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DETERMINANTS OF INSTITUTIONAL DELIVERY AMONG POST-NATAL ATTENDANCE IN KPONE KATAMANSO MUNICIPALITY

BY

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DECLARATION

I, Rudolf Lamptey, hereby declare that this final dissertation work titled "DETERMINANTS OF INSTITUTIONAL DELIVERY AMONG POST-NATAL ATTENDANTS IN KPONE KATAMANSO MUNICIPALITY" is uniquely done by me.

I confirm that, the dissertation is done for my academic requirement to successfully obtain a Master's Degree in Public Health from the University of Ghana.

Rudolf Lamptey **Signature: ……** **Date:09/03/2022**

(Principal Investigator)

Dr. Benedict N.L. Calys-Tagoe **Signature: ……** **Date: ……./……/2022**

(Supervisor)

……

DEDICATION

I dedicate my dissertation work to the workforce of the health facilities and Municipal health directorate of the Kpone-Katamanso Municipality.

ACKNOWLEDGEMENT

I wish to show my sincere appreciation to the Almighty God for how far he has brought me on the educational ladder.

To my project supervisor Dr. Benedict N.L. Calys-Tagoe, I am thankful for the guidance and support and most especially his encouragement. Profound appreciations also go to Mrs Lois Adom and Mrs. Queen Norman, their contributions to various aspects of this project and course work is highly appreciated. Not forgetting the administration and staff of the maternity units and child welfare clinics of the Ghana Health Service Facilities in the Kpone Katamanso Municipality.

Finally, to the authors whose articles and books I reviewed and everyone who in diverse ways contributed to making this project a success.

God bless you all.

ABSTRACT

INTRODUCTION: Efforts by the world health organization to improve maternal health involves antenatal care services and safe and clean delivery services. Place of delivery may affect maternal morbidity and mortality. The aim of this study was to find out the factors that affected place of delivery among women attending the post-natal clinic in the Kpone Katamanso Municipality. The study examined socio-cultural and economic factors as well as factors within the health facility that can affect place of delivery.

METHOD: The study used a case control study design, with the ratio of the cases to control as 1:1. The sample size used for the study was four hundred and eight (408). Mothers attending post-natal clinics and child welfare clinics were interviewed. Mothers who delivered in health institutions were cases and mothers who did not deliver in health institutions made up the control group. A multistage sampling method was used in the sampling from the facility level to the individual level. Questionnaires were used to collect data for analysis. Data was analyzed in two parts. Part one is a bivariate analysis of all the socio-economic and obstetric factors and its effect on institutional delivery. Factors significantly associated with institutional deliveries were involved in the multivariate analysis in the second part.

Results: Antenatal coverage among the study population was 92.16% with most deliveries occurring in the age range of 25-to-29-year group (37.25%) for institutional delivery and 37.75% for non-institutional delivery.

Conclusion: Education, Christians and living in communities that supported antenatal service utilizations were some social factors that positively affected institutional delivery. Early booking and attending at least eight antenatal clinics were positively associated with institutional delivery.

Table of Content.

TABLES AND FIGURES

LIST OF ABBREVIATION

ANC	ANTENATAL CARE
WHO	WORLD HEALTH ORGANIZATION
MMR	MATERNAL MORTALITY RATIO
ICD-10	INTERNATIONAL CLASSIFICATION OF DISEASES-10
SDG	SUSTAINABLE DEVELOPMENT GOALS
MHS	MATERNAL HEALTH SURVEY
SBA	SKILLLED BIRTH ATTENDANT
TBA	TRADITIONAL BIRTH ATTENDANT
DHIMS	DISTRICT HEALTH INFORMATION MANAGEMENT SYSTEM
APH	ANTE-PARTUM HAEMORRHAGE
PPH	POST-PARTUM HAEMORRHAGE
VBAC	VAGINAL DELIVERY AFTER CAESARIAN SECTION
MOH	MINISTRY OF HEALTH
GHS	GHANA HEALTH SERVICE
HIV	HUMAN IMMUNODEFICIENCY VIRUS
STI	SEXUALLY TRANSMITTED INFECTIONS

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Antenatal care is a major component of the reproductive health services. It is a widely accepted method adapted by the World Health Organization (W.H.O) to monitor pregnant women throughout their period of pregnancy till time of delivery. A four-part strategy to combat maternal mortality as outlined by the Director General of W.H.O at the Safe Motherhood Initiative in Nairobi to half maternal mortality includes a good pre-pregnancy care, good nutrition and detecting high risk pregnancy early and appropriate referral (safe motherhood initiative,1978). Eighty-six percent of 295,000 maternal death recorded in 2017 was from Sub Saharan Africa and Southern Asia with Sub-Saharan Africa accounting for sixty-six percent (WHO,2017). According to W.H.O, the initiative includes contraception's, antenatal and post-natal care, basic and comprehensive essential obstetric care, primary health care and female equity. Maternal mortality defined by the World Health Organization (W.H.O,2000) as "the death of a woman whilst pregnant or within 42 days of delivery or termination of pregnancy, from any cause related to, or aggravated by pregnancy or its management, but excluding deaths from incidental or accidental causes" (ICD-10). Top five causes of maternal death in Ghana concluded by Lee, Odoi, Opare Addo & Dassah, (2011) are 'hypertensive diseases in pregnancy (26.4%), hemorrhagic diseases including antepartum and post-partum hemorrhages (16.8%), genital tract sepsis (10.6%), early pregnancy deaths from abortion and ectopic gestations (8.4%) and obstructed labor (8.7%)'. The first four accounted for nearly two-thirds (62.2%) of all deaths and more than three-quarters (87.3%) of direct obstetric deaths (Odoi et al, 2011). Conditions

such as genital tract infection together with sickle cell disease, accounted for 13.7% of all maternal deaths and 61.1% of indirect maternal death. The Ghana Maternal Health Survey (2017) has thirty percent (30%) of maternal death caused by haemorrhagic diseases in pregnancy and fourteen percent (14%) of maternal mortality caused by hypertensive diseases in pregnancy. Skilled delivery is a delivery attended by an accredited health personnel who has been trained in the management of uncomplicated or normal labour and immediate post-partum period and also has the skill to refer complicated cases (W.H.O,2014). Antenatal care and delivery by a skilled birth attendant is a major component of maternal and child health and its coverage can help in the reduction of maternal mortality in different part of the world. In developing countries, socio-economic and cultural factors affect maternal mortality and morbidity in different ways. Many studies had determined factors that affect place of delivery. Determinants of home or institutional delivery depends on socio-economic factors such as marital status of the woman, employment status, age, residence(rural/urban), husband being the final decision maker, whether the woman lives with the mother-in-law, family income, health facility accessibility, community acceptance of antenatal care services and institutional delivery, and parity of the woman (Dahiru et al, 2015). These factors affect the place of delivery by these women, for instance the number of antenatal clinic visits and the gestational age at booking has an effect on institutional delivery (Wondimu & Woldemeseyat, 2020). Women who booked before seventeen (17) weeks were five (5) times less likely to deliver at home as compared to women booking at seventeen weeks and above. (Wondimu & Woldemeseyat, 2020).

1.2 PROBLEM STATEMENT

A comprehensive analysis of global maternal mortality trend based on data for one hundred and seventy-one (171) countries shows a substantial reduction of maternal mortality ratio between 1990 and 2015, but progress has been much slower than required to meet the MDG 5 target of reducing Maternal Mortality Ratio (MMR) by 75% between 1990 and 2015. (Alkema et al,2015). Additionally, the Sustainable Development Goal (SDG,2015) 3.1 expects a reduction in maternal mortality ratio to less than 70 per 100,000 live births by 2030. According to WHO (2017), approximately eight hundred and ten (810) women died from preventable causes related to pregnancy and childbirth daily which is about 295000 deaths yearly. About ninety-four percent (94%) of the mortality occurred in low- and middle-income countries. The causes of maternal death and preventable interventions are well known. In Ghana the maternal mortality ratio as at 2017 was 310 per 100000 live births (MHS, 2017). This value was an improvement as compared to a decade ago when the Maternal Mortality Ratio was about 580 per 100000 live births (MHS, 2007). The leading causes of maternal mortality in Ghana as at 2011 are hypertensive diseases in pregnancy, hemorrhage, sepsis, unsafe abortion and obstructed labor (Odoi et al. 2011).

Interventions directed at managing these five primary obstetric causes of maternal mortality can aid in achieving the SDG 3.1. The priority interventions include contraception, prevention of sexually transmitted infection (STI) and Human Immunodeficiency virus (HIV), comprehensive abortion care, antenatal care including emergency and comprehensive emergency obstetric care and post-partum care. Maternal health services must include basic and comprehensive emergency obstetric care including management of hemorrhagic diseases in pregnancy, management of puerperal sepsis, management of hypertensive diseases in pregnancy and its

complications, management of cephalo-pelvic disproportion and obstructed labor (Prata, Passano, Sreenivas & Gerdts, 2010). These interventions are set to occur at the facility level be it primary or secondary. Any delivery occurring outside the facility will hence not be managed effectively if there are any complications.

Delivery by skilled birth attendants has increased from 55% in 2007 to 78% in 2017 in Ghana (MHS, 2017). Skilled birth attendants (SBA) work in the health facility hence, we can say institutional deliveries have increased over the past years. To achieve the sustainable development goal 3.1, we must ensure all pregnant women get access to institutional delivery with adequate management of direct causes of maternal mortality. In areas where institutional deliveries are low, we can expect a poor maternal mortality ratio. Countries with high maternal mortality ratio tend to have a low partnership ratio, that is, deliveries by midwifes and doctors (Graham et al., 2001).

Women who attend antenatal care are four (4) times more likely to have an institutional delivery (Fekadu et al., 2018). In a facility in Kpone Katamanso Municipality, there is a disparity between the antenatal registrant and delivery in the same health institution. Figure 1 highlights the significant difference in the number of antenatal registrants as compared to the number of deliveries within the facility across 2018 to 2020.

