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A STUDY ON SOCIOECONOMIC FACTORS INFLUENCING

UNDER-FIVE MORTALITY IN

YANGON REGION

(CASE STUDY IN HLAING THAR YAR TOWNSHIP)

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This is to certify that the thesis entitled "**A STUDY ON SOCIOECONOMIC FACTORS INFLUENCING UNDER-FIVE MORTALITY IN YANGON REGION (CASE STUDY IN HLAING THAR YAR TOWNSHIP)",** submitted as a partial fulfillment towards the requirement for the degree of Master of Development Studies has been accepted by the Board of Examiners.

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ABSTRACT

Under-five mortality is one of the most important indicators of the socioeconomic and health status of a community. This study was conducted to expose the situation of under-five mortality in Myanmar and analyze the socio-economic factors influencing on under-five mortality in Hlaing Thar Yar Township. Primary data were collected by using stratified two-stage sampling. Data was analyzed by using descriptive statistics and regression analysis. The findings show that parents with high level of education reduce under-five mortality. If the ages of mothers are between 15 and 34 years, under-five mortality will be lower. The birth order in 2nd and 3rd rank child reduce under-five mortality. Moreover, child immunization, breastfeeding practice, antenatal care and accessing toilet facility decrease under-five mortality. The government should provide the comprehensive reproductive health and child survival programs such as taking antenatal care, child immunization, breastfeeding practice, improving better sanitation.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

AMWs	=	Auxiliary Midwives
ANC	=	Antenatal Care
CBNBC	=	Community Based Newborn Care
CDSR	=	Child Death Surveillance and Response in Myanmar
CHWs	=	Community Health Workers
CLMV	=	Cambodia, Laos, Myanmar and Vietnam
CNS	=	Central Nervous System
IMR	=	Infant Mortality Rate
LHVs	=	Lady Health Visitors
MDHS	=	Myanmar Demographic and Health Survey
MOHS	=	Ministry of Health and Sports
PHS	=	Public Health Supervisor I
PMCT	=	Prevention of Mother to Child HIV/AIDS Transmission
RHC	=	Rural Health Center
U5MR	=	Under-five Mortality Rate
UHC	=	Universal Health Coverage
UNICEF	=	The United Nations Children's Fund or The United Nations International Children's Energy Funds
WCHD	=	Women and Child Health Development

CHAPTER (I)
INTRODUCTION

1.1   Rationale of the Study

Mortality is one of the basic components of population change and the related data are essential for demographic studies and public health administration. Mortality is a continuous force of erosion, which tends to reduce populations. Mortality is also an excellent indicator of the economic, social status and well-being of the people of the region or to be precise, a pointer of development. Mortality levels define fitness, survival and growth of a population (Peer Javaid Ahmad, Sushma Jain, Gowher Ahmad Wani, Syed Basharat Ahmad Shah, 2018). The key global indicator of child health, under-five mortality rate (U5MR), the probability of dying before 5 years of age (per 1000 live births). Previously targeted in the fourth Millennium Development Goal (MDG-4), U5MR is now in the third Sustainable Development Goal (SDG-3), aimed at reducing under-five mortality to at least as low as 25 deaths per 1000 live births in all countries by 2030. And then the under-five mortality is a leading indicator of child health and overall development of a nation, reflecting the social, economic and environmental conditions in which healthcare of the children. Child health is determined by many factors including parental education, access to health services and family income (Solomon Gebretsadik, Emmanuel Gabreyohannes, 2016).

Although the under-five mortality rate which has declined significantly over time, it remains high in many developing countries and varies widely across countries. Higher under-five mortality rate implies that the poor health of the population and is indirectly important at both micro and macro levels. Besides poor health causes a lower quality of human resources and productivity. Efforts are being made and strategies are being implemented across all developing countries to reduce infant and child mortality rate to an acceptable level (Aye, 2019).

Bilateral donors such as the United Kingdom's Department for International Development performed the improvement of the health of poor people as their top priority in the health sector. World Health Organization and the World Bank identifies

low socio-economic status that may cause high child mortality. Poor children are more likely to get disease through inadequate water and sanitation, indoor air pollution, poor housing conditions, and high exposure to disease vectors. They are also more likely to be infected diseases because they are undernourished; to have diets deficient in one or more essential micronutrients (e.g. vitamin A, iron); to have a low birth weight because of poor maternal nutrition, infections during pregnancy, and short birth intervals; and to have recurrent disease episodes. Low income is the root cause of the deprivation of poverty. Low income is associated with lower levels of education, and lower education is associated with mortality (Cornelius Nattey, Honorati Masanja, Kerstin Klipstein-Grobusch, January 2013).

In addition to socioeconomic factors, demographic and environmental factors are important for under-five mortality and are essential for good health. Environmental risk factors in low income countries account for about one-fifth of the total burden of disease. According to the WHO report, about 3% of under-five deaths are due to environmental risk factors and about 90% of all child are due to health. According to Mosley and Chen (1984), child mortality can be achieved by a combination of socioeconomic, demographic, environmental and health seeking behavioral factors (Solomon Gebretsadik, Emmanuel Gabreyohannes, 2016).

The study of under-five mortality is one of the most important studies in developing including Myanmar. There are two reasons behind this (i) high infant and child mortality and (ii) its relationship with fertility. Therefore the under-five mortality is an index reflecting environmental, social, economic, health care service and delivery situation on the one hand and maternal as well as family and community norms and practices on the other (Aye, 2019).

According to the 2014 national censuses data, under-five mortality rate was 71.8 deaths per 1,000 live-births and is one of the highest rate in Southeast Asia. Hence, Myanmar still faced problems on reducing infant and child mortality rate. Moreover, it is important to investigate of the factors of under-five mortality. This is because appropriate health policies and plans needed to be put in place to reduce under-five mortality. Therefore, this thesis aims to examine the socio-economic factors influencing on under-five mortality in study area.

1.2 Objectives of the Study

This study intends to expose the situation of under-five mortality in Myanmar and to analyze the socio-economic factors influencing on under-five mortality in study area.

1.3 Method of Study

The thesis used the descriptive method based on primary and secondary. The primary data were collected from 241 households in Hlaing Thayar Township by using stratified two stage sampling. This study employed the secondary data from Statistical Year Books published by Central Statistical Organization, Department of Health, United Nations Children's Fund (UNICEF), 2014 census report of the Department of population which published in October by 2017 and General Administration Department.

1.4 Scope and Limitations of the Study

This study emphasized only on related to the socio-economic factors influencing on under-five mortality in study area. The study was focused on 241 respondents who ever married within child bearing age 15-49 and 2 of 20 wards and 2 of 9 village tracts were selected in the Hlaing Thar Yar Township by using stratified two-stage sampling.

1.5 Organization of the Study

The study involves five chapters. Chapter I is the introduction and it will cover rational, objectives, the method, and the scope and limitation. Literature review on the factors which relate to under-five mortality are presented in Chapter II. Chapter III described current health system in Myanmar and current situation of health care for child under-five. The analysis on survey data about the under-five mortality and socio-economic factors in Chapter IV. The findings and suggestions are expressed in Chapter V.

CHAPTER (II)
LITERATURE REVIEW

2.1 Definition of Child Mortality Rate

Child mortality is a key indicator for the implementation of child survival programs, not only for child health and nutrition but also for social and economic development. The most common used definition of child mortality is the number of child deaths under the age of 5 per 1000 live births.

The use of child mortality as a health indicator depends on the population using it. In developing country, child mortality rates may play an important role as an indicator of broader health and of environmental and social issues such as malnutrition, water, sanitation, poverty and access to health system.

Child mortality rate are included the following mortality rate:

Infant Mortality Rate (IMR) – the number of infants who die in a given year before reaching 1 year of age per 1,000 live births.

Under-five Mortality Rate (U5MR) – the probability that a new born baby will die before reaching age 5. The probability is expressed as a rate per 1,000.

Child Mortality Rate – the probability of dying between the ages of 1 and 5. The probability is expressed as a rate per 1,000.

The infant mortality, under-five mortality and child mortality rates measure the survival of children. It impacts not only the social, economic and environment but also children's lives. They measure not only health services (both preventive and curative) but more broadly are an index of the situation into which children are born.

Mortality rates at early ages have a significant impact on life expectancy at birth, a key indicator of health. In fact, infant and under-five mortality are seen as key health indicators in their own right. As a result, all of the developing countries are working to reduce mortality rates by formulating and implementing their own strategies and plans to receive assistances and collaborating with UN agencies, international organizations and NGOs.

2.2 The Theories Relate to Under-five Mortality

In less developed countries, there are five macro-social change theories that explain the differences in the infant and child mortality: modernization theory, dependency/world-systems theory, gender stratification theory, economic disarticulation theory, and developmental state theory.

