ASHESI UNIVERSITY COLLEGE

The Effect of Ghana's Free Maternal Health Care Policy on Maternal Mortality: A case study of the Nsawam Government Hospital.

By

Ramatu Issah

Undergraduate dissertation submitted to the Department of Business Administration, Ashesi University College. Submitted in partial fulfillment of the requirements for the award of Bachelor of Science Degree in Business Administration

Supervised by: Dr. Edgar Cooke

May 2017

DECLARATION

I hereby declare that this undergraduate thesis is my original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ……..

Candidate's Name: ……

Date: 02/05/2017

I hereby declare that the preparation and presentation of this undergraduate thesis research were supervised in accordance with the guidelines on supervision of undergraduate thesis established by Ashesi University College.

Supervisor's Signature: …….

Supervisor's Name: …….

Date: 02/05/2017

ACKNOWLEDGEMENT

Firstly, I am grateful to Allah for the abundant mercies. I am grateful to everyone who has read this dissertation. Even more, my sincerest thanks to all those who made the time to share their opinions, knowledge, feedback and good wishes.

It would be a terrible oversight if I did not say thank you particularly to Dr. Edgar Cooke and the lecturers of Ashesi University College. I would like to show my appreciation to the staff of the Nsawam Government Hospital for their effort and contribution towards this research. To all those who believed in this research and provided their inputs and corrections. I am grateful to my parents Mr. and Mrs. Issah Umar Sanda for the constant support throughout this research both financially and emotionally.

Ramatu Issah.

ABSTRACT

The study examined the effect of Ghana's free maternal health care policy on maternal mortality using yearly records of deliveries, maternal mortality, postnatal and antenatal attendance and the amount spent on the policy. The data was obtained from the Department of the Obstetrics & Gynecology of the Nsawam Government Hospital. T-test and correlation coefficient were used for the research. Trend analysis showed a reduction in maternal mortality however, there was an insignificant difference in the means of maternal mortality before and after the policy. The research showed a significant increase in antenatal and postnatal attendance at the hospital. Also, there was a negative relationship between maternal mortality and antenatal and postnatal attendance which shows that increase in antenatal and postnatal attendance reduces maternal mortality at the hospital. However, there was a decrease in the number of deliveries after the policy. The free maternal health care policy should be maintained however, it women should be educated about the benefits of early ANC, PNC and delivering at a hospital. Further research is needed to understand the reason for the decrease in deliveries at the hospital from 6,158 in 2012 to 4,371 in 2016. Also, the causes of maternal mortality at the hospital need to be researched into as this will enable the hospital to devise specific measures to reduce maternal mortality at the Nsawam Government Hospital.

Keywords: maternal mortality, Nsawam Government Hospital, free maternal health care policy, antenatal care and postnatal care.

LIST OF ABBREVIATIONS

FULL WORD	ABBREVIATION
Acquired immunodeficiency syndrome	AIDS
Antenatal Care	ANC
Ghana Health Insurance Authority	GHIA
Ghana Health Service	GHS
Gross Domestic Product	GDP
Human Immunodeficiency Virus	HIV
Millennium Development Goals	MDL
Ministry of Health	MOH
National Health Insurance Scheme	NHIS
Postnatal Care	PNC
United States Agency for International Development	USAID
World Health Organisation	WHO

Table of Contents

CHAPTER ONE

1.0 Introduction

This chapter gives an overview of the undergraduate thesis research. It provides a background of the thesis, the problem statement that led to the development of the undergraduate thesis and the significance of the undergraduate thesis research. The chapter states the objectives that the research fulfilled at the end of the research and the questions that were answered to arrive at the solution. The chapter concludes by giving an overview of the rest of the thesis.

1.1 Background of The Study.

Maternal mortality according to the World Health Organization is the "*death of a woman while pregnant or within 42 days of the termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental causes*" (World Health Organization, 2013)

Maternal mortality came into the global spotlight after research was carried out by Rosenfield and Maine in 1985. The research showed that developing countries did not give much importance to maternal mortality. Also, the measures that were put in place to tackle maternal mortality were not enough to adequately reduce the high rate of maternal mortality (Rosenfield & Maine, 1985). This led to the "Safe Motherhood" conference that took place in Nairobi, Kenya in 1987. African leaders met under the auspices of the WHO and the United Nations Children's Fund. At the conference, global statistics on

death and complications resulting from pregnancy were presented by speakers (Senah, 2003). They raised awareness on the increasing rate of maternal mortality in developing countries and established the Safe Motherhood initiative. The aim of the Safe Motherhood initiative was to cut maternal mortality by 50% before the year 2000 and make known to the world the plight of pregnant women. The training of traditional birth attendants, decentralization of health care, antenatal training and the expansion of primary health care, were some of the strategies put in place in African countries. These strategies/programs aimed to improve health care after the safe motherhood conference (Nour, 2008). The conference encouraged more discussion on maternal mortality around the globe (Rosenfield & Maine, 1985). By the year 1993, nearly all sub-Saharan African countries had developed a program to aid in the reduction of maternal mortality (Creese & Kutzin, 1997). Before Ghana attained independence in 1957, access to health care in Ghana was mainly the out-of-pocket system. Under this system, a person pays money to use health care services (Ahiadeke, 2001).

After Ghana became independence, the government tried to make health services free by financing it with the revenue from taxation, however, this system could not be sustained due to stagnation of the economy. The stagnation of Ghana's economy led to a shortage in vital medical supplies, equipment and the overall service quality of the health sector in Ghana (Yakubu, 2016). In 1983, the PNDC government of Ghana adopted the International Monetary Fund and World Bank economic recovery program. This recovery program helped reduce the shortage in health supplies and equipment, but, it was

accompanied by disparities in health access. This was because health services became expensive and the poor had difficulties in accessing health care (Apoya & Marriot, 2011).

By the year 2000, the goal established by the Safe Motherhood conference could not be realized. The global community reaffirmed its commitment in 2000 by establishing a goal to reduce maternal mortality in the 8th MDG. During the 8th millennium summit in 2009, 189 countries endorsed the millennium declaration and pledged to meet the goals set by the 8th-millennium summit. Under this summit, goal number 5 (out of 10) aimed to reduce maternal mortality by the year 2015 (World Health Organization, 2015). As at 2015, the rate of maternal mortality was reduced worldwide from an estimated value of 532,000 in 1990 to 303,000 in the year 2015. However, this reduction was not enough to meet the target of a three-quarters reduction in maternal mortality from 1990 to 2015. In 2015, the "women who died around the world every day due to pregnancy and childbirth was 830. Out of 830, 550 occurred in sub-Saharan Africa and 180 occurred in Southern Africa and 5 occurred in developed countries" (World Health Organization, 2015). The direct causes of maternal deaths are hemorrhage, infection, hypertensive disorders and obstructed labor, and the indirect causes are associated with pre-existing diseases that are not complications from pregnancy but are intensified by pregnancy (Gil, Hernandez, Gil, & Alvarez, 2009).

Following the establishment of the MDG, the health sector has gone through changes. Many countries, especially developing countries subsidized health care, increased expenditure on health care and some introduced national insurance policy for the populace. However, these policies could not be sustained in some countries due to

economic turmoil. For example, in Ghana, subsidies were removed and user fees were introduced at health institutions to reduce the balance of payment deficit during a period of economic struggle (Creese & Kutzin, 1997). Ghana introduced the NHIS in 2003. One goal of the NHIS is to provide a broad package of service, by mainly targeting the rural and poor parts of the country (Ministry of Health, 2004). Prior to the introduction of the NHIS, Ghana was operating under a cash and carry system, where individuals paid to access health services (Agyepong & Adjei, 2008).

The NHIS provides outpatient care, inpatient care (admission treatment), oral health, eye care services, maternal care and emergency care. The outpatient service is a medical care or treatment that does not require an overnight stay in a hospital or medical facility. Outpatient care is administered in a medical office/hospital or outpatient surgery center (Santiago, 2016). It includes the consultations for malaria, acute respiratory tract infection, skin disease and ulcers, among others. The inpatient services refer to the medical treatment that is provided in a hospital or other facility and requires at least one overnight stay (Santiago A., 2016). It involves a general and specialist in-patient care, investigations including laboratory investigations, accommodation in general ward, among others. Oral health covers relief for pain, incision and drainage, tooth extraction and temporary relief. Dental restoration under the NHIS covers services such as simple amalgam fillings and temporary dressing. The eye care service under the NHIS includes the treatment of refraction, visual fields, keratometry, cataract removal and eyelid surgery. Maternal care covered under the NHIS includes antenatal care, delivery, caesarean section and postnatal care. Finally, emergencies include crisis health situations

that demand urgent intervention. An example is brain surgery or heart surgery due to accidents (Ministry of Health, 2004).

There are three types of health insurance schemes used in Ghana namely, district-wide mutual health insurance scheme, private commercial health insurance scheme and the private mutual health insurance scheme. The District Mutual Health Insurance Scheme is run by the government. It makes provisions for all Ghanaians without preference to subscriber's income level, place of origin, religion or educational level. On the other hand, the private health insurance scheme can be established by individuals without subsidy from Government. The private health insurance scheme can be formed by any group of people. For instance, members of a religious group or employees of a specific industry can come together and pay a contribution to cater for their health needs. The third type is the private commercial health insurance. This is a profit based insurance scheme operated by individuals using trending market conditions. Premiums are paid by subscribers and this premium is calculated based on the risks of an individual subscriber or group of subscribers (Ministry of Health, 2004).

An exemption strategy was put in the NHIS to offer financial protection to the poor and vulnerable groups in Ghana and to speed up progress towards achieving universal health care coverage. The exemption strategy in the NHIS includes the free maternal health care and contribution exemptions for children below 18 years and the aged. In 2008, the government of Ghana introduced the free maternal health care policy to improve access to health care for females who are pregnant or have given birth. The policy gave women access to free family planning, ambulance services, among others.

The government of Ghana wanted to encourage women to give birth in health facilities where they will have the services of a skilled health attendant and vital amenities. The initiative sought to reduce maternal mortality in Ghana (Unicef, 2013).

1.2 Problem Statement.

Over the years, a good deal of research has been conducted on the issue of maternal mortality worldwide. The countries with the highest rate of maternal mortality are the developing countries, with half of the rates being in sub-Saharan African countries (World Health Organization, 2015). Several reasons were identified as the possible cause of death of pregnant women. The government of Ghana introduced the NHIS, the free maternal health care policy and improved structures in the country. The mentioned measures were put in place to improve access to health care in Ghana. Despite all these measures, maternal mortality is still prevalent in Ghana, with the highest rates being in the Greater Accra, Upper West and Eastern Regions. The Eastern Region of Ghana recorded a high maternal mortality rate in 2013, a rate higher than that of the previous year despite the measures put in place by the government. According to the GHS, maternal mortality in the Eastern Region went up in 2013 to 122 as compared to the 116 maternal deaths in 2012. The Municipal Director of the GHS attributed this to the shortage of doctors and midwives, as well as limited funding from government (Smith, 2014).

1.3 Research Objectives.

The research sought to assess the effect of the free maternal health care policy on maternal mortality rate at the Nsawam Government Hospital. With the above aim in mind, the research assessed the following objectives:

- Examined whether the free maternal health care policy has led to a reduction in the rate of maternal mortality at the Nsawam Government Hospital.
- Determined whether women's attendance for ANC care has risen after the implementation of the free maternal health care policy at the Nsawam Government Hospital.
- Determined whether women's attendance for PNC services has risen after the introduction of the free maternal health care policy at the Nsawam Government Hospital.

1.4 Research Questions.

The above research objectives led to the construction of the following questions on which the research investigated. This research was driven by the questions:

- Has the free maternal health care policy reduced maternal mortality at the Nsawam Government Hospital?
- Has the introduction of the free maternal health care policy led to an increase in ANC attendance at the Nsawam Government Hospital?
- Has the introduction of the free maternal health care policy led to an increase in PNC attendance at the Nsawam Government Hospital?

1.5 Hypothesis.

This research aimed to find the relationship between maternal mortality and Ghana's free maternal health care policy. The free maternal health care policy was introduced by the government of Ghana and it exempts women from paying any fee when attending a health facility that the government has authorized to provide the services. For this research, the null hypothesis was tested. The null hypothesis in this research (H0) states that the hypothesis is false and the alternative hypothesis (H1) states that the hypothesis is true.

- H0: The implementation of the free maternal health care policy has not reduced maternal mortality at the Nsawam Government Hospital.
- H1: The implementation of the free maternal health care policy has led to a reduction in maternal mortality at the Nsawam Government Hospital.

1.6 Significance of the Study.

To the best of my knowledge, little research has been conducted at the Nsawam-Adoagyiri Municipality to examine if the implementation of the free maternal health care program has reduced maternal mortality at the Nsawam Government Hospital. This research assessed the effect of the free maternal health care policy on maternal mortality rates at the Nsawam Government Hospital. Also, government expenditure on the policy in the Nsawam Government Hospital was assessed to evaluate the sustainability of the policy. The research made recommendations to policy makers/stakeholders on the aspect of the policy that could be improved to effectively reduce maternal mortality at the Nsawam Government Hospital.

1.7 Methodology.

This section of the research includes the research design, sampling procedure, source of the data used, target group, the data collection procedure, sample size, data collection instrument and the analysis of the data collected. The research employed a descriptive design in explaining how antennal care and postnatal care were being used by women from inception till nine months after giving birth. Also, the record of maternal mortality was analyzed to tell whether maternal mortality has reduced after the implementation of the policy. The undergraduate thesis is a case study of the Nsawam Government Hospital for a period from 2000 to 2015.

Secondary quantitative data was used for the research. Internal data was taken by reviewing quarterly delivery records at the hospital. Again, ANC and PNC attendance lists were examined to show if there has been an increase in attendance for ANC and PNC at the hospital after the policy was introduced. In addition, funds provided by the government of Ghana for the implementation of the policy (receipts) at the hospital was examined. This information helped show if there has been an increase in funding for the project over the years and if the funds have been enough to run the program.

Additional information was taken by reviewing documents and databases. Data and information were gathered from government publications. For example, Ministry of Health, Ghana Statistical Services, Official page for GHIA, were used. Also, internationally recognized organizations, like the WHO, World Bank, among other documents were analyzed. These sources gave information about the background of the data gathered from the hospital.

1.8 Overview of Nsawam-Adoagyiri Municipality.

The Nsawam-Adoagyiri Municipality is in the Eastern region of Ghana. It was established in 2012 under Ghana legislative instrument 2047. The Municipality has a population of 86,000 which comprises of 49.1% males and 50.3% females. The municipality has 8 doctors, 5 specialists, 79 nurses and 20 paramedics. The doctor to patient ratio in the municipality is 1: 16,000 and it is lower than the nationally established standard of 1: 10,000 level of doctor to patient ratio. The most reported illness in the municipality is malaria, followed by pregnancy-related diseases (Ministry of Finance, 2016). The fertility rate is 3.8 with the general fertility of 109.2 births per 1000 women which are above the regional rate of 103.9 (Ghana Statistical Service, 2014).