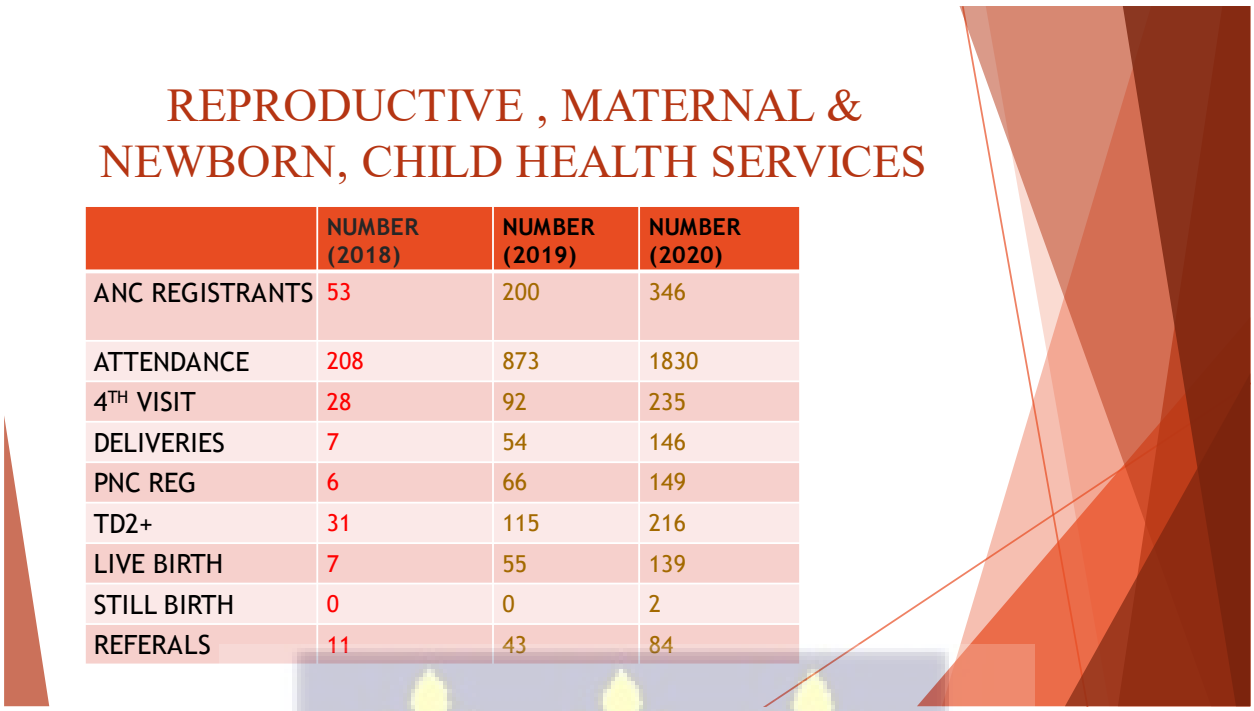

Fig 1. 2020 annual perfomance review.

It is clear that reducing maternal mortality is an important goal for any country as stipulated in the SDG goal 3.1. Considering institutional delivery is one of the ways of achieving this goal, it is therefore troubling to note from the data that the number of women who deliver in institutions is disproportionate to those who register for antenatal services. Hence, identifying the factors that influence this disparity in the numbers is worth exploring.

Table 1. ANTENAL ATTENDANCE AND DELIVERIES WITHIN KPONE KATAMANSO (DHIMS 2).

Period	Number of all deliveries	Antenatal registrant
2020	2564	5516
2019	2362	5372
2018	2025	4838

Data from the district health information management system shows similar disparity in the whole district from 2018 to 2020.

1.3 RATIONALE

The conference on safe motherhood in Nairobi 1987 issued a call to reduce maternal mortality by half in a decade. According to the World Health Organization (2017), sixty six percent (66%) of maternal mortality was from Sub-Saharan Africa alone. The Safe Motherhood Initiative includes contraception, antenatal care, aseptic delivery, basic and essential obstetric care, basic maternal care, primary health care and gender equality (WHO,1993) put in place to promote and maintain maternal and child health. Only essential obstetric care can help improve maternal mortality because it tackles the direct cause of maternal mortality and includes action that substantially improve maternal mortality (Maine & Rosenfield, 1999). Maine & Rosenfield (1999), argued that maternal mortality stayed high because of the misconception that maternal mortality can be reduced by improved socio-economic factors but the single most important factor that can improve maternal death is essential obstetric care at facility level. Maine and Rosenfield, (1999) also argued that screening of risk factors during antenatal services has minimal effect on reducing maternal mortality. Hence to tackle maternal mortality in other to achieve sustainable development goals, institutional delivery must be increased no matter the socioeconomic factors affecting women. Their argument only emphasized on screening pregnant women on risk of pregnancy complications. Another importance of antenatal care is client education on the possible danger signs that will prompt the early decisions to come to the facility to be managed. Essential obstetric care can be given only at the facility level hence making it a single most important factor to improve maternal mortality. Delivery within the health facility has a positive outcome in reducing the maternal mortality ratio as compared to deliveries outside the health facility. Areas of lower maternal mortality ratio have higher delivery attended by skilled birth attendants (Graham, et al., 2001), which in a Ghanaian setting are in the health institutions. There

is consistently lower institutional delivery among antenatal antendees within the kpone katamanso municipality over the years. The reason for the low institutional delivery and factors attributing to that has not been explored in the municipality.

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A study of the socio-economic and cultural factors may give us insight into the lower patronage of institutional deliveries in spite of increasing antenatal registration over the years.

1.4 RESEARCH QUESTIONS

- What socio-economic and cultural factors affect place of delivery?
- What is the relationship between antenatal service utilization and institutional delivery?
- What is the relationship between the number of antenatal clinics attended and institutional delivery?
- What is the relationship between the gestational age at booking and institutional delivery?

1.5 RESEARCH OBJECTIVES

GENERAL OBJECTIVE:

The general aim of the present study is to determine factors that affect institutional delivery among post-natal attendants.

SPECIFIC OBJECTIVES:

- To determine the socio-cultural and economic factors that influence institutional delivery.
- To determine the relationship between gestational age at booking and institutional delivery.
- To assess the relationship between antenatal attendance and institutional delivery.

CHAPTER TWO

LITERATURE REVIEW

2.1 OVERVIEW OF MATERNAL MORTALITY

Maternal mortality is the death of a woman who is pregnant or forty- two (42) days after termination of pregnancy by factors related to, or aggravated by the pregnancy and its management and not by accidental or incidental causes (W.H.O 2000). Approximately eight hundred and ten (810) women died daily from preventable causes related to pregnancy and childbirth, which is about 295000 deaths in year (WHO,2017). About ninety-four (94%) of the mortality occurred in lower and middle-income countries. The causes of maternal death and preventable interventions are well known. In Ghana the maternal mortality ratio as at 2017 is 310 per one hundred thousand (100,000) live birth (DHS 2017). This value is an improvement as compared to a decade when the Maternal Mortality Ratio is about 580 per 100,000 live births (DHS, 2007). The leading causes of maternal mortality in Ghana are pregnancy induced hypertension, hemorrhage, sepsis, abortion and obstructed labor (Odoi et al, 2011).

According to Maine et al, 1999, there is a stall in the reduction of maternal mortality because effort is invested into programs such as contraception's, antenatal care, aseptic delivery, basic and essential emergency obstetric care, basic maternity care, primary health care, and gender equality. But only essential obstetric care can help reduce maternal mortality. Essential obstetric care includes caesarian section, parenteral antibiotics, anticonvulsants, removal of retained product of conceptions, assisted vaginal delivery and administration of parenteral uterotonics. These services can be performed by a skilled birth attendant in a health facility.

Pregnant women delivering in health facilities are less likely to die as compared to non-institutional delivery. The causes of maternal death can be managed in a health facility with all the available equipment's and the personnel. In areas where health facility-based delivery accessibility is low, clients seeking for health care at the facility may have complicated cases and are likely to record higher mortality. Higher maternal mortalities can be recorded in such health institutions as compared to the home delivery due to high-risk selection. In a study by Chinkhumba et al (2014) on maternal and peri-natal mortality by place of delivery in Sub-Saharan Africa, there was a higher maternal mortality recorded in institutional delivery as compared to non-institutional delivery. This could be attributed to the higher risk cases that report to the health facilities for delivery.

2.2 INSTITUTIONAL AND NON-INSTITUTIONAL DELIVERY

Factors that positively influence the utilization of antenatal care according to Dahiru and Oche (2015) are 'age of mother, residence(rural/urban), mother and husband level of education, household wealth quintile, health insurance enrollment, working status of women, religion and decision-making autonomy of the woman. Women with low level of education, having low household wealth, living in the rural area, multiparous and attending less than four (4) antenatal clinics are significantly likely to have a non-institutional deliver. (Tamang et al 2019). Non institutional delivery is likely to be associated with a higher mortality because essential obstetric care is not assured. According to Graham, Bell and Boullough (2001), countries, using partnership ratio (PR) as an indicator defined as "proportion of delivery by a doctor and a midwife" in which the sum is the proportion of delivery by professional attendant. The partnership ratio in areas of high maternal mortality ratio is lower than areas with relatively lower maternal mortality ratio. According to Graham et al (2001), Countries such as Peru, Tunisia, Egypt and Namibia have more than a quarter of their deliveries not attended by skilled professional but maternal mortality ratio is below 250 per 100,000 live births. Inversely, other countries like Malawi, Ghana, Bolivia, and Zambia with approximately half of their deliveries attended by skilled birth attendants but maternal mortality remains high – above 500 per 100,000 live births. These remain an issue of access and quality. Countries with lower-than-expected maternal mortality ratio may apparently make sure not all deliveries are attended by skilled attendants and only deliveries requiring emergency obstetric care service receive it. On the contrary, those countries with higher-than-expected mortality may have skilled personnel without a proper infrastructure and/or staffs who are not in fact well trained. The overall

maternal mortality ratio is lower in delivery with a skill birth attendant than a non-skilled attendant. Improvement in birth attended by skilled birth attendant is a strategy that can improve maternal mortality but access to skill birth attendants is low in sub–Saharan Africa (WHO, 2004). In an observational study in Janani Suraksha Yojana, maternal mortality decreased with the increase institutional delivery (Gupta, 2012).

