, >150,000 kyat = 3 1$= 1,200 kyat	Ordinal

Table 3.1 Operational Definition and Scale of Measurement of Variables (cont.)

Independent Variables			
4. Physical accessibility factors			
16.	Travel time to the nearest health facility	Time taken from home to reach nearest health facility on foot (walking time) categorized as within 30 min = 1, more than 30 min = 2	Ordinal
17.	Type of transport to health facility	Availability of transport to reach nearest health facility categorized as On foot = 1 , Vehicle = 2	Nominal

CHAPTER IV
RESEARCH FINDINGS

This study was conducted by using the cross sectional data in order to identify the percentage of using the SBAs and to explore the factors associated with the using of SBAs at delivery in the study area.

The results of this study are presented in three parts. It begins with characteristics of sample followed by percentage of using SBAs, and factors associated with using SBAs during delivery.

4.1 Characteristics of Sample

Characteristics of sample are presented below based on the analytical framework.

Sociocultural Factors

The result of sociocultural factors included the number and percentage of maternal age, marital status, race and religion, family composition, mother's education, husband's education and women's autonomy for the respondents or mothers and their husbands.

1. Maternal age

A total of 191 mothers with children under one year of age participated in this study. They were of reproductive age between 18 to 49 years old. Almost one half of the mothers (49.20%) were aged at 25 to 34. It showed that the middle aged group participated in the study more than other age groups. Slightly less than one third (31.4%) were youth aged were less than 25 years old. Almost one fifth (19.4%) were aged at 35 and older. Mean age of respondents was 28.72 years with a minimum age of 18 years and the maximum age was 48 years (see Figure 4.1).

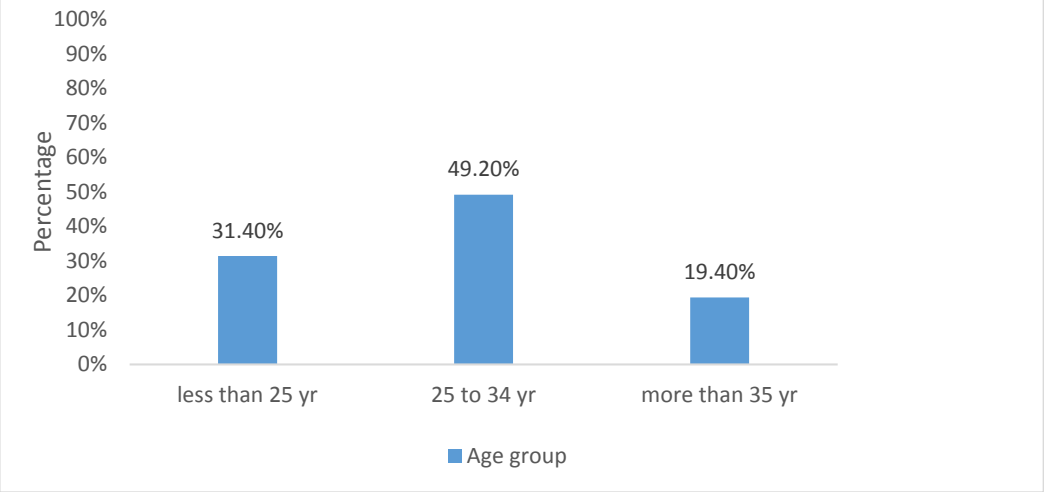


Figure 4.1 Percentage Distribution of Age Group

2.Marital status

Among the participant of this study, 191 mothers, the majority 186 were married (97.4%). The number of mothers in other groups totaled 5 (2.6%) which included single, separated, widowed and divorced women.

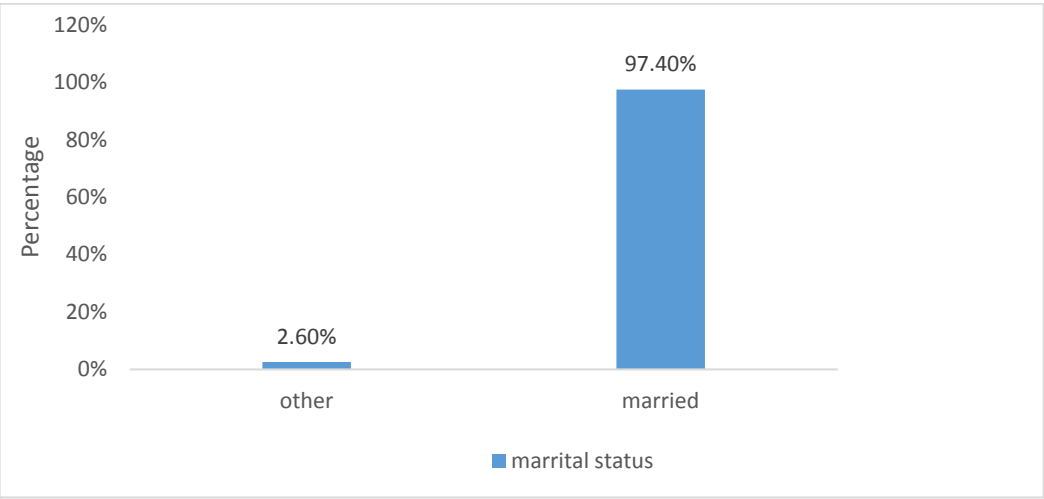


Figure 4.2 Percentage Distribution of Marital Status

3.Race

The majority race group was Burmese accounting for 91.1% of all respondents. Only 8.9% belonged to other racial group. It could be stated that nine of ten were Burmese (See Figure 4.3).

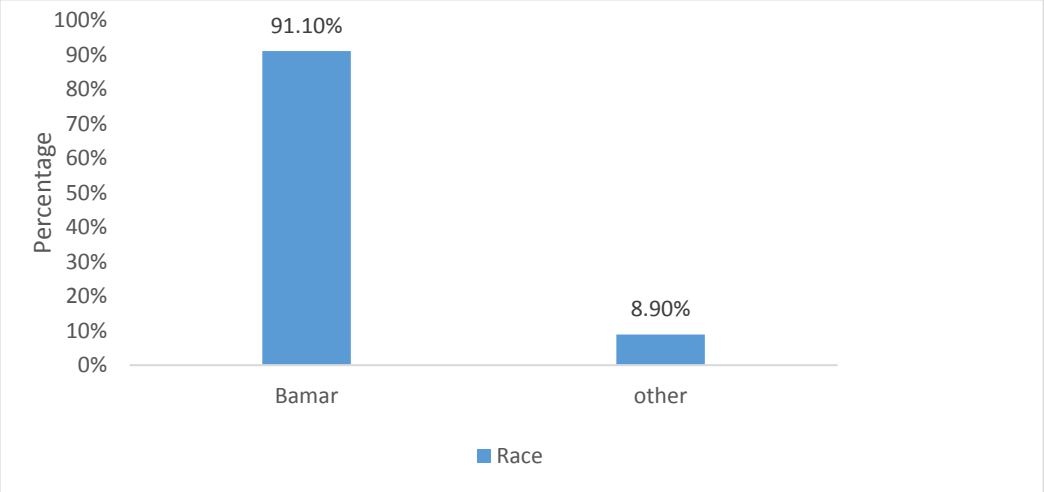


Figure 4.3 Percentage Distribution of Race

4. Religion

The two groups based on religion were Buddhism and others. Almost all respondents were Buddhist (95.8%). Only 4.2% of respondents belonged to other religions (see Figure 4.4).