1.9 Organization of The Study.

This research contains five chapters. Chapter one introduces the research by stating the research topic, objectives, questions the research seeks to answer and the hypothesis of the study. This chapter provides a background of the research topic and a summary of the method used to collect and analyze data in the research. The chapter concludes by giving an overview of the rest of the thesis. The second chapter contains literature relevant to the research on maternal mortality in the global and Ghanaian context. Also, it provides the policies that have been instituted globally and in Ghana to reduce maternal mortality. Finally, it provides the conceptual framework for which the research is based on.

Chapter three looks at the methodology that was used to collect and analyze the data to arrive at the findings. It includes the research design, source of data, how data was

collected and the instruments that were used for the research. The fourth chapter contains the results of this research. The chapter used the theoretical and empirical findings to point out the implications of the policy. Also, the research rejects or fails to reject the hypothesis statement. The last chapter provides a conclusion of the research by recapping the analysis conducted. The implication of the research was given and recommendations were made to policy makers and other stakeholders.

CHAPTER TWO

2.0 Literature Review

This chapter presents the current information available on maternal mortality around the world and in Ghana. It presents the causes of maternal mortality and proposed solutions for reducing maternal mortality by examining available literature on maternal mortality in the global and national level. Also, it presents the conceptual framework that guides this research.

2.1 Maternal Mortality in The Global Context.

According to the WHO, every year worldwide, 303,000 women die during pregnancy and childbirth, 2.7 million babies die within the first 28 days of their life and 2.6 million of children born around the globe are stillborn (World Health Organization, 2016). African countries have the highest maternal mortality rates (World Health Organization, 2016). The global health community has been in search of an effective solution to reduce maternal mortality. The causes of maternal mortality are classified under direct or indirect factors. Direct factors are because of the pregnancy, examples are hemorrhage, obstructed labor, hypertensive disorders, among others. On the other hand, indirect factors are associated with pre-existing diseases that are not complications arising from the pregnancy but are intensified by pregnancy. Examples of indirect factors are malaria, HIV/AIDS, among others. (Alvarez, Gil & Hernandez, 2009).

As reported by the WHO, direct factors account for about 75% of maternal mortality globally (World Health Organization, 2016). This was affirmed in the research

conducted by Dale et al. (2014) which showed that 73% of all maternal deaths were caused by direct factors with only 27.5% being because of indirect factors. The research was carried out from 2003 to 2009 and it used regional, sub-regional and global estimates. The main causes of maternal death identified were hemorrhage, hypertensive disorder and sepsis. Sub- Saharan African countries and southern India recorded over 80% of the deaths due to non-communicable diseases, poor health systems and inappropriate measures put in place to reduce maternal mortality (Say, et al., 2014). However, the research did not go further to state the individual country's contribution towards the high maternal mortality rate which could have helped the countries covered in the study in decision making. In addition, the research recommended the use of suitable tracking methods to measure the effectiveness of policies aimed at reducing maternal mortality. This will help policy makers track the effectiveness of the policy over a period and make the necessary adjustments to improve it (Say, et al., 2014).

High rates of maternal mortality affect a country's development efforts. Many studies that sought to find the relationship between economic development and health ran in one direction; from economic development to investment in health. However, research done by Amiri and Gerdtham (2013) showed a two-way relationship between economic development and health. The research used under-five mortality rate and maternal mortality ratio from WHO from 1990-2010. The research used per capita GDP as the measure of economic growth. The research investigated the effect of the disparity between the variables of GDP and health outcomes using the Granger causality analysis. The result showed that a reduction of mortality had a larger effect on GDP growth in low-income countries because the average efficiency rates in the countries used increased

over the period considered in the research (Amiri & Gerdtham, 2013). The effect of GDP on maternal outcomes was stronger in lower-income countries than in high-income countries. This means than an increase in GDP had a stronger effect in reducing maternal mortality in lower income countries than in countries with higher GDP. The return on investing in maternal health care in lower-income countries leads to a higher reduction in maternal mortality than in higher GDP countries. This reveals that marginal health investment on health outcomes is higher at low levels of GDP. In contrast, the causal effect of maternal and child mortality on GDP is generally stronger in high-income countries. This could be due to the difference in the level of capital or infrastructure (Amiri & Gerdtham, 2013).

The research carried out by Amiri and Gerdtham (2013) indicates that developing countries must invest not only in health but also in the human capital of the country. Amiri and Gerdtham (2013) defined human capital as "the stock of competencies, knowledge, social and personality attributes, including creativity, embodied in the ability to perform labor to produce economic value" (Amiri & Gerdtham, 2013). According to Amiri and Gerdtham, "*higher investment in human capital in developing countries leads to a higher reduction of maternal mortality*". The research shows that developing countries should invest more in human capital to reduce maternal mortality and this will, in turn, increase the gross domestic product of the nation. However, the research did not consider the effect of outliers, which could influence the results of the research.

2.2 Maternal Mortality in The Ghanaian Context.

Ghanaian societies regard the death of a woman from pregnancy-related complications as an issue that should be prevented by performing ritual purification. "The Akan communities, for instance, believed maternal death is unclean and they observe strict dietary and behavioral codes that were established by those before them. These codes are supposed to ensure their safe delivery" (Senah, 2003). To tackle the issue of maternal mortality, the government of Ghana introduced the "Safe Motherhood Program". It was introduced to ensure that a woman has control over issues that affect her. The program included making available trained midwives, quality ANC and PNC.

The research was carried out by the GHS in 2014 to analyze the components of the safe motherhood program. The research showed a reduction in institutional maternal mortality in Ghana from 195/100,000 live births in 2011 to 143.8/100,000 live births. This is shown in figure 1 in the appendix. The research showed a fall in ANC attendance from 98.2% in 2011 to 87% in 2014. However, the women visiting the hospital at least four times during the period for ANC increased from 72.7% in 2013 to 76% in 2014. This is vital because it shows that at least more women were reached with the basic intervention. This helps show the presence of ailment and enable treatment to begin immediately (Ghana Health Service, 2014). Also, PNC coverage increased from 56.9 in 2010 to 100.3% in 2014. The high value was due to challenges in recording data. For instance, women were recounted following their visits after the registration. Skilled delivery also rose from a low of 44.6% in 2010 to 56.7% in 2014 (Ghana Health Service, 2004).

The Greater Accra, Ashanti and Eastern Regions recorded the highest rates of maternal mortality over the years, with the lowest maternal mortality rate recorded in the Upper West, Upper East and Central (Ghana Health Service, 2014). Maternal mortality rates by regions are shown in figure 5 in the appendix. As revealed by the WHO, most of the causes of maternal mortality are preventable. This is because the health solutions to the causes of maternal mortality are well known (World Health Organization, 2016). All women need to have access to ANC, PNC and skilled assistance during delivery. Well-timed assistance can save the life of the woman.

As said by Nour (2008), there are three delays that prevent a pregnant person from receiving treatment in developing countries. These three delays according to Nour (2008) are the delay in reaching a health facility, delay in deciding to seek care on time and delay in receiving the necessary treatment in a health facility.

The first delay identified by Nour is the delay in reaching a health facility. He suggests that the delay is caused by the bad road network in developing countries and lack of transportation to certain parts of the country (Nour, 2008). Many communities do not have access to paved roads nor vehicles that could speed up the process of reaching health care facilities on time. In Ghana, health facilities are situated far from rural communities. The second delay identified by Nour occurs when upon arrival at the hospitals, women receive poor or ineffective treatment. Some developing countries do not have the necessary technology or drugs to provide critical care to patients. Finally, Nour's third delay is caused by the community, family members or the mother herself not being able to identify a life-threatening situation. Due to this, the woman is unable to

seek timely medical treatment. This happens when delivery takes place at home with unskilled attendants. These attendants lack the skills and tools to identify emergency situations (Nour, 2008). This research is relevant because the findings of the WHO showed that most of the causes of maternal mortality are preventable but, the woman must have access to well-timed assistance (World Health Organization, 2016).

2.3 Ghana's National Health Insurance Scheme (NHIS)

The NHIS was introduced in 2003 under the National Health Insurance Act of 2003 by the government of Ghana. It aims to provide Ghanaians access to affordable health care to replace the cash and carry system that was being used by Ghanaians (National Health Insurance Framework, 2004). The NHIS was created "to secure the implementation of a national health insurance policy that ensures access to basic health care services to all resident (Blanchet, Fink & Osei-Akoto, 2012). The ultimate vision of the government in instituting the NHIS was to provide an acceptable package of quality essential health services without out-of-pocket payment (National Health Insurance Framework, 2004).

The types of health insurance schemes are the District Mutual Health Insurance Schemes, Mutual health Insurance Schemes and Private Commercial Health Insurance Schemes (Ministry of Health, 2004). The District Mutual Health Insurance Scheme includes members from both the formal and informal sectors of the economy and it does not have a centralized ownership. It belongs to the members who pay contributions and surpluses made is plowed back into the scheme to reduce contribution levels or increase

the benefits package. This scheme might receive a subsidy from the government (Ministry of Health, 2004).

Private Mutual Health Insurance Scheme can be established and operated by any group of persons and it need not have a district focus. It can be community-based or occupational. Unlike the District mutual health insurance, it does not receive a subsidy from the government (Ministry of Health, 2004). The last type of insurance is the Private Commercial Health Insurance. It is operated for profit based on market principles. Premiums are based on the calculated risks of groups and individuals who subscribe to it. Thus, those with higher risks pay more (Ministry of Health, 2004). Membership to the national health insurance scheme is by contribution in the case of the social-type health insurance and premium payment in the case of private commercial health insurance (Ministry of Health, 2004).

2.4 Ghana's Free Maternal Health Care Program.

In 2008, the government of Ghana introduced a policy that exempted women from paying delivery fees in public, private and mission facilities in Ghana. It began with the four most deprived regions in Ghana namely, northern, upper east, upper west and central regions and moved to other parts of the country in April 2005 (Witter, Adjei, Armar-Klemesu, & Graham, 2009). The policy aimed to address the potential barriers women faced with the NHIS policy. The role of the free maternal health care policy is to reduce maternal mortality and improve women's health in general. It aims to reduce the number of women and children who die from preventable pregnancy and labor related problems, motivate women to seek ANC and PNC as well encourage women to deliver in

health care facilities" (Ghana Health Nest, 2012). For a woman to access the free maternal policy, she must be pregnant, have registered for the NHIA. All babies born to the woman are covered till they are 90 days old and the woman can use the free maternal health care services from the day her pregnancy is confirmed up until 9 months after she has given birth (Ghana Health Nest, 2012).

The free maternal health care policy was instituted to encourage women to give birth in health facilities. Research conducted by Bosu et al., showed an increase in facility delivery after the free maternal health care policy was introduced (Bosu, Jacqueline, Armar-Klemesu, & Tornui, 2007). Bosu et al., in 2007 evaluated the free maternal health care policy using data from the maternal ward, outpatient department, theater, emergency room, isolation ward, intensive care unit and the mortuary in 9 hospitals in the Central region and 12 hospitals in the Volta region. The result showed a decrease in maternal mortality from 445 to 381 per 100,000 total births in the Central Region and from 648 to 391 per 100,000 total births in the Volta Region after the policy. The changes in the 2 regions were not statistically significant (Bosu, Jacqueline, Armar-Klemesu, & Tornui, 2007). This research cannot be generalized to the whole of Ghana but, it gives a fair idea as to how effective the free maternal health care policy is in reducing maternal mortality. The insignificant result could be because the research used fewer data points for the analysis. The research used only one year before and after the policy to conduct the research.

2.5 Conceptual Framework.

The conceptual framework used for this research was developed by James and Deborah in 1992. They identified the determinants of maternal mortality by categorizing the causes of maternal deaths as either immediate or distant. The immediate causes that can affect a woman's pregnancy were her reproductive health, access to health services like ANC care, family planning, among others, health care behavior and a set of unknown factors (McCathy & Maine, 1992). The part of the conceptual framework which this research is based on is the how easily these women can assess the ANC and PNC services available to them. For instance, an educated woman is more likely to seek medical attention, attend ANC care and use the modern technology when in labor or delivery. On the other hand, a woman who is from a low-income level or low educational status is less likely to use a modern method of giving birth, due to her inability to afford those services or her inability to convey herself to a health center due to low-income levels (McCathy & Maine, 1992).

The reproductive status of a woman has a relationship with maternal mortality. According to Ahiadeke (2001), a woman with an unwanted pregnancy is more likely to seek an abortion (Ahiadeke, 2001). In Ghana, women often resort to illicit and unsafe abortions due to the illegality of abortion in Ghana (Ahiadeke, 2001). This will generally increase the risk of dying or disability. The next variable is access to health care services. This includes access to treatment for women safe and successful birth, availability of health facilities to offer women necessary services to increase the outcome of safe

delivery, this will include the availability of drugs, contraceptives and safe abortion procedures.

This research seeks to examine the funds provided for the free maternal health care policy and by this, it will identify if the amount spent on drugs and other services have increased over the years. When women have the free maternal health care policy, they will be more willing to seek medical care when they believe they will receive the needed service and drugs. Another variable used in the framework which is of significance to this research is the behavior of pregnant women towards the use of health care services. For the free maternal health care policy to be successful in reducing maternal mortality, women must access the services. However, women, especially those in rural parts of the country use harmful traditional practices like the improper use of drugs, pushing the abdomen to hasten delivery, among others. The outcomes of these immediate factors can lead to the woman getting pregnant, having a complicated pregnancy, disability or dying (McCathy & Maine, 1992).