The prevalence of facility delivery among twenty-eight (28) sub-Saharan African countries is (66%) with the highest in Gabon (96%) and lowest in Chad (23%). More than half of the twenty-eight (28) countries recorded less than seventy percent (70%) prevalence of health facility delivery falling short of achieving the Sustainable Development Goal 3 by ensuring healthy lives and promoting wellbeing of all reproductive age mothers. According to Adde et al,2020, Chad has the highest Maternal Mortality Ratio (MMR) due to challenges with infrastructure and health financing mechanism. Interventions such as implementation of unified social insurance scheme in countries like Gabon, Ghana and the Democratic Republic of Congo has led to the increase in institutional deliveries in these countries. Demand -side intervention based on community-based mobilization is successful in other countries in increasing institutional deliveries (Adde et al,2020).

2.3 **FACTORS AFFECTING PLACE OF DELIVERY**

Socio-economic factors that may affect women decision on the place of delivery include level of education of both husband and wife, parity of the woman, housing type, living with mother-in-law, family finances, place of residence, occupational status of woman, knowledge and experience about delivery, marital status, religion and society beliefs and perception on the utilization of maternal health services. According to Tamang et al. (2019), low level of education, having low household wealth, living in the rural area, multiparity and having less than four (4) antenatal visits are significantly likely to be associated with non-institutional delivery.

Educational level of couple affects institutional delivery. According to Teferra et al. (2012), the odd of institutional delivery among women with secondary educational level is about twelve (12) times more than women with primary or lower level of education. In a study done in Nigeria by Dahiru & Oche (2015), educational level of the woman appeared to be the most powerful predictor of institutional delivery with a dose-response characteristic. Increasing the level of education was associated with increasing the odds of institutional delivery. Husbands level of education played a similar role by increasing the utilization of health facility for delivery. Educated husbands are likely to support pregnant wives to utilize antenatal services and probably institutional delivery. In a study done by Abeje et al (2014), husband's education is a positive predictor of institutional delivery. Women with no formal education were least likely to use health institution for delivery and women with at least secondary education were most likely to deliver in health institutions in Kenya, Nigeria, Tanzania, Bangladesh, India and Pakistan (Tei &Lia, 2013). Education of the woman is an empowerment strategy to reduce some gender related issues such as early childhood pregnancy and birth, gender-based violence and substance abuse

that can help in the reduction of the overall maternal mortality ratio. Education makes women confident to be involved in the household decision making processes and have a say in their health. In the analysis of the WHO Global Survey on maternal and Perinatal health in twenty-six (26) countries, it was found that women with lower educational levels are likely to die than women with higher educational levels (Karlsen et al,2011).

Mothers who chose home delivery over institutional delivery according to Takelab et al (2015) was because labor was going on well with close attention from relatives and family members. A study among mothers in North West Ethiopia who delivered at home shows that 80.0% of the home deliveries were assisted by close relatives and reasons for the home delivery was closed attention from relatives, home delivery being the usual experience, short labor and they did not have any complication to require the service of a trained attendant (Teferra et al,2012). In Java Province of Indonesia, mothers attributed home delivery and the use of traditional birth attendance to cost, traditional birth attendance being closer to the community and development of trust among the people, encouragement by close relatives to use the traditional birth attendance, perception of the role of the trained birth attendant to complicated pregnancy and labor, poorly accessible health care centers and perception that trained birth attendants are too young and inexperienced (Titaley et al,2010). In Tegray Northern Ethiopia, health workers perceived some facility factors as hinderance to institutional delivery. Client relatives not being allowed into the delivery room and mistreatment by health care providers, lack of infection prevention materials like mask and goggles, poor infrastructure and poor location of health post making accessibility difficult were some factors perceived by health care workers as a cause of lower utilization of institutions for delivery (Gebrehiwot et al,2014). In the Kassena-Nankana District in Northern Ghana, women attributed home delivery to the fact that

they were taken unaware and did not expect the delivery to occur in such a short time, others for convenience's sake and few cited economic reasons for home delivery (Akazili et al,2011). In the Builsa District in Northern Ghana where 98.8% of the women interviewed utilized the antenatal services and only 61.9% delivered in the health facility mentioned the "unaware of onset of labor and delivery" as the reason of home delivery (Boah et al,2018). This indicates the important of quality of antenatal health services in determining the utilization of health institutions for delivery.

Residence is known to affect the utilization of health institutions for delivery. Rural residence confers some disadvantage in the utilization of institutional delivery. This could be due to cost, poor accessibility, distance between health facility and lack of skilled staff in the health facilities in the rural areas that can lead to poor outcome and poor satisfaction (Dahiru & Oche, 2015). The prevalence of home delivery is higher among rural dwellers in Amhara regional state of Ethiopia even though most of the women admitted that institutional delivery is more beneficial (Abeje etal, 2014). Urban dwellers are more likely to deliver in a health facility as compared to rural dwellers in south Asia and Sub-Saharan Africa (Tey & Lai, 2013).

Household wealth affects institutional delivery. Institutional delivery is lower in women in the lowest wealth quintiles in South Asia and Sub-Saharan Africa (Tey & Lai, 2013). According to Tadele and Lamaro (2017), empowering women economically and through education allows them to take control of their health and that increases institutional delivery. Increasing household health index through the empowerment of the female gender socially and economically increases the odds of institutional delivery and reduction of maternal mortality.

Parity of the woman and delivery in a health facility is dependent on characteristics of the woman. Nulliparous mothers' utilization of institutional delivery is dependent on education of

the woman and attending more than four antenatal visits (Ndao-Brumblay et al, 2012). The utilization of institutional delivery by mothers who have other children from the study shows it depends on believing that institutional delivery is better, availability of health insurance and the health of the woman (Ndao-Brumblay et al, 2012). Grand multiparous women (more than five deliveries) are least likely to utilize health institutions for delivery (Dahiru & Oche, 2015) because of the experience they may have at childbirth. Institutional delivery among nulliparous women is higher than multiparous women in Ethiopia because of the perception of having knowledge and experience in multiparous women (Kebede et al, 2016; Takelab et al,2015). In Mara and Kagera regions in Tanzania, women of higher parity were less likely to deliver in the health institutions and the reasons are due to the experience they may have in childbirth (Bishanga et al,2018).

Due to poor health seeking behavior among elderly women, age of the woman affects the possible utilization of health institutions for deliveries. Younger women are more likely to deliver in health facilities because they are likely to be literate and inexperienced at childbirth. Education, nulliparity and young age was associated with increased in utilization of health institutions for delivery (Kebede et al, 2016).

Women with less decision-making autonomy about their health and a community with least support for institutional delivery has lesser odds of institutional delivery (Speizer et al.2014). Husbands who support institutional delivery and decision-making do not lie with one partner is associated with higher odds of institutional delivery. Women reporting husbands as the main decision makers are less likely to deliver in a health facility (Speizer et al.2014). Among women in rural Pakistan, decision making autonomy of the woman is associated with institutional delivery. The odds of institutional delivery are higher among women whom decision-making

autonomy lies on them (Agha & Carton,2011). Women household decision-making autonomy was associated with the utilization of other maternal health services such as antenatal services, utilization of skilled birth attendants and facility-based delivery in Indonesia (Rizkianti et al, 2020). The association of house-hold decision-making autonomy with the utilization of maternal health services such as antenatal services, births attended by skilled personnel and the utilization of facility for delivery indicated that interventions that empowers mothers can help reduce maternal mortality. Such interventions including the family planning services that give women confidence to decide on timing, spacing and decision on the number of children are effective in reducing maternal mortality. Indonesia recorded a fall in the maternal mortality rate by 82% due to an increase in the contraceptive prevalence rate from 1970 to 2017 (Utomo etal,2021). Supportive community attitude is known to be associated with higher odds of institutional deliveries. Support of institutional delivery by husband and mother-in-law is associated with increased odds of institutional delivery. Women with lower decision-making autonomy are less likely to use health institutions for delivery. In a study by Speizer et al, 2014 shows that women with lower decision-making autonomy and spouses' non-supportive attitude towards the utilization of health institutions for delivery are the least likely to have institutional delivery even after controlling for the woman's perceptions about community attitude.

2.4 ANTENATAL CARE AND PLACE OF DELIVERY

Antenatal care is an integral part of reducing maternal mortality. The world health organization recommends at least eight (8) antenatal visits for every pregnant woman before her delivery (WHO,2018). Antenatal care services utilizations, previous obstetric histories of mothers including birth experiences and perceived importance of antenatal services affect the utilization of institutions for deliveries. Screening of maternal risk factors at the antenatal clinics and health education about danger sign in pregnancy can help reduce maternal mortality. Socio-economic factors such as education, age, household wealth, marital status, spousal education and residency that affect the utilization of antenatal services is likely to similarly affect institutional delivery. The utilization of antenatal services is affected by the age of the woman, marital status of the woman, distance to the place of antenatal services, level of education of the spouse. Youthful mothers and married women have a higher use of antenatal services (Chorongo, Okinda,Kriuki…….,Muga,2016). There is scarce information on the effect of cultural practices on the utilization of antenatal services. A study in Nigeria found age, educational status of husband and wife, residency and decision-making autonomy to be positively associated with both antenatal service utilization and institutional delivery (Dahiru & Oche, 2015).