Modernization theory – it would claim that industrialization could reduce child mortality due to increase economic output and subsequent improvements in education, housing and health care (R Scott Frey, Carolyn Field, 2000). According to Frey and Cui (2016), industrialization and economic growth can lead to a higher standard of living and advanced medical technology. In turn, it can lead to a lower mortality rate (Mgwadu, June 2019).

Dependency/world-systems theory - it would argue that economic dependence increases child mortality and reduces the overall human well-being as the economic the core countries generated economic surplus production in the dependent countries (R Scott Frey, Carolyn Field, 2000).

Gender stratification theory - it would argue that child mortality decreases as the status of women increases (R Scott Frey, Carolyn Field, 2000). According to Wang (2014), many scholars have supported this theory that promoting the women's empowerment, providing them with education and other means can improve women's access socioeconomic resources, knowledge and skills on how to provide their children with adequate nutrition and care, resulting in reduced child deaths (Mgwadu, June 2019).

Developmental state theory - According to Frey and Field (2000), development state theory claims that it is possible for developed states to reduce child mortality by more easily promoting human well-being. Developed states can share the wealth of their development with their society. This sharing will improve the income of people in that society and their health of the children (Mgwadu, June 2019).

2.3 Factors Influencing on Under-five Mortality Rate

Both the presence of diseases and low nutritional status and bio-demographic risk factors such as birth weight, birth interval and birth order, food intake (including breastfeeding) and child care practice can influence child mortality. Another factors influenced on under-five mortality are socioeconomic factors such as family economic status, places of residence, parental education and parental occupation

(Research Study on the Determinants of Infant and Child Morbidity and Mortality in Myanmar, 2005)

2.3.1 Socio-economic Factors

(i)   Parents' Education

Broadly speaking, there are two reasons to expect parents' education to have an impact on the health and survival of their children. First, it increases their potential for income by increasing their professional status. Second, it gives them knowledge and attitudes about proper child care and health protection and management. Caldwell's (1979) Ibadan study is one of the most influential studies on child mortality in developing countries (Ahonsi, 1992)

Controlling the professional status of fathers and mothers and the type of residential environment, there is still a sharp decline in child mortality with maternal education, and the result is not changed even after the use of family planning and father education has been incorporated. Of these five factors, children of secondary schooled women have an average of only 50 per cent of the chance of dying for children of non-schooled mothers (Ahonsi, 1992).

The key role of maternal education in reducing child mortality is not related to the standard of living of the household. Regarding the mother's schooling activities suggested three main mechanisms for improving the survival of the child. First, education is eager to adopt modern child care practices as it reduces the number of deaths associated with illness. Second, it becomes the mothers to be more proficient in the existing medical facilities by making better use of the services and better treatment for her children. Third, it raises the status of woman within the family, increases her control over household resources and leads to giving their children more resources for their own good regardless of gender (Ahonsi, 1992).

The negative impact of parental education on child mortality is well established and widely accepted. Generally maternal education performs as an independent variable of infant and child mortality and is sometimes seen as a proxy for other social variables. Maternal education has impact on child mortality by various pathways: promoted socioeconomic status, increased choice of children's health, including interactions with medical staff, cleanliness, and emphasis on child quality in terms of fewer children, and increased investment in food and capital (Research Study on the Determinants of Infant and Child Morbidity and Mortality in Myanmar, 2005).

(ii)   Employment Status of Parents

These are variables that directly determine the economic position of the household and therefore influence, among other factors, the quality of its children's nutrient intake, their home living conditions and their use of modern medical services, all of which may be expected to affect their health and survival. Caldwell's 1979 Ibadan study carried out a comparable effect of mother's white-collar occupational status could be lower child mortality as secondary schooling although it has a minimum of no independent effect because more than 93 percent of such women had secondary education. On the other hand, a significant impact of husband's white-collar occupational status was realized in that for women married to men in white-collar occupations living in New Ibadan. The study found that white-collar workplace situation had a significant impact on child mortality. Sulaiman (1987) showed a detailed analysis of the effects of this set of variables in Southern Nigeria. The study which included from Southeast Nigeria and replaced marital duration with mother's age as an index of child mortality risk exposure, matched and analyzed responses from 4,679 couples by using the same methods as the 1985 UN. Therefore it was possible to estimate the influence of women's income on child survival regardless of her husband's income. The analysis showed an inversely relationship between child mortality and both parents' income (Ahonsi, 1992).

2.3.2   Demographic Factors

(i)   Age of the mother

Age of the mother is considered one of the one of influence factors on under-five mortality. Ribeiro et al. (2014) exposed that mothers aged under 15years or above 35 years have experienced a higher risk of child mortality. Furthermore, they explain that it is estimated that 25 percent of women in developing countries have their first child before the age of 20 years. On the other hand, a higher risk of the child mortality have emerged to the mothers who have more than 35years. Elderly pregnant mother are more likely to be affected by the effects on the fetus and the newborn, on the genetic origin, miscarriages and multiple pregnancies resulting from assisted fertilization. The results from the study done by Rutstein (2000) revealed that the birth rate among mothers who have 35 years or above was related with higher infant mortality rates while the births rate among mothers aged 18years was also related with higher neonatal deaths but lower under-five mortality rate (Mgwadu, June 2019).

(ii)   Place of delivery

It is safer for both mother and child to have children in health care centers. Mothers born in health facilities have a higher survival rate. The evidence from the study done by Ettarh and Kimani (2013) showed that women who deliver at health facilities are less likely to report death than women who do not deliver at health facilities. In addition, in health facilities, they receive a higher level of care compared to outpatient clinics. At home, mothers often do not know how to use unskilled birth attendants and equipment, and their babies can die (Mgwadu, June 2019). Several studies have confirmed that there is a higher chance of child survival when a mother is in hospital rather than at home. A study by Mahmood (2002) in Pakistan found that health centers are considered to be a safer delivery environment and that a child has a lower risk of becoming infected, so that a child born in health centers should be in better health than a child born at home (Mgwadu, June 2019).

(iii)   Birth interval

Numerous studies have been done to find the most appropriate birth rate to determine the relationship between birth time and certainty. Rutstein (2005) states that the period between births has many effects on infant mortality. Moreover he also explained that shorter births, which are associated with more severe pregnancy problems, increase the risk of morbidity during pregnancy and increase the risk of stillbirth and maternal death. According to the study, shorter periods are more closely related to infant rates, but moderate intervals tend to be lower (Mgwadu, June 2019). Mustafa and Odimegwe (2008) also show that short birth periods, especially those less than 2 years of age, adolescent pregnancy and previous child deaths are associated with an increase in infant and child mortality (Cornelius Nattey, Honorati Masanja, Kerstin Klipstein-Grobusch, January 2013).

2.3.3   Proximate Factors

(i)   Breastfeeding

Breastfeeding is the most natural way to feed a baby and provides all the nutrients a baby needs. Many studies have shown that breastfeeding affects the survival of the baby. Case study by DaVanzo et al. (2008) shows that a mother who begins long-term feeding and supplementation has increased her chances of survival of her newborn. Further, they also explain that breastfeeding in the first year increases

the chances of reducing infant and fetal mortality. Another study by Mahmood (2002) found that breastfeeding was associated with a reduction in infant mortality and a more than 62% reduction in under-five mortality. In addition, Mahmood (2000) also explained that it is important to know when to start taking supplements to predict infant mortality. He said delaying the introduction of supplements could increase the infant mortality rate. He also explained the health and nutritional status of breastfeeding for both mother and child (Mgwadu, June 2019).

(ii) Type of Toilets (Sanitation facilities)

According to Mosley and Chen (1984), a family's environmental condition can determine environmental pollution and infectious diseases that children can be exposed to. Household water sources can measure water pollution and the type of toilet building can measure fecal pollution. About half of the population in developing countries suffer from major diseases caused by inadequate drinking water and sanitation, and about 90 percent of the population suffers from diarrhea, the second leading cause of death among under-five children (Mgwadu, June 2019). These diseases are mainly due to the use of underdeveloped drinking water sources and poor and underdeveloped sanitation (Mgwadu, June 2019).

According to statistics, 32% of the world's population, or about 2.3 billion people, do not use sanitation (Organization, 2017). According to the World Health Organization (WHO) in 2017, an estimated 1.748 million people still use undeveloped toilets. For example, bucket toilets and pit latrines, the remaining 600 million use shared toilets with other households (World Health Organisation, 2017).

The study made by Klaauw and Wang (2004) in India presented that access to toilet facilities can be lower the under-five mortality rate. In households without toilets, infants are said to have a higher risk of dying than households in toilet facilities. According to policy experiments in India, improving family income and environmental factors can reduce infant and child mortality rates (Mgwadu, June 2019).