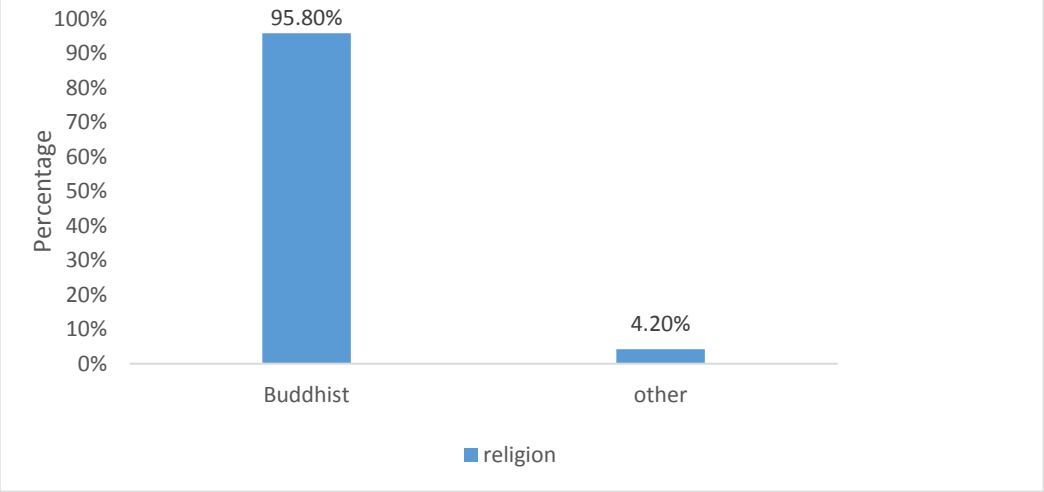


Figure 4.4 Percentage Distribution of Religion

5. Family types

Family type comprised two groups, i.e., nuclear and extended family groups. Nuclear family accounted for 63.9% of all respondents. Extended family accounted for 36.1%. It could be noted that nuclear family was almost twice that of extended family (See Figure 4.5).

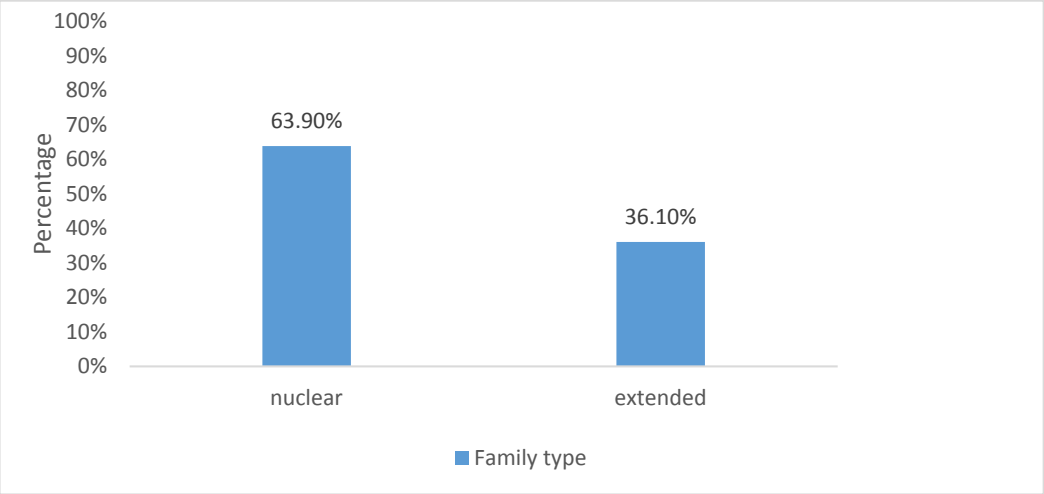


Figure 4.5 Percentage Distribution of Family Types

6. Family members

Among 191 respondents, 64.4% had less than six members in their family and 35.6% had at least six members (see Figure 4.6). Although the majority of families in the study had less than six members, the proportion was lower than the national average of 70.2%.

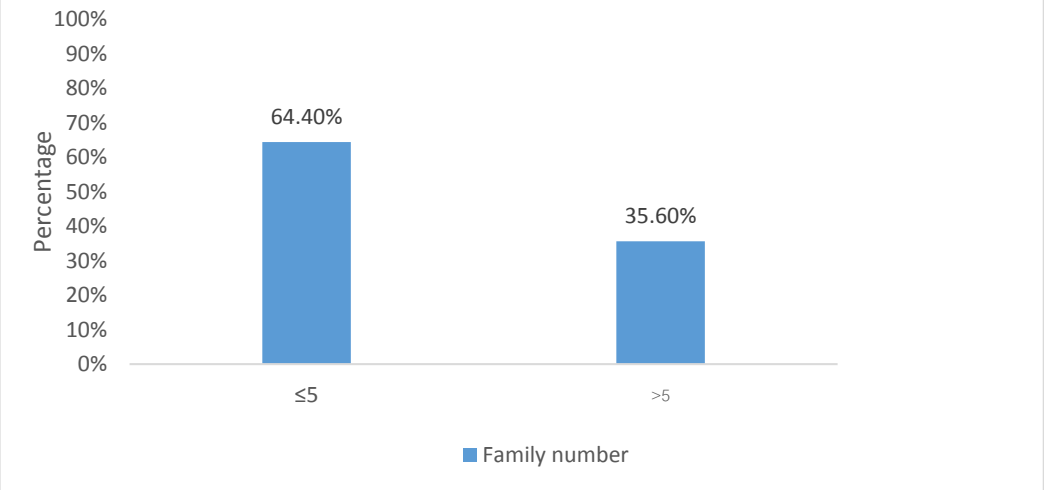


Figure 4.6 Percentage Distribution of Family Members

7. Mother's education

With regard to education level of mothers, 47.1% of respondents completed primary school and lower. Respondents who completed middle school comprised 27.2% and respondents who completed high school totaled 25.7%. It could be concluded that almost one half completed primary school and lower level including illiterate, followed by those who completed middle school and high school and higher including college or university and degree (see Figure 4.7).