A systemic review by (Berhan and Berhan,2014) show are higher chance of institutional delivery among pregnant women attending antenatal care than women not attending antenatal care. Women attending antenatal clinics were four times more to deliver in health institution (Fekadu et,al, 2018). Antenatal clinics is an opportunity for health promotion and women attending such clinics are more informed about their health. In a meta-analysis on the effect of antenatal care services on institutional delivery, it was found that attending a minimum of four antenatal clinics is similar to attending fewer antenatal clinics in increasing odds of institutional

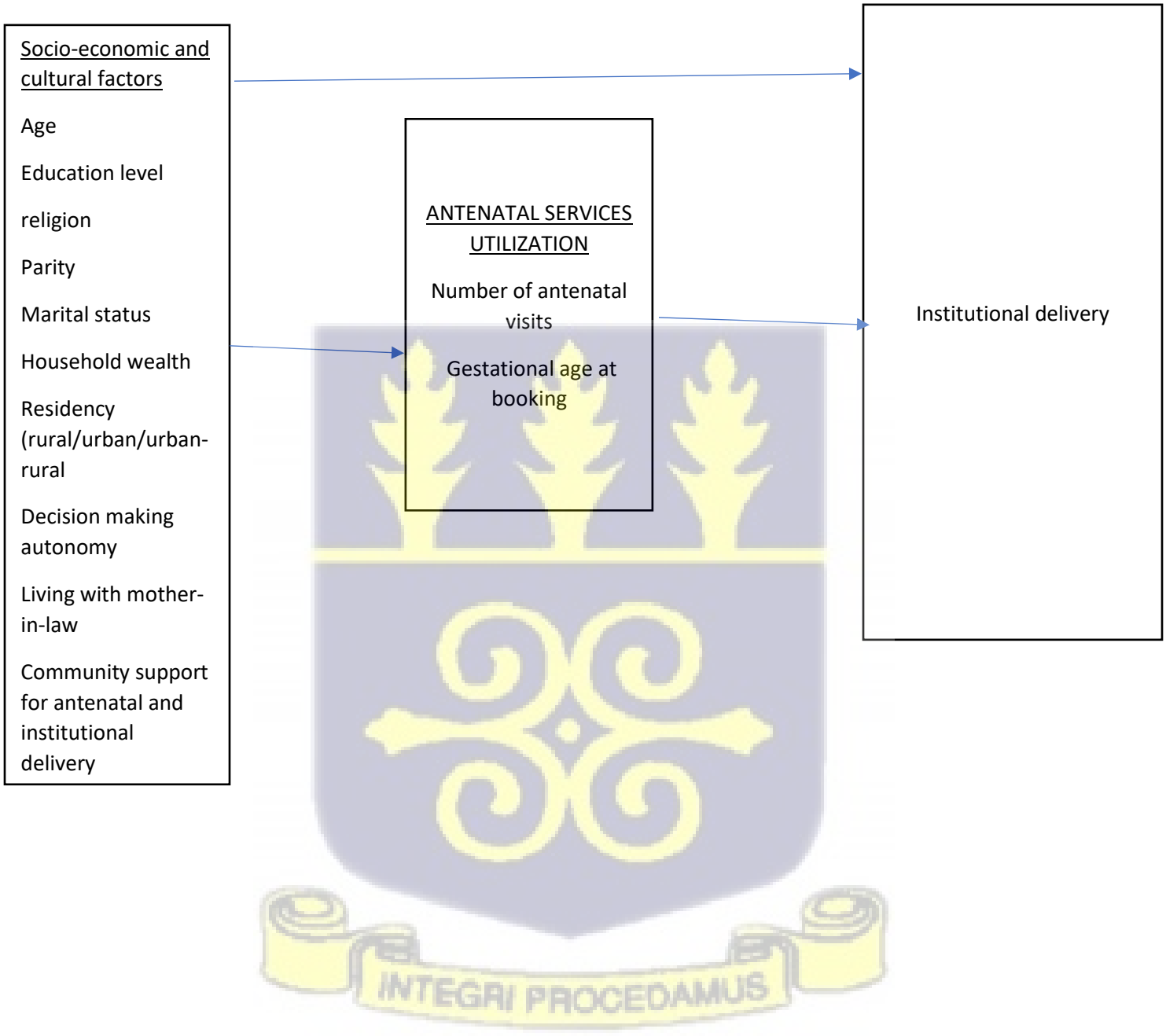
delivery. The reason given was that in developing countries, the health professional provide all information on health promotion needed to avoid missed opportunities (Fekadu et,al, 2018). Women in Tanzania also have similar higher odds of institutional delivery when they attend at least four (4) antenatal clinics (Bishanga et al,2018).

Antenatal experience in previous pregnancy can affect the decision for institutional delivery for current pregnancy. The aspect of quality of care in antenatal clinics and its effect on institutional delivery or utilization of antenatal clinics in future pregnancy is lightly evident. Quality of care can influence care seeking behaviors for future pregnancy. Quality of care was noted to be more important than education and household wealth in determination of institutional delivery in Pakistan (Agha & Williams, 2016). Multiparous women are likely to return to the same clinic for antenatal services if they perceive the midwife to be respectful and treated them with dignity. The attitude of health service providers is a major determinant for institutional delivery. Fear for poor reception during institutional delivery is a reason for home delivery in Ethiopia (Asefa et al, 2018).

Previous experience of simple labor and uncomplicated home delivery in previous pregnancies is a reason for non-institutional delivery. Mothers tend to sort the services of skilled attendants only when they are ill (Asefa et al, 2018). The identification of overt pregnancy complication such as bleeding per vagina, symptoms of anemia such as dizziness, lower abdominal pains and vomiting in early pregnancy is associated with seeking care from the facility that makes them start antenatal care. Pregnancy related health problems has a positive effect on institutional delivery in Dodota district, Oromia region of Northern Ethiopia (Feyissa & Ganemo,2013) with women developing complication during pregnancy more likely to use health institutions for delivery. Complications of previous pregnancies can affect subsequent pregnancies that will let a woman

have institutional delivery. A dominant indication for caesarian section in the University of Cape Coast Hospital was previous caesarian section (Prah et al,2017). These clients had no chances of home delivery because of the education they receive after the caesarian sections. Women who try a vaginal delivery after a caesarian section (VBAC) are likely to do so in a health facility in which from the study 21.5% ended up in an emergency caesarian section (Prah et al,2017).

2.5 CONCEPTUAL FRAMEWORK.



NARRATIVE

Socio-economic and cultural factors have effect on the utilization of antenatal services and institutional delivery. Religious beliefs that illnesses are cause by natural events and can be reversed by human interventions are associated with utilization of health services (Glaser, 1970). Income and household wealth increase utilization of health services. The demand for health care increases when there is extension of insurance coverage to low-income groups according to Anderson and Benham,1970. Women exist in subordinate position and do not make health decisions for themselves. Women tend not to visit health facilities without the company of their spouses or other elderly women (Peter, 2008).

These socio-economic and cultural factors that affect antenatal service utilization also affect the decision for institutional delivery among these women. Antenatal service utilization, including the number of antenatal services attended and the gestational age at booking affect the decision to deliver at a health institution. Birth order and the number of antenatal visits were factors that was associated with the utilization of institutional delivery among women of childbearing age in western Ethiopia (Tesfaye & Genemo, 2013).

CHAPTER THREE

METHODOLOGY

3.1 Study design

A case-control study design with a 1:1 matching was used to gather relevant information from women attending post-natal and child welfare clinics. Client who delivered in health institutions were equally matched with client who did not deliver in a health institution.

3.2 Study location

Study location was the Kpone Katamanso Municipality in the Greater Accra Region. The municipality includes areas like Kpone, Michele camp, Gbetsele, Tema Community 25, Bediako, Zenu, Katamanso, Oyibi, Seduase, Appolonia, Kpone Bawaleshie. The Ghana Health Services facilities within these areas are mostly health centers. The municipality has two polyclinic which is Kpone Polyclinic and Zenu polyclinic. The municipality has private health facilites, one quasi-government health facility and one Christian Health Association of Ghana (CHAG) facility.

Data was collected from Ghana Health Services facilities within the Kpone Katamanso Municipality in the Greater Accra Region of Ghana. The facilities were Zenu Polyclinic, Kpone Polyclinic, Oyibi Health Centre, Katamanso Health Centre, Appolonia Health Centre, Gbetsele Health Centre, Bediako Health Centre, Bawaleshie Health centre and Seduase Health Centre.

3.3 Study population:

Study population were women attending postnatal care service in the health facilities within the municipality. Cases were attendees who delivered in the health facility. Controls were attendees who did not deliver in the health facility.

3.4 Sample size;

The sample size was calculated using sample size estimation for odd ratio with specified relative precision.

With the following assumptions: proportion of cases is 0.46 (calculated from the Dhims 2)

Ratio of cases to control is 1:1

Odds ratio of 2 with 25% relative precision with a confidence interval of 95% with 5% margin of error.

$N= Z^2_{1-\alpha/2}\{1/[PC_e^*(1-PC_e^*)]+1/[PC_e(1-PC_e)]\}/\{\log_e(1-error)\}^2$

PC_e=0.46 (proportion of cases exposed)

$PC_e = PC_e^* * OR/1+PC_e^*(0R-1)$

PC^*_e=0.3(proportion of controls exposed)

N=33.76/0.0828

N=408

With 204 cases and 204 controls.