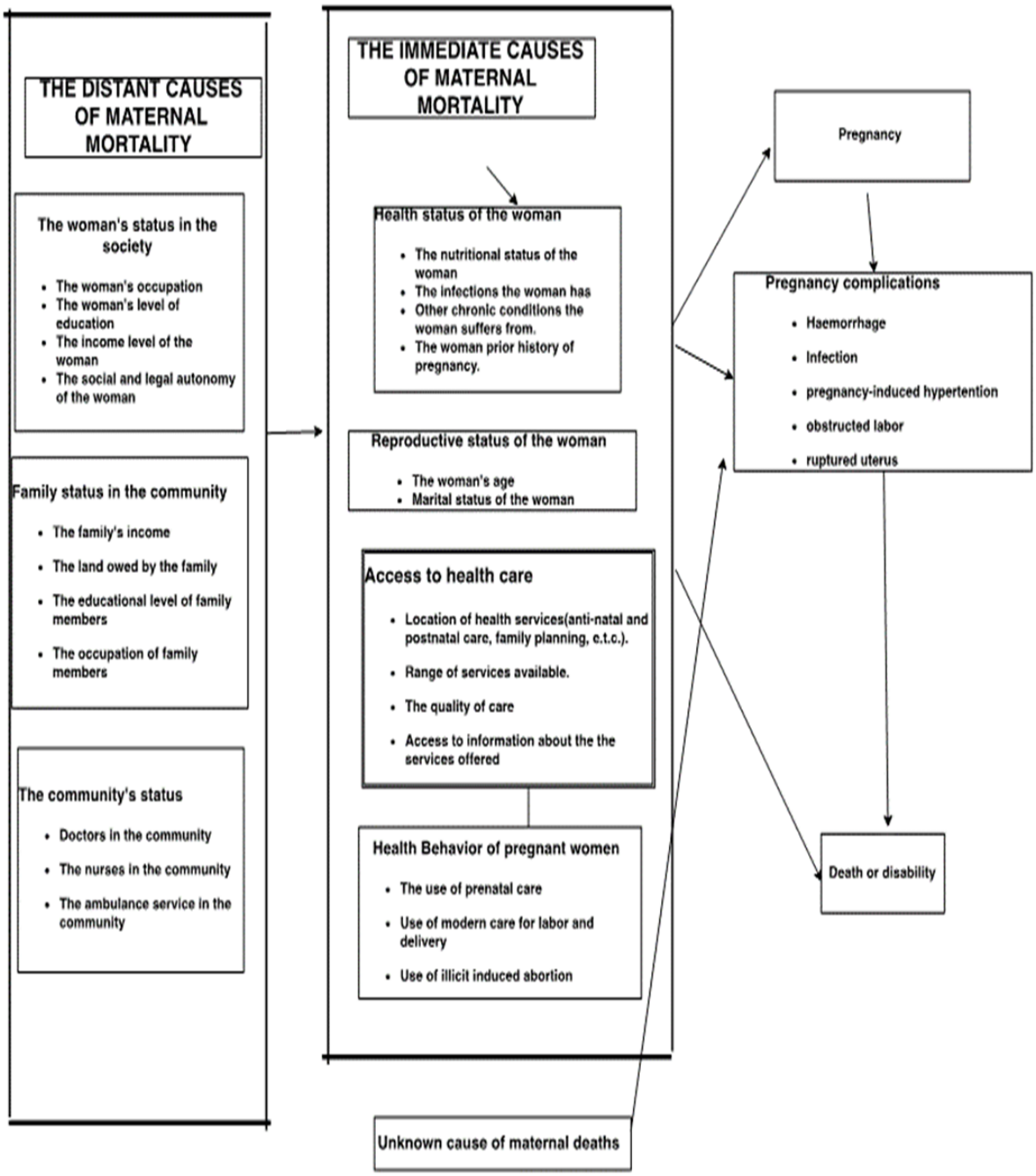

Figure 3. A framework for analyzing determinants of maternal mortality.

Reprinted from "A Framework for Analyzing the Determinants of Maternal Mortality, by J. McCarthy & D. Maine, 1992, p. 26, figure 2.

CHAPTER THREE

3.0 Methodology

Chapter three looks at the methodology that was used to collect and analyze the data to arrive at the findings. This chapter presents the conceptual framework for the variables that affect maternal mortality at the Nsawam Government Hospital and it explains the research method that was used to analyze the data collected. The methodology employed involves the collection of quarterly recorded data on maternal deliveries at health facilities, antenatal attendance by expectant mothers and postnatal attendance by females who have delivered at the Nsawam Government Hospital.

3.1 Target Population and Sampling Method.

Convenience sampling was used to select the Nsawam Government Hospital for the research. It is one of the largest hospitals at the Nsawam-Adoagyiri Municipality and patients are referred from other parts of the municipality to the hospital. The Nsawam Government Hospital provides obstetric and gynecologist services for women referred from other parts of the district. Also, the hospital offers ANC and PNC services and therefore, offers information to a certain degree about the situation in the district. However, the research is not a representation of the state of maternal mortality in the district because the population considered was the hospital.

3.2 Research Instruments and Data Sources.

Quantitative data was collected and used for the research. According to Sukamolson (2010), "*quantitative research is a social research that employs empirical*

methods and empirical statements" (Sukamolson, 2010). He states that quantitative research reviews how a program or policy fulfills a standard (Sukamolson, 2010). The research assessed the effect of the free maternal health care policy on maternal mortality at the Nsawam Government Hospital. With the collection and use of quantitative data, the researcher examines the effect of the policy on maternal mortality at the hospital as it is.

Internal data recorded from 2000 to 2016 at the hospital were collected and used in this research. Internal data was collected by reviewing the hospital's quarterly delivery records. Also, ANC and PNC attendance registry was analyzed and used to assess the effect of the policy on maternal mortality at the Nsawam Government Hospital. Additional data were also collected by reviewing documents and databases; Government publications from the Ministry of health, Ghana Statistical Services and the Ghana NHIA, among others. These sources provided data and information for the research

3.3 Research Analysis

The variables used in the research were the number of deliveries, ANC attendance, PNC attendance, maternal mortality and funds provided for the implementation of the free maternal health care policy at the Nsawam Government Hospital. The dependent variable for the research was maternal mortality at the hospital and the independent or explanatory variables were ANC, PNC, the number of deliveries and funding for the policy. The research was carried out to determine if the policy has led to a reduction in maternal mortality at the hospital. Also, the research examined if the policy has led to an increase in PNC and ANC attendance at the Nsawam Government

Hospital. Moreover, the funds spent on the policy was examined to determine if the funds have been increasing over the years and if they have, its effect on maternal mortality.

The relationship between Ghana's free maternal health care policy and maternal mortality rate at the hospital was examined. This showed the relationship between the variables used in this policy. T-test analysis was used to determine the difference in the means between the period before and after the implementation of the free maternal health care policy for the variables used in the research (maternal mortality, PNC and ANC attendance and the number of deliveries at the Nsawam Government Hospital). The analysis enabled the researcher to determine if there has been a significant difference in maternal mortality after the implementation of the policy at the hospital. Graphs such as scatter plots and bar charts were used to show the trend in the variables used in this research.

3.4 Hypothesis

This research aims to find the relationship between maternal mortality and Ghana's free maternal health care policy at the Nsawam Government Hospital. The null hypothesis in this research (H0) states that the hypothesis is false and the alternative hypothesis (H1) states that the hypothesis is true. For this thesis, the null hypothesis that was tested is stated below:

- **H0**: The implementation of the free maternal health care policy has not led to a reduction in maternal mortality at the Nsawam Government Hospital.

The alternative hypothesis is stated below:

- **H1**: The implementation of the free maternal health care policy has led to a reduction in maternal mortality at the Nsawam Government Hospital.

3.5 Definition of Variables

Maternal Mortality: Maternal mortality according to the World Health Organization is the "*death of a woman while pregnant or within 42 days of the termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental causes*" (World Health Organization, 2013).

ANC Attendance: Is a measure of the proportion of women who receive care at least once during pregnancy within a given year.

PNC Attendance: Is a measure of the proportion of women who receive care after giving birth.

3.6 Ethical Consideration.

To ensure that the study is conducted as thoroughly and ethically as possible, this research complies with ethical guidelines prescribed by the Ghana Health Service. The Department hosts the GHS Ethical Review Committee (GHSERC) which reviews and approves all proposals for research to be conducted in GHS facilities. It ensures consistency of all research conducted within the GHS. This research complies with the guideline below:

Risks and Benefits of the Research

The research bears no direct risk to individuals and the institution (Nsawam Government Hospital). Personal information in the records used was not exposed because the data was collected in aggregated form by date of attendance and cause of death only from the Nsawam Government Hospital. The data was identified by random numbers. In the case that the research shows that the free maternal health care policy has reduced maternal mortality, the government might scale up the policy to include other services. In the case that the research shows that the free maternal health care policy has not been beneficial in reducing maternal mortality, then the Nsawam Government hospital can put measures in place to make it effective. For instance, the hospital can devise strategies to get more women to attend PNC and ANC.

Confidentiality

The data collected and used in the research were anonymized and therefore the personal information of the women was not exposed. The researcher used random numbers to identify the data entries. Again, information collected was kept on the researcher's secure user log-in profile on an Ashesi university computer and a copy given to the hospital and the Ghana health service.

Anonymity

The data collected and used in the research was the number of deliveries, antenatal attendance, postnatal attendance, maternal mortality records and funds provided for the implementation of the policy at the Nsawam Government Hospital. Data on

maternal mortality was collected from the hospital aggregated by the year of death only. No respondent was used in this research.

Voluntarily Withdrawal

This research collected and used secondary data on ANC attendance, PNC attendance and data on maternal mortality for the Nsawam Government Hospital. No respondents were used in this research.

Compensation

There was no compensation because no respondents were used in this research. The institution that was used in the research is the Nsawam Government Hospital and a copy of the research was given to the hospital for their internal use.

Data Storage and Usage

The data that was collected and used for the research is kept on the researcher's secure user log-in profile on an Ashesi university computer. The research will not be used for any other purpose without the permission of the Ghana Health Service.

Description of Consenting Process

No respondents were used in the research. Only secondary data from the Nsawam Government Hospital was used in this research. Before beginning the research at the Nsawam Government Hospital, consent was sought from the Ghana Health Service. Also, the research was conducted according to guidelines set by the GHS.

Conflict of Interest and Data Ownership

There was no conflict of interest in the collection and handling of the data used in the research. The researcher and the affiliated institution of the researcher have no influence on the information that was provided.

Protocol Funding

This research is a requirement towards the completion of the researcher's Bachelor's Degree in Business Administration. There is no sponsor for this research. The researcher put aside GH₵ 300 for transportation to and from the hospital when conducting the research.

Duration and Timeline of the undergraduate thesis Research

This research took the duration of 28 weeks. It started on the 29th August 2016 and ended on the 17th of April 2017. 8 weeks were used to gather background information on the research topic. Four weeks were used in seeking permission from the Ghana Health Service Review Board. 6 weeks were used to gather information from the research site after permission was granted by the GHS. 6 weeks were used to analyse the data gathered from the hospital using statistical instruments like t-test and correlation coefficient and the remaining 4 weeks were used to write up the findings.

CHAPTER FOUR

4.0 Presentation and Analysis of Results

The data collected assesses the effect of the free maternal health care policy on maternal mortality at the hospital. This chapter is divided into three parts. The first part shows the trends in the variables used in this research namely, maternal mortality, antenatal attendance, postnatal attendance and the funds spent on the implementation of the free maternal health care policy at the Nsawam Government Hospital. The second part presents the results and analysis of the t-test statistical analysis, while the final part presents an analysis of the correlation between maternal mortality and the variables that affect maternal mortality at the hospital (ANC, PNC and the number of deliveries).

4.1 Analysis of Trends in the Variables

Figure 4 presented below shows the trend in maternal mortality at the Nsawam Government Hospital. As shown in figure 4 below, maternal mortality fell from 18 deaths in 2000 to 3 in 2006. However, after the implementation of the free maternal health care policy, maternal mortality decreased further from 3 to 1 in 2009. Maternal mortality rose in 2011 to 4 before declining afterward to 2 in 2012 and 1 in 2016. The highest maternal mortality,18, was recorded in 2002 before the free maternal policy was implemented. On the other hand, the lowest maternal mortality of 1 was recorded after the implementation of the free maternal health care policy.

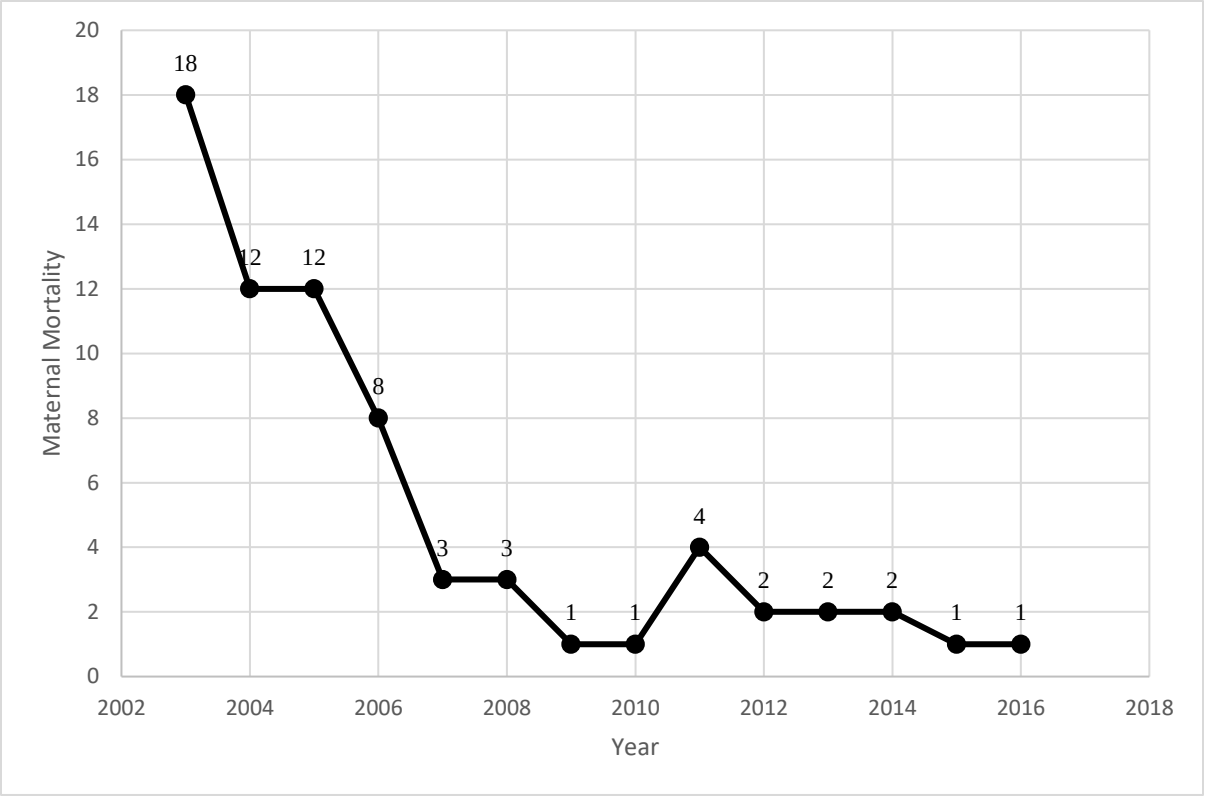

Figure 4. Maternal Mortality at the Nsawam Government Hospital from 2002 to 2016.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The decrease in maternal mortality can be associated with the free maternal health care policy. This is because women now have access to free ANC and PNC as well as the services of trained health personnel during delivery.