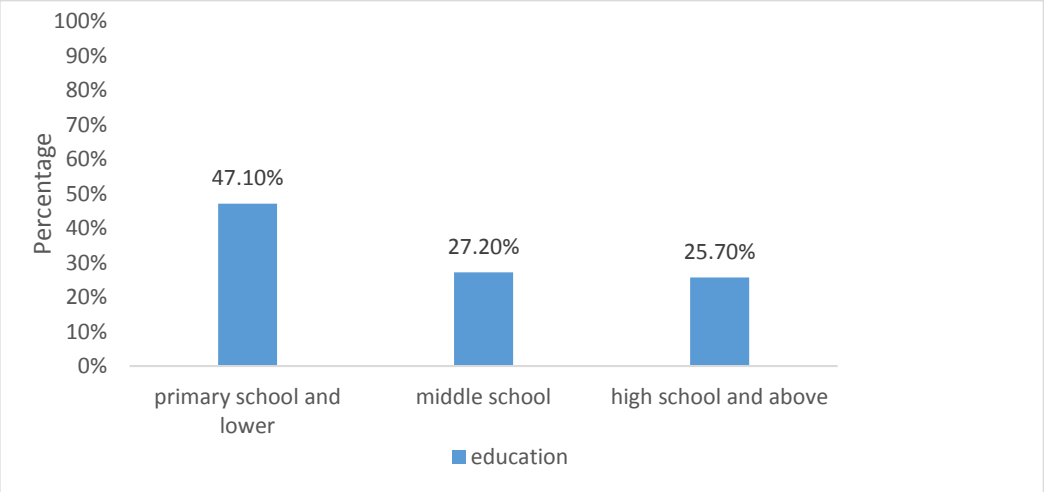


Figure 4.7 Percentage Distribution of Education of Mothers

8. Husband's education

Regarding education level of the husband of respondents, 29.8% completed primary school and lower level. A total of 35.1% completed middle school and another 35.1% completed high school level and above (see Figure 4.8).

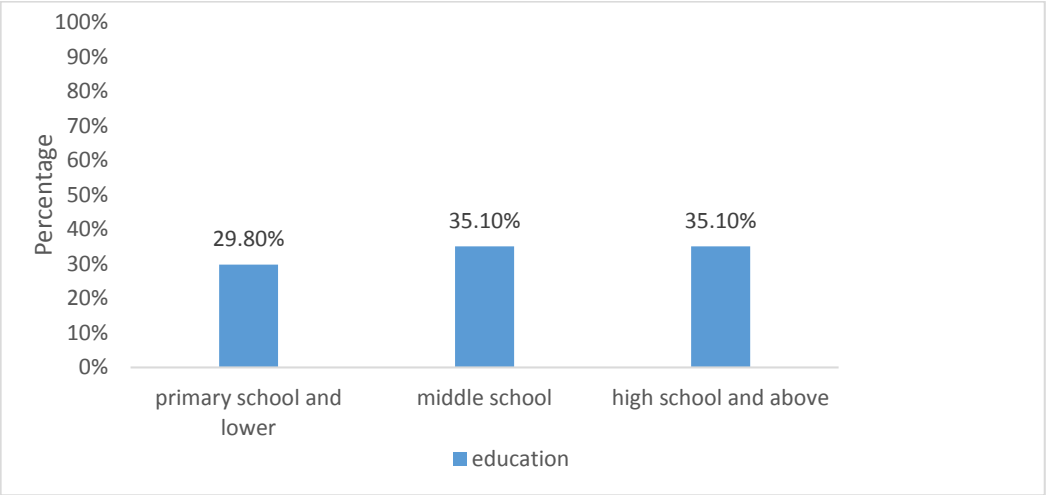


Figure 4.8 Percentage Distribution of Education of Husbands

9. Decision makers

Figure 4.9 shows the percentage of decision makers choosing the use of SBAs at delivery of the last child. About one half of the subjects (56.5%) made their own decision and lower than one half of respondents (43.5%) accepted the decision made by others.

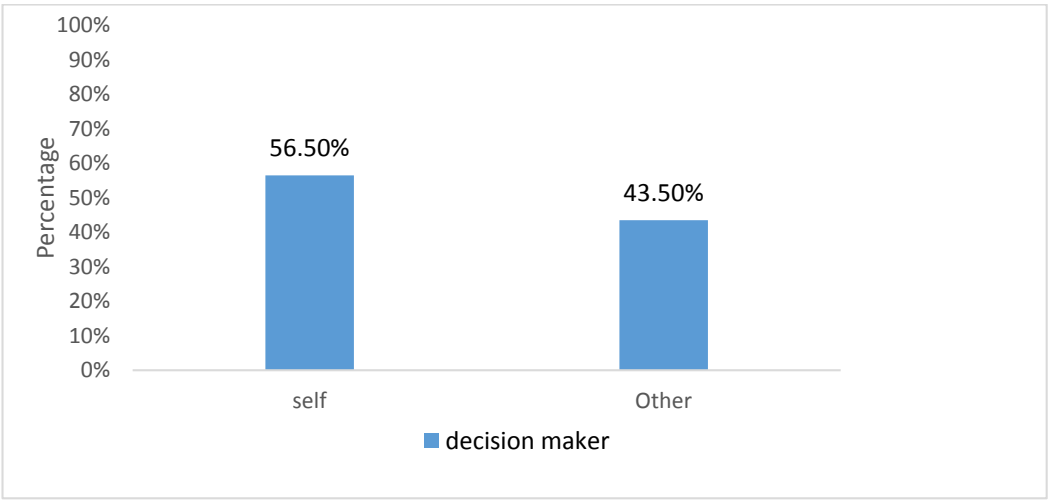


Figure 4.9 Percentage Distribution of Decision Makers

Perceived Needs/Benefits Factors

The results of perceived needs and benefits included ANC use, birth order and complications.

10. Provider of antenatal care

Almost all subjects (95.8%) used SBAs for their ANC (see Figure 4.10). This result illustrated that SBAs were more used than non SBAs during the ANC for their last child.

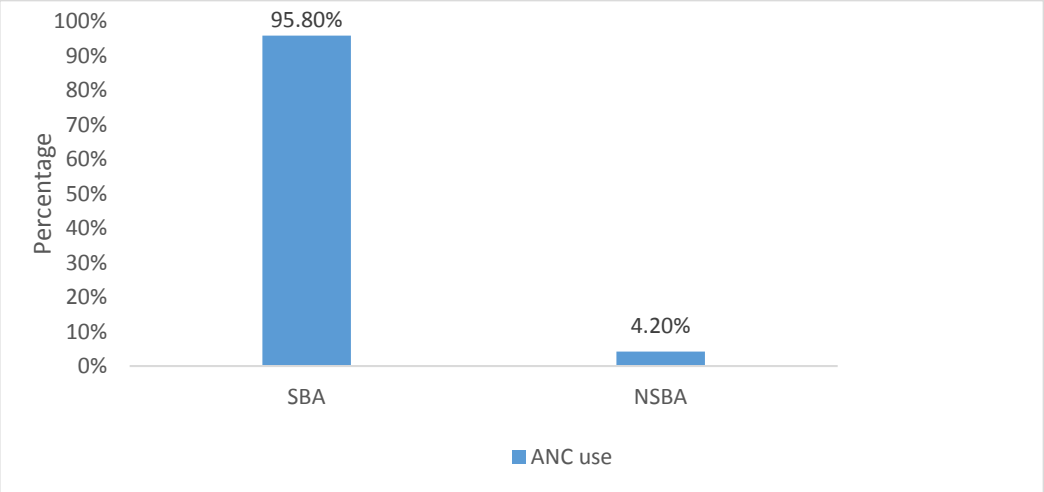


Figure 4.10 Percentage Distribution of Provider of Antenatal Care

11. Children numbers

Regarding the number of children that women had, 40.3% of mothers had one child. Respondents who had two and more children totaled 29.30%. The proportion of mothers who had three or more children comprised 30.4% (see Figure 4.11).