3.5 Sampling technique:

Data was to be collected from four hundred and eight (408) participants. The leadership of the facilities were informed with an introductory letter and the GHS Ethics Review Board approval letter, to seek permission for data collection. Ghana Health Services facility are clustered into number one, CHAG facilities and Quasi-Government facilities clustered into number two and the private facilities were clustered into number three. The numbers were written on pieces of papers and dropped in a bowl. Ghana Health Service facilities was randomly picked hence the study was done in all health facilities under the Ghana Health Service in the municipality. The number of study participants from each GHS facility was proportionately selected based on the total number of deliveries in the facility in the previous year (Tab 3.1). During the selection of participants, attendees are given numbers which are put into a box. The numbers are randomly drawn from the box and corresponding attendees are invited to participate in the study. This procedure was done in every facility involved in the study. In facility with lower sample sizes for example five, one participant is invited for a day during post-natal clinic until sample size is reached. Facilities with higher sample sizes, a maximum of five (5) participants are invited on a day of post-natal clinic until sample size reached. Attendees signed an informed consent before participating in the study. This was the first of research done in the municipality hence the midwives and the community health nurses were trained by the principal investigators.

Tab 3.1 Disproportionate distribution of samples among Ghana Health Service Facilities

FACILITY (half year number of deliveries)	NUMBER OF CASES	NUMBERF OF CONTROLS
ZENU POLYCLINIC (194)	47	47
KATAMANSO HEALTH CENTRE (48)	12	12
OYIBI HEALTH CENTRE (46)	23	23
KPONE POLYCLINIC (300)	71	71
GBETSELE HEALTH CENTRE (48)	12	12
APPOLONIA HEALTH CENTRE (60)	14	14
BEDIAKO HEALTH CENTRE (40)	10	10
BAWALESHIE HEALTH CENTRE (40)	10	10
SEDUASE HEALTH CENTRE (10)	5	5

3.6 Variables.

Tab 3.2 Operational definition of Independent and Dependent Variables

INEPENDENT VARIABLE	**OPERATIONAL DEFINITION**
AGE	ACTUAL AGE OF PARTICIPANTS in years
MARITAL STATUS	never married=0 MARRIED=1 DIVORCED=2 WIDOWED=3 COHABITING=4

RELIGION	CHRISTIAN =1 MUSLIM=2 AFRICAN TRADITIONAL RELIGION=3 OTHERS=4
EDUCATIONAL LEVEL	NO FORMAL EDUCATION=0 BASIC EDUCATION=1 SECONDARY EDUCTION=2 TERTIARY EDUCATION=3
PARITY	NULLIPAROUS=1 PAROUS=2
HOUSEHOLD WEALTH AS MONTHLY INCOME IN CEDIS	,<1000 =1 1000-2000=2 2000-3000=3 3000-4000=4 4000-5000=5 >5000=6
RESIDENCY	RURAL-=1 URBAN=2
DECISION MAKING AUTONOMY	NO=1 YES=2
LIVING WITH MOTHER-IN-LAW	NO=1 YES=2
COMMUNITY SUPPORT FOR ANTENATAL CARE AND INSTITUTIONAL DELIVERY	NO=1 YES=2

ANTENATAL VISITS AT TIME OF STUDY	Total number of antenatal visits before labor
GESTATIONAL AGE AT BOOKING	FIRST TRIMESTER <13 WEEKS =1 SECOND TRIMESTER13-28 COMPLETEDWEEKS =2 THIRD TRIMESTER =3
Emergency obstetric care	No=1 Yes=1
DEPENDENT VARIABLES	Controls =0 Cases =1

3.7 DATA COLLECTION METHOD, TOOL AND TECHNIQUE

Data collection method was a structured interview using a questionnaire as a tool. Questionnaire was interviewer-administered. Questionnaire was pretested in the field. Participants were guided in the answering of the questionnaire. The questionnaire was divided into 3 parts first the socio-economic and cultural part, antenatal utilization and availability of emergency obstetric care at place of delivery.

3.8 DATA PROCESSING

Quantitative data collected was entered into excel by data entry clerks. Double entry was done by two different data entry clerks on each data collection tool to ensure data accuracy. The datasets were validated and all the variations that came up were corrected. Validation was done until the data sets were consistent. Also, internal consistency checks were run to pick out mistakes which were not noticed or picked during data validation, this provided an inherent consistency in the output of the variables.

3.9 DATA ANALYSIS

Quantitative data was analyzed using STATA 16. Entry into excel was done and imported into STATA 16. Frequency tables with test of associated (chi-square analysis) was used to summarize and represent the data. Bivariate Logistics Regression was used to test for factors that were significantly associated with institutional delivery in the first model. Factors that were significantly associated with institutional delivery in the first model were used in the multivariate analysis in the second model.

ETHICAL CONSIDERATION

ETHICAL CLEARANCE.

Prior to commencement of study, ethical approval was sought from the Ghana Health Service Ethics Review Committee. A written permission was sought from the municipal health directorate and the management of the various facility. Written permission was also sought from midwife on duty on the day of data collection.

DESCRIPTION OF SUBJECT IN THE STUDY

The participants of the study were women presenting at the post-natal clinics in public facilities in the Kpone Katamanso Municipality.

PARTICIPANT'S CONSENT

To seek the consents of individuals to participate in the study, eligible individuals were only enrolled to participate in the study after they have endorsed a written informed consent/absent form either by thumb printing or signing, before giving the opportunity to respond to the items on the questionnaire.

PRIVACY/CONFIDENTIALITY

Identifiers was used rather than names of participants to ensure confidentiality and data kept under lock and key. Data collected was only used for the purpose of this project and could only be assessed by the principal investigator and the supervisor.

VOLUNTARY PARTICIPATION

Participation in this study was voluntary and participants were given the choice to either be or not be part of the study and they can withdraw from the study anytime they feel pleased.

POTENTIAL RISK OR BENEFITS

The study involved only the administration of questionnaire and assistant provided by the interviewer, however there was a potential risk of contracting Covid-19 under the current

circumstances of the Covid-19 pandemic. Therefore, the following interventions were put in place to ensure the safety of the study participants and the research assistants;

- The researcher and assistants were in personal protective equipment that includes facemask, face shield, gloves.
- Interviewer and participants sanitized their hands with alcohol-based rubs after filling each questionnaire
- Social distancing was maintained between the participants and the interviewer

Participants in the study did not receive any material benefits from the study as this was communicated to them before the commencement of the study but they may benefit from policies that will be put in place to meet their health needs especially towards maternal health.

COMPENSATION

The participants were informed that they will not receive any compensation package for their participation.

DATA STORAGE AND USAGE

All hard copies of the data obtained from the field were transformed into an electronic data using Microsoft Excel which was password encrypted. Data collected was stored in both electronic and hard copies. The participants were assured that the data collected was used for academic purposes and will inform policy, which they stand to benefit.

QUALITY CONTROL

There was pre-testing of questionnaires on women attending post-natal clinics in a private facility within the municipality to ensure that questions are well framed and easily understood. The questionnaires were then updated and retested prior to the original study. Research assistants were trained on appropriate data collection skills and data entry to ensure uniformity and accuracy of data collected.

CHAPTER FOUR

RESULTS

A total number of four hundred and eight (408) women ages sixteen (16) to forty-one (41) years (mean = 27.80, SD ±0.28) attending post-natal clinics in the Kpone Katamanso municipality participated in the study. Two hundred and four (204) women delivered in health facilities within the Kpone Katamanso municipality. The antenatal coverage (percentage of study population who attended any ANC) for the study population was 92.16%.

Table 4.1. socio-economic characteristic of study participants and test of significant on institutional delivery at 95% confidence interval

VARIABLE	NON-INSTITUTIONAL DELIVERY N=204(%)	INSTITUTIONAL DELIVERY N=204(%)	P-VALUE
Age			
15-19	16 (7.84)	24(11.76)	0.334
20-24	39(19.2)	29(14.22)	
25-29	77(37.35)	76(37.25)	
30-34	43(21.08)	54(26.47)	
35-39	22(10.78)	15(7.35)	
40-44	7(6.43)	6(2.94)	
45-49	-	-	
Marital status			**0.002**
NEVER MARRIED	76(37.25)	50(24.51)	
Married	99(48.53)	124(60.78)	
Divorced	0.00(0.00)	6(2.94)	
Cohabiting	29(14.22)	24(11.76)	
Religion			**0.000**
Christians	156(76.47)	198(97.06)	
Muslims	48(23.53)	5(2.58)	
others	0(0.00)	1(100)	
Education			**0.000**
No educ	55(26.96)	9(4.4)	
Primary	107(52.54)	87(42.65)	
Secondary	32(15.69)	74(36.27)	
Tertiary	10(4.9)	34(16.67)	
Residency			0.201
Rural	54(26.47)	43(21.08)	
urban	150(73.53)	161(78.92)	
Wealth			**0.000**
<1000	114(55.88)	157(76.96)	
1000-1999	7(34.31)	20(9.80)	
2000-2999	13(6.37)	12(5.88)	
3000-3999	4(1.96)	6(2.94)	
4000-5000	3(1.47)	9(4.41)	
In-law sta			0.229
Yes	155(75.98)	160(80.88)	
no	49(24.02)	39(19.12)	
Autonomy			0.687
no	85(41.67)	81(39.71)	
yes	119(58.33)	123(60.29)	

Anc supp			
No			**0.018**
yes	73(35.78)	51(25)	
	131(64.22)	153(75)	

Majority of women who delivered in a health facility were in age ranges of 25–29-year (37.25%) followed by the 30-34 years (26.47%) age range. Similar outcome was noted in women who delivered outside a health facility with age ranges 25-29 years forming 37.75% followed by the 30-34 age range (21.08%). The least deliveries in facility and non-facility were found in 40-44 age range and no observed deliveries in the 45-49 age group.

About sixty-one (60.78%) of women who delivered in health facility were married followed by 24.51% who were never married. About three percent (2.94%) were divorced and 11.76% were cohabiting. Same was noted for women who delivered outside health facilities with a higher percentage married (48.53%) followed by 37.25% never married and 14.22% cohabiting.