2.4 High Risk of Under-five Mortality in Southeast Asia

Although Southeast Asia has seen a significant reduction in infant and maternal mortality over the past two decades, these achievements have been unevenly distributed across countries in the region. In Southeast Asia, 18,000 mothers and

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400,000 children died in 2008. Among the Association of Southeast Asian Nations (ASEAN), the infant mortality rate is less than 10 per 1,000 live births in three countries: Brunei Darussalam; Singapore and Malaysia. Over the past two decades, the infant and under-five mortality rates in Thailand and Vietnam have dropped significantly below 15 per 1,000. In the Philippines and Indonesia, the rate was lowered to between 30 and 50 per 1,000 live births. In the year 2008, the death of under-five child in Myanmar, Cambodia and Laos is 50 to 70 per 1,000 is still the highest in Asia. These rates are similar to those of neighboring countries more than two decades ago. While Southeast Asia has been able to achieve a reduction in child mortality as set out by the United Nations Millennium Development Goal 4 (MDG4), Cambodia and Myanmar are considered underdeveloped (The Millennium Development Goals, 2014).

Despite the complexity of national trends, including the substantial burden of morbidity and mortality in the countries of Southeast Asia, little attention has been paid to revitalizing and strengthening the policy agenda of the Partnership for Maternal, Newborn and Child Health. With Southeast Asia's economy becoming more integrated, there is an increasing need to reduce mortality. Although effective and affordable technology is available to reduce maternal, infant and child mortality, progress has been uneven. The region therefore has a critical need to reduce maternal and child mortality and to highlight key factors that explain the successes and challenges to be met. Death analysis could be avoided by extending coverage to identify more effective approaches to improving maternal, neonatal and child health in Southeast Asia.

The different rates of reduction in child mortality can be partly attributed to variations in the causes of death. The 40% proportion of child mortality is neonatal and the largest proportion of preventable deaths, although several ASEAN countries have successfully reduced their post-neonatal and child mortality burdens. Infectious diseases, including pneumonia and diarrhea, still account for almost half of children's deaths and indicate a significant extent of continued reduction in child mortality (Health in South East Asia 2, January 25,2011).

In ASEAN countries, there is a gap between antenatal care coverage, skilled childbirth and vaccination. This is the key to sustainable development of treatment. Regarding the overall coverage of the program, Laos has significantly lower coverage than other countries in the region. Even for the richest groups, coverage is far from

60%. Apart from Laos and Cambodia, prenatal care is widespread in around 90% of the richer and urban areas of the world. This inequality underscores the need for financial and policy support from the Global Alliance to vaccinate the world. The vaccine levels for the richest quintile in Cambodia are similar to those in other Southeast Asian countries, compared to Indonesia's highest quintile. However, coverage of the poorest households in Cambodia is almost 40% lower. According to data from other countries, skilled births (as expected by Thailand and Vietnam) are less comprehensive, especially with inequality in Philippines, Laos and Cambodia. The difference in qualifying birth rates between urban and rural Lao people is the largest between countries. The stillbirth can be seen as an indicator of the broader development of the health care system. The overall development of the health care system in the region is broader and more inconsistent with compromise (Regional Cooperation and Integration of Regional Development, November, 2012).

2.5   Review of Previous Studies

Zeleke Worku (2009) studied Factors That Affect Under-Five Mortality among South African Children by using South African Demographic Health Survey data set (SADHS). The objective of study was to identify key predictors of mortality among children under the age of five years. Survey logistic regression analysis and Cox regression were used for performing data analysis. The study has shown that under-five mortality is significantly influenced by the duration of breastfeeding, marital status of the mother, ownership of toilet facilities, the level of education of the mother, residential area and place of delivery of the child, and that rural mothers and children.

Shamal Karmaker and Biprasish Singha (2014) did the determinants of U5MR in Bangladesh by applying data from Bangladesh Demographic and Health Survey (BDHS), 2007. This paper was examined to analyze the determinants of U5MR mortality by using life table technique as a bivariate analysis and Cox proportional hazard model was used. The results showed that the factors such as the place of residence, parent's education, father's working status, sources of drinking water, type of toilet facility, wealth status, watching of television, mother's age, months of breastfeeding, birth interval had influence on infant and child mortality. Besides residence, parent's education, type of toilet facility, wealth status, watching TV, months of breastfeeding, and birth interval were the most significant predictors of

neonatal, post-neonatal, infant and child mortality. Despite advances in medical technology, infant mortality rates are still high. Socio-economic factors indicate a significant reduction in household and environmental conditions in this population.

Min Ko Ko et.al (2017) did an ecological analysis of community-level socio economic factors of infant and under-five mortality by using of 2014 censuses data. In this study, the explanatory variables such as access to electricity, safe drinking water, safe latrine, maternal education, and maternal employment were used for infant and under-five mortality. The findings of this study show that environmental factors and the availability of electricity in communities have a greater impact on infant and under-five mortality rates in Burmese communities than on women's literacy and employment conditions (Mawi, 2018).

Lal Hrin Mawi (2018) studied Factors Associated with Infant and Under-five mortality in Myanmar. The results of this study showed that mothers did not use contraceptive methods and that pre-birth intervals were significant determinants of infant, child and under-five mortality. On the other hand, children who are breastfed are at lower risk of death in childhood and below the age of five compared to children who are not. The twin child, the short period of birth, the father who worked in manual workers and mothers who did not use contraceptives, the birth order, the size of the child after delivery, the skilled birth attendant, the caisarean-born child, the mothers who did not work outside, were found to be significant predictors of infant mortality. Children from hilly, dry and delta ecological zone are more likely to have under-five mortality in Myanmar (Mawi, 2018).

Mai Amy Chit (2017) made an empirical study on the knowledge, attitude and practice effects of the mothers on health condition of under-five children in four selected wards and four selected villages in Hlaing Thayar Township. The major objectives of this study are to determine knowledge, attitude and practice of mother regarding child health and to explore the effective ways for the child health in four selected wards and four selected villages in Hlaing Thayar Township. The finding of that study is that there are mothers who have under-five child had misunderstanding on communicable diseases. They don't have enough knowledge and practice how to treat their children regarding communicable diseases.

Thanh (2002) studied the net effect of maternal education and social inequality and their interaction on the incidence of child diarrhea by using the 1997 Demographic and Health Survey and Vietnam's 1997 Socio-Economic Statistics

Data. She found that children born to higher education mothers are less likely to suffer from diarrhea. Although geographic differences did not affect child diarrhea, economic inequality between areas was identified as an important predictor of child diarrhea. Children living in poor areas are more likely to have diarrhea than those in richer areas. Thanh concluded that the effect of maternal education on diarrhea is due to the strong impact of the mother's knowledge of personal hygiene, sanitation and childcare. Whatever the inequality between socio-economic development areas, higher educated mothers are more likely to protect their children from diarrhea than less educated mothers.

CHAPTER (III)
OVERVIEW OF UNDER-FIVE MORTALITY IN MYANMAR

3.1   Health Care System in Myanmar

The Ministry of Health and Sports (MOHS) is responsible for providing comprehensive health services. The Minister of Health of the Union heads the MOHS with the assistance of two Deputy Ministers of Health. Newborn and child health related interventions are being implemented by the Department of Public Health in close collaboration with the Department of Medical Care. There is a newly created Child Health Division within the Department of Public Health headed by the Director (National Strategic Plan for Newborn Child Health Development (2015-2018), 2018).

There are 330 townships which form the main units for the planning and implementation of health services at each level of the village/urban ward (since March 2018). The delivery of health services to each township consists of several rural health centers (RHCs) further subdivided into sub-health centers for a cluster of villages (serving 3000 to 10000 population). Community volunteers, e.g. Community Health Workers (CHWs) and Village Auxiliary Midwives (AMWs), are a critical link between the community and the formal public health system (National Strategic Plan for Newborn Child Health Development (2015-2018), 2018).

The existence of traditional medicine, together with the modern medical system, is a unique and important feature of Myanmar's health system (allopathic medicine). It's pretty well accepted and used by the people. The State encourages the scientific assessment of therapeutic practices in the traditional health care system. The university has a degree in traditional medicine and there are 14 hospitals run by the state for traditional medicine. Traditional medicine practitioners shall be recognized

by the State in accordance with the provisions of the related laws (Five-Year Strategic Plan for Child Health Development in Myanmar (2010-2014), 2010).

In line with the National Health Policy, non-governmental organizations such as Myanmar Maternal and The Child Welfare Association (Myanmar Maternal and Child Welfare Association Law, 1990) and the Myanmar Red Cross Society also take part in the provision of services and their roles are becoming more important as the need for collaboration in the health sector increases. They have an important role to play in inter-sectoral collaboration and enhance community (Five-Year Strategic Plan for Child Health Development in Myanmar (2010-2014), 2010).

3.2 Maternal and Child Health Care System in Myanmar

The main purpose are to help mothers and children and improve maternal and child health by reducing infant and infant mortality. Maternal and child nutrition and vaccines are key to maternal and child health in Myanmar. The main activities of Maternal and Child Health in Myanmar are antenatal Care, Safe and aseptic delivery, Postnatal Care, Newborn Care, Under-five, Nutrition for mother and children and immunization.