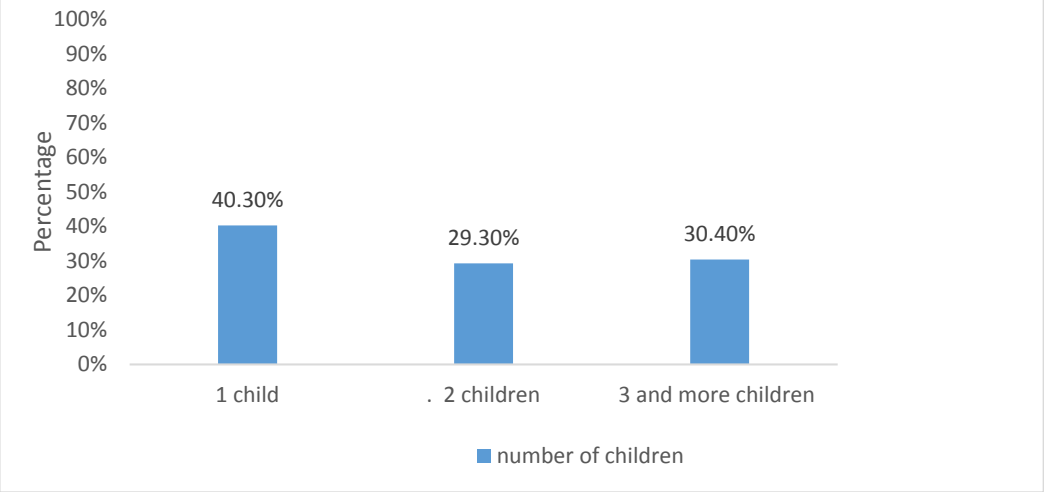


Figure 4.11 Percentage Distribution of Children Numbers

12. Complications of delivery

Among 191 respondents, only 11% experienced complications during the delivery of the last child. The majority of them (89%) did not have such experience (see Figure 4.12).

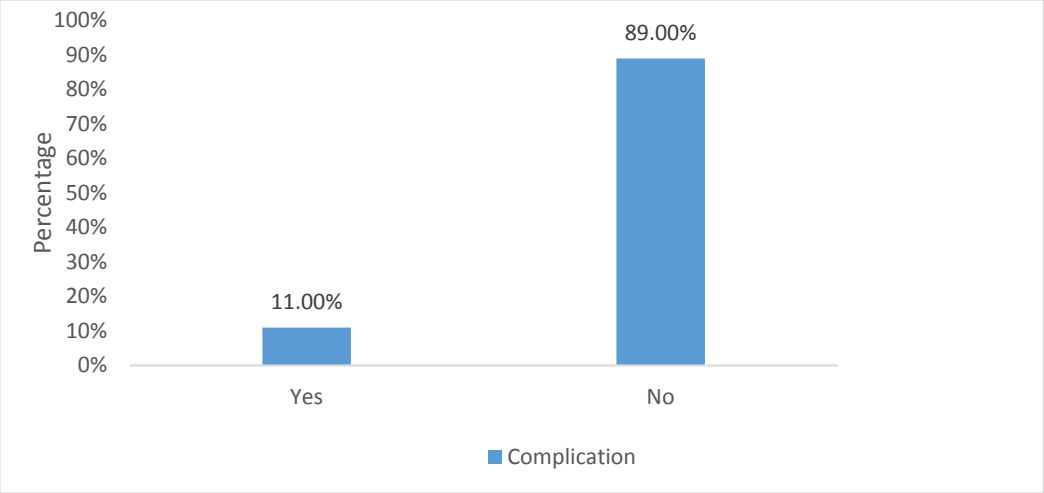


Figure 4.12 Percentage Distribution of Complications of Delivery

Economic Accessibility Factors

The result of economic accessibility factors included variables on mother's occupation, husband's occupation and ability to pay.

13. Mother's occupation

Concerning the mother's occupation, 73.3% of the respondents were unemployed or held nonpermanent job and only 26.7% were employed (see Figure 4.13).

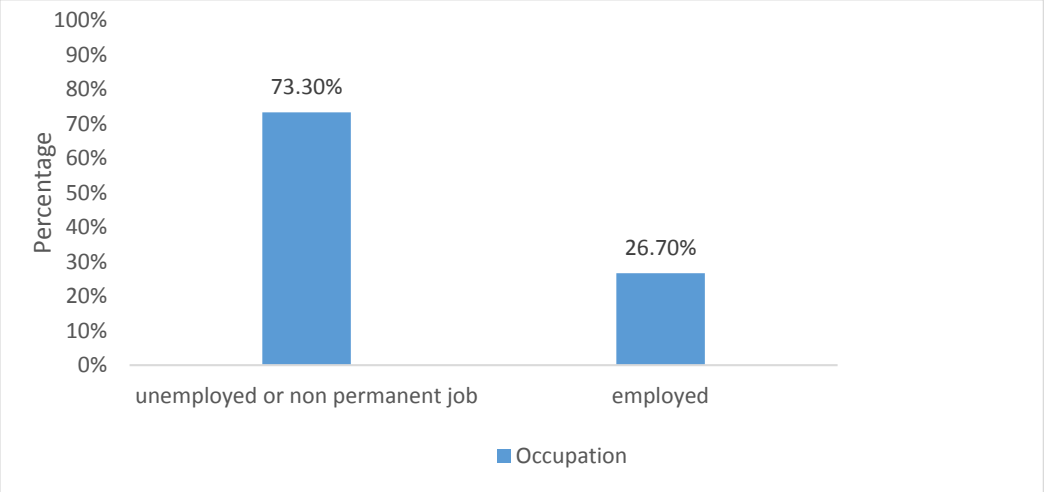


Figure 4.13 Percentage Distribution of Occupation of Mothers

14. Husband's occupation

Regarding occupational status of husbands, nearly one third (29.3%) were unemployed or engaged in nonpermanent jobs and two thirds of the respondents (70.7%) were employed (see Figure 4.14).

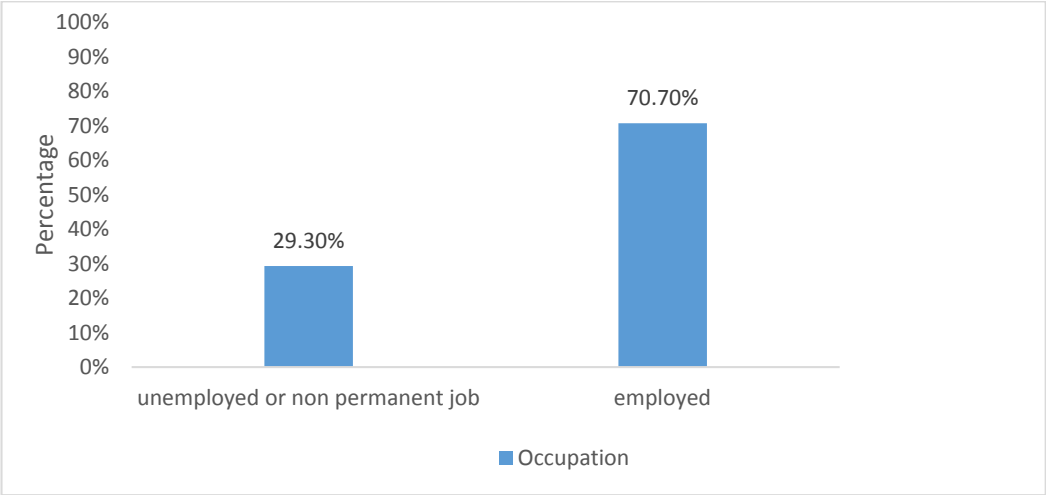


Figure 4.14 Percentage Distribution of Occupation of Husbands

15. Family income

With respect to monthly family income, slightly more than one half of the subjects had family income between 80,000 and 150,000 kyat followed by those having less than 80,000 kyats (26.7 %) and more than 150,000 kyat (21.5%) (see Figure 4.15).