Figure 5 below shows the trend in the number of deliveries at the Nsawam Government Hospital. As shown in figure 5, the number of deliveries increased from 2230 to 6158 in 2012.

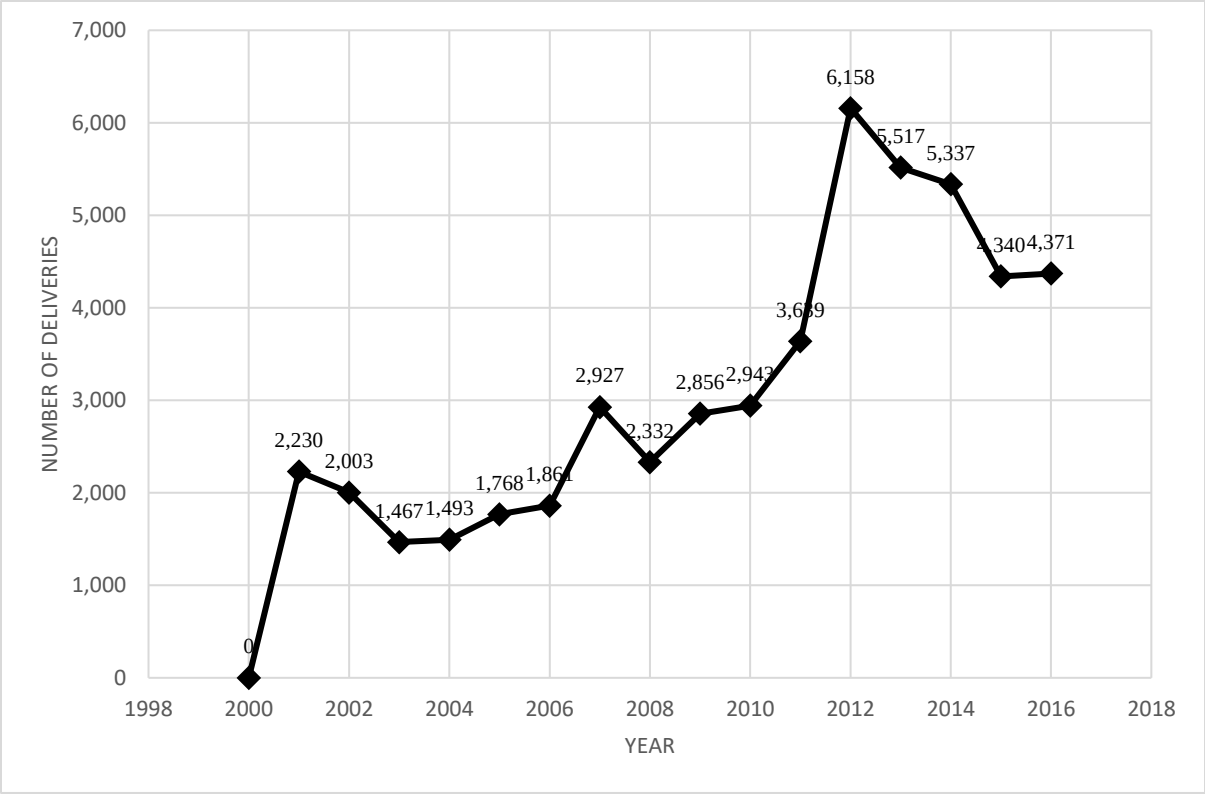

Figure 5. The Number of Deliveries at the Hospital from 2002 to 2016.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The expectation before carrying out the research was that after the policy was introduced in 2008, the number of women who give birth in the Nsawam Government Hospital will increase. However, the number of deliveries decreased from 6,158 in 2012 to 4,371 in 2016. This could be attributed to women giving birth at home or using traditional birth attendants. Moreover, the framework for analyzing determinants of maternal mortality by Deborah and James in figure 3, identified other factors that prevent women from delivering in health facilities other than user fees charged at the point of rendering the services. These factors such as the woman's level of education, closeness to

health facilities among others could be the reasons for the decrease in deliveries at the hospital even with the policy being in place.

Figure 6 below shows the trend in antenatal attendance in the Nsawam Government Hospital. One of the objectives of the free maternal health care policy is to increase attendance in health facilities.

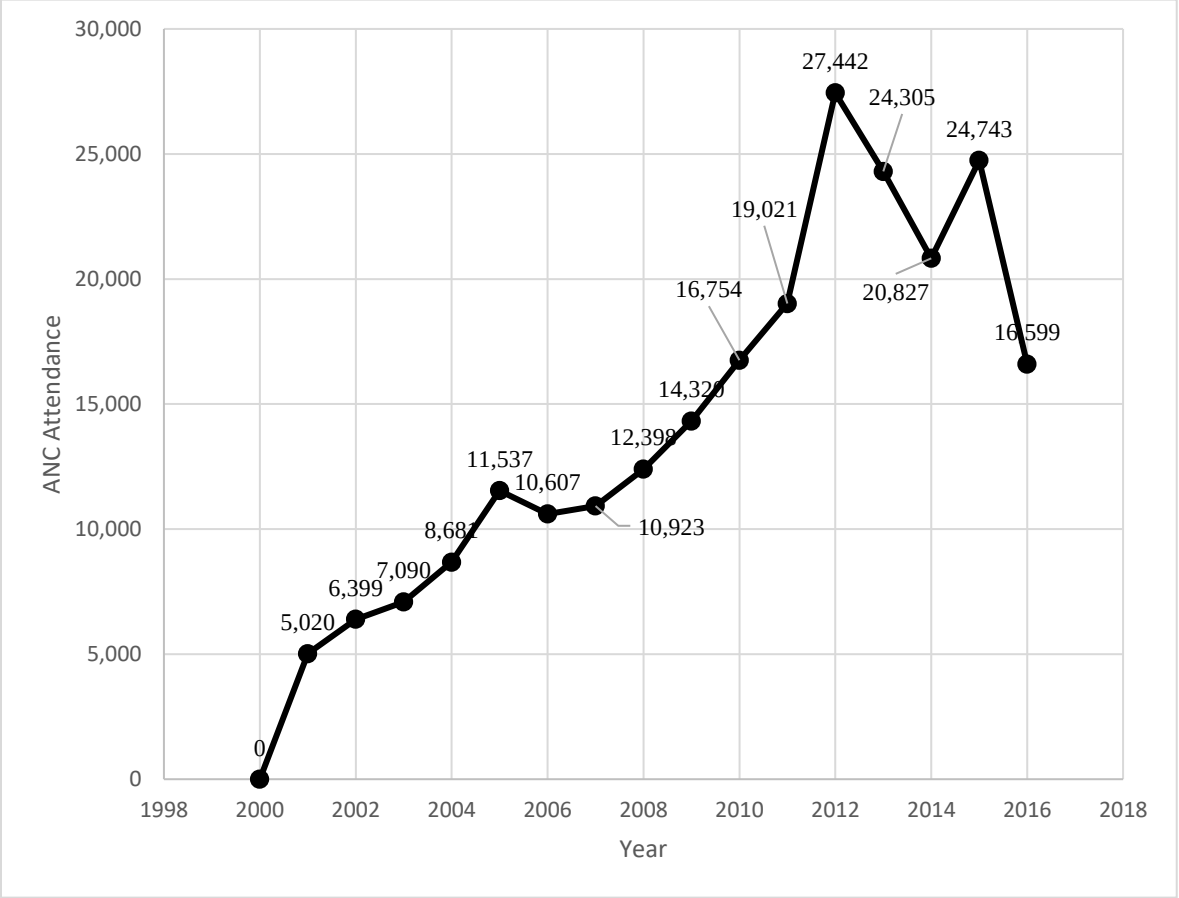

Figure 6. Antenatal Attendance at the Nsawam Government Hospital From 2001 to 2016.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

As shown in figure 6, antenatal attendance at the Nsawam Government Hospital increased from 5,020 in 2001 to 11,537 in 2005. It declined afterward to 10,607 in 2006 but, it rose afterward to 27,442 in 2012. The highest antenatal attendance was 27,442 recorded in 2012, while the lowest antenatal attendance recorded was 5,000 in the year 2000. Even though the free maternal health care policy was expected to increase ANC at the Nsawam Government Hospital, ANC attendance reduced from 27,442 in 2012 to 20,827 in 2014 and from 24,743 in 2014 to 16,499 in 2016.

This could be due to the presence of other factors that prevent women from accessing health care facilities other than fees charged by service providers. These barriers could be non-financial, such as cultural preference to give birth at home, ethnic group practices, and distance from health facilities, among others. As stated by the GHIA, the free maternal health care policy would not be effective in reducing maternal mortality if the factors that increase ANC attendance are non-financial. The lowest ANC was 5,020 recorded in 2001 before the policy was introduced, while the highest ANC attendance was 27,442 recorded in 2012 after the policy was introduced.

Figure 7 shows the trend in postnatal attendance at the Nsawam Government Hospital which increased from 614 in 2004 to 6,246 in 2016.

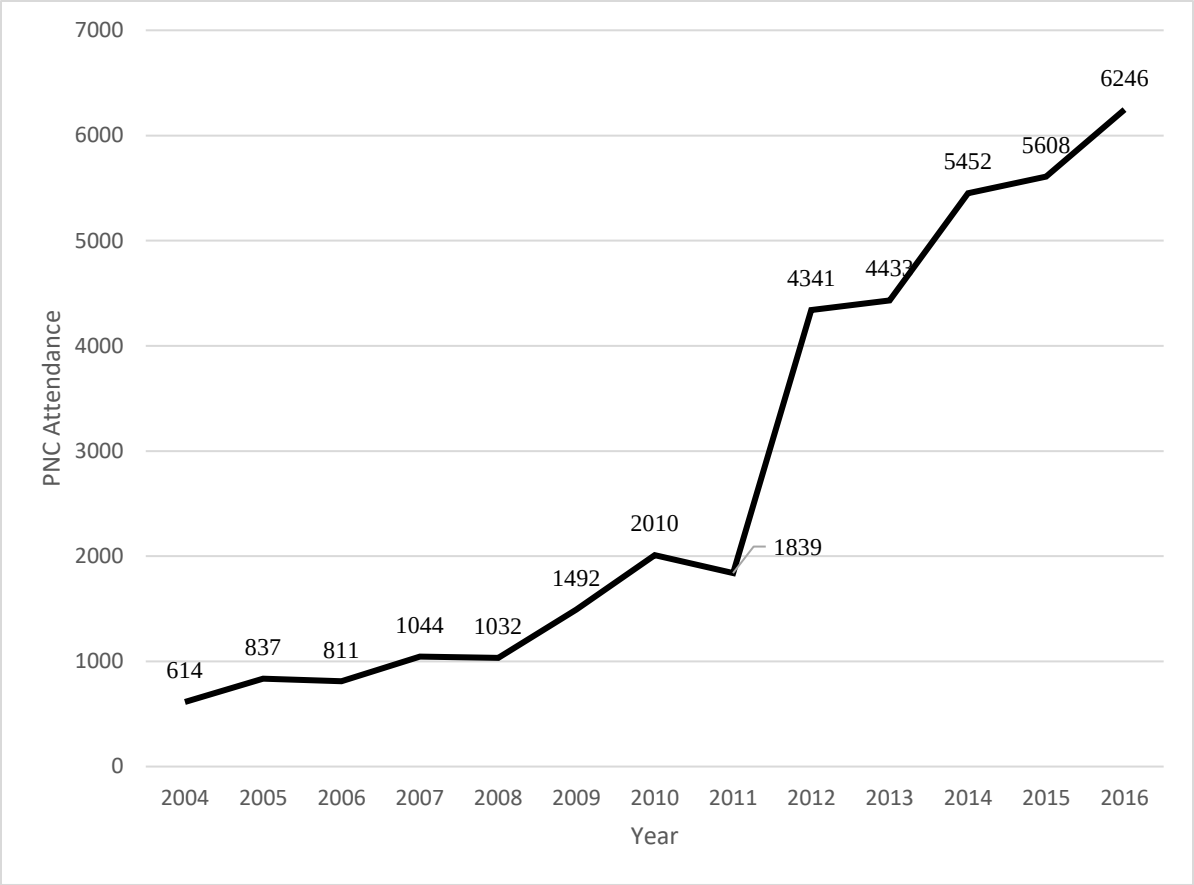

Figure 7. The Trend in Postnatal Attendance at the Nsawam Government Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The increase in postnatal attendance might be because of the introduction of the free maternal health care policy at the hospital. However, in 2011 antenatal attendance fell from 2010 to 1839. The highest postnatal attendance was 6246 recorded in 2016, while the lowest postnatal care attendance was recorded in 2004.

Figure 8 shows the attendance for the outpatient department at the hospital which increased from 11,646 in 2010 to 23,490 in 2015.

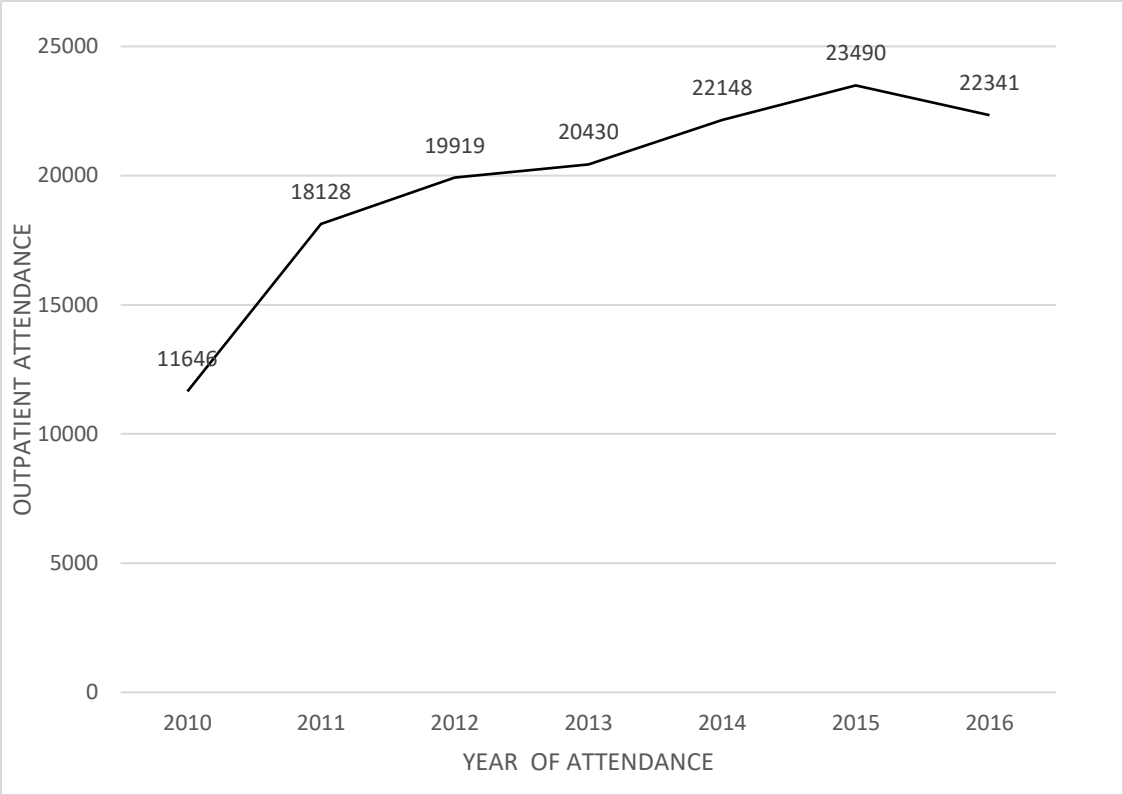

Figure 8. Attendance for the Outpatient Department at Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The outpatient attendance decreased from 23,490 in 2015 to 22,341 in 2016. The outpatient care covers the drugs and services provided to women who were treated under the free maternal health. Outpatient care may be administered in a medical office/hospital or outpatient surgery center (Santiago, 2016). From figure 8, outpatient attendance increased over the years, this means that the number of women who were provided with basic treatment had increased.