Table (3.1) Maternal and Child Health Care Services in Myanmar

Type of Health Service	2014 (%)	2015 (%)	2016 (%)	2017 (%)
Antenatal Care	83.6	82.4	86.1	92.6
Postnatal and Newborn Care	85.2	86.3	91.0	92.3
Referral	18.1	21.1	24.0	26.5
Home deliverer by BHS	33.1	30.3	27.3	23.6
Anti-Tetanus Toxoid Immunization to Mother	78.1	78.0	81.2	83.4
DPT-3 Immunization	89.8	91.9	91.5	92.3
Measle-2 Immunization	79.9	76.8	83.8	84.6

Source: Public Health Statistics, MOHS

By the table (3.1) antenatal care coverage was gradually increased from 83.6% in 2014 to 92.6% in 2017. This data shows that the community knows antenatal care coverage and postnatal care are important before and after birth. In postnatal visit review, the data increasing form 85.2% to 92.3% during 2014-2017. But the home delivered by BHS was decreased from 33.1% in 2014 to 23.6% in 2017. Emergency referral rate in Myanmar gradually increase in 18.1% in 2014 and finally reached to top at 26.5% in 2017. These data show that the community is aware of, and has early notification of, the emergency situation and is trying to find out about the health service. The increase in referral data is shown in the accessibility of health services and health care facilities.

Regarding the services given in antenatal period, tetanus immunization is 78.1% in 2014 to 83.4% in 2017. In immunization coverage of Myanmar during 2014 to 2017, Tetanus (DPT) vaccine is showed gradually increase trend with 89.8% to 92.3%. Finally, the vaccine is increased 79.9% in 2014 to 84.6 % in 2017. This means that mothers learn more about the appropriate level of immunization against childhood diseases. It is important to give their children and themselves full immunization doses.

3.3 Health Facilities and Resources for Maternal and Child Health in Myanmar

The types of public facilities for maternal and child health included rural health centers, maternal and child health centers, urban health centers and school health centers. The main activities are the planning of the township health care system are training, negotiation and supervision. The following table shows public facilities for maternal and child health in Myanmar from 2015 to 2018.

Table (3.2)   Number of Public Facilities for Maternal and Child Health

No.	Facility	2015	2016	2017	2018
1	Rural Health Center	1535	1684	1696	1778
2	Maternal and Child Health Center	348	348	348	348
3	School Health Team	80	80	80	80
4	Urban Health Center	87	87	88	90

As mention in the table (3.2), there is 348 Maternal and Child Health center and 80 school health team since 2015. The number of health facilities in Myanmar remained the same from 2015 to 2018. But in 2018, 90 urban health centers and 1788 rural health centers are providing maternal and child health.

Midwives and Lady Health Vis visitors are key providers of maternal and child health care at the grassroots level. Doctors and nurses provided hospital services. The information contained in this report includes primary hospital services (Public Health Statistics (2014-2016), 2016) . In Myanmar, primary health workers are key front-line health workers responsible for providing primary health services at the community level. The overall health resources for maternal and child health included primarily medical officers, health supervisors I and II, midwives and women health visitors (Hlaing, 2019). As shown in Table (3.3), the total health workforce presented between the fiscal year 2015 and 2018.

Table (3.3) Health Workers

Health Occupational Categories	2015	2016	2017	2018
Medical Officers	52	52	53	55
Public Health Supervisor I	143	143	140	140
Public Health Supervisor II	104	104	105	106
Midwives	815	815	817	815
Lady Health Visitors	307	307	308	310

for Maternal and Child Health Centers

By the table (3.3), health workers for maternal and child health centers generally increased in medical officers, public health supervisor II and lady health visitors from 2016 to 2018. Although the main tasks of health workers are disease control activities, water and sanitation, vector-borne disease control activities, immunization, they must provide all primary health care activities in addition to maternal, newborn and child health care services, particularly in rural areas due to lack of PHS I and midwives.

Therefore, the distribution of health care providers and volunteer health workers in the community is an important factor in improving the health of the community. Table (3.4) and (3.5) show the distribution of basic health staff and volunteer health workers.

Table (3.4)   Distribution of Basic Health Staff in Myanmar (2018)

Health occupation categories	Percentage Distribution of Basic Health Staff
Township Health Nurse	2
Health Assistants	10
Midwives	60
Lady Health Visitors	11
Public Health Supervisor I	4
Public Health Supervisor II	13

Source: Annual Public Health Report, MOHS

Table (3.5)   Distribution of Volunteer Health Workers in Myanmar (2018)

Type of Volunteer Health Workers	Percentage Distribution of Volunteer Health Worker
Community Health Worker	42
Auxiliary Midwife	40
Traditional Birth Attendance	18

Source: Annual Public Health Report, MOHS

Midwives were the main providers of rural health care. Grade (II) public health supervisors have been trained to assist midwives. Auxiliary midwives have also been trained to assist midwives in maternal and child health services.

3.4   Under-five Children Deaths in Myanmar

Mortality among the under-five is one of the country's key economic development and social health indices. Because children are important assets of the nation, the reduction in infant mortality and child mortality is likely to be the most important part of the population (Peer Javaid Ahmad, Sushma Jain, Gowher Ahmad Wani, Syed Basharat Ahmad Shah, 2018). Under-five deaths were directly linked to maternal health status, particularly maternal nutrition, and health care services during delivery and post-natal period. UNICEF shows that infants born in low-income countries are 50 times more likely to die in the first month of life than those born in richer nations. In Myanmar, too, under-five mortality is a major public health problem. In addition to maternal and child health care, the priority issue has been to reduce maternal and child mortality.

Table (3.6)   Infant and Under-five Mortality Rate in Myanmar

	2015	2016	2017	2018
Infant Mortality Rate (per 1,000 live Birth)	40.6	39.3	38	36.8
Under-five Mortality Rate (per 1,000 live Birth)	51.6	49.7	47.9	46.2

Sources: Statistical Year Book, 2019

As a result of Table (3.6), the infant mortality in Myanmar fell slightly from 40.6 in 2015 to 37.40 in 2019. Also the under-five mortality gradually decline from 51.6 in 2015 to 44.7 in 2019. Therefore, overall review is decreasing trend of infant and under-five mortality seen in 2015-2019. Hence it also shows Myanmar health policy and plans with planned activities are effectively implementing.

Major Causes of Under-five Mortality in Myanmar

Although Myanmar has improved its under-five mortality rate by at least 25 per 1,000 live births by 2030, there has been progress to improve child survival, but the main causes of under-five mortality are pneumonia, measles and mumps. In addition, malaria is one of the causes of morbidity and mortality and is re-emerging as a public health problem due to climate and ecological changes, uncontrolled migration of populations, multidrug-resistant parasites and insecticide-resistant vectors. A total

of 284 of Myanmar's 325 townships are malaria epidemics (especially in forested areas), accounting for 60 per cent of reported malaria cases. Approximately 3.6 million children under the age of five and 800,000 pregnant women live in areas at high or moderate risk of malaria transmission (Myanmar Multiple Indicator Cluster Survey, 2009-2010).

Malnutrition among children and women is a major challenge for Myanmar. Exclusive breastfeeding rates, improper introduction of supplements have well-known coordination effects of malnutrition and severe malnutrition and other diseases.

Table (3.7)   Major Causes of Under-five Mortality in Myanmar (2015-2018)

Rank	Cause of death	Percentage (%)
1	ARI/pneumonia	24.3
2	Sepsis	7.2
3	Congenital anomalies	6.5
4	Fever, with/without fits	6.5
5	CNS infection	4.8
6	Accident, other than drowning	2.4
7	Drowning	2.3
8	Diarrhoea	2.0
9	LBW/malnutrition	1.8
10	Beri-beri	1.5
11	DHF/DSS	0.8
12	Other causes	5.8
Total		**100**

Source: Review/Assessment of Implementation of CDSR in Myanmar

According to Table (3.7), the overwhelming leading cause was ARI/pneumonia with 24.3 per cent followed by the second leading cause of septicemia – both of which are infectious. Congenital anomalies were the third leading cause. The other two leading causes are also infectious in nature – fever (with or without febrile fits) and CNS infections (Ministry of Health and Sports, UNICEF, 2018). Many of them could be prevented by immunization or other preventive

measures, such as insecticide-treated bed nets. In addition, diarrhea is easy to treat and acute respiratory infections respond well to early care. Presence of easily preventable or treatable diseases may result in failure or delay in access to care, limited services, access to clean water and sanitation.

3.5   Under-five Child Deaths in Yangon Region

Yangon is Myanmar's most populous city. Yangon is made up of 4 districts and 45 townships. Of the 44, there are now 33 townships in the city of Yangon. According to the 2014 census, it has more than 5 million people. During the census, there were 630,533 children aged 0 to 5 in Yangon Region. In Yangon Region, the estimated infant mortality rate (Infant Mortality Rate, IMR) is 44 per 1,000 live births. It is the lowest in the country. The per capita mortality rate is much lower than the Union IMR of 62. 1000 live births (The 2014 Myanmar Population and Housing Census Yangon Region).

The death cases of under-five of 4th district in Yangon Region are seen with the following table.

Table (3.8)   Under-five Mortality Rate in Yangon Region (2015 to 2018)

District	Under-five Mortality Rate (per 1000 LB)			
	2015	**2016**	**2017**	**2018**
South	14.5	13.8	14.4	10.4
West	8.7	8.4	7.8	7.2
North	14.4	14.3	11.8	10.9
East	14.8	15.7	19.1	18.8
Total	**13.9**	**14**	**14.2**	**12.7**

Source: Yangon Regional Health Department

In 2015, there are 13.9% children death before their fifth birthday in Yangon Region. After implementation the community-based newborn care (CBNBC), under-five mortality is marginally dropped 12.7% in 2018, as shown in table (3.7). Nearly 70 percent of children in Rangoon Region have greater access to health care than any other state or region that can provide life-saving maternity care to mothers and

children at birth. This means the quality of antenatal care available to pregnant women in Yangon Region (Hanney, 2019).

The community-based newborn care (CBNBC) strategy has expanded to five regions, including Yangon, with the aim of reducing infant mortality. CBNBC allows trained volunteers to be involved in neonatal care, such as early and exclusive breastfeeding, personal hygiene and skin care. Once the plan has been established, implementation will be followed as the most crucial part of raising maternal and child health levels. It can be seen that the project is being implemented phase by phase in the Yangon Division for maternal, neonatal and child health under 5 of the Reproductive Health (RH) project, Prevention of Mother to Child HIV/AIDS Transmission (PMCT) project and Women and Child Health Development (WCHD) project. Reproductive Health project implemented in 14 townships, Prevention of Mother to Child HIV/AIDS Transmission (PMCT) project implemented in 16 townships and Women and Child Health Development (WCHD) project implemented in 6 townships by Non-Governmental organizations (National Strategic Plan for Newborn Child Health Development (2015-2018), 2018).

CHAPTER (IV)

ANALYSIS ON SOCIOECONOMIC FACTORS

4.1 Survey Profile

The township of Hlaing Tharyar was organized on 13 July 1989. Town planning at Insein Township, Tharyargone Village, took place before 1989. In 1989, Seinpanmyine Ward, a hard fireman from Mayangone Township, was arranged there. And then people from the South Okkalapa Township, Thingangyun Township and Kamayut Township were added to Tharyargone Village. Due to the overcrowded population of Yangon City, five village districts (Tharyargone, Kasin, Sanchaung, Nyaung Ywar, Alae Ywar) from Insein Township and six village districts (Thaungyi, Yae Okkan, Shewlinpan, Atwin Pa Dan, Apyin Pa Dan) from Htantapin Township were organized into a Township to arrange fire shelters and squatters. By order of the Ministry of Home Affairs and Religious Affairs, on 13 July 1989, the Township was re-organized as 8 districts and 9 village districts with the aim of arranging a squatter in the township of Hlaing Thar Yar. After being organized as the Hlaing Thar Yar Township, the population is gradually increasing. In accordance with the overcrowded

population, by order of the Ministry of Home Affairs on 30 March 1995 it was re-established as 20 wards and 9 villages (Swe, 2017).

Hlaing Thar Yar Towship has the largest population and is the most densely populated in the Yangon area. The Hlaing Thar Yar Industrial Zone, consisting mainly of clothing and other light industries, is one of the largest industrial parks in the country. Showpiece's gated wealth communities, such as the IMF City and Pun Hlaing Garden Residences, in the south-eastern part of the township, are the elite domains of the country and are probably among the best communities in the country. After Cyclone Nargis, the township experienced a population jump due to refugees. The township is connected to the other parts of Yangon, across the Yangon River, across the Aung Zaya Bridge and the Baint Naung Bridge (Swe, 2017).

The population and density are related to the socio-economic status of the population. Population density is important to drive the region's economic activities dramatically. Population density is the proportion of the total population of a place and its total area. According to Census Data, the total household was 148,711 and total population was 687,867 in Hlaing Thar Yar Township. The density of population was 10,211 persons per square kilometer in Hlaing Thar Yar Township (Swe, 2017).

4.1.1 Health Care Center and Manpower of Hlaing Thar Yar Township

Health sector development is a key sector for production. Educated and healthy labor increases the skills and productivity of labor. Adequately having the health care center in the township is the basic need for development of township. The development of hospital and health centers, the prime health facilities are present in Table (4.1).

Table (4.1)   Health Care Centers in Hlaing Thar Yar Township (2019)

Type	Number
Township Hospital	1
Station Hospital	1
Urban Health Centre	1
Rural Health Centre	1
Rural health sub-Centre	5
Private clinics and maternity	133

Total	142

Source: General Administrative Department of Hlaing Thar Yar Township

As a result of Table (4.1), there are one township hospital, one station hospital, one urban health center, one rural health center, one rural health sub-center as government sector and 133 private clinics and maternity in private sector. Therefore, the total of health facilities in Hlaing Thar Yar Township is 142. Private clinics in Hlaing Thar Yar Township are powerful influences, but most basic people are unable to access private clinics.

In Hlaing Thar Yar Township, although the sanctions are almost full, some doctors, nurses and midwives are gone. There is therefore a shortage of human resources and these facilities may not cover all health needs in the community. Therefore, the number of health manpower is presented in Table (4.2).

Table (4.2)   Health Manpower (2019)

Category	Sanctioned
Doctor	11
Dental Surgeon	2
Nurse	22
Health Assistant	5
Lady Health Visitor	2
Public Health Supervisor	10
Midwifes	12
Total	**64**

Source: General Administrative Department of Hlaing Thar Yar Township

According to Table (4.2), there are mainly 11 doctors and 22 nurses and other 2 dental surgeons, 2 township health nurse (THN), 5 health assistances (HA), 2 Lady Health visitors (LHV), 10 Public health supervisors (PHS) and 12 midwifes. The manpower of health staff has not sufficient comparable with its population.

4.1.2   Distribution of Health Worker and Health Worker Population Ratio

The adequacy of health personnel is essential for any population to achieve a health goal. However, developing countries, which are confronted at all levels of socio-economic development, have difficulties with the adequacy of qualified health

workers in their health workplaces. The following table show Health Worker - Population ratio in Hlaing Thar Yar Township.

Table (4.3)   Health Worker-Population Ratio in Hlaing Thar Yar Township

Health occupational Categories	2019	
	Total	Health Worker: Population (population -423,388)
Medical Officers	13	1:32568
Health Assistances	5	1:84677
Nurse	22	1:19244
Midwives	12	1:35282
Lady Health Visitors	2	1:211694
Public Health Supervisor I and II	10	1:42338

Source: General Administrative Department of Hlaing Thar Yar Township

As a result of table (4.3), the medical officer to population ratio at is 1:32568 and health assistant population ratio is 1: 84677. The nurse population ratio is 1:19244 and the midwife population ratio is 1:35282. The lady health visitor population ratio is 1:211694 and the public health supervisor population ratio is 1:42338.

4.1.3   Voluntary Health Workers Functioning

Voluntary health workers are also working for public health services in Hlaing Thar Yar Township. Voluntary health workers include mostly community health workers (CHW) and midwives (AMW).They are shown in Table (4.4).

Table (4.4)   Voluntary Health Workers (2018)

Voluntary Health Workers	Trained	Functioning
Community Health Workers (CHW)	35	33
AME (Auxiliary midwives)	60	56

Source: Health Data, Hlaing Thar Yar General Hospital

According to Table 4.4, there were 33 CHW and 56 AME. Although 35 CHW and 60 AME receive training on health practice and knowledge, only 33 CHW and 56 AME do voluntary work in the community. They contribute to awareness of health

knowledge such as maternal and child health, family planning, hygiene and vaccination in townships.

4.1.4 Non-government Organizations Working in Hlaing Thar Yar Township.

There are non-government organizations (NGOs) in Hlaing Thar Yar Township for the public health care services. They are also providing health care activities and performing for the public health care. They are

1. Myanmar Maternal and Child Welfare Association (MMCWA) Branch
2. Myanmar Red Cross Society (MRCS) Branch
3. Myanmar Medical Association (MMA) Branch
4. Myanmar Nurse Association (MNA) Branch
5. Save the Children
6. Population Services International (PSI)
7. Marie Stops International (MSI)
8. Youth to Youth

4.2 Survey Design

Because Hlaing Thar Yar includes wards and village tracts, a stratified two-stage sampling was used for the household survey. Households in the survey area are segregated by occupant type (rural or urban). In this first stage, wards and village tracts are classified as First Sample Units (FSUs) and households in selected FSUs are classified as Secondary Sample Units (SSUs). In the second stage, the number of married households between the ages of 15 and 49 is selected from the household list in each FSUs (See in Appendix 2).

The survey was conducted among mothers aged 15 to 49 and mothers of children under 5 from 241 households (SSUs). This was done through personal interviews to gather information from the mother, father and family questionnaires. The questionnaire included three sections: Mother, Father and Family Questionnaire. These questionnaire were based on the Demographic Health Survey (DHS) model questionnaire.

The questionnaire of mother collected data about demographic characterizes of mother such as age of mother and age at 1st birth. Data on socioeconomic characteristics such as educational level and currently working were collected. The women were asked about their pregnancy history, the number of they had, about the

maternal health care and knowledge and use of contraceptive methods. The household questionnaire also collected information such as household size, type of toilet facilities, shared with other household, fuel for cooking, source of drinking water and access to electricity. The questionnaire of father includes the occupation and education level. For community level questions, type of residence and distance from health facilities were collected.

4.3   Examining the Survey Data

This section presents the profile of the respondent of the surveyed. The frequency and percentage distribution of socio-economic, demographic and proximate factors will be summarized as follow.

Table (4.5)   Percentage and Frequencies Distribution of Socioeconomic Factors by Under-five Mortality

Socioeconomic Factors		No. of Respondents	Percent (%)
Mother's Education	No Education	31	12.9
	Primary	119	49.4
	Secondary	74	30.7
	Higher	17	7.1
	Total	**241**	**100**
Mother's currently Working	No	115	47.7
	Yes	126	52.3
	Total	**241**	**100**
Father's Education	No Education	30	12.4
	Primary	97	40.2
	Secondary	94	39
	Higher	20	8.3
	Total	**241**	**100**
Household Size	At least 3	19	7.9
	4-5	114	47.3
	6-7	81	25.3

	8 and above	47	19.5
	Total	**241**	**100**

Source: Survey Data, 2020

As a result of Table (4.5), the results of the mothers' education show that there were 12.9% of mothers with no education, 49.4% with a primary level of education, 30.7% with a secondary and 7.1% with higher level of education. Regarding the employment condition of the mother, 47.7% of the mother are unemployed and 52.3% of the mother are employed. Considering fathers' education, 12.4% of fathers with no education, 40.2% and 39% of fathers with primary and secondary level of education and 8.3% with higher level of education. There were 7.9% of households that have at least 3 members, 47.3% have 4-5 members, 25.3% have 6-7 members and 19.5% have 8 members and above.

Table (4.6) Percentage and Frequencies Distribution of Demographic Factors by Under-five mortality

Demographic Factors		No. of Respondents	Percent (%)
Age of Respondent	15-24	46	19.1
	25-34	110	45.6
	35-44	74	30.7
	45-44	11	4.6
	Total	**241**	**100**
Age at 1st Birth	15-24	169	70.1
	25-34	66	27.4
	35-44	6	2.5
	Total	**241**	**100**
Place of Residence	Urban	113	46.9
	Rural	128	53.1
	Total	**241**	**100**
Place of Delivery	Home	138	57.3
	Hospital	88	36.5
	Others	15	6.2
	Total	**241**	**100**
Sex of Child	Male	139	57.7

	Female	102	42.3
	Total	**241**	**100**
Birth Interval	Less than 2 years	129	53.5
	2-3 years	45	18.7
	4 years and above	67	27.8
	Total	**241**	100
Birth Order	1st rank	237	98.3
	2nd -3rd rank	4	1.7
	Total	**241**	**100**

Source: Survey Data, 2020

By Table (4.6), the results regarding the mother's currently age show that 19.1% were at the age of 15-24 years, 45.6% were at the age of 25-34 years, 30.7% were at the age of 35-44 years and 4.69% were at the age of 45-44 years. Therefore, the highest percentage age group of respondents is 25-34 years old. In term of percentage, 70.1% of mothers' age at 1st birth were 15-24 years, 27.4% were 25-34 years and 2.5% were 35-44 years.

In terms of percentage, the place of delivery at home is 57.3 per cent, the hospital is attended by 36.5 per cent and other health facilities are attended by 6.2 per cent. According to survey data, out of 128 households, 53.1% lived in rural areas, while 46.9% lived in urban areas. With respect to the period of birth, 53.5 per cent born less than 2 years after their sibling, 18.7 per cent born 2-3 years and 27.8 per cent born 4 years and older.

The results of gender status of child show that 57.7% were male and 42.3% were female. In accordance with the birth order, 98.3% of children were 1st rank and 1.7 % were 2nd and 3rd rank.

Table (4.7) Percentage and Frequencies Distribution of Proximate Factors by Under-five mortality

Proximate Factors		No. of Respondent	Percent (%)
Immunization	One time	157	85.1
	Two times	81	33.6
	Three or more times	3	1.2

	Total	**241**	**100**
Breastfeeding	No	14	5.8
	Yes	227	94.2
	Total	**241**	**100**
ANC care	No	229	95
	Yes	12	5
	Total	**241**	**100**
Type of Cooking Fuel	Electricity	45	18.9
	Gas and Cool	37	15.4
	Wood	136	56.4
	Others	23	9.5
	Total	**241**	**100**

Table (4.7) continued			
Proximate Factors		**No. of Respondent**	**Percent (%)**
Type of Water Source	Piped	15	6.2
	Well	162	67.2
	Spring	1	4
	Others	63	26.1
	Total	**241**	**100**
Type of Toilet Facility	Flesh	101	41.9
	Pit	98	40.7
	No Facilities	35	14.5
	Others	7	2.9
	Total	**241**	**100**
Total Facility Shared with Other Households	No	181	75.1
	Yes	80	24.9
	Total	**241**	**100**
Distance to Health Facility	Big Problem	55	22.8
	Not Big Problem	186	77.2
	Total	**241**	**100**

Source: Survey Data, 2020

The results of the next factors are shown in the table (4.7). There were 85.1 per cent of children who were immunized once, 33.6 per cent were immunized twice and 1.2 per cent were immunized three or more times. In terms of percentage, 5.8 per cent of mothers who never breastfed and 94.2 per cent of mothers who always breastfed. The distribution of interviewees by antenatal care shows that 95 per cent did not receive and 5 per cent did not receive. As a result of contraceptive use, 59.3% respondents used and 40.7% didn't use.

Considering the type of cooking fuel, 18.9% households used electricity, 15.4% used gas and cool, 56.4% used wood and 9.5% used other fuel to cook. The majority of the households 67.2% accessed water from well, 6.2% accessed from piped and 26.1% from other sources. Similarly, the majority of the households 41.9% and 40.7% have flesh and pit type of toilet facilities and remaining 14.5% and 2.9% have no toilet facility and others. Moreover, there were 75.1% of households didn't share the toilet with other households but 24.9% share that. Distance to health facility

is not a big problem for 186 77.2% households but remaining 22.8% households is a big problem.

The age distribution of under-five mortality from survey data are presented in Table (4.8).

Table (4.8) Age Distribution of Under-five Mortality

Age Group	No. of Respondents	Percent (%)
Below 1 year	4	23.5
2-3 years	12	70.6
4 years	1	5.9
Total	**17**	**100**

Source: Survey Data, 2020

Based on the survey data, the number of children who died before one year were 23.5%. There were 70.6% who died between 2 and 3 years. The remaining children 5.9% who died in 4 years.

4.4   Analysis on Survey Result

This section includes the analysis of survey data using binary logistic regression analysis. Logistic regression analysis was carried out to check the proposed objective of the relationship between under-five mortality as a dependent variable and each factor of influence as an independent variable.

Therefore, the Binary Logistic Regression Equation is:

$$logit(y) = \ln(odds) = \ln\left(\frac{p}{1-p}\right) = \alpha + \beta_i X_i$$

$$= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$
$$+ \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14}$$

where, Yi = Under-Five Mortality

β_0 = Constant

X_1 = Mother's education

X_2 = Father's education

X_3 = Mother currently working

X_4 = Household Size

X_5 = Age of Mother

X_6 = Place of Residence

X_7 = Birth Order

X_8 = Size of Child

X_9 = Birth Interval

X_{10}= Child immunization

X_{11}= currently breastfeeding

X_{12}= Antenatal care

X_{13}= Contraceptive use

X_{14}= Type of sanitation facility

X_{15}= Type of drinking water

The logistic regression outcomes are shown in the following Table.

Table (4.9) Regression Result of Socio-economic Factors on Under-five Mortality

Variable	B	S.E	Wald	df	p-value	Exp(B)	95%CI Lower	95%CI Upper
Mother's education No education (ref:)								
Primary	0.148	0.223	0.441	1	0.507	1.159	0.749	1.794
Secondary	-0.065	0.242	0.071	1	0.789	0.937	0.583	1.507
Higher	-0.328***	0.316	1.088	1	0.000	1.390	0.749	2.581
Father's education No education (ref:)								
Primary	0.155	0.213	0.527	1	0.468	1.167	0.769	1.772
Secondary	-0.370	0.241	2.361	1	0.124	1.448	0.903	2.321
Higher	-0.148***	0.548	0.071	1	0.005	0.862	0.289	2.575
Mother's Age 35-44 year (ref:)								
15-24 year	-1.452**	0.450	2.549	1	0.043	0.424	0.148	1.119
25-34 year	-1.354*	0.421	4.411	1	0.086	0.434	0.194	0.972
Birth order 1st rank (ref:)								
2nd to 3rd rank	- 0.307*	0.207	2.205	1	0.053	0.763	0.491	1.103
Child Immunization One time (ref:)								
Two time	-1.204***	0.211	32.70	1	0.0000	3.334	2.207	5.037
Three and more time	-2.517***	0.270	86.882	1	0.0000	12.395	7.301	21.015
Breastfeeding practice No (ref:)								
Yes	-1.788***	0.177	102.61	1	0.0000	0.167	0.118	0.236
Antenatal Care No (ref:)								
Yes	-0.867***	0.188	21.246	1	0.0000	0.420	0.291	0.608
Type of Toilet facility No facility (ref:)								
Flush	-2.127**	0.524	4.234	1	0.042	3.023	1.062	8.611
Pit	-2.314**	0.545	5.576	1	0.029	2.648	1.242	10.922
Other	1.584	0.540	7.423	1	0.453	4.398	1.588	15.148
Constant	2.439	0.828	11.930	1	0.001	5.421		

Source: Survey Data,2020

Note: *significant at 10%, ** significant at 5%, *** significant at 1%

The estimated logistic regression model is

$$logit(y) = 2.439 - 0.328 \, (mother's \, education) - 0.148(father's \, education)$$
$$- 1.452(15 - 24 years) - 1.354(25 - 34 \,)year$$
$$- 0.307(2nd \, and \, 3rd \, rank) - 1.204(Two \, time \, immunize)$$
$$- 2.517(Three \, and \, more \, immunize) - 1.788(Breastfeeding)$$
$$- 0.867 ANC - 2.127(Flush) - 2.314(Pit)$$

As a result of table (4.9), the logit of a child to die before fifth birthday is related to the categories of parents' education level (higher), age of mother (15-24 years and 25-34 years), birth order (2nd and 3rd rank), child immunization (two and three and more times), antenatal care, breastfeeding and type of toilet facilities (flush and pit).

Mother's higher education level and father's higher education level are statistically significant at 1% level. This indicated that the mothers of children who were educated in higher level are less likely to have under-five mortality than illiterate mothers. These findings may be because of the way that more educated mothers are better prepared and learned about antenatal care and better taking care of practices. In addition, higher education level can reduce under-five mortality by making women more getting to know health knowledge and practice. Similarly, the fathers of children who were educated in higher level were less likely to have under-five mortality than illiterate fathers. Therefore, there is an inversely relationship between parents' educational level and under-five mortality risk.

Concerning the age of mother at 1st birth, aged 15 -24 years is statistically significant at 5% level and $25 - 34$ years is statistically significant at 10% level. The children whose mothers' age at 1st birth were 15 -24 years and $25 - 34$ years are less likely to have low under-five mortality than $35 - 44$ years. This implied that these age group is the best to get pregnant because young age makes healthier and makes it easier to give birth. Besides, it can reduce the risk of miscarriage than in old age group. Also the birth order of children is significant at 10% level. The children who are 2nd and 3rd rank of mother are less likely to die than the children who are 1st rank. Mothers can take good care of 2nd and 3rd order children because of having the experience of previous child birth and knowing good practice of child health. Both age of mother at 1st birth and birth order have the inversely relationship on under-five mortality.

Regarding the child immunization (two times and three and more times), breastfeeding practice and type of sanitation facilities are statistically significant at 1% and 5% level respectively. The children who have immunized two times and three and more are less likely to have lower under-five mortality than the children who have been one time immunized. Also children are breastfed are less likely to die compare with children are not breastfed. The mothers of children who have been revived antenatal care before delivery are less likely to die than mothers who have not been received antenatal check-up before delivery. Concerning type of sanitation facilities, households access flush sanitation facilities and pit sanitation facilities are less likely to die compare with households do not access facilities. Hence, child immunization, breastfeeding practice and type of sanitation have a negative influence on under-five mortality.

CHAPTER (V)
CONCLUSION

5.1   Findings

Mortality among the under-five is a leading indicator of child health and overall development in countries. It also reflects the level of socio-economic development and quality of life of a country. Reducing under-five mortality indirectly helps improve child survival and reduces young children's risk of dying. This study aimed at the socioeconomic factors influencing on under-five mortality in study area. On the basic of the sample survey data, binary logistic regression was applied to analyze relationship between dependent variable and independent variables.

The findings for overall study, the highest percentage age group of respondents is 25-34 years old. They can answer the questions fluently and obtained the qualified data for this study. Regarding the age of respondent at 1st birth, the 15-24 years age group is the highest (70.1%) age group at 1st birth. Most of the respondents live in rural 53.1% and urban 46.9%. 57.3% of respondents delivered child at home. Delivery at home is still going on in spite of institutional delivery has been promoted in Myanmar. Because of that, skilled medical staffs, good quality of health facility and hygienic conditions are needed more to reduce infection and child mortality during delivery. Out of all respondents 49.4% with a primary level of education. So, they have weak health knowledge in caring their children in healthy behavior and family planning. The children who received one time immunization is the highest with 85.1% because most of the mothers did not know the advantages of immunization and their health knowledge are weak. Also the 95% of mothers who didn't receive ANC and 5% of mothers received. Women with no received ANC are more prone to pregnancy complications such as preeclampsia, eclampsia and anemia. Regarding the employment condition of the mother, most of the mother 52.3% are employed. Therefore, while most of the respondents are doing job, they care their child. Besides, most of the respondent access water form well and use wood for cooking fuel. It makes the air pollution and can destroy forests or homes through

accidental fires. Considering age at death from survey data, between 2 and 3 years age group is the highest mortality.

The results from binary logistic regression, the children whose mothers' higher education level are less likely to reduce under-five mortality compared with the child whose mothers are illiterate. Similarly, the children whose fathers' higher education level are less likely to reduce mortality compared with the children whose fathers are uneducated. This is because parents' education helps them to use knowledge and skills to the benefit of the child's health and its survival. Educated mothers have more knowledge, get better information on health and nutrition related practices. It leads to significant reduction in under-five mortality risk. Moreover, most of the educated women are less likely to marry and give birth later and have fewer children. Another reason is the power of education makes transform from young girls into empowered and self-confident women.

Childbirth at mothers' aged (15-24) and (25-34) years makes get the best outcomes for mothers and babies and decreases the risk of pregnancy complications. The child who is the 2nd and 3rd birth order has the lower under-five mortality risk compared with the child who is the first rank birth order. Higher order of birth are associated with the experience of childbirth, nutrition and practice of child health.

This study found that child immunization (two times and three and more times) was significantly influenced on under-five mortality. Immunization can enhance the functioning of the immune system to prevent diseases. Breastfeeding has strong significant role in reducing child mortality in Hlaing Thar Yar Township. Breast milk provides the newborn with the nutrients their needs and breastfeeding practice is a universal in Myanmar. Antenatal visit plays significant role on under-five mortality. The risk of under-five mortality was found lowest for the children whose mother's received antenatal check during pregnancy. Type of sanitation facility is also important role in reducing under-five mortality. Family access flush and pit are less likely to die compared to no toilet facilities. The unimproved sanitation facility can cause childhood diarrhea.

5.2   Suggestions

Based on the findings, parents' education level has inversely related with under-five mortality. Mother education is the basis for enhancing the child survival. Mother should also be educated about the healthy feeding practices and contributed to improve child health in the long term. The practice of early marriages should be

discouraged to reduce teenage pregnancy which could be helpful in increasing child survival. On this issue, the government should apply more educational budget and enhance educational program to complete basic education level.

Also child immunization, breastfeeding practice, antenatal care and type of sanitation facilities are inversely related to under-five mortality. The children who received immunization and breastfeeding had lower under-five mortality risk than the children who didn't receive immunization and breastfeeding. Therefore, government should try to extend immunization programs to cover all children, to provide birth at the heath facility, to encourage access to quality antenatal care since it can reduce child mortality.

In addition, government and non-government organizations as well as policy makers: promoting comprehensive reproductive health and child survival programs such as contraceptive methods, taking antenatal care, vaccination against newborns and exclusive breastfeeding, giving births to qualified or qualified health providers and health facilities, and providing better sanitation facilities.

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APPENDIX - I

Research Questionnaire

Question Number ……………

Ward/Village ………………………   Street……………

Householder Number …………….

Part (I) Questionnaire for Mothers Aged 15-49 years

(1) Age …………………years

(2) Race…………………

(3) Religion……………..

(4) Education

    ☐ No education   ☐ Primary

    ☐ Secondary   ☐ Higher

(5) Occupation

    ☐ Dependent   ☐ Vendor

    ☐ Government Staff   ☐ Company Staff

    ☐ Own business   ☐ Daily Wages

    ☐ Others (Specify)…………………………………..

(6) Age at marriage…………..

(7) Age at 1st birth …………………

(8) How many pregnancies did you have?

    …..……………………………

(9) Have you used contraception?

    ☐ No   ☐ Yes

(10) If no, reason for not using

    ☐ Religion

    ☐ Far away from hospital/clinic or health care center

    ☐ Others (Specify) ……………..

History of Pregnancy

(11) Did you have abort?

☐ No   ☐ Yes

(12) If yes, week of pregnancy abort…………

(13) If no, did you give birth the child alive?

☐ No   ☐ Yes

(14) If no, age of child when dead (months) ………………

(15) Sex of Child

☐ Male   ☐ Female

(16) Child is twin?

☐ Single   ☐ Multiple

(17) Which method used when child birth?

………………..

(18) Were there any health problems in child bearing?

☐ No   ☐ Yes

(19) Birth Weight

…………………………..

(20) Place of delivery

☐ Home   ☐ Hospital

☐ Others (Specify) …………..

(21) Delivery provider

☐ Doctor   ☐ Health Care Assistant

☐ Midwife   ☐ Traditional Birth Attendant

☐ Others (Specify) ………

(22) Place of child death

☐ Home   ☐ Hospital

☐ Health Care Center   ☐ Others (Specify) …………….

(23) Did you child receive treatment before dead?

☐ No   ☐ Ye

(24) Place of receiving treatment

☐ Home   ☐ Hospital

☐ Health Care Center   ☐ Others (Specify) …………….

(25) Person provided care treatment to unhealthy child.

☐ Doctor   ☐ Health Care Assistant

☐ Midwife   ☐Traditional Birth Attendant

☐ Others (Specify) …………

(26) Did you receive antenatal care?

☐ No   ☐ Yes

(27) If yes, place of receiving Antenatal care.

☐ Home   ☐ Hospital

☐ Health care center   ☐ Others (Specify) ………..

(28) If no, why did you receive antenatal care?

☐ Can't Afford   ☐ Far from Health Center

☐ Others (Specify) ……….

(29) Have the child received vaccination?

☐ No   ☐ Yes

(30) If yes, how many times did the child receive?

☐ One time   ☐ Two times

☐ Three or more times

(31) If no, why did not the child receive?

☐ Can't Afford   ☐ Far from Health Center

☐ Others………

(32) Did you breast feed?

☐ No   ☐ Yes

(33) When did you breast feed?

☐ No breast feed   ☐ At once

☐ One hour after birth   ☐ Others (Specify)….

(34) Birth interval between one and another

……………..………

Part (II)   Questionnaire for Father

(35) Age of father……………….

(36) Educational level

☐ No education   ☐ Primary

☐ Secondary   ☐ Higher

(37) Father's occupation

☐ Dependent   ☐ Vendor

☐ Government Staff   ☐ Company Staff

☐ Own business   ☐ Construction

☐ Carry/Driver   ☐ Daily Wages

☐ Others (Specify)…………………………….

(38) Monthly Income

☐ Below 100000   ☐ 100000 - 150000

☐ 150000 - 200000   ☐ 200000- 250000

☐ 250000 - 300000   ☐ 300000 and above

Part (III)   Questionnaire for Household Characteristics

(39) No. of household member
…………….………..

(40) No. of children under 5 years
…………….………..

(41) Household's properties
☐ Car   ☐ Motor cycle
☐ TV   ☐ Mobile Phone
☐ Bicycle   ☐ Nothing above all

(42) Home ownership
☐ Owner   ☐ Rent   ☐ Others…….

(43) Type of House

Roof	Wall	Floor
☐ Brick	☐ Brick	☐ Brick
☐ Corrugated iron	☐ Wood	☐ Wood
☐ Plastic	☐ Bamboo	☐ Bamboo
☐ Others………..	☐ Others………..	☐ Others………..

(44) Did you have electricity power in your home?

☐ No   ☐ Yes

(45) Where did you get electricity power from?

☐ Public   ☐ Private   ☐ Owner generator

☐ Others (Specify) ……………….

(46) Type of Fuel for cooking.

☐ Electricity   ☐ Gas and Coal   ☐ Wood

☐ Others (Specify) ……………

(47) Where did you get the drinking water?

☐ Pipe   ☐ Well   ☐ spring

☐ Others (Specify) …………………………..

(48) Type of Toilet Facilities

☐ No facilities   ☐ Flesh

☐ Piped   ☐ Others (Specify)…………..

(49) Does your household share toilet facilities with other household?

☐ No   ☐ Yes

(50) How your family members usually wash hand with soap after going to toilet?

☐ No   ☐ Yes

(51) How long does it take the time to go to health facilities from your home?

………………………….

(52) Is it a big problem or not big problem?

☐ No   ☐ Yes

APPENDIX - II

In the first-stage, two wards from the urban area and two village tracks from the rural area were selected from sampling frame of Hlaing Thar Yar Township and a total of households were 11,947 in the selected FSUs.

In the second-stage, households were SSUs and the appropriate sample size of SSUs was determined based on sample size determinant formulas of Krejcie and Morgan (1970), and Cochran's (1977). According to Krejcie and Morgan (1970), using the acceptable margin of error is 7% for this survey.

$$n \geq \frac{p(1-p)Z^2}{E^2}$$

Where;

p = 0.5 (maximum possible proportion)

E = 0.06 (margin of error)

Z = 1.645 (90% level of significance)

Hence, n≥193 households

The required minimum sample size was 188 households for this study. However, in many educational and social research surveys, the response rates are typically well below 100%. Therefore, the required sample size (80% response rate assumed) is 241 (193/0.8) households.

Allocation of Sample Size (Number of Households) to Each Stratum

Strata	N_h	n_h	M_{hi}	a_h	M_{hi}
I (Urban)	20	2	5644	0.47	113
II (Rural)	9	2	6303	0.53	128
Total	**29**	**4**	**11947**	**1.00**	**241**

N_h = total number of wards/ village tracks in each stratum

n_h = number of sample wards/ village tracks in each stratum

M_{hi} = total number of households in the ith ward/ village track of each stratum

m_{hi} = number of households in the sample for ith ward/ village track of each stratum

$$a_h = \frac{M_{hi}}{\sum M_{hi}}$$

List of Selected Wards and Allocation of Number of Households in Urban (Stratum I)

Selected Ward	No. of household	P_{1i}	No. of Selected Households
Ward (8)	2195	0-39	44
Ward (12)	3449	0.61	69
Total	**5644**	**1.00**	**113**

Source: General Administrative Department of Hlaing Thar Yar Township

List of Selected Wards and Allocation of Number of Households in Rural (Stratum II)

Selected Village Track	No. of household	P_{1i}	No. of Selected Households
Apyin Padan	2627	0.42	54
Shan Chaung	3676	0.58	74
Total	**6303**	**1.00**	**128**

Source: General Administrative Department of Hlaing Thar Yar Township

Sampling Frame of Urban Areas

Ward	Total Number of Households	Cumulative Frequency	Range	Random Number	Number of Household in Selected Ward	Number of Selected Households
Ward (1)	6455	6455	1-6455			
Ward (2)	4970	11425	6456-11425			
Ward (3)	6457	17882	11426-17882			
Ward (4)	1742	19624	17883-19624			
Ward (5)	11047	30761	19625-30671			
Ward (6)	9627	40298	30672-40298			
Ward (7)	10242	50540	40299-50540			
Ward (8)	2195	52735	50541-52735	51092	2195	44
Ward (9)	4295	57030	52736-57030			
Ward (10)	3274	60304	57031-60304			
Ward (11)	4476	64780	60305-64780			
Ward (12)	3449	68229	64781-68229	65135	3449	69
Ward (13)	2464	70693	68230-70693			
Ward (14)	4501	75194	70694-75194			
Ward (15)	5773	80967	75195-80967			
Ward (16)	5109	86076	80968-86076			
Ward (17)	486	86572	86077-86572			
Ward (18)	4369	90931	86573-90931			
Ward (19)	5390	96321	90932-96321			
Ward (20)	8486	104807	96322-104807			

Sampling Frame of Rural Areas

Village	Total Number of Households	Cumulative Frequency	Range	Random Number	Number of Household in Selected Ward	Number of Selected Households
Kasin	3127	3127	1-3127			
Shan Chaung	3676	6803	3128-6803	5686	3676	54
Nyaung	9457	16257	6804-16257			
Apyin Padan	2627	18884	16258-18884	18276	2627	74
Atwin Padan	3031	21915	18885-21915			
Ale	3638	2553	21916-2553			
Yeokkan	9936	35489	25554-35489			
Ka Lar Gyi Su	3428	38917	35490-38917			
Shwe Lin Pan	5987	44904	38918-44904			