Most women attending the post-natal clinic were Christians with 97.06% among those who delivered in the health facility followed by 2.45% who were Muslims. Among women who delivered outside the health facility 76.47% were Christian and 23.53% were Muslims.

Among women who delivered in a health facility 42.65% had basic education followed by 36.27% secondary education, 16.67% tertiary education and 4.41% had no formal education. Among women who did not deliver in a health facility 52.45% had basic education, 15.69% had secondary education, 26.96% had no formal education and 4.90% had tertiary education.

Twenty-one percent (21.08%) of study population resided in rural areas while 78.92% resided in urban areas for client who delivered in health facilities while among women who delivered outside health institutions, 26.47% resided in rural areas and 73.53% resided in urban areas.

Women from households earning less than 1000 cedis formed the majority (55.88%) followed by 34.31% representing households earning between 1000 and 2000 cedis. 6.37%, 1.96% and 1.47% represented households earning 2000-3000cedis, 3000-4000cedis and 4000- 5000 cedis respectively.

About eighty-one percent (80.88%) of women who delivery in the health facility did not stay with mother-in-law. Approximately seventy six percent (75.98%) of women who delivered outside the health facility did not stay with mother-in-law.

Sixty one percent (60.29%) of women who delivered in health facilities had the decision-making autonomy and fifty eight percent (58.33%) of women who did not deliver in a health facility had the autonomy to decide where to deliver.

Seventy five percent (75%) of women who delivered within health institutions live in communities that supported the use of antenatal services while 65.48% of women who delivered at home lived in communities that supported antenatal services.

Table 4.2 Obstetric characteristic of study population and test of significance on institutional delivery at 95% confidence interval

VARIABLE	NON-INSTITUTION DELIVERY N=204(%)	INSTITUTIONAL DELIVERY N=204(%)	P-VALUE
parity			**0.000**
1	69(33.83)	69(33.82)	
2	32(15.69)	63(30.88)	
3	65(31.86)	35(17.16)	
4	24(11.76)	34(16.67)	
5	14(6.86)	3(1.47)	
Booking trimester			**0.000**
No book	32(15.29)	0.00(0.00)	
First	82(42.16)	147(72.06)	
Second	57(27.94)	38(18.63)	
Third	29(14.44)	19(9.31)	
Antenatal visit			**0.000**
None	32(15.69)	0.00(0.000	
<8	141(69.12)	135(66.18)	
8 and more	31(15.20)	69(33.82)	
Anc visit(eliminate non attendees)			**0.001**
<8	141(81.98)	135(66.18)	
At least 8	31(18.02)	69(33.82)	
Antental visits			**0.000**
Non attend.	32(15.69)	0(0)	
attendant	172(84.41)	204(100)	
Antenatal attended			**0.002**
<4	69(37.79)	47(23.04)	
At least 4	107(62.21)	157(76.96)	

In the sample population, the proportion of primiparous women who delivered in health institutions and home are equal (33.82% for both). Women who had two, three, four and five deliveries and delivered at home formed 15.69%, 31.86%, 11.76%, 6.86% respectively. For institutional delivery, two, three, four and five deliveries formed 80.33%17.16%,16.67%1.47% respectively.

Seventy two percent (72%) of women who delivered in health institutions booked in the first trimester, 18.63% booked in the second trimester and 9.31% booked in the third trimester.

About forty-two (42.16%) of women who did not delivery in any health institution booked at the first trimester,27.94% and 14.22% of women booked at second and third trimester respectively and 15.69% did not attend antenatal clinic.

Sixty-six percent (66.19%) and sixty-nine (69.12%) of women who had institutional delivery and non-institutional delivery respectively visited antenatal services less than eight times. Women who had at least eight antenatal visits formed 33.82% and 15.20% of institutional delivery and non-institutional delivery respectively.

Eliminating non-antenatal attendants, women who attended antenatal services less than eight times formed 81.98% for home delivery and 66.16% for institutional delivery. Women who attended at least eight antenatal clinics formed 18.82% and 33.82% for non-institutional delivery and institutional delivery respectively.

Thirty-two (32) women who never attended antenatal clinic delivered at home. The antenatal uptake according to the study is about ninety two percent (92.16%).

There is an association between attending at least four (4) antenatal clinics and institutional delivery. [$X^2(1) = 9.71$, $p<0.01$]. The odds of institutional delivery among women who attended at least four antenatal clinics was about twice the women who attended less than four (4) [OR=2.03,95%CI (1.30,3.18), P<0.01].

In the bivariate analysis (tab 4.3), marital status, religion, level of education, wealth index and living in communities that support the utilization of antenatal services were some of the socio-cultural factors that were significantly associated with institutional delivery. In the bivariate analysis there was an association between marriage and institutional delivery[$X^2(3) = 14.64$, $p<0.005$)]. The odd of institutional delivery among married women was about twice [OR=1.90,95%CI (1.22-2.97), p<0.005] that of non-married women. There was an association between religion and institutional delivery[$X^2(2) = 40.87$, $p<0.001$) in bivariate analysis. The odds of institutional delivery among Islamic women were 92% less than Christian women [OR=0.08,95% CI (0.03,0.21)]. The odds of institutional delivery among mothers who had basic education was about five (5) [OR=4.97 95%CI (2.33-10.62), p<0.001] times that of women without any formal education. Women with secondary education had the odd of 14.13[OR=4.13,95%CI (6.24-32.01), P<0.001] more than women with no formal education for institutional delivery. Women who had tertiary education had odds of 20.78[OR=20.78, 95%CI (7.67-56.30), p<0.001] more than women with no formal education to deliver in health institutions. There is an association between parity and institutional delivery[$X^2(4) = 27.96$, $p<0.001$]. The odds of institutional delivery reduced by 43% as the parity increases from three above. There is an association between increasing household wealth and institutional delivery[$X^2(4) = 38.04$, $p<0.001$].

There was an association between community support for antenatal attendance and institutional delivery [$X^2(1) = 5.61$, $p<0.05$] in the bivariate analysis. The odds of delivering in a health institution was 1.67 times more in women who lived in communities that supported antenatal services [OR=1.67 95%CI (1.09-2.56), $p<0.05$]. There was an association between institutional delivery and gestational age at booking[$X^2(3) = 53.85$, $p<0.001$]. The odds of institutional delivery decreased by 61% as booking date increased progressively from the first trimester to the second trimester [OR=0.39 95% CI (0.24-0.64), $p<0.001$]. The odds of institutional delivery in the third trimester booking were 62% less than first trimester booking [OR=0.38 95% CI (0.20-0.72), $P<0.005$]. There was an associated between attending at least eight antenatal clinics and institutional delivery [$X^2(1) = 11.93$, $p<0.01$]. The odds of institutional delivery among women who attended antenatal clinic at least 8 times was 2.32 times more than women who attended less than 8 times [OR=2.32 (95%CI=1.43-3.78, $p<0.01$].

Table 4.3 Bivariate analysis of socio-cultural and obstetric factors and institutional delivery.

VARIABLE	ODDS RATIO	P-VALUE	5% CONFIDENCE INTERVAL
MARITAL STATUS			
NEVER MARRIED	CONSTANT		
MARRIED	**1.9**	**0.004**	**(1.22-2.97)**
DIVORCED	-		
COHABITING	1.26	0.488	(0.66-2.40)
RELIGION			
CHRISTIAN	**CONSTANT**		
MUSLIM	**0.08**	**0.000**	**(0.032-0.211)**
EDUCATION			
NO EDUCAT	CONSTANT		
PRIMARY	**4.97**	**0.000**	**(2.33-10.62)**
SECONDARY	**14.13**	**0.000**	**(6.24-32.01)**
TERTIARY	**20.78**	**0.000**	**(7.67-56.30)**
PARITY			
AT MOST 2	CONSTANT		
3 AND MORE	**0.53**	**0.002**	**(0.36-0.80)**
WEALTH			
<1000	CONSTANT		
1000-1999	**0.21**	**0.000**	**(0.11-0.36)**
2000-2999	0.67	0.339	(0.294-1.523)
3000-3999	1.09	0.897	(0.300-3.949)
>4000	2.19	0.251	(0.58-8.23)
SUPPORT FOR ANC			
SUPPORT FOR ANC	CONSTANT		
SUPPORT	**1.67**	**0.018**	**(1.09-2.56)**
BOOKING			
1ST TRIMESTER	**CONSTANT**		
2ND TRIMESTER	**0.39**	**0.000**	**(0.23-0.63)**
3RD TRIMESTER	**0.38**	**0.003**	**(0.20-0.72)**
<8 ATTENDANCE	**CONSTANT**		
AT LEAST 8 ATTENDANCES	**2.32**	**0.001**	**(1.43-3.78)**

Table 4.4 Bivariate analysis on attending at least four antenatal clinics and institutional delivery.

ANC ATTENDED	ODDS RATIO	P-VALUE	95% CONFIDENCE INTERVAL
<4	CONSTANT		
AT LEAST 4	**2.03**	**0.002**	**(1.30-3.18)**

There was an association between attending at least four antenatal clinics (tab 4.4) and institutional delivery. [$X^2(1) = 9.71$, $p<0.01$]. The odds of institutional delivery among women who attended at least four (4) antenatal clinics was about twice the women who attended less than four (4) [OR=2.03,95% CI (1.30,3.18), P<0.01] antenatal clinics.

Table 4.5 Multivariate analysis of socio-cultural and obstetric factors and it's association with institutional delivery.