Figure 9 shows the inpatient attendance for the Nsawam Government Hospital which increased from 3,924 in 2010 to 24,387 in 2011.

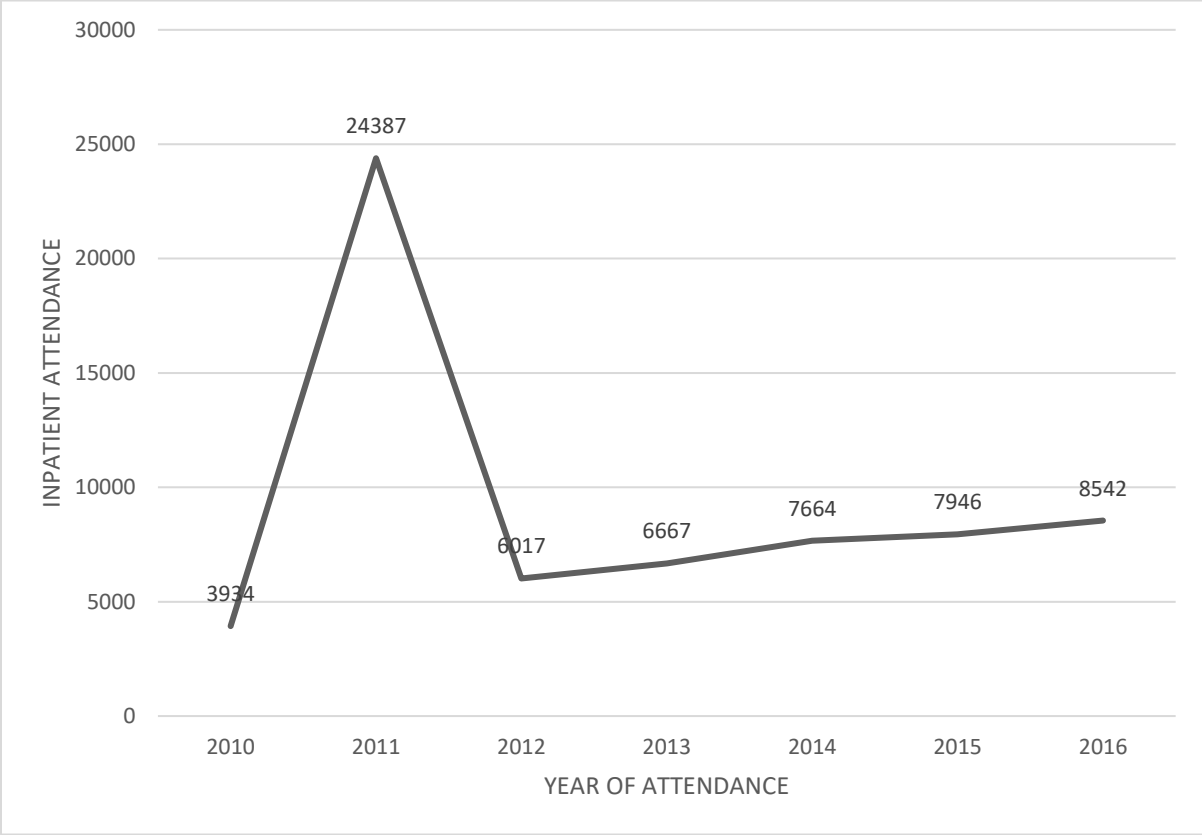

Figure 9. Attendance for the Inpatient Department at the Nsawam Government Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

Inpatient attendance decreased from 24,387 in 2011 to 6,017 in 2012. Afterward, it increased to 8,542 in 2016. Inpatient services refer to the medical treatment that is provided in a hospital or other facilities and requires at least one overnight stay (Santiago A., 2016). The sharp decline in attendance for inpatient department in 2011 from 24,387 to 6,017 in 2012 might be good because it shows that patients are receiving timely

medical care/treatment. Therefore, patients are not required to stay overnight at a health facility.

Figure 10 shows the funds spent on running the free maternal health care policy at the Nsawam Government Hospital which increased from GHC 423,311.11 in 2010 to GHC 2,398,788.87 in 2016.

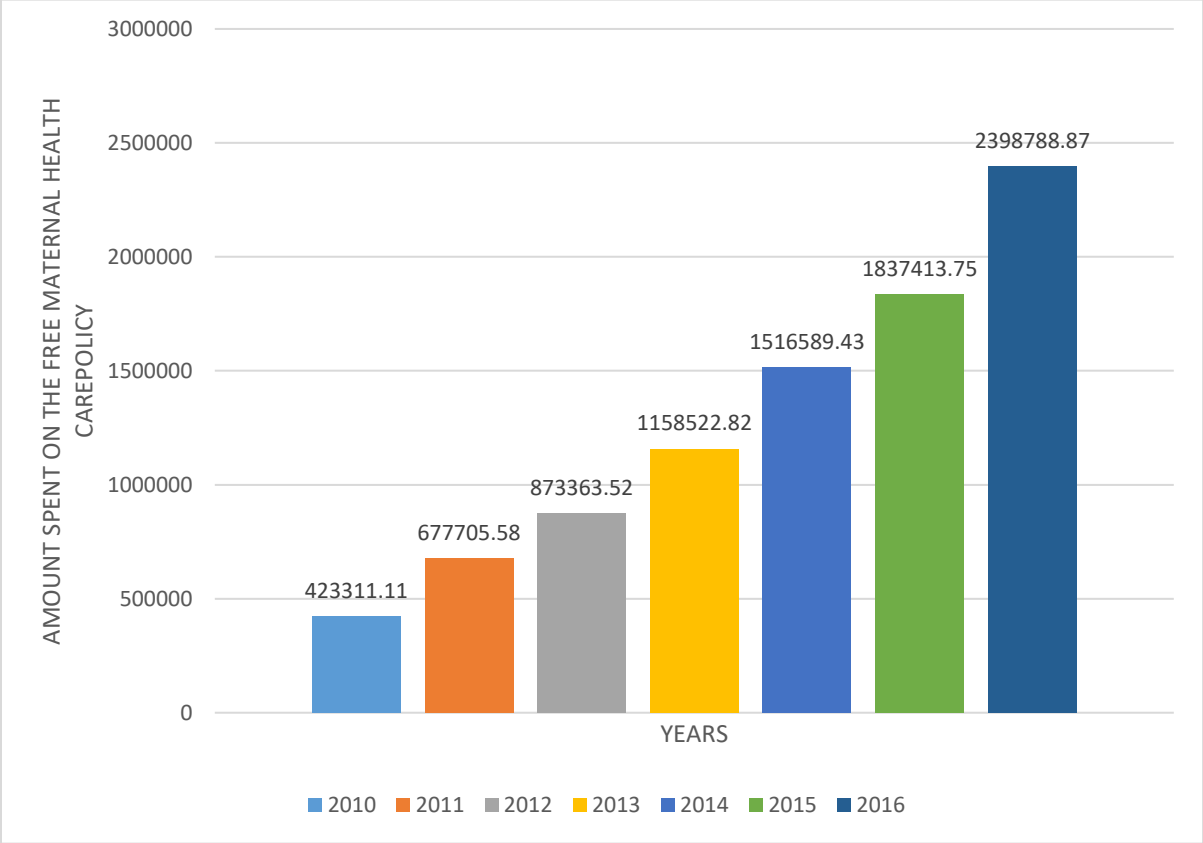

Figure 10. Spending on the Policy at the Hospital from 2010 to 2016.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The amount comprises the cost of drugs and services rendered to the women who are catered for under the free maternal health care policy. The increase in funds spent on the free maternal health care policy could be because of the increase in outpatient attendance as shown in figure 8. The increase in the number of pregnant women seeking care is good because as shown in the research conducted by the WHO, health solutions to factors causing maternal mortality are well known but, well-timed assistance is needed to save the lives of women (World Health Organization, 2016). When more women are being reached with maternal services like free ANC, PNC and the services of a trained birth attendant, then there is a likelihood of reducing maternal mortality at the Nsawam Government Hospital. Government spending on the free maternal health care policy is likely to reduce maternal mortality in line with the suggestion by Amiri and Gerdham (2013) relating higher investment in human capital to lower maternal mortality (Amiri & Gerdtham, 2013).

4.2 Has there been an improvement in health outcomes after the policy was introduced?

A t-test was carried out to test whether health outcomes has improved after the introduction of the policy. The test was used to determine whether there has been a significant difference in means of maternal mortality after the policy was introduced. A statistically significant t-test indicates that the mean of maternal mortality in one period is larger than that of the other period. The null hypothesis that the difference between the period before and after the free maternal healthcare policy is zero was tested. The tables below show the outcome of the t-test analysis for the variables used in the research

namely; maternal mortality, ANC, PNC and number of deliveries at the Nsawam Government Hospital.

To conduct the analysis, the variables were tested for normality using the Jarque-Berra test. Maternal mortality at the hospital was not normally distributed however, ANC, PNC and delivery at the hospital were normally distributed. The level of significance used for the t-test analysis was 0.05(5%) and a two-tailed test was conducted.

Table 1.

A test showing the difference in means for Health Outcomes at the Nsawam Government Hospital.

Health Outcomes	Mean before Policy	Mean After policy	Degrees of freedom	P- Values
Maternal mortality	7.14	2.00	0.05	0.112
ANC	7047.71	18733.20	0.05	0.00
PNC	323.14	3349.70	0.05	0.00
Delivery	1546.00	4040.40	0.05	0.00

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

As shown in table 1, the mean for maternal mortality at the hospital decreased after the introduction of the policy from 7.14 to 2.0. This means that maternal mortality

reduced at the hospital after the policy was introduced. However, the decrease in maternal mortality was insignificant. This was because, at 5% significance level for a two-sided test, the p-value was 0.112. Thus, the researcher failed to reject the null hypothesis that "there is no difference in the means over the two periods".

This indicates that there was an insignificant difference between maternal mortality at the hospital between the period before and after the policy. The outcome of the research is in-line with the research conducted by Bosu et al., in 2007 which showed that a reduction in maternal mortality after the policy was statistically insignificant (Bosu, Jacqueline, Armar-Klemesu, & Tornui, 2007).

The insignificant difference in means could be because of the small sample used in both research. Also, the research used data from one hospital and the research by Bosu et al. used two regions in Ghana Volta and Central region. The similarity in results could be because of the use of small data points in both research. Bosu et al's research used only one year before and after the policy in two regions of Ghana to evaluate the free maternal healthcare policy, while this research uses data from 2000 to 2016 and it focused on only one hospital.

As shown in table 1, the mean for antenatal attendance at the hospital increase after the policy was introduced. This is because the mean after the policy was introduced was 18733.2 and this is greater than the mean of 7047.7 before the policy was introduced. Also, the p-value was 0.00, this is less than the alpha value of 0.025 (i.e., $p > .025$), it can be concluded that there is a statistically significant difference between our two variable scores (antenatal attendance before and after the policy).

The significant difference between the period before and after the implementation of the free maternal health care policy at the hospital means there has been a significant increase in antenatal attendance at the hospital. This means that more women are being provided with the needed drugs and service of a health professional to ensure their safe delivering. This is because antenatal attendance allows early detection of health complications and immediate treatment can be prescribed to improve the health of the woman and baby.

As shown in table 1, the mean for PNC attendance after the implementation of the policy increased 323.14 to 3349.7 after the policy. The p-value is 0.001, and since it is less than the alpha value of 0.025 (i.e., $p > .025$), it means that there is a statistically significant difference between postnatal attendance after the policy. Therefore, the null hypothesis was rejected. This significant increase in PNC attendance could be because of the free maternal health care policy at the Nsawam Government Hospital. This shows that more women are being reached with the necessary drugs and services to improve their health after delivering.

As shown in table 1, the mean number of deliveries at the Nsawam Government Hospital after the policy increased from 1546 to 4040.4 after the policy. The increase indicates that more women gave birth under the supervision of a professional birth attendant after the policy was introduced. This is good because as compared to traditional birth attendants, the hospital is better equipped to manage emergency situations during delivery.

The p-value is 0.00 which is less than the alpha value of 0.025. Therefore, the null hypothesis was rejected since there was a statistically significant difference between the number of deliveries before and after the policy. The increase in the number of deliveries at the Nsawam Government Hospital could be because of the implementation of the free maternal health care policy. This indicates that pregnant women are given the needed assistance during delivering.

4.3 The relationship between the Policy and Health Outcomes at the Hospital.

A correlation coefficient was used to assess the possible linear association between maternal mortality and ANC, PNC, funds spent on the free maternal health care policy and the number of deliveries at the Nsawam Government Hospital. According to Mukaka (2012), the values of the coefficient of correlation range from a perfect negative correlation (-1) a perfect positive correlation (+1). The coefficient of correlation indicates the association between two numerical variables (Mukaka, 2012).

Table 2.

The Correlation Matrix between Maternal Mortality and the Variables that Affect Health Outcomes at the Hospital.

	Maternal Mortality	Deliveries	ANC	PNC	Funds
Maternal Mortality	1				
Deliveries	-0.69	1			
ANC	-0.69	0.93	1		
PNC	-0.60	0.85	0.78	1	
Funds	-0.49	0.72	0.64	0.96	1

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

As shown in table 2, the correlation between maternal mortality and number of deliveries under the supervision of a certified professional midwife at the Nsawam Government Hospital is -0.69.