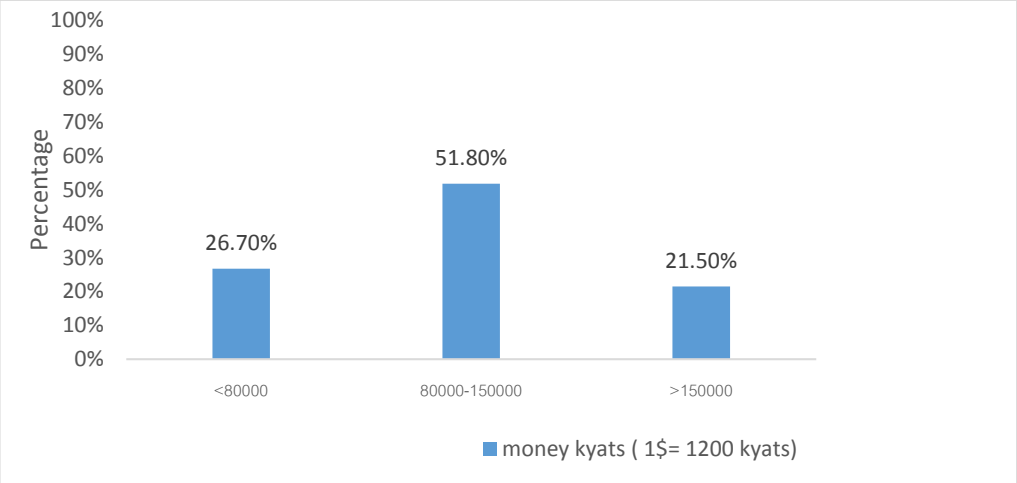


Figure 4.15 Percentage Distribution of Family Income

Physical Accessibility Factors

The following bar chart shows the percentage of results of variables on distance from the health facility and transport to the health facility according to the health services in the selected rural area.

16. Travel time to the nearest health facility

Regarding distance to the nearest health facility, the majority of respondent (79.6%) lived in villages located within 30 minutes walking distance from the sub-center. Only 20.4% spent more than 30 minutes walking when they wanted to go to the nearest health center (see Figure 4.16). This reflected that health facility or health center was near the village in this study area.

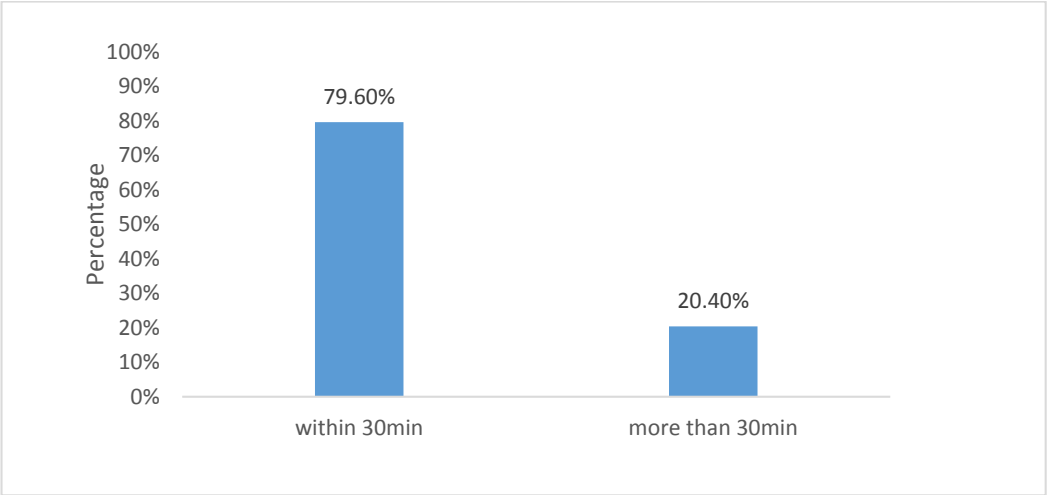


Figure 4.16 Percentage Distribution of Travel Time to the Nearest Health Facility

17. Type of transport to health facility

Accessibility to health facility is shown in Figure 4.17. The majority of the respondents (77.5%) residing in villages could walk to the sub-center. Only 22.5% needed vehicles to go to the health facility.

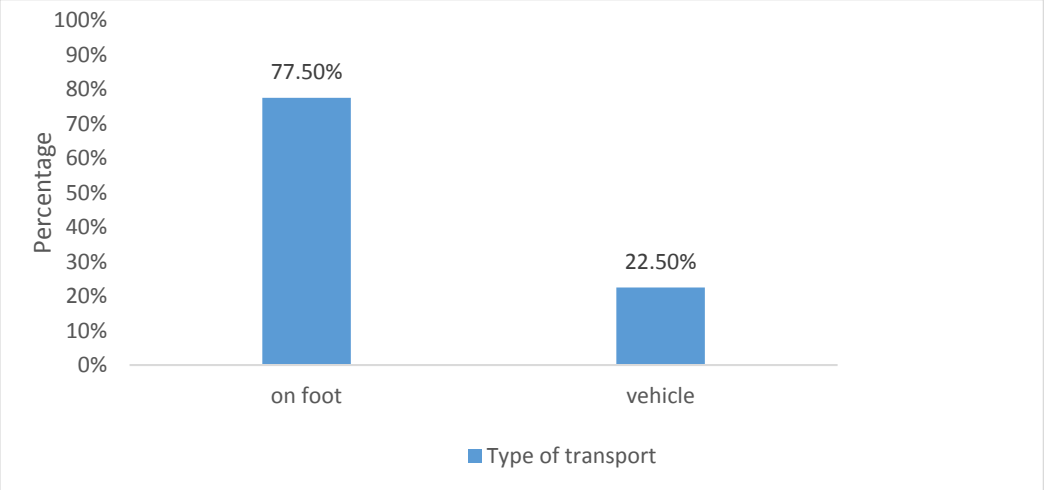


Figure 4.17 Percentage Distribution of Type of Transport to Health Facility

Using SBA in Selected Area

Figure 4.18 presents the level of using SBAs at delivery in the study area. Slightly more than three fourths of the respondent (76.4 %) used SBAs at delivery. However, almost one fourth (23.6%) did not use SBAs at delivery.

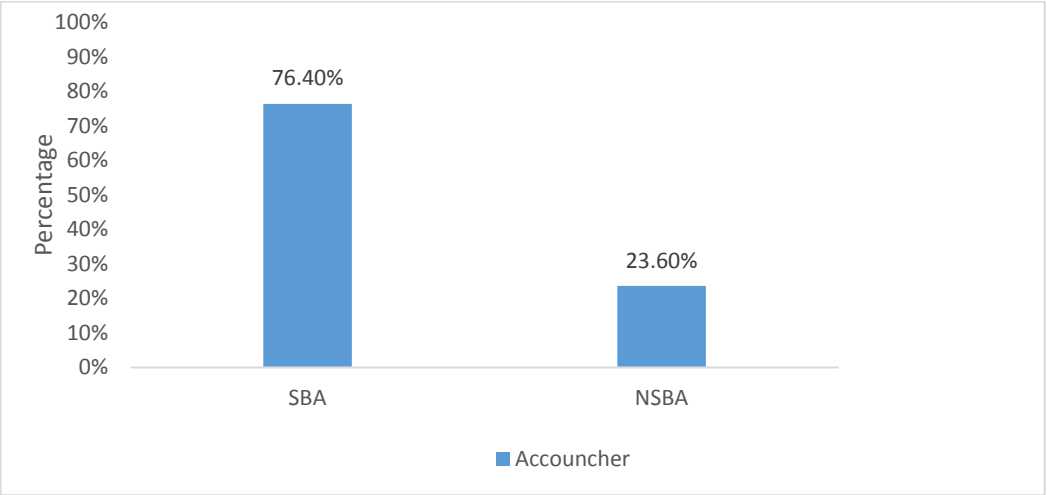


Figure 4.18 Percentage Distribution of Accouncher of Last Child

4.2 Association Between Independent Variables and Dependent Variable of Use of SBA

Association Between Sociocultural Factors and Use of SBA

Because a small proportion of other groups of marital status representing single/separated/divorced/widowed, caused the expected percentage of mothers using SBAs to be less than 5%. Thus, this variable was excluded from bivariate analysis.

Results in Table 4.1 revealed an association between independent variables consisting of maternal age, race, religion, family type, family number, mother's education, husband's education and decision maker, and dependent variables comprised use of SBAs. All variables were based partly on the analytical framework.

Variables concerning sociocultural factors were not significantly associated with using SBAs at delivery. Although non-significant, it is important to note that younger mothers tended to use SBAs at delivery more than older mothers did. Burmese and other races had nearly the same percentage of using SBAs accounting for slightly more than three fourths of all respondents.

Among women with different religions, Buddhist women had a tendency to use SBAs more than non-Buddhist women did. With respect to family composition,

percentage of using SBAs between women from nuclear and extended families was hardly different.

Although a significant association between education of mother and SBA was not shown, women with middle school education used SBAs more than women with high school and higher as well as those women with lower education. Women with husbands who completed high school and above had a tendency to use SBAs more than those whose husbands completed middle school and lower education.

With regard to decision maker, women's decision or self-decision had higher percentage of using SBAs than those whose decision were not made by themselves.

Table 4.1 Association Between Sociocultural Factors and Use of SBA

Characteristics	**Number**		**Percent**		**Chi-square**	**P value**
	SBA	**NSBA**	**SBA**	**NSBA**		
Sociocultural factors						
V1 Maternal age, +++					2.117	.367
1. less than 25yr	48	12	80.0%	20.0%		
2. 25 to 34yr	73	21	77.7%	22.3%		
3. more than 35yr	25	12	67.6%	32.4%		
V2 Race, +++					.000	.997
1. Myanmar	133	41	76.4%	23.6%		
2. Other	13	4	76.5%	23.5%		

Table 4.1 Association Between Sociocultural Factors and Use of SBA (cont.)

Characteristics	Number		Percent		Chi-square	P value
	SBA	NSBA	SBA	NSBA		
V3 Religion, +++					3.241	.072
1. Buddhist	142	41	77.6%	22.4%		
2. Other	4	4	50.0%	50.0%		
V4 Family types, +					.008	.927
1. nuclear	93	29	76.2%	23.8%		
2. extended	53	16	76.8%	23.2%		
V5 Family members +					.122	.727
1. ≤ 5	95	28	77.2%	22.8%		
2. ≥ 5	51	17	75%	25%		
V6 Mother's education, +++					2.051	.359
1. primary school and lower	65	25	72.2%	27.8%		
2. middle school	43	9	82.7%	17.3%		
3. high school and above	38	11	77.6%	22.4%		
V7 Husband's education, ++					.418	.811
1. primary school and lower	43	14	75.4%	24.6%		
2. middle school	50	17	74.6%	25.4%		
3. high school and above	53	14	79.1%	20.9%		
V8 Decision maker, ++					.707	.400
1. self	85	23	78.7%	21.3%		
2. others	61	22	73.5%	26.5%		

Association Between Perceived Needs/Benefits Factors and Use of SBA.

Regarding factors concerning perceived needs/benefits, the only significant associated factor was between provider of ANC for the last pregnancy and using SBAs while the rest of variables were not.

With respect to type of provider of ANC for the last pregnancy, pregnant women who received ANC care from SBAs were more likely to deliver with SBAs. That is, 79.2% of women whose ANC care providers were SBAs used SBAs at delivery compared with only 12.5% of women who received ANC care from non-SBAs used SBAs at the time of delivery. It could be noted that a strongly statistically significant association was found between ANC provider and use of SBAs during the delivery of the last child.

Among women with different numbers of children, women with one child were more likely to use SBAs at delivery than women with more than one child. A total of 83.1% of mothers who had one child used SBAs at delivery more than mothers who had more than one child. Only 78.6% of women with two children used SBAs and 65.5% of women with more than two children used SBAs at the last delivery.

Mothers who had complications during the delivery of the last child had a greater tendency to use SBAs than those without complications. A total of 85.7% of women with complications at delivery used SBAs compared with 75.3% without complications that used SBAs.

Table 4.2Association Between Perceived Needs/Benefits Factors and Use of SBA

Characteristics	**Number**		**Percent**		**Chi-square**	**P value**
	SBA	**NSBA**	**SBA**	**NSBA**		
Perceived needs/benefits factors						
V9. Provider of antenatal care, ++					18.955	.000
1. SBA	145	38	79.2%	20.8%		
2. NSBA	1	7	12.5%	87.5%		
V10 Children numbers, +++					5.890	.053
1. 1 child	64	13	83.1%	16.9%		
2. 2 children	44	12	78.6%	21.4%		
3. 3 and more children	38	20	65.5%	34.5%		
V11.Complications of delivery, +					1.127	.288
1. Yes	18	3	85.7%	14.3%		
2. No	128	42	75.3%	24.7%		

Association Between Economic Accessibility Factors and Use of SBA

According to economic accessibility, variables in this factor included mother's occupation, husband's occupation and ability to pay, and showed no significant association with use of SBAs during the delivery of the last child. Percentage of mothers using SBAs is described below

Variables concerning mother's occupation showed that 75.7% of the respondents unemployed or engaged in nonpermanent job used SBAs during the delivery of the last child less than employed mothers. That is, 78.4% of the former mothers used SBAs while 75.7% of later mothers did.

With respect to economic accessibility, family income was not significantly associated with using SBAs at delivery; even the poor tended to use SBAs at delivery more than the rich. Among the lowest income group of women,

80.4% used SBAs at delivery compared with 76.8% among the middle income group and 70.7% among the highest income group.

Table 4.3 Association Between Economic Accessibility Factors and Use of SBA

Characteristics	**Number**		**Percent**		**Chi-square**	**P value**
	SBA	**NSBA**	**SBA**	**NSBA**		
Economic accessibility factors						
V12. Mother's occupation, +					.153	.695
1. unemployed or non permanent job	106	34	75.7%	24.3%		
2. employed	40	11	78.4%	21.6%		
V13. Husband's Occupation, ++						
1. unemployed or non permanent job	39	17	69.6%	30.4%	2.032	.154
2. employed	107	28	79.3%	20.7%		
V14 Family income, +++					1.190	.552
1. <80000 kyats	41	10	80.4%	19.6%		
2. 80000-150000 kyats	76	23	76.8%	23.2%		
3. >150000 kyats	29	12	70.7%	29.3%		

(1$= 1200 kyats)

Association Between Physical Accessibility Factors and Use of SBA

Regarding physical accessibility, time to reach nearest health facility and type of transportation were not significantly associated with using SBAs at delivery. Notably, mothers who lived near a health facility tended to use SBAs at delivery more than those who lived far away.

In addition, women who could walk to a health facility had a higher tendency to use SBAs than those who needed a vehicle to go to a health facility. In

all, 78.4% of women who reported they could walk to a health facility used SBAs at delivery compared with 69.8% of those who used a vehicle to get to a health facility.

Table 4.4 Association Between Physical Accessibility Factors and Use of SBA

Characteristics	**Number**		**Percent**		**Chi-square**	**P value**
	SBA	**NSBA**	**SBA**	**NSBA**		
Physical accessibility factors						
V15 Travel time to the nearest health facility, ++					2.599	.107
1. within 30min	120	32	78.9%	21.1%		
2. more than 30min	26	13	66.7%	33.3%		
V16 Type of transport to health facility, ++					1.372	.241
1. on foot	116	32	78.4%	21.6%		
2. vehicle	30	13	69.8%	30.2%		

CHAPTER V
DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter contains the discussion, conclusion and recommendations based on the study findings.

5.1 Discussion and Conclusion

The aim of the study was to determine the percentage of mothers using the SBAs at delivery in a selected rural area and the associations between factors concerning sociocultural, perceived needs/benefits, economic accessibility and physical accessibility and use of SBAs at delivery in rural areas of Thanlyin Township.

The finding showed that the level of using SBAs at delivery in the selected areas was higher than the national average. That is, 76.4% of women used SBAs at delivery compared with 63.0% on average using SBAs in rural areas at the country level. Although the SBA rate was higher than the average use in rural areas at the national level and higher than that of the average global level at the end of MDGs (Sein, 2012; UN, 2015), this might not reflect the representative coverage of SBAs in rural Thanlyin Township because the sampling frame was drawn from the immunization registration list. Mothers who came to the sub-center for their child's immunization were those women who could potentially easily access health care services and were familiar with the midwives. In addition, the majority of the respondents of this study, accounting for slightly more than three fourths of all subjects could walk to the sub-health center, indicating that they lived nearby the sub-center and found it easy to obtain services at the sub-health center.

Even though coverage of SBAs among women who could potentially easily access SBAs was higher when compared with other rural areas in Myanmar, the percentage using SBAs was still lower than that of the average use of SBAs in

urban areas, where 89.6% of pregnant women could use SBAs at delivery in 2010 and still far from reaching the global target of the SBA rate (WHO, 2014). Thus, the level of using SBAs in the present study reflected the need to develop strategies to encourage all mothers to delivery with assistance from skilled personnel to achieve the SDG3, i.e., that all births are assisted by skilled persons that could reduce the maternal mortality ratio to less than 70 per 100 000 live births by 2030 (UN, 2015).

The second aim of this study emphasized the association between factors on sociocultural, perceived needs/benefits, economic accessibility and physical accessibility and use SBA at delivery, was based partly on the variables used in explaining the use of SBA from the analytical framework of Gybrysch and Cambell. Using the chi-square test revealed that only type of provider at ANC for the last child was significantly associated with using SBAs at delivery.

According to the finding of this study, the women who received ANC from skilled persons were more likely to use SBAs at delivery. That is, 79.2% used SBAs at delivery compared with 20.8% who did not. This may reflect that ANC process helps in increasing familiarity between the health persons and mother, reducing delays in seeking their services and creating more positive attitudes to use skilled health personnel (Adjiwanou & LeGrand, 2013).

On the other hand, even though some women (20.8%) received ANC from skilled persons, they still preferred to obtain services from other providers who were not skilled personnel. This may be due to the community's acceptance of TBAs as found in one study of Myanmar (Oo et al., 2012).

Apart from factors on perceived needs, the study did not find other factors that showed significant associations as expected from the analytical framework. However, sociocultural factors such as maternal age and education of mothers tended to play a role in explaining the use of SBAs at delivery. That is, younger mothers tended to use SBAs at delivery more than mothers at older age did. In addition, mothers with higher education levels also tended to use skilled personnel at delivery more than those with lower education levels. With respect to factors on physical accessibility, mothers living near a health facility tended to use SBAs at delivery more than those living far away.

Factors concerning economic accessibility of this study showed a contradictory result with previous studies. The poor tended to use SBA at delivery more than the rich, and such result needs to be explored in-depth in the future by controlling other variables. In this area, the SBA coverage rate did not reach the UN target but was over the national coverage rate. In Myanmar, every health facility provides the financial cost from the maternal side and not the government side. Therefore, this constitutes one of the economic barriers to reduce the coverage rate of SBAs and continue use of TBAs or non SBAs.

Regarding physical accessibility, mothers who lived within 30 min by foot to a health facility did not use SBAs at about 20%. This result showed requirements or weak points from the supply side such as the skills of the health personnel or health facility, for example, infrastructure.

As this study emphasized the demand side only, the percent of SBA uses was high, and also provider of ANC was significantly associated with using SBAs at delivery. However, the maternal mortality rate was high in this study area, so a supply side study also needs to be conducted because it could improve the quality of SBAs and the use of SBAs at delivery. These factors included quality of care and health personnel as well as adequacy of SBA and availability of health facilities. They could play a role to increase use of SBAs and ensure that pregnant women could receive proper care and good management during pregnancy, childbirth and the postpartum period.

5.2 Recommendations

The finding from the study provided suggestions as described below.

- Although the subjects of the current study were women with potentially easy access to SBAs, the level of using SBAs at delivery was still far below the SDG target. Program intervention is needed to encourage all pregnant women to use SBAs to achieve universal coverage. This may be achieved with existing projects such as a global alliance for vaccine and immunization project that covers all rural areas of Myanmar. In addition, it needs to include women who face difficulties in accessing to health care services and subjects that represent rural Myanmar for future research.

- Only type or care provider at ANC showed a significant association with the use of SBAs. That is, skilled personnel played a role in continuing care at delivery. Future research on the need for promoting the role of skilled personnel throughout the period of pregnancy to postpartum needs to be replicated with representative data.
- With regard to the insignificant associations of almost all variables that included into the analysis, the study included only women with potentially easy access to SBAs; therefore, future studies need to include both women with and without easy access as the representative sample.
- As the study focused on only one selected rural area, the study scale was quite small. Thus, a future study needs to scale up the area and include both rural and urban areas to explore the disparity among geographical areas. In addition, multivariate analysis can be employed to control confounding factors.
- Because this study's focus was only on the demand side, further studies needs to include both demand and supply sides.

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APPENDIX

Questionnaires on Utilization of Skilled Birth Attendants of Infants' Mothers in Thanlyin Township during Antenatal, Delivery and Postnatal Period

ID ☐☐☐

Demographic Characteristics

1. Sub-center / Village name ---------- ☐
2. How old are you? (completed age in years) ☐☐
3. How old is your last child? (in months) ☐☐
4. What is your race? ---------- ☐
5. What is your religion? ☐
   1.Buddhist
   2.Islam
   3.Hindu
   4.Christian
   5.Others (specify)----------
6. What is your marital status? ☐
   1.Single
   2.Married
   3.Divorced
   4.Separated
   5.Widow
7. What is the type of your family? ☐
   1.Nuclear
   2.Three generation
   3.Extended
   4.Others (specify)----------
8. How many members in your family? ☐☐

Socio-Economic Characteristics

9. Education level of the respondent ☐

1.Illiterate
2.Read and Write
3.Primary
4.Middle
5. High
6. College / University student
7. Graduate

10. Education level of husband ☐

1.Illiterate
2.Read and Write
3.Primary
4.Middle
5.High
6.College / University student
7.Graduate

11. What is your occupation? ☐

1.Dependent
2.Manual worker
3.Skilled worker
4.Farmer
5.Government employee
6.Company employee
7.Own business
8.Others (specify)----------

12. What is the occupation of your husband? ☐

1.Dependent
2.Manual worker
3.Skilled worker
4.Farmer
5.Government employee
6.Company employee
7.Own business

8.Others (specify)----------

13. What is your monthly family income? (in Kyats) ☐☐☐☐☐☐☐

14. Do you own the followings?

	Yes	No
1.TV/Video/DVD	☐	☐
2.Vehicles	☐	☐
3.Land /House/Farm	☐	☐
4.Others (Specify) ----------		

Obstetric History

15. How many children do you have? ☐☐

(If there is only one child, skip to question no. 25)

16. Was there any complication during the delivery of your second last child?

	Yes	No
17. If there was complication, specify	☐	☐
1.----------	☐	
2.----------		
3.----------		
4.----------		
18. Was your second last child born alive or dead?	☐	☐

19. What was the birth weight of your second last child? ☐☐

20. Where did you deliver your second last child? ☐

1. Home
2. Sub-center
3. Rural health center
4. Hospital
5. Others (Specify)----------

21. Who attended the delivery of your second last child? ☐

1. Traditional Birth Attendant
2. Auxiliary Midwife

3. Midwife
4. Lady Health Visitor
5. Doctor
6. Others (Specify)----------

22. Type of delivery of your second last child ☐

1. Normal Vaginal Delivery
2. Assisted Vaginal Delivery
3. LSCS

23. Did you get postnatal care after the delivery of your second last child?

Yes ☐ No ☐

24. From whom did you get the postnatal care after the delivery of your second last child? ☐

1. Traditional Birth Attendant
2. Auxiliary Midwife
3. Midwife
4. Lady Health Visitor
5. Doctor
6. Others (Specify)----------

Service Utilization

25. Is there any health care service in or near your village? Yes ☐ No ☐

26. How far is the nearest health center from your house on foot? ☐

1.Up to ½ hour
2.Between ½ and 1 hour
3.Between 1 and 1 ½ hour
4.> 1 ½ hour

27. How can you get to the nearest health center? ☐

1.On foot

2.By trishaw

3.By cart

4.By Trawlergi / motorcycle / car

28. Did you take antenatal care service during your last pregnancy? Yes ☐ No ☐
(If yes, skip to question no.30)

29. If no, why didn't you take antenatal care?

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30. When did you start taking antenatal care? (in months) ☐

31. How many times of antenatal visit did you take during last pregnancy? ☐☐

32. Where did you take antenatal visit during your last pregnancy? ☐

1.Home

2.Sub-center

3.Rural health center

4.Hospital

5.Others (specify)----------

33. Why did you take there? ----------

34. By whom have you taken antenatal care? ☐

1.Traditional Birth Attendant

2.Auxiliary Midwife

3.Midwife

4.Lady Health Visitor

5.Doctor

6.Others (specify) ----------

35. Who decided to take antenatal care with that person? ☐

1. Self

2. Husband

3. Parents

4. In-laws

5. Relatives
6. Friends
7. Others (Specify)----------

36. Did you take antenatal care with that person throughout your pregnancy?

Yes ☐ No ☐

37. If no, why did you decide to change?

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38. Where did you deliver your last child? ☐

1. Home
2.Sub-center
3.Rural health center
4.Hospital
5.Others (specify)----------

39. Why did you deliver there?

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40. Who attended the delivery of your last child? ☐

1.Traditional Birth Attendant
2.Auxiliary Midwife
3.Midwife
4.Lady Health Visitor
5.Doctor
6.Others (specify) ----------

41. Who decided to choose that person? ☐

1.Self
2.Parents
3.Siblings
4.In-laws
5.Other relatives
6.Health worker
7.Others (specify)

42. Was there any complication during the delivery of your last child? Yes ☐ No ☐

(If no, skip to question no.44)

43. If yes, please specify ☐

1.----------

2.----------

3.----------

4.----------

44. Type of delivery of your last child? ☐

1.Normal Vaginal Delivery

2.Assisted Vaginal Delivery

3.LSCS

45. Did you get postnatal care after the delivery of your last child? Yes ☐ No ☐

46. If yes, how many times did you get postnatal care? ☐☐

47. If no, why didn't you get postnatal care?

---

48. From whom did you get postnatal care after the delivery of your last child?

1.Traditional Birth Attendant ☐

2.Auxiliary Midwife

3.Midwife

4.Lady Health Visitor

5.Doctor

6.Others (Specify)----------

49. Why did you decide to take postnatal care from that person?

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50. Who decided to take postnatal care from that person?

1.Self ☐

2.Husband

3.Parents

4.In-laws

5.Relatives

6.Friends

7.Others (Specify)----------

Name of interviewer----------

Signature----------

BIOGRAPHY

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DATE OF BIRTH	11th April, 1977
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EDUCATION	Bachelor of Medicine and Bachelor of Surgery (M.B,B.S) University of Medicine 2, Yangon, Myanmar 2004 Master of Arts (Population and Reproductive Health Research) Institute for Population and Social Research Mahidol University Thailand 2017
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