VARIABLE	ADJUSTED ODDS RATIO	P-VALUE	95% CONFIDENCE INTERVAL
NEVER MARRIED	CONSTANT		
MARRIED	1.04	0.09	0.503-2.129
DIVORCE	1		
CO-HABITING	1.78	0.28	0.62-5.070
CHRISTIAN	CONSTANT		
MUSLIM	0.09	**0.000**	0.025-0.316
OTHERS	1		
NO EDUCATION	CONSTANT		
BASIC	1.12	0.851	0.35-3.60
SECONDARY	1.58	0.48	0.45-5.52
TERTIARY	7.31	**0.012**	1.54-34.67
PARITY 1	CONSTANT		
2	2.64	0.023	1.141-6.115
3	0.66	0.34	0.275-1.564
4	1.14	0.789	0.431-3.032
5	0.08	**0.005**	0.139-0.474
<1000	CONSTANT		
1000-1999	0.45	**0.000**	0.019-0.116
2000-2999	0.03	**0.000**	0.007-0.141
3000-3999	0.23	0.067	0.487-1.109
4000-4999	0.43	0.303	0.088-2.135
NO SUPPORT	CONSTANT		
SUPPORT ANC	0.35	**0.006**	0.169-0.738
FIRST	CONSTANT		
SECOND	0.30	**0.001**	0.144-0.618
THIRD	0.44	0.093	2.706-16.880
<8 VISIT	CONSTANT		
AT LEAST 8 VISITS	6.76	**0.000**	1.016-16.880

In the multivariate analysis (tab 4.3) tertiary education, religion, higher parity, community that support antenatal services, gestational age at booking and attending at least eight antenatal clinics were significantly associated with institutional delivery.

CHAPTER FIVE

DISCUSSION

Utilization of health institutions for delivery improves maternal outcomes. One indicator for the attainment of Sustainable Development Goal 3.1 by year 2030 is the proportion of birth attended by skilled birth attendant (SDG,2015). This study assumed that all institutional deliveries were attended by Skilled Birth Attendants. The antenatal coverage for the sample population was about ninety-two percent (92.16%) which fell below the 2017 antenatal coverage of ninety-eight percent (98%) (MHS,2017).

Increasing level of formal education was associated with institutional delivery. Education has an effect on the general reproductive health decision making among Ghanaian women. Ghanaian women with tertiary education were likely to make positive decisions about their general reproductive health (Darteh et al, 2014). The odds of institutional delivery among women who had tertiary education in this study was higher [AOR=7.31 95% CI (1.54,34.67), $p<0.05$] than women with no formal education. This finding is consistent with other research studies (Feyissa1 R.T& Genemo A.G, 2013; Tey & Lai, 2013; Dahiru & Oche,2015; Yaya, Bishwajit and Gunawardena,2019; Awoke W, Muhammmed J & Abeje G,2013;). Educating women tend to increase their awareness about complications that can arise in labor and they can make informed decision about their health. Educated women are likely to be in the position to afford the cost of health care and institutional delivery.

From this study, the odds of institutional delivery in clients who attended antenatal clinics was higher than client who did not attend any clinic. According to Fekadu et al,2018 the odds of institutional delivery among women who attended any antenatal clinic was four (4) times more

than women who did not attend any clinic. Antenatal clinic forms a contact point between skilled birth attendants and pregnant women. Pregnant women who booked early in their pregnancy were more likely to attain the minimum antenatal visits requirement by the World Health Organization. Trimester at which women booked for antenatal care services was significantly associated with institutional delivery from this study. There was a regressive decrease in odds of institutional delivery as the booking gestational age increases from the first to the last trimester. The total number of antenatal visits during pregnancy period had a significant effect on institutional delivery from the study. The odds of institutional delivery in women who attended at least eight (8) antenatal services were about seven times [AOR=6.76 95% CI (2.71,16.880, $p<0.01$)] the women who attended less than eight (8) antenatal clinics. The odds of institutional deliveries were higher in any woman who booked as compared to women who never registered for antenatal visits. The finding is consistent with study in Northern Ethiopia (Tsegay et al,2017). Feyissa1 R.T& Genemo A.G, 2013; Tadele N* and Lamaro T,2017; Dahiru & Oche,2015; Fekadu et al,2018 found that attending at least four antenatal services was associated with increased odds of institutional delivery.

In this study, higher parity was found to be associated with non-institutional delivery. This finding is consistent with other studies (Feyissa1 R.T& Genemo A.G, 2013; Tsegay et al,2017) .According to (Dahiru & Oche,2015) the more experienced a woman is in childbirth the less likely they will use health institutions for delivery. Women with higher parity may be more confident and recognize that it may not be necessary to be attended by skill health providers because to their experience and knowledge in their previous deliveries. Attitude of health staff and previous experience of women during childbirth can affect institutional delivery. Multiparous women who experienced bad treatments from health workers may not attend the

same institution during labor. Women with their first pregnancy tend to seek the service of skilled providers due to fear of complications that may arise from the pregnancy (Kebede et al,2016).

Religion is a strong predictor of institutional delivery with the odds favoring Christians [OR=0.08,95%CI (0.03,0.21)]. Institutional delivery is lower among faith healing oriented congregations and non-affiliated women who resorts to non-religious trained providers for reproductive health. Such congregations including Zionist and Apostolic faith have low patronage for institutional delivery as compared to Catholics Women in Mozambique (Cau &Agadjanian,2019). Catholics and mainline protestants women tend to have a higher level of decision-making autonomy as compared to women belonging to the faith-oriented congregations. The odds of institutional delivery were found to be higher in orthodox Christians and Catholics as compared to Muslims in Wukro and Butajera regions in northern Ethiopia (Hagos et al, 2014). This study combined all Christian movement for example Catholics, orthodox churches, spiritual churches as Christians and when compared to Muslims there was an increased in odds of institutional delivery among Christians as compared to Muslims. Other studies in Ghana had shown that non-Christian women are likely not to access other reproductive health services such as contraception (Nketiah-Amponsah &Abuosi, 2012).

LIMITATION OF THE STUDY

Kpone-Katamanso Municipality has mix of urban and rural settlement. Kpone which is the Municipal Capital is mostly made up of indigenes who are mostly engage in fishing. There are cluster of companies in Kpone. Though Kpone can be classified as a rural community, it harbors professional who tend to work in the surrounding companies. Sample population from the Kpone polyclinic may not be internally valid as the settlers may not have attribute of rural settlement. Areas such as Katamanso, Oyibi, Appolonia and Kpone Bawaleshie though between two urban centres ie Tema and Madina have experienced in-migration in the past years. The findings in this study cannot be generalized to the overall population of the country because the research was performed in only Kpone-Katamanso Municipality. The settlers in these areas may have moved from urban areas to the rural settings at the period of study hence the sample population at the time of study may not necessarily represent Kpone Katamanso Municipality Members. Some participants work in the informal sector and are not able to accurately categorize the monthly incomes. Availability of basic or comprehensive emergency obstetric services was not analyzed because the outcome was similar for all sampled population who delivered in a health institution. Most of the women delivered in the health centers which only had basic emergency obstetric services and the polyclinics in the Municipality did not have a comprehensive emergency obstetric care service.

CHAPTER SIX

6.1 CONCLUSION

This study has shown a positive association between attending antenatal clinics and institutional delivery. Attending at least eight antenatal clinics as recommended by the World Health Organization is associated with institutional delivery. Booking early in pregnancy preferably the first trimester is associated with institutional delivery. Booking early is associated with the possibility of attending at least eight visits which is positively associated with institutional delivery. Female education is a strong positive predictor of institutional delivery in both models. Higher parity and living in communities that do not support the utilization of antenatal services negatively affect institutional delivery

6.2 RECOMMENDATIONS

In the attaining of the Sustainable Development Goal 3.1(reduce the Maternal Mortality Ratio to less than 70 deaths per 100,000 deliveries), efforts directed towards education of the female child is prime. Education of women about their health and the danger sign associated with home delivery can increase institutional delivery rate. In women with lower levels of educations in India, there was an increase in institutional delivery when they received at least one visit from community health nurses in their third trimester (Blanchard et al,2021). Creating awareness about the dangers of home deliveries by community health nurses when adapted in the Ghana Health Service can reduce home delivery and maternal and perinatal mortality. Further investment into community mobilizations programs that make the stakeholders within the communities to feel part of the health system can help build support in health promotion

programs. Promoting antenatal services utilizations by incorporating it into the culture of the community will increase the odds of institutional delivery. Adaptation of pregnancy school into the health services where the husbands of the pregnant women are invited to participate can improve antenatal attendance during the subsequent visits. Efforts to improve quality of overall health delivery system to client satisfaction makes them ambassadors of health and improve service utilization in general.

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APPENDICES

APPENDIX I: PARTICIPANTS INFORMATION SHEET

This information sheet is to inform the participants in the Kpone Katamanso about the research for them to make an informed decision of whether to participate in the study or not. It also defines the nature of the research, purpose, risks, advantages and compensation.

Title of Study:

"DETERMINANTS OF INSTITUTIONAL DELIVERY AMONG ANTENATAL ATTENDANTS IN KPONE KATAMANSO MUNICIPALITY"

Introduction:

The principal investigator (PI) is Rudolf Lamptey, a Master of Public Health (MPH) student of the School of Public Health of the College of Health Sciences, University of Ghana. My email address is rudolflamptey97@gmail.com. My telephone number is 0506741210

Background and Purpose of Research:

I am carrying out a research on the topic: "Determinants of Institutional Delivery among Antenatal Attendants in Kpone Katamanso Municipality".

Nature of Research:

The research has a case-control study design. My interest is to determine socio-cultural and economic factors that affects institutional delivery in the Kpone Katamanso Municipality. It would be conducted among 408 women attending post-natal clinic the Ghana Health Service facilities in the Kpone Katamanso Municipality.

PARTICIPANTS INVOLVEMENT

Duration/ what is involved:

A structured questionnaire would be used to elicit information from the study participants after the aim of the study has been explained to them and they are interested in participating. The questionnaire would be administered in English Language for literate respondents and translated into Twi or Ga for non-English literate respondents. This would last for 10 minutes.