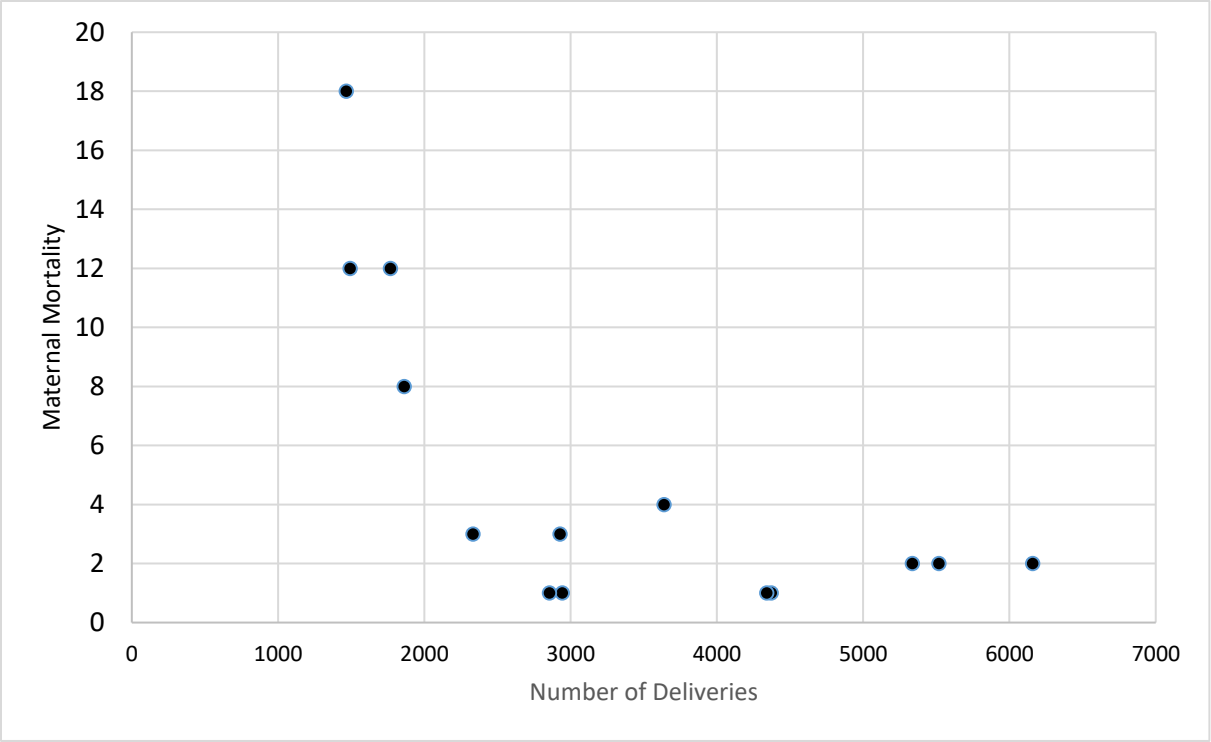

Figure 11. Correlation between Maternal Mortality and Deliveries at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

As shown in figure 11, maternal mortality and the number of deliveries is negatively correlated. This means that women who give birth at the Nsawam Government Hospital under the supervision of a trained midwife are less likely to die of maternal factors. This could be because they are provided with skilled services and the necessary amenities that can be used in handling an emergency.

Figure 12 shows a scatter plot depicting the correlation between maternal mortality and ANC attendance at the Nsawam Government Hospital. As shown in table

2, the correlation between maternal mortality and number of deliveries at the hospital is -0.69.

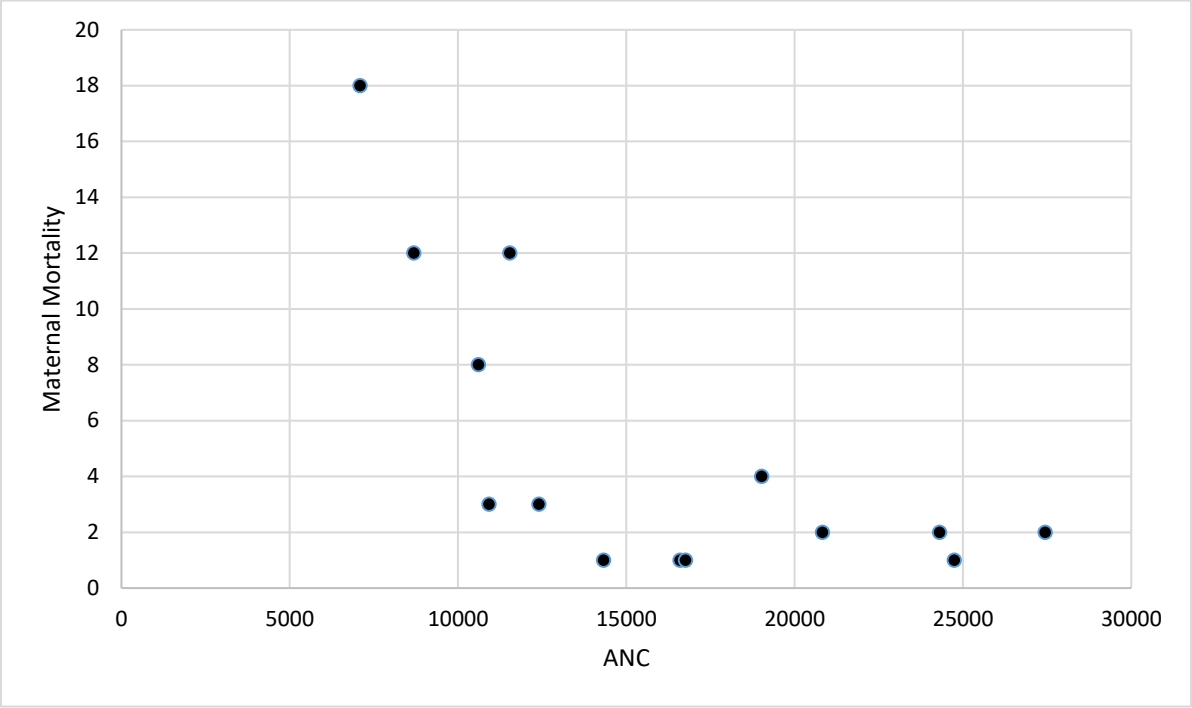

Figure 12. The Correlation between Maternal Mortality and ANC at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

As shown in figure 12, the correlation between maternal mortality and ANC is negative. This connotes that women who receive care at the Nsawam Government Hospital before putting to birth are less likely to die of maternal factors. As stated in the 2014 annual report for family health (2014), antenatal care shows that more women were reached with the basic intervention as it helps show the presence of ailment and enable treatment to begin immediately.

Figure 13 shows a scatter plot illustrating the correlation between PNC and maternal mortality at the Nsawam Government Hospital. As shown in table 2, the correlation between maternal mortality and number of deliveries at the Nsawam Government Hospital is -0.6.

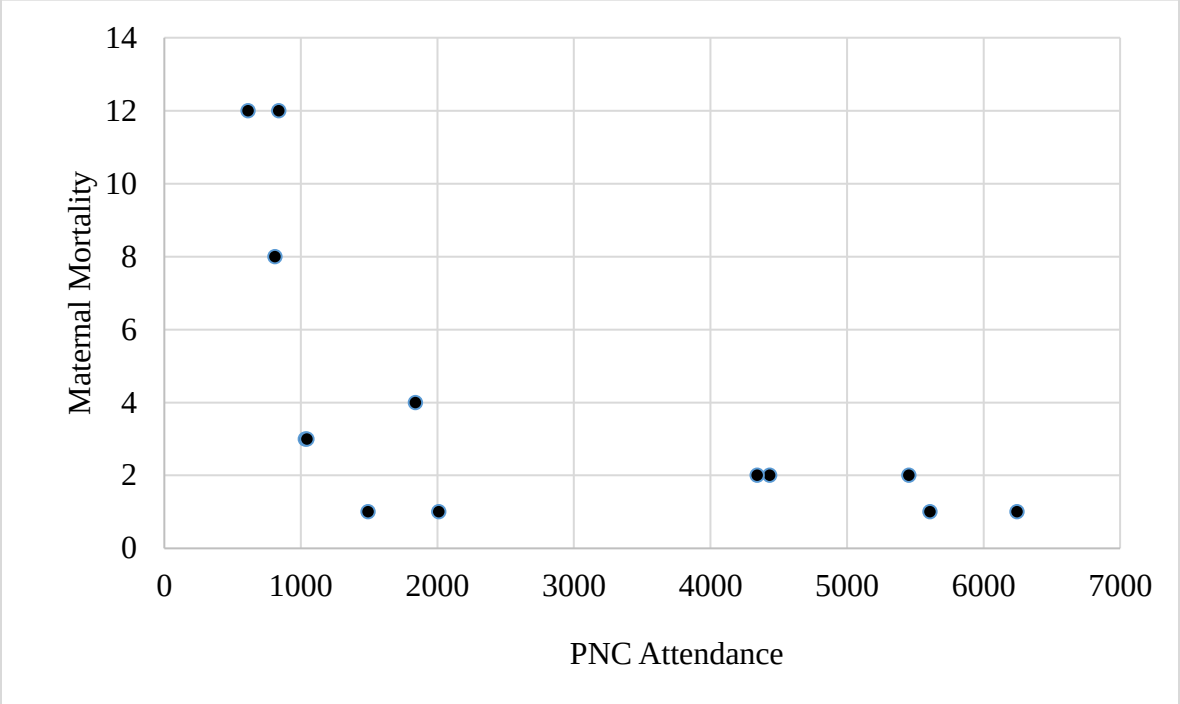

Figure 13. The Correlation between PNC and Maternal Mortality at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

This means that PNC and maternal mortality at the Nsawam Government Hospital correlate negatively. The inference is that women who receive care at the Nsawam Government Hospital after delivering are less likely to die of maternal factors. This could be because the free maternal health care policy has provided women with access to the needed assistance and amenities for safe delivery. It could also be because of other

distant factors such as increased level of education, the number of hospitals, among others. which was identified in the conceptual framework for this research.

Figure 14 shows a scatter plot of the correlation between funds spent on the policy and maternal mortality at the Nsawam Government Hospital. As shown in table 2, the correlation between maternal mortality and funds spent on the policy at the hospital is -0.5.

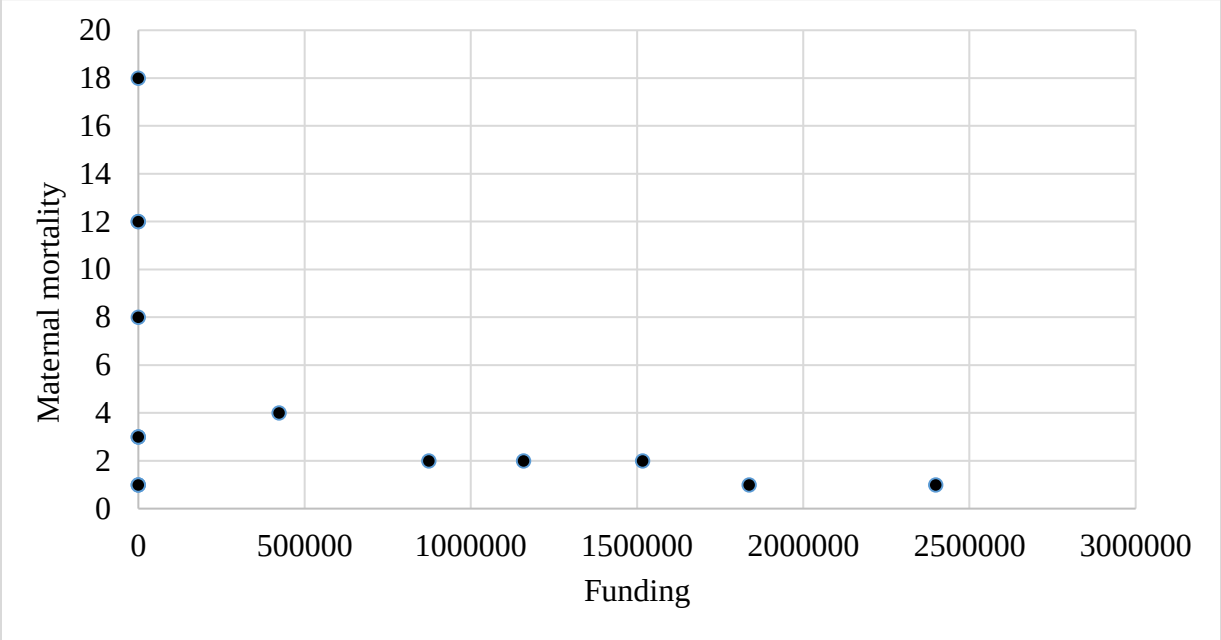

Figure 14. The Correlation between Funding and Maternal Mortality at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The amount spent on the policy is negatively related to maternal mortality at the Nsawam Government Hospital. This shows that the more amount spent on the policy, the more the reduction in maternal mortality at the hospital. This is in line with the research

conducted by Amiri and Gerdtham (2013) which showed that a higher investment in human capital in developing countries leads to a higher reduction of maternal mortality (Amiri & Gerdtham, 2013). In this case, maternal mortality will reduce as more funds are spent running the policy. The funds are used for the provision of drugs, payment of health personnel, among others.

Figure 15 shows a scatter plot illustrating the correlation between funds spent on the policy and the number of deliveries at the Nsawam Government Hospital. As shown in table 2, the correlation between funds and delivery at the Nsawam Government Hospital is 0.72.

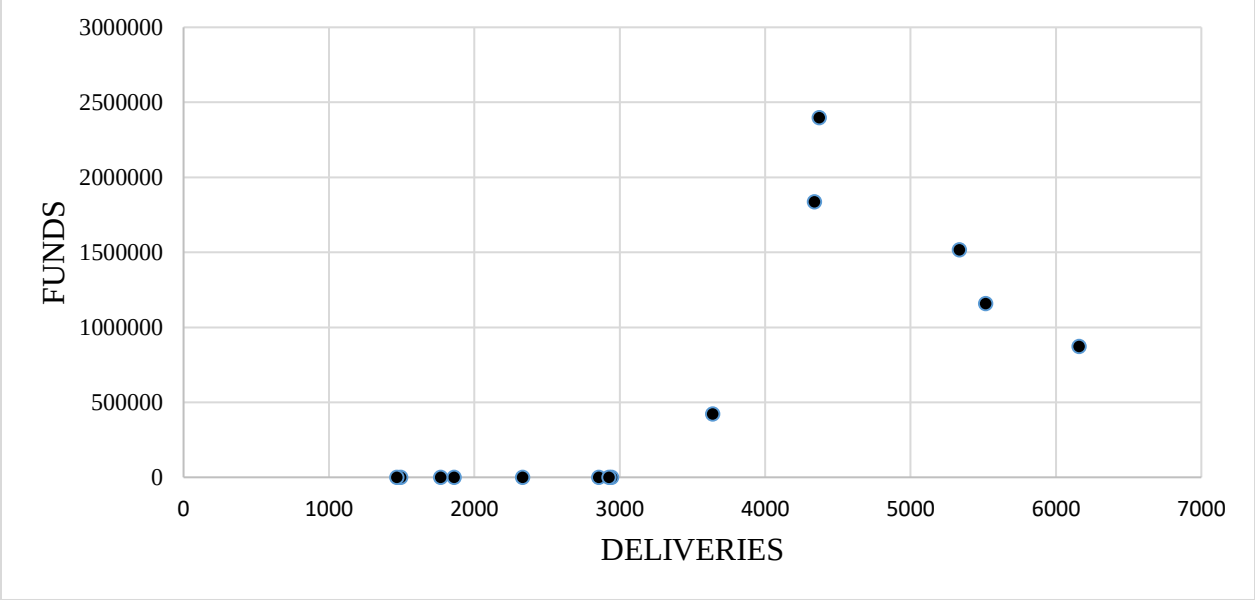

Figure 15. The Correlation between Funds and the Number of Delivery at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The amount spent on the policy is positively correlated to the number of deliveries at the Nsawam Government Hospital. This shows that the more amount spent on the policy, the more women are likely to give birth at the hospital. As illustrated in the conceptual framework developed by Deborah and James in 1992, women are more likely to visit the health facility if they know they will receive the needed service and drugs (McCathy & Maine, 1992). In this case, a woman will be more willing to deliver at the Nsawam Government Hospital if she knows she will receive the needed treatment and be provided with a quality service. The funds are used in the provision of drugs, payment of service personnel. Therefore, the more funds spent on the policy, the more drugs and service personnel will be made available.

Figure 16 shows a scatter plot illustrating the correlation between ANC attendance and the number of deliveries at the Nsawam Government Hospital. As shown in table 2, the correlation between ANC attendance and delivery at the Nsawam Government Hospital is 0.93. This is a very strong correlation.

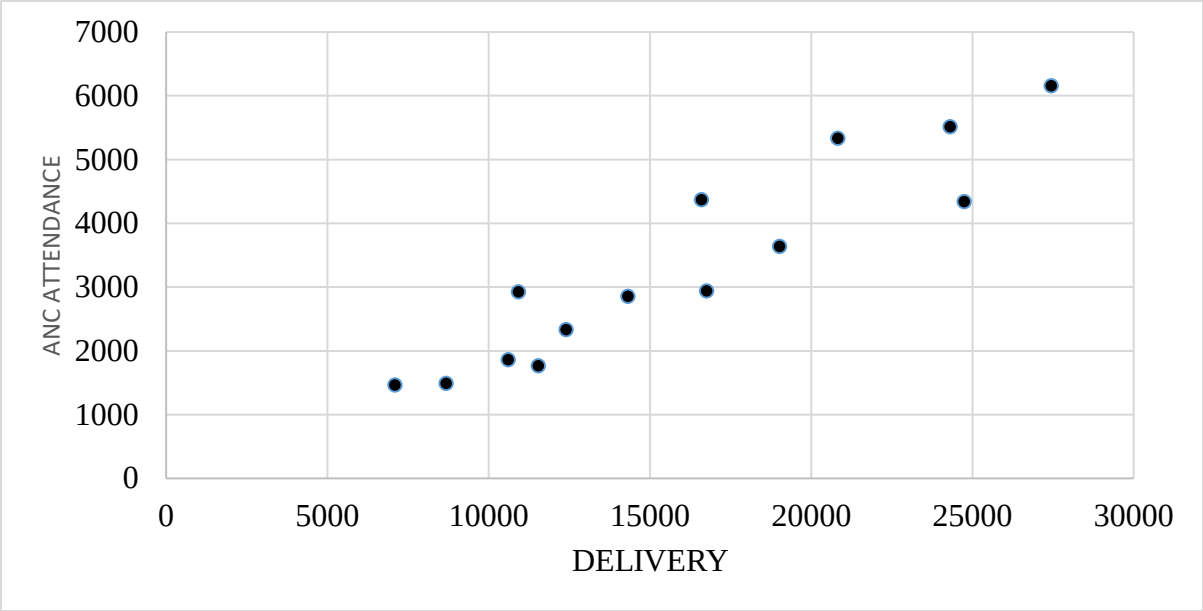

Figure 16. The Correlation between delivery and ANC Attendance at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

The number of deliveries at the Nsawam Government Hospital is positively correlated with ANC attendance at the hospital. This shows that the more times a woman gives birth at the Nsawam government Hospital, the more women likely she is to give birth at the hospital. It can also be inferred that the woman who attends ANC regular is more likely to give birth safely because, during ANC, ailments are diagnosed. The correlation between the number of deliveries and ANC is linear while the correlation between the other variable is not linear. This means that although some of the variables have a positive relationship, due to non-linearity of the graph, it will improve but, after a point will worsen.

Figure 17 shows a scatter plot depicting the correlation between ANC and PNC attendance at the Nsawam Government Hospital. As shown in table 2, the correlation between ANC and PNC is 0.79.

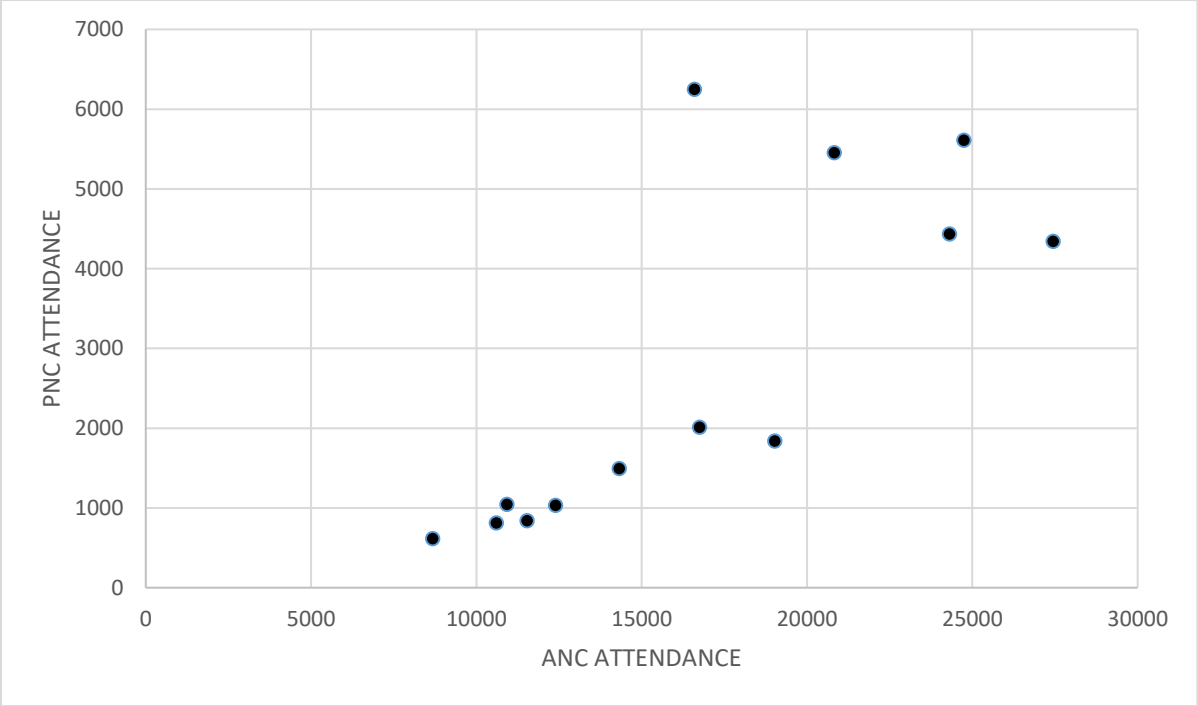

Figure 17. The Correlation between ANC and PNC attendance at the Hospital.

Note. The analysis is based on data retrieved from the Obstetrics and Gynecology department of the Nsawam Government Hospital. Reprinted with permission.

Also, as shown in table 2, ANC and PNC attendance are positively correlated. This means that women who attend ANC at the Nsawam Government Hospital are likely to attend PNC after giving birth.

CHAPTER 5

5.0 Conclusion and Recommendations

This chapter summarizes the previous chapters of the research and provides the recommendations, limitations of the research and the areas for future research.

5.1 Summary of Findings

The research made some observations and discoveries. Firstly, a total of 70 maternal mortalities was recorded between the periods of 2003-2016 at the hospital. Maternal mortality reduced from 18 in 2000 to 1 in 2016 though it rose in 2011 to 3, before declining to 1 in 2016. ANC attendance showed an increase from 5,020 in 2001 to 16,599 in 2016. Likewise, PNC attendance also increased from 614 in 2004 to 6246 in 2016. The number of deliveries also increased from 2230 in 2003 to 4371 in 2016. The funds spent on the free maternal health care policy at the Nsawam Government Hospital increased steadily from GH₵ 423,311.11 in 2010 to GH₵ 2,398,788.87 in 2016.

A t-test was used to analyze the data collected from the hospital and it showed a statistically insignificant difference in the means of maternal mortality. The test showed a statistically significant difference in means for ANC, PNC and the number of deliveries between the period before and after the policy. This implies that the free maternal health care policy has not led to a significant reduction in maternal mortality at the hospital. However, the policy has led to a statistically significant increase in ANC and PNC attendance at the hospital. The number of deliveries also showed a significant increase after the policy.

A correlation coefficient was used to show the relationship between the variables that affect maternal mortality at the Nsawam Government Hospital. It showed a negative relationship of -0.69 between maternal mortality and ANC at the Nsawam Government. Also, there was a negative correlation of -0.6 between PNC and maternal mortality and a negative relation of -0.7 between the number of deliveries and maternal mortality at the hospital.

This indicates that an increase in ANC and PNC attendance and delivery at the hospital has the likelihood of reducing maternal mortality at the Nsawam Government Hospital. There was a negative relationship of -0.5 between maternal mortality and the amount spent in running the policy at the hospital and it shows that the more the fund spent on the policy, the more it will impact the reduction of maternal mortality at the hospital. Furthermore, funding correlated positively (0.72) with the number of deliveries at the hospital. This shows that the more the funds spent on the policy, the more women are likely to give birth at the hospital. ANC attendance correlated positively with the number of deliveries and PNC attendance at the hospital. This shows that women who attend ANC at the hospital are more likely to deliver at the hospital and women who visit the hospital for ANC are more likely to attend PNC at the hospital.

5.2 Conclusion

On the effectiveness of the free maternal mortality at hospital, the researcher formulated three objectives for the investigation of the research problem;

The research sought to examine whether the free maternal health care policy has led to a reduction in the rate of maternal mortality at the Nsawam Government Hospital and the

research question the researcher answered was if the free maternal health care policy reduced maternal mortality at the Nsawam Government Hospital? The methods employed in analyzing the data collected were trend analysis, t-test and correlation coefficient. The trend analysis showed a reduction in maternal mortality however, the t-test analysis showed an insignificant difference in the means for maternal mortality between the period before and after the policy. This means that the free maternal health care policy has not significantly reduced maternal mortality at the hospital after the policy.

In addition, the researcher sought to determine whether women's attendance for ANC care has risen after the implementation of the policy. The trend analysis showed that ANC attendance has been increasing and the t-test analysis showed a statistically significant difference for ANC attendance between the periods before and after the policy. In addition, the correlations coefficient showed that ANC attendance has the likelihood of reducing maternal mortality at the Nsawam Government Hospital. Therefore, the policy has led to a rise in ANC attendance at the hospital.

Again, the researcher sought to determine whether women's attendance for PNC services has risen after the introduction of the free maternal health care policy at the Nsawam Government Hospital. The trend analysis showed an increase in PNC attendance at the hospital. Also, there was a negative correlation of -0.6 between maternal mortality and PNC attendance and the t-test analysis showed a statistically significant difference in maternal mortality between the period before and after the policy. This shows that PNC attendance has increased significantly after the policy was introduced at the hospital.

Finally, the research aimed to establish if the funds spent on the policy has been increasing. If the funds have been increasing, the research sought to determine how effective it has been in reducing maternal mortality at the hospital. The research showed an increase in funds spent on the policy. The correlation coefficient analysis showed a negative relationship between maternal mortality and the funds spent on the policy although there was a positive relationship between funds, and PNC and ANC attendance. This means that maternal mortality reduces as more funds are spent on the policy while ANC and PNC attendance increase at the hospital as more amount is spent on the policy. The free maternal health care policy has reduced maternal mortality and increased ANC and PNC attendance at the hospital. However, there is a question on the policy's impact on the number of deliveries at the hospital since the number of deliveries decreased after the policy.

5.3 Recommendations

The free maternal health care policy has many prospects for the hospital and should be maintained. However, the policy should be strengthened. Also, other initiatives or programs should be run periodically at the hospital to educate expectant mothers and women who have given birth on the benefit of early ANC, PNC and delivering under the supervision of a trained midwife. Also, the benefit of the free maternal health care policy should be emphasized by visiting communities regularly. Maternal mortality has been decreasing at the Nsawam Government Hospital but, there is the need for the administration of the hospital to put measures in place that will encourage women from the community to visit the hospital for treatment. This is because the reduction in maternal mortality is insignificant.

Again, women should be educated on maternal issues and why it is relevant to seek timely care as this will lead to the timely discovery of complications. This can be done by reaching out to women who are still not delivering at the hospital e.g. identification can be done through the ANC attendance records and a community nurse can visit them and talk about the importance of delivering at the hospital.

5.4 Limitations and Implication for Future Research

The data for maternal mortality at the hospital was not normally distributed. This could be because of the small dataset used for the analysis. Therefore, one must be cautious when drawing conclusions from the research.

Some unanswered questions were revealed in this research and further research at the Nsawam Government Hospital would help in answering them, subsequently improving the policy. Further research is needed to understand the reason for the decrease in the number of deliveries at the hospital from 6,158 in 2012 to 4,371 in 2016. Also, the causes of maternal mortality at the hospital need to be researched into as this will enable the hospital to devise specific measures to reduce maternal mortality. Again, research employing both quantitative and qualitative data could help understand the underlying reasons why women choose to deliver at the hospital or elsewhere.

BIBLIOGRAPHY

Agyepong, I. A., & Adjei, S. (2008). Public social policy development and implementation: a case study of the Ghana National Health Insurance scheme. Oxford University Press.

Ahiadeke, C. (2001). Incidence of Induced Abortion in Southern Ghana. International Family Planning Perspectives.

Amiri, A., & Gerdtham, U.-G. (2013). Impact of Maternal and Child Health on Economic Growth: The partnership for Maternal, Newborn and Child Health.

Apoya, P., & Marriot, A. (2011). Achieving a Shared Goal: Free universal healthcare in Ghana. Joint Agency.

Arhinful, D. K. (2014). The solidarity of self-interest: Social and cultural feasibility of rural health insurance in Ghana. American Journal of Public Health Research.

Asamoah, B., Moussa, K., Stafstrom, M., & Musinguzi, G. (2011). Distribution of causes of maternal mortality among different socio-demographic groups in Ghana; a descriptive study. BMC Public Health.

Blanchet, N., Fink, G., & Osei-Akoto, I. (2012). The Effect of Ghana's National Health Insurance Scheme on Health Care Utilization. Ghana Medical Journal.

Bosu, W., Jacqueline, B., Armar-Klemesu, M., & Tornui, J. A. (2007). The Effect of Delivery Care User Fee Exemption Policy on Institutional Maternal Deaths in the Central and Volta Regions of Ghana. Ghana Medical Journal.

Creese, A., & Kutzin, J. (1997). Marketizing education and health in developing countries: miracle or mirage. New York: Oxford University Press.

Ghana Broadcasting Corporation. (2015, February 7). Ghana. Retrieved from Concerns over poor state of Ghana's public health facilities: http://www.gbcghana.com/1.1986300

Ghana Health Nest. (2012, September 8). What is the Free Maternal Care Policy? Retrieved from ghanahealthnest.com: http://ghanahealthnest.com/what-is-the-free-maternal-care-policy/

Ghana Health Service. (2004). National Health Insurance Policy Framework for Ghana. Retrieved from www.ghanahealthservice.org: https://www.ghanahealthservice.org/downloads/NHI_policy%20framework.pdf

Ghana Health Service. (2014). 2014 Family Health Annual Report. Retrieved from Ghana Health Service: http://www.ghanahealthservice.org/downloads/2014_FHD_ANNUAL_REPORT.pdf

Ghana News Agency. (2011, February 25). High Maternal Deaths in Eastern Region worrying-Dr Apea-Kubi. Retrieved from www.ghananewsagency.org: http://www.ghananewsagency.org/health/-high-maternal-deaths-in-eastern-region-worrying-dr-apea-kubi-25915

Ghana News Agency. (2015, November 26). Eastern Region moves to end maternal and neonatal deaths. Retrieved from Ghana News Agency:

http://www.ghananewsagency.org/health/eastern-region-moves-to-end-maternal-and-neonatal-deaths--97503

Gil, R., Hernandez, V., Gil, A., & Alvarez, L. J. (2009). Factors associated with maternal mortality in Sub-Saharan Africa: an ecological study. BMC Public Health.

Khan, K., Gulmezoglu, M. A., Wojdyla, D., Say, L., & Van Look, P. F. (2006). WHO analysis of causes of maternal death: a systematic review. National Centre for Biotechnology Information.

McCathy, J., & Maine, D. (1992). A Framework for Analyzing the Determinants of Maternal Mortality. Jstor.

Ministry of Finance. (2016, March 9). The Composite budget of the Nsawam-Adoagyiri Assembly for 2016 Fiscal year. Retrieved from Ministry of Finance: http://www.mofep.gov.gh/sites/default/files/budget/2016/Composite/ER/Nsawam-Adoagyiri.pdf

Ministry of Health. (2004, August). National Health Insurance Policy Framework for Ghana. Retrieved from Ministry of Health: http://www.moh.gov.gh/wp-content/uploads/2016/02/National-Health-Insurance-Policy-framework.pdf

Mukaka, M. (2012). A guide to appropriate use of Correlation coefficient in medical research. Malawi Medical Journal.

Nour, N. M. (2008). An Introduction to Maternal Mortality. Obstetrics and Gynecology.

Nwanne, T. (2016, August 18). 303, 000 Women Die During Pregnancy, Childbirth – WHO. Retrieved from Newsbreak: https://www.newsbreak.ng/2016/08/303-000-women-die-pregnancy-childbirth/

Reproductive Health Indicators: Guidelines for their generation, interpretation and analysis for global monitoring. (2006, January). Retrieved 2017, from World Health Organization: www.who.com

Rosenfield, A., & Maine, D. (1985). Maternal Mortality- A Neglected Tragedy. Where is the M in MCN? The Lancet.

Santiago, A. (2016, November 22). What is Outpatient Care? Retrieved from verywell: https://www.verywell.com/outpatient-1736237

Santiago, A. C. (2016, November 22). Inpatient Care. Retrieved from verywell: https://www.verywell.com/inpatient-care-1736093

Say, L., Chou, D., Gemmill, A., Tuncalp, O., Moller, A.-B., Daniels, J., . . . Temmerman, M. (2014). Global causes of maternal death: a WHO systematic analysis. Science Direct.

Senah, K. (2003). Maternal Mortality in Ghana: The Other Side. African e-journals Project.

Smith, D. (2014, 02 10). Maternal mortality rate goes up in Ghana's Eastern Region. Retrieved 11 21, 2016, from International Federation of Gynecology and Obstetrics: http://www.figo.org/news/maternal-mortality-rate-goes-ghanas-eastern-region-0013888

Sukamolson, S. (2010). Fundamentals of quantitative research. JSTOR.

UNICEF. (2013, May 18). 2012 Ghana: Evaluation of the free maternal health care initiative in Ghana. Retrieved from www.unicef.org: https://www.unicef.org/evaldatabase/index_70025.html

Witter, S., Adjei, S., Armar-Klemesu, M., & Graham, W. (2009, January 13). Providing free maternal health care: ten lessons from an evaluation of the national delivery exemption policy in Ghana. EBSCO. Retrieved from EBSCO: http://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?sid=03f81bf4-2394-4fd3-81a2-37bad6b302c3%40sessionmgr4007&vid=0&hid=4102

World Health Organization. (2013). WHO guidance for measuring. Retrieved from WHO: http://apps.who.int/iris/bitstream/10665/87982/1/9789241506113_eng.pdf

World Health Organization. (2013, May). Trends in Maternal Mortality: 1990 to 2013. Retrieved from WHO: http://apps.who.int/iris/bitstream/10665/112682/2/9789241507226_eng.pdf?ua=1

World Health Organization. (2015, May). Millennium Development Goals. Retrieved from WHO: http://www.who.int/mediacentre/factsheets/fs290/en/

World Health Organization. (2016, August 16). True magnitude of stillbirths and maternal and neonatal deaths underreported. Retrieved from WHO: http://www.who.int/mediacentre/news/releases/2016/stillbirths-neonatal-deaths/en/

Yakubu, A. (2016, October 24). Why Ghana Opted for SAP. Retrieved from Ghanaweb: http://www.ghanaweb.com/GhanaHomePage/features/Why-Ghana-Opted-For-SAP-93436

APPENDICES

Appendix 1. The trend in Institutional Maternal Mortality Rate in Ghana.

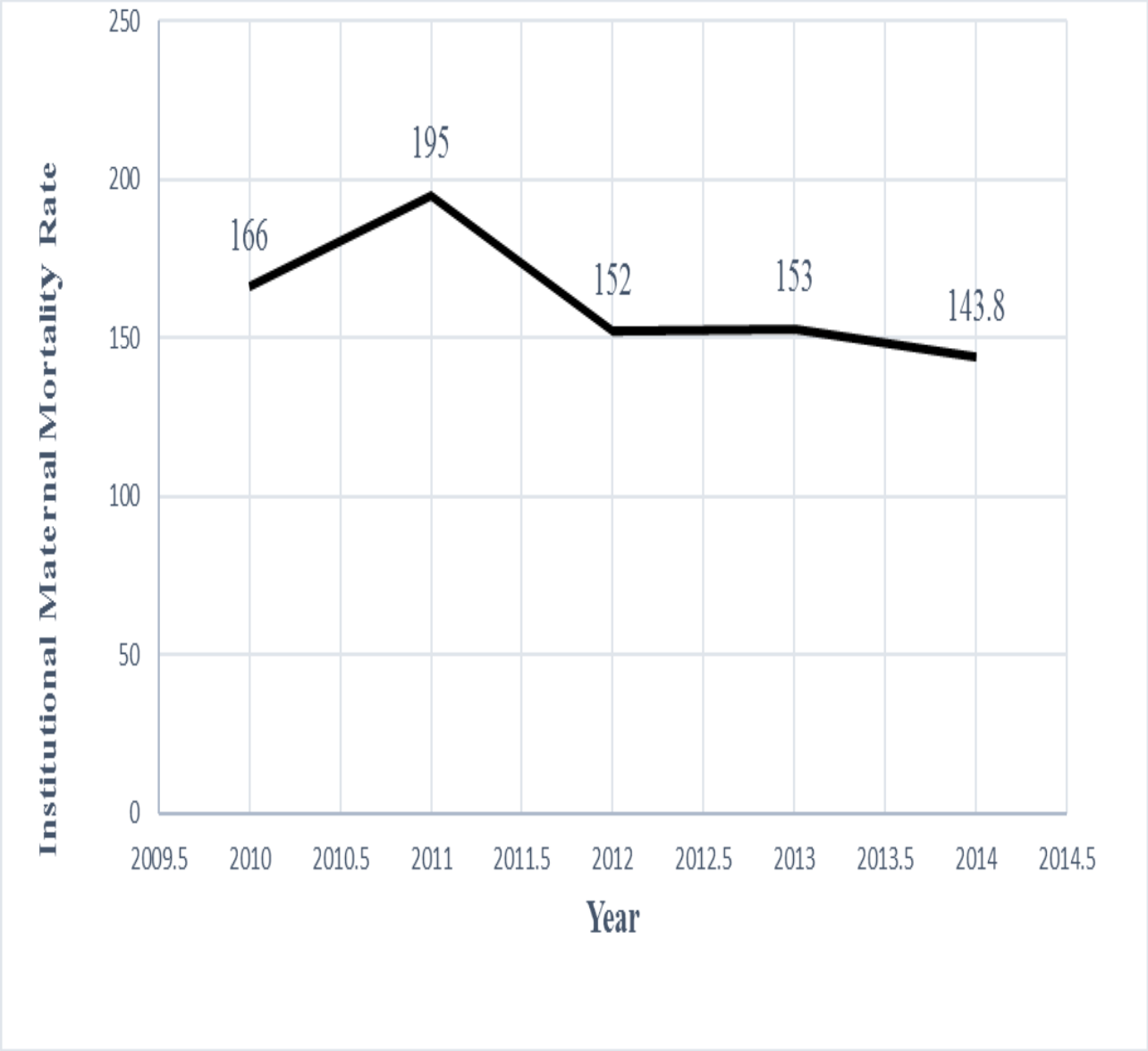

Figure 1. A line Graph Showing Institutional Maternal Mortality Rate in Ghana. Data retrieved from the Ghana Health Service 2014 Report (2015).

Appendix 2. A Bar Chart Showing the Trend in Maternal Mortality by the Regions of Ghana

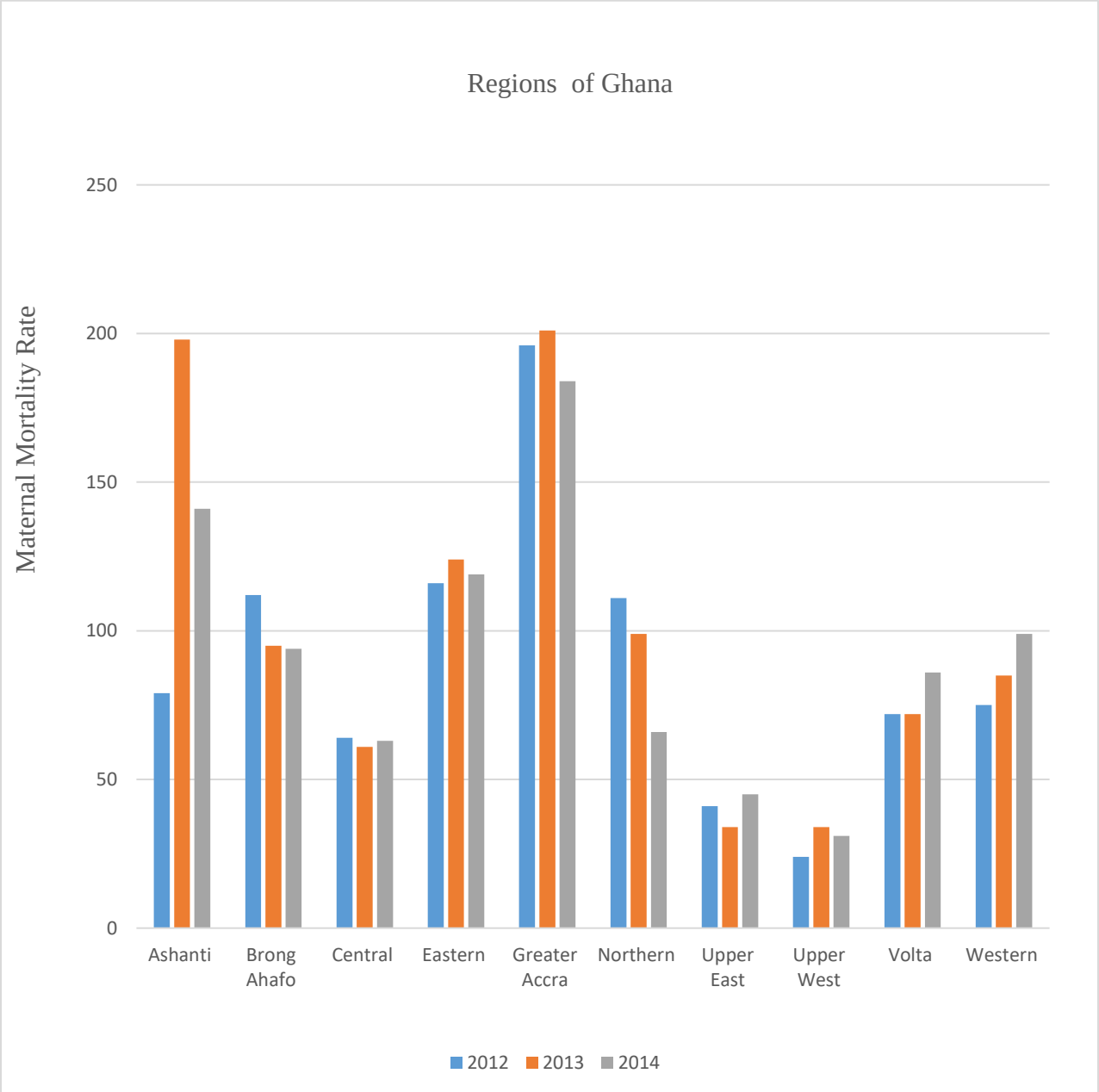

Figure 2. A Bar Chart Showing Maternal Mortality Rates by Regions of Ghana. Data retrieved from the Ghana Health Service 2014 Report (2015).