Potential Risks:

There is potential risk of contracting Corvid-19 under the current circumstances of the Corvid-19 pandemic. Therefore, the following interventions will be put in place to ensure the safety of the study participants and the research assistants;

- The researcher, participants and assistants will be in personal protective equipment that includes full gown, facemask, face shield, gloves and boot covers
- Participants will wash their hands with soap under running water as observed by the research assistants before receiving the questionnaire
- Participants will sanitize their hands with alcohol-based rubs after filling the questionnaires
- Social distancing of 2metres will be maintained between the participants and the research assistants

Benefits:

Participants would have the opportunity to learn some socio-cultural and economic factors that affect institutional delivery and maternal mortality as a whole..

Cost:

There would be no cost incurred by participants for taking part of the study except their time.

Compensation:

There would not be any compensation for participating in the study.

Confidentiality:

In ensuring anonymity, participants would only be identified with codes and numbers. No information regarding participants name or any other information that traces the data collected to the participants would be taken. Filled questionnaires would be kept under lock and key, with only the principal investigator having access.

Voluntary participation/ withdrawal:

Participation in the study is voluntary and not compulsory. Participants have the right to decide whether or not they want to be part of the study. You can also withdraw your consent at any time of the study.

Outcome and feedback:

Findings of the study will be shared with the selected health facilities which may improve health service delivery at the facilities.

Feedback to participants:

A report would be presented to various stakeholders such as the Ministry of Health (MOH), Ghana Health Service, and Kpone Katamanso Municipal Health Directorate who formulate policies in antenatal care and its related issues. The report will be published in a journal.

Funding information:

This study is funded by the Principal Investigator.

Sharing of Participants Information/Data:

Participant information or data would be kept by me. Filled questionnaires would be kept under lock and key, with only the principal investigator having access. It would not be shared with anyone else.

Provision of Information and Consent for participants:

A copy of the information sheet and consent form will be given to you to sign or thumb-print before participation in the study

Who to Contact for Further Clarification/Questions:

If there are any clarifications or concerns you want addressed concerning this research, please contact Rudolf Lamptey at the Department of Population, Family and Reproductive Health, School of Public Health on telephone number 0506741210. You can also contact me by e-mail rudolflamptey97@gmail.com. For further clarification on ethical issues kindly contact the Ghana Health Service Ethical Review Committee Administrator, Nana Abena Apatu on phone number 0503539896.

APPENDIX II: CONSENT FORM

STUDY TITLE: …DETERMINANTS OF INSTITUTIONAL DELIVERY AMONG ANTENATAL ATTENDANTS IN KPONE KATAMANSO
……

……

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and all questions satisfactorily explained to me in a language I understand (*English, Twi or Ga*). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Participant……..

Participants' Signature ……...OR Thumb Print……

Date:…….

INTERPRETERS' STATEMENT

I interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the (*English, Ga or Twi*) language to his proper understanding.

All questions, appropriate clarifications sort by the participant and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter……

Signature of Interpreter…….. OR Thumb Print …….....

Date:……

Contact Details

STATEMENT OF WITNESS

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the language, he/she understood (*English, Twi or Ga*)

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name:……

Signature…….... OR Thumb Print …….....

Date:……

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name……

Signature …….

Date…….

APPENDIX III

DATA COLLECTION TOOL.

Questionnaire

1. Socio-economic and economic factors

1.1 AGE AT LAST BIRTHDAY …….

1.2 MARITAL STATUS
1. NEVER MARRIED
2. MARRIED
3. DIVORCED
4. WIDOWED
5. COHABITING

1.3 RELIGION
1. CHRISTIANITY
2. ISLAMIC RELIGION
3. TRADITIONAL RELIGION
4. OTHERS

1.4 LEVEL OF EDUCATION
1.NO FORMAL EDUCATION
2. BASIC EDUCATION
3. SECONDARY EDUCATION
4. TERTIARY EDUCATION

1.5 RESIDENCY
1. RURAL
2. URBAN

1.6 PARITY (EXACT NUMBER OF DELIVERIES) …….

1.7 HOUSEHOLD WEALTH (MONTHLY SALARY IN GHANA CEDIS)
1. <1000
2. 1000-2000
3. 2001-3000
4. 3001-4000
5. 4001-5000
6. >5000

1.8 DECISION MAKING AUTONOMY 1. NO

2.YES

1.9 LIVING WITH MOTHER-IN-LAW AT TIME OF PREGNANCY 1. NO

2. YES

1.10 COMMUNITY SUPPORT FOR ANTENATAL SERVICES AND INSTITUTIONAL DELIVERY

1. NO

2. YES

2.FACILITY FACTORS

2.1 AVAILABILITY OF EMERGENCY OBSTETERIC CARE 1. NO

2. YES

2.2 AVAILABILITY OF COMPREHENSIVE EMERGENCY OBSTETERIC CARE 1.NO

2. YES

3 ANTENATAL HISTORIES

GESTATIONAL AGE AT BOOKING 1.12 COMPLETED WEEKS

2.28 COMPLETED WEEKS

3.MORE THAN 28 COMPLETED WEEKS

NUMBER OF ANTENATAL VISITS ……

APPENDIX IV

VARIABLE TABLE AND OPERATIONAL DEFINITION

VARIABLE	VARIABLE TYPE	OPERATIONAL DEFINITION	SCALE OF MEASUREMENT
AGE	EXPOSURE	AGE AT LAST BIRTHDAY	CATEGORICAL 1.15-19, 2.20-24, 3.25-29, 4.30-34, 5.35-39, 6.40-44, 7.45-49 AGE <15 WILL BE ADDED TO 15-19 AGES >49 WILL BE ADDED TO 45-49
MARITAL STATUS	EXPOSURE	NEVER MARRIED MARRIED DIVORCED WIDOWED COHABITING	NORMINAL CATEGORICAL 1.NEVER MARRIED 2.MARRIED 3.DIVORCED 4.WIDOWED 5.COHABITING
RELIGION	EXPOSURE	RELIGIOUS AFFILIATION	NORMINAL CATEGORICAL 1.CHRISTIAN 2.MUSLIM 3.TRADITIONALIST 4.OTHERS
EDUCATIONAL LEVEL	EXPOSURE	HIGHEST LEVEL OF FORMAL EDUCATION	ORDINAL CATEGORICAL 1.NO FORMAL EDUCATION 2.BASIC EDUCATION 3. SECONDARY EDUCATION .4 TERTIARY AND HIGHER EDUCATION

PARITY	EXPOSURE	NUMBER OF DELIVERIES AT TIME OF STUDY	BINARY CATEGORICAL 1.PRIMIPARITY 2.MULTIPARITY
RESIDENCY	EXPOSURE	PLACE OF RESIDENCE	BINARY CATEGORICAL 1.RURAL 2. URBAN
HOUSE HOLD WEALTH	EXPOSURE	COMBINED SALARY OF HOUSEHOLD	ORDINAL CATEGORICAL 1.<1000 2.1000-2000 3.2001-3000 4.3001-4000 5.4001-5000 6.>5000
DECISION MAKING AUTONOMY	EXPOSURE	DECISION OF WOMAN TO DECIDE ON PLACE OF DELIVERY INDEPENDENT OF THE HUSBAND OR INLAWS	BINARY CATEGORICAL 1. NO 2. YES
LIVING WITH MOTHER-IN-LAW AT TIME OF PREGNANCY	EXPOSURE	LIVES WITH MOTHER-IN-LAW (HUSBANDS MOTHER)	BINARY CATEGORICAL 1.NO 2.YES
COMMUNITY SUPPORT FOR ANTENATAL SERVICES AND INSTITUTIONAL DELIVERY	EXPOSURE	COMMUNITY SUPPORT	BINARY CATEGORICAL 1.NO 2. YES
PRESENCE OF ESSENTIAL OBSTETERIC CARE	EXPOSURE	PRESENCE OF EMERGENCY OBSTETERIC EXCLUDING CAESARIAN SECTION AND BLOOD TRANSFUSION	BINARY CATEGORICAL 1.NO 2. YES

PRESENCE OF COMPREHENSIVE ESSENTIAL OBSTETERIC CARE	EXPOSURE	PRESENCE OF EMERGENCY OBSTETERIC INCLUDING CAESARIAN SECTION AND BLOOD TRANSFUSION	BINARY CATEGORICAL 1.NO 2. YES
GESTATIONAL AGE AT BOOKING	EXPOSURE	GESTATIONAL AGE AT REGISTRATION FOR ANTENATAL CARE SERVICES FIRST TRIMESTER IS TIME OF CONCEPTION TO 12 COMPLETED WEEKS SECOND TRIMESTER IS THE DURATION FROM THE 13TH WEEK TO 28 COMPLETED WEEKS THIRD TRIMESTER IS DURATION BETWEEN THE 29TH WEEKS TO DELIVERY.	ORDINAL CATEGORICAL 1.FIRST TRIMESTER 2.SECOND TRIMESTER 3.THIRD TRIMESTER
NUMBER OF ANTENATAL VISITS DURING PERIOD OF PREGANCY.	EXPOSURE	NUMBER OF ANTENATAL VISITS	BINARY 1.<8 2.>=8
CASES	OUTCOME	POST NATAL CLIENTS WHO DELIVERED AT THE FACILITY THEY ATTENDED ANTENATAL CARE	
CONTROL	OUTCOME	POST NATAL CLIENT WHO DID NOT DELIVER AT THE HEALTH FACILTY THEY ATTENDED ANTENATAL	

APPENDIX V

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

My Ref. GHS/RDD/ERC/Admin/App |21|375
Your Ref. No.

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6th September, 2021

Rudolf Lamptey
University of Ghana School of Public Health
P.O Box 834 Dansoman Estate, Accra.

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC 028/08/21**
Project Title	Determinants of Institutional Delivery among Antenatal Attendants in Kpone Katamanso Municipality
Approval Date	6th September, 2021
Expiry Date	5th September, 2022
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.
- Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
Dr. James Akazili
(Head, Ethics & Research Management Department)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra