DETERMINANTS OF LOW BIRTH WEIGHT AMONG INFANTS DELIVERED IN TOKORA HEALTH CENTRE IV, NAKAPIRIPIRIT DISTRICT

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A Centre of Excellence in the Heart of Africa

Declaration

I Ngiro Sunta Joy hereby declare that all the content in this dissertation submitted to Uganda Christian University (UCU) is my individual work. I am also aware that if any way I misinterpreted this dissertation presented to UCU or higher degree awarded to me on basis of the content may be officially cancelled.

Student signature…… … Date……..

Approval

This is to certify that the dissertation has been submitted for review with my approval as the supervisor.

Supervisor:

Mr. Odongo Joseph

Dedication

This dissertation is dedicated to all the mothers that delivered from Tokora HCIV, Nakapiripirit District and attended post-natal care during the study period.

Acknowledgement

I thank almighty GOD for the guidance and wisdom towards preparation of this dissertation. big thanks go to Mr Odongo Joseph for the professional guidance in this dissertation.

Great thanks to Uganda Christian University and the Administration for granting me an enabling environment to study in the University.

Finally, my parent, spouse and children who persevere and sacrifice their time to enable me to complete this dissertation

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Acronyms and abbreviations

WHO-World Health Organization

UNICEF-United Nations Children's Fund

HMIS-Health Management Information System

IFA-Iron Folic Acid

YCC-Young Child Clinic

NACS-Nutrition Assessment and counselling Support

IPT-Intermittent Presumptive Therapy

LBW-Low Birth Weight

Operational definitions

Low Birth Weight is defined as the weight of a child at birth which is less than 2500 g (WHO)

Gestation age is defined as the duration of pregnancy after the last day of the menstrual cycle (LMP) and computed in weeks and days (WHO).

Antenatal care is defined as the care given to the pregnant mother throughout the pregnancy period at the Health facility in order to control presumed healthy problems of pregnant women without symptoms by screening and also to diagnose diseases or complicated obstetric conditions, provide information about lifestyle, pregnancy and delivery.

Postnatal care is defined as the health care given to mothers and their new born babies immediately after the birth for as long as the first six weeks of life.

Abstract

WHO estimated that about 30 million low birth weight babies are born each year (23.4%) (WHO 2016). Ministry of Health estimated about 14.7% prevalence of low birth weight in Uganda in 2020. Tokora HCIV between 2020 and 2021 had a prevalence of 23.1% (Maternity and child Health Department, 2021). The broad objective was to identify the determinants of low birth weight among infants delivered in Tokora HC IV, Nakapiripirit District. A descriptive cross-sectional study was conducted, and data was collected at a point in time and the determinants of low birth weight and its factors were described. quantitative and qualitative methods of data collection were employed. Target participants were mothers who delivered live born babies from Tokora Health centre IV and attended post-natal care within the 6 weeks' period after delivery. Findings revealed a low birth weight prevalence of 29.4% among babies who were delivered in Tokora Health centre IV, Nakapiripirit District, higher than the 23.1% in between 2020 and 2021 and also 14.7% for MOH, 2020. Significant findings were observed from the gestational age, maternal education and financial support from spouses. The health facility should focus on Health Systems strengthening and improve the capacity to deliver an integrated package on maternal, neonatal and child health service.

CHAPTER ONE

1.0 Introduction

This chapter shows the background to the study, statement of the problem, objectives of the study, research questions, significance of the study or justification, and conceptual framework.

1.1 Background to the study

WHO defines Low Birth Weight as weight at birth of less than 2500g. There are two categories of low-birth-weight babies: those occurring as a result of intra uterine foetal growth restriction and those resulting from pre-term births (born too soon before 37 weeks of gestation) (Barros, 2019).

WHO estimates that about 30 million LBW babies are born annually (23.4% of all births) (OTA, 2018). Globally, more than 20 million infants are born each year weighing less than 2,500 grams, accounting for nearly 19% of all births in low-income countries – a rate more than double the level in high income countries (7 per cent) (WHO U. , 2019). More than 96 percent of low birth weight occurs in the Low- and middle-income countries (LMICs), reflecting the higher likelihood of these babies being born in poor socio-economic conditions where women are more susceptible to inadequate diets, teenage pregnancy, and infection and more likely to undertake physically demanding work during pregnancy (WHO report, 2014).

At health facilities in Uganda, the incidence of low birth weight defined as the proportion of new borns weighing less that 2500g, is monitored through both health system surveillance and household surveys. The prevalence of low birth weight in Uganda is estimated to be 14.7% (MoH, 2020). Between 2020 and 2021, the prevalence of low birth weight at Tokora Health Centre IV, Nakapiripirit District was 23.1% (Maternity and child Health Department, 2021). However, currently, there is inadequate information on the prevalence of low birth weight.

In addition, according to the WHO report 2020, it was shown that a child's health is to a great extent determined by factors that operate *in utero*, well before they are born.

According to the UDHS 2016, weight at birth is used as a yardstick of maturity and is an important determinant of child survival and development, birth weight specific mortality and morbidity, and this is equally true for very large neonates (UBOS, 2011).

At birth, foetal weight is accepted as the single parameter that is directly related to the health and nutrition of the mother. Foetal weight is also an important determinant of the chances of the new-born to survive and experience healthy growth and development. This is because low birth weight (LBW) is directly related to both immediate and long-term health consequences.

The weight at birth of neonates is vital in explaining not only a neonate's growth, but also its morbidity and mortality trend. Attempts to establish the causes of low birth weight have been partially futile, with less reduction in its prevalence being registered over years, south of the Sahara (UNICEF, 2016).

The study will therefore assess the determinants of low birth weight among infants born in Tokora HC IV, Nakapiripirit District.

1.2 Statement of the Problem

Low birth weight continues to be a significant public health problem globally and associated with a range of short- and long-term consequences. Overall, its estimated that 15% to 20% of all births worldwide are low birth weight representing more than 20 million births per year (WHO, WHA Global Nutrition targets 2025, low birth weight policy brief, 2020)

According to Ministry of health, the reported prevalence of LBW in Uganda was 14.7% in April 2020 (MOH, 2020). However, according to HMIS reports from the Maternal and Child Health department at Tokora Health centre IV, the prevalence of low birth weight was 23.1% between 2020 and 2021 which is absolutely far beyond the national threshold of 14.7% and low birth weight is a poor birth outcome in the continuum of maternal health care.

Low birth weight affects cognitive inabilities, low intelligence quotient levels, increased risk of diabetes and heart disease later in life and subsequently retardation, morbidity, and mortality among these children later in their lives (WHO report, 2019).

According to the Uganda Nutrition Action Plan 2011-2016, low birth weight is a public health problem in Uganda and several interventions at health facility level such as ANC services, folic acid and iron supplementation, Nutrition assessment and counselling support (NACS) programmes, intermittent presumptive treatment (IPT) and Nutrition and health education have been put in place to improve outcome. Despite all these preventive interventions, the prevalence of LBW stands still at 14.7%.

Therefore, Tokora HCIV doesn't have sufficient information on the current magnitude of low birth weight. This study therefore will identify the determinants of low birth weight among infants delivered at Tokora Health Centre IV, Nakapiripirit District and subsequently make recommendations on how to underpin the determinants of low birth weight.

1.3 Objectives of the study

1.3.1 General objective

To identify the determinants of low birth weight among infants delivered in Tokora HC IV, Nakapiripirit District.

1.3.2 Specific objectives

1. To find out the prevalence of low birth weight among infants born in Tokora HC IV, Nakapiripirit District.
2. To assess the factors that determine low birth weight among infants delivered from Tokora HC IV, Nakapiripirit District.
3. To find out challenges caregivers/parents face in keeping normal weights of infants in Tokora HC IV, Nakapiripirit District.

1.3.3 Research questions

What is the prevalence of low birth weight among infants born in Tokora Health Centre IV, Nakapiripirit District?

What factors determine low birth weight among infants born from Tokora HC IV?

What challenges do caregivers face in keeping normal weights of infants in Tokora HC IV?

1.4 Scope of the study

This section highlights the Geographical, content and time scope of the study.

1.4.1 Geographical scope

The study was conducted in Tokora Health centre IV, Tokora sub-County, Chekwii County in Nakapiripirit district. Tokora sub-county has a total population of 27,500 comprising of 12,300 males and 15,200 females. The sub-county has a total of 4 parishes and 26 villages, 3,944 households and an average household size of 5.3(UBOS 2013).

1.4.2 Content scope

The study focused on examining all the mothers who delivered from Tokora HC IV and have come to attend PNC within 24hours, 6 days and 6 weeks.

Data from the maternity and post-natal registers for the period of 22nd April to 20th May 2024 was considered during the study period.

1.4.3 Time scope

The study took 1 month and was conducted between 22nd April to 20th May 2024.

The study period stated included the time for data collection and analysis.

This was collected using interviewer administered questionnaires and key informant interviews from purposively selected midwives.

The Health centre records in maternity and post-natal ward were reviewed to determine the birth weights of infants delivered in the study period.

1.5 Justification

The determinants of low birth weight are multi-dimensional and complex and therefore rotate around Maternal, spousal support and socio-economic factors. Although a study was done between 2020 and 2021 in Tokora Health Centre IV with the prevalence of low birth weight being determined at 23.1%, little has been done to critically unpack the contributing factors to the major determinants of low birth weight among infants born in Tokora Health Centre IV.

Consequently, low birth weight causes impaired immune function, increased susceptibility to infection and disease, reduced muscle strength. Cognitive inabilities, low intelligence quotient levels, increased risk of diabetes and heart disease later in life and subsequently retardation, morbidity and mortality among these children later in their lives and because these negatively impacts on the life of an individual, community, nation and the world.

It was therefore justifiable to conduct this study so as to underpin the determinants of low birth weight among infants born in Tokora Health Centre IV.

1.6 Significance of the Study

The research findings will add to existing literature about the determinants of low birth weight among infants born in Tokora Health Centre IV and subsequently suggest recommendations to address the determinants of low birth weight.

The findings of the study will be shared with community members through public barazas to create awareness of the benefits of having normal weight babies.

It will also inform current policy review to guide healthcare service providers in reproductive, maternal, neonatal and child health reduce on subsequent risks associated with exposure to low birth weight among infants.

The study findings will also be disseminated to Tokora Health Centre IV and shall help the administrators design interventions that best suit and aim to minimize low birth weight among infants born in Tokora HC IV.

Conceptual framework

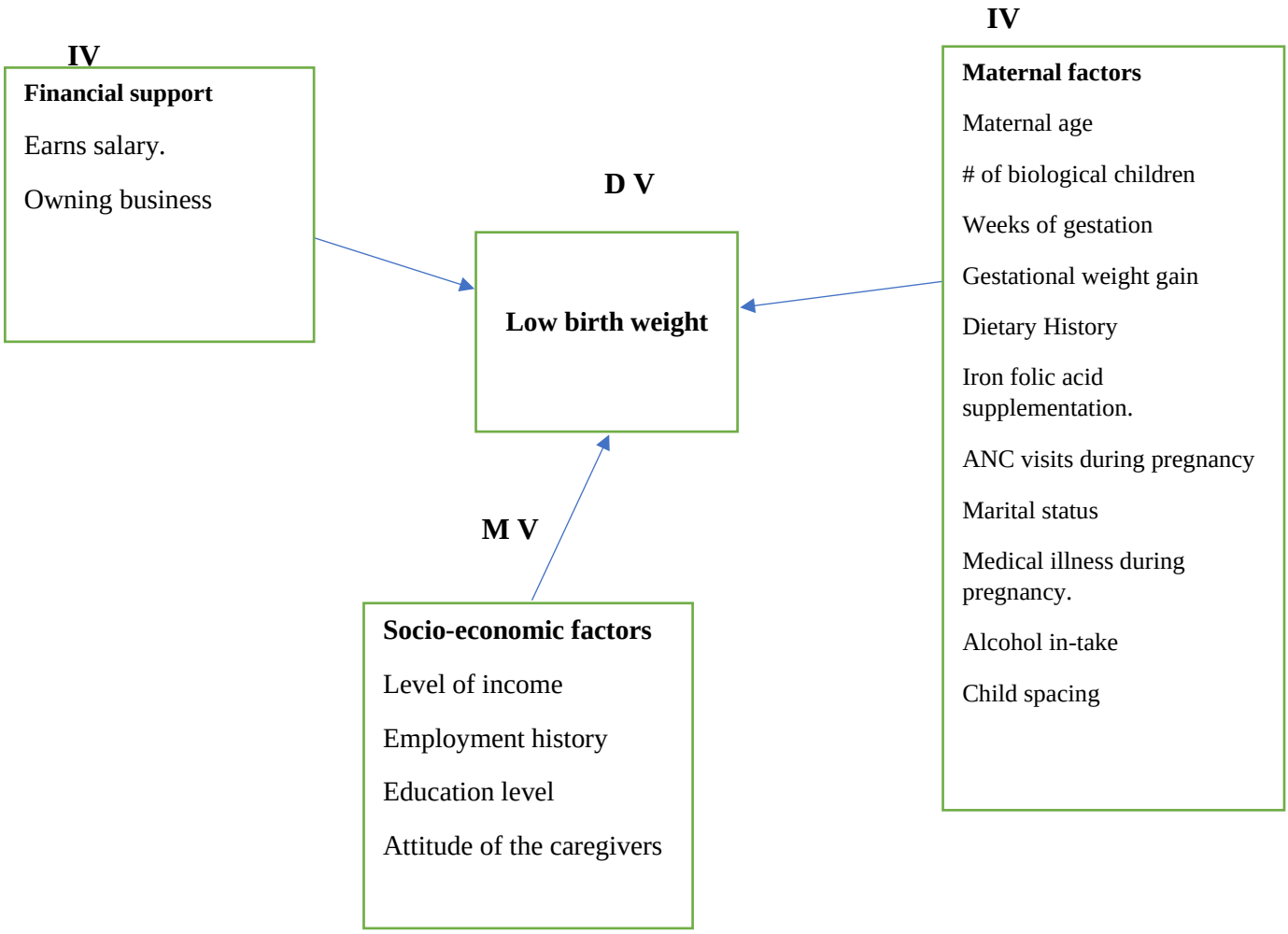

FIGURE 1: THE STUDY CONCEPTUAL FRAMEWORK

KEY:

DV= DEPENDENT VARIABLE

IV= Independent Variable

MV= Moderating Variable

CHAPTER TWO:

LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature related to the determinants of low birth weights among institutional deliveries, the section has an introduction to low birth weights, followed by the determining factors.

2.1 Definition of key terms

Low Birt Weight (LBW) as weight at birth of less than 2500 g (WHO standard)

Gestational age refers to the length of pregnancy after the first day of the last menstrual period (LMP) and usually expressed in weeks and days (WHO standard).

Antenatal care (ANC) is the routine health control of presumed healthy pregnant women without symptoms (screening), to diagnose diseases or complicating obstetric conditions without symptoms, and to provide information about lifestyle, pregnancy and delivery.

Postnatal care (PNC) is the care given to the mother and her newborn baby immediately after the birth and for the first six weeks of life.

2.2 Low birth weight

Low Birth Weight refers to weight at birth of less than 2,500 g. Low birth weight is one of the major determinants of perinatal survival, infant morbidity and mortality as well as the risk of developmental disabilities and illnesses in future lives (WHO, 2020) most developing countries, it was approximated that every ten seconds an infant dies from a disease or infection that can be attributed to LBW (Siza, 2019). Although about one-half of all LBW infants in industrialized countries are born preterm most LBW infants in developing countries are born at term and are affected by intrauterine growth restriction that may begin early during pregnancy (Ramakrishmnan, 2018)

Low birth weight is categorized according to Gestational age.

An infant is defined as a child from birth up to the age of 1 year (WHO 2020) and for this research we will use this as a measure of the level of care given by mothers to their children and a measure of maternal health and care during and after pregnancy.

WHO also classifies LBW in the following ways.

Table 1: WHO classification of Low Birth Weight

Prematurely born	**Gestational age (GA)**	**Birth weight**
LBW (low birth weight)	GA < 37 weeks	BW = 2499g – 1500g
VLBW (very low birth weight)	GA < 32 weeks	BW =1499g – 1000g
ELBW (extremely low birth weight)	GA < 28 weeks	BW = 999 - 700g
ILBW (incredible low birth weight)	GA < 24 weeks	BW < 700g

While the global prevalence of LBW has slightly declined, the rate in many developing countries is still quite high (30%). Weight at birth is a good indicator of the new-born's chances for survival, growth, long-term health and psychosocial development. LBW babies are significantly at risk of death, contributing to the high perinatal morbidity and mortality in developing countries.

Low-income countries account for majority share of LBW. Half of the children with a LBW were born in South Asia and among these countries India and Bangladesh has the highest prevalence of LBW (30%). (Low birth weight: Country, regional and global estimates. (New York: UNICEF; 2019. United Nations Children's Fund and World Health Organization)

In Ethiopia, the prevalence of LBW was 17.1% among mothers in the age group 18-35 years (Olunsanya, 2019). In Kenya, the prevalence of low birth weight was 11.2% which figures are still too high as compared to the WHO recommendations (Ngare, 2019).

According to the Uganda Demographic Health Survey 2011, 13.5% of 452 recorded births were low weight among mothers less than 20 years of age, 9.7% of 1,414 among mothers ranging from 20-34 and 7.9% of 203 among those ranging from 35-49.

This clearly shows that the prevalence of low birth weights is quite high.

2.3 Prevalence of low birth weight

WHO estimates that about 30 million LBW babies are born annually (23.4% of all births) and they often face short and long term health consequences.

Low birth weight continues to be a significant public health problem globally and associated with a range of short- and long-term consequences. Overall, its estimated that 15% to 20% of all births worldwide are low birth weight representing more than 20 million births per year (WHO, WHA Global Nutrition targets 2025, low birth weight policy brief, 2020).

Most literature supports the notion that teenage childbearing is generally associated with higher risk of adverse reproductive outcomes. There is however continued debate on whether this association is mainly a factor of unfavourable socio-demographic conditions of adolescent mothers or due solely to their biological immaturity.

Several studies have reported increased risks of low birth weight (LBW) among offspring of adolescent mothers. With respect to adolescent mothers, it has been suggested that they are still developing and growing, and therefore, mother and offspring may compete for the supply of nutrients. At older ages, women are more likely to have pre-existing, possibly undiagnosed diseases or poor health, including reduced cardiovascular reserve, which could result in poor placentation and LBW (Restrepo-Mendez, 2021) Previous studies in Uganda have shown that teenage pregnancy, rural residence and lack of knowledge about any risk factors for LBW as some of the major factors influencing low birth weight (MUK, 2018).

2.4 Determinants of low birth weight

A hospital-based study in eastern Taiwan reported that teenage mothers gave birth to babies of significantly lower birth weight than adult mothers (19% versus 9%, respectively) (Li, 2018). Research indicates that mothers at the younger and older ends of the childbearing age range are at increased risk for low birth weight.

A cross-sectional study done among teenage mothers in Uganda showed that there was no relationship between maternal age and low birth weight (Louis, 2019). A case control study done in Iran also found that there was no relationship between age and LBW (Mirzarahimi, 2017). Another study done in Iran also found no statistical significance between age and low birth weight (Khorshidi, 2015).

Married women are, more likely to seek early prenatal care, and thus less likely to have low birth weight infants (Berihun, 2013). Further, women who have relationships that are considered intermediates between married and unmarried (i.e. cohabitating with the father)

have birth outcomes that are better than those of unmarried women, but poorer than for married women. (Jo Kay, 2013). In contrast to this, a study done in Brazil showed no relationship between marital status and LBW (Coutinhoi, 2009).

An inverse relationship has been found to be between maternal weight gain and the proportion of infants with a birth weight less than 3,000 g. Birth weight greater than or equal to 4,000 g increased with an increasing weight gain in underweight and normal-weight women, but the association was less apparent in overweight and obese women. Our finding that low maternal BMI and a weight gain of < 10 kg during pregnancy, especially in combination, put women at risk of having infants too small for gestational age (Rode, 2007) A low body mass index (BMI) and suboptimal weight gain during pregnancy are long-recognized risk factors for the delivery of infants too small for gestational age (Ota, 2010). The causes of low birth weight are complex and interdependent, but the anthropometry of the mother and her nutritional intake are thought to be among the most important. Pre-pregnancy weight, body mass index (BMI) and gestational weight gain all have strong, positive effects on foetal growth suggesting that energy balance is an important determinant of birth outcomes.

The WHO collaborative study on maternal anthropometry and pregnancy outcomes, using data from 111,000 women from across the world reported that mothers in the lowest quartile of pre-pregnancy weight carried an elevated risk of IUGR and LBW of 2.55 (95% CI 2.3, 2.7) and 2.38 (95% CI 2.1, 2.5) respectively. A study in India reported the odds ratio for LBW among Indian mothers to be three times more in severe chronically energy deficient low BMI groups when compared to normal BMI groups. A prospective pregnancy cohort study carried out in Bangalore, India, confirmed that a low maternal weight at baseline and poor weight gain in the second trimester to be important predictors of IUGR after controlling for potential confounding variables 9. In India, low body mass index, short stature, anaemia and/or other micronutrient deficiencies are known to increase the risk of giving birth to a baby with LBW. For example, low BMI is a reliable indicator for protein-energy malnutrition, which affects foetal growth during pregnancy (Schieve, 2000B).

Women with poor nutritional status, reflected in low BMI (<18.5) had 49% higher odds of having LBW infants according to a study done by Neggers in 2003 (Neggers, 2003). Their findings are in agreement with previous studies where low pre-pregnancy BMI was significantly associated with LBW of an infant.

In recent years, maternal pre-pregnancy body mass index (BMI) has increased among the childbearing age women in developed countries (Ceassey, 2009). It has been shown that

women who are overweight or obese at the start of pregnancy are at increased risks of poor maternal and child health outcomes. Several recent studies reported that pre-pregnancy BMI was positively associated with infant birth weight (Li et al, 2013). Several recent studies also reported that pre-pregnancy BMI was positively associated with infant birth weight. Pre-pregnancy body mass index, gestational weight gain, and other maternal characteristics in relation to infant birth weight (Nohr, 2008). Furthermore, women who gain weight excessively or inadequately during pregnancy are at increased risks of poor maternal and child health outcomes (Guelinckx, 2008A). Weight gain during pregnancy within the recommended range (11 to 40 pounds) remained constant during the last 10 years (CDC, 2013). Several studies have shown that maternal excessive gestational weight gain was associated with increased risks of pregnancy-induced hypertension, gestational diabetes mellitus (GDM), caesarean delivery and large for gestational age infant, and maternal inadequate gestational weight gain was associated with increased risks of low birth weight and small for gestational age infant (Guelincky, 2008; Li, 2013). A study done in Benin showed no association between LBW and BMI (Mirzarahimi, 2013).

The prevalence of low birth weight (LBW) is higher in Asia than elsewhere, predominantly because of undernutrition of the mother prior to and during pregnancy. There are qualitative differences in dietary requirements during early and late pregnancy - micronutrients and protein requirements in early pregnancy, and calories and other nutrients later. Micronutrient deficiencies during pregnancy have been shown to have serious implications on the developing foetus (Muthayya, 2013). The weight of the infant at birth is a powerful predictor of infant growth and survival, and is dependent on maternal health and nutrition during pregnancy (Grantham-McGregor, 1998)

Macronutrient supplementation during pregnancy and an adequate nutrient supply to the foetus is an important area of research while investigating interventions to enhance birth weight. There is controversy on whether dietary macro- and micronutrient supplementation in pregnancy can increase birth weight. A meta-analysis showed only modest increases in maternal weight gain and foetal growth following dietary supplementation (Mulago NRH, 2011). Evidence from systematic reviews of randomized controlled trials on the effectiveness of nutritional interventions aimed at reducing IUGR has demonstrated the beneficial effects of macronutrient (protein/energy) supplementation, with an overall odds ratio of 0.77(95% CI 0.58, 1.01) for reducing IUGR (Black, 2010). Supplementation was associated with increases in maternal weight gain and mean birth weight, and a decrease in the number of LBW babies

of borderline significance. A community-based trial in rural Gambia showed that supplementing pregnant women with a high-energy groundnut snack significantly increased birth weight. Supplementation significantly increased birth weight (Muthayya, 2009)**.** A study done in Uganda found number of meals was not associated with LBW (Louis B., 2016)A study done in India found that IFA during pregnancy was negatively associated with LBW. IFA during pregnancy was significantly associated with decreased LBW (Balarajan, 2013). A case control study done in the University Hospital of Cantabria found no relationship between iron folic acid supplementation and low birth weight. A randomized control trial in Burkina Faso found that there was improved fetal growth after micro-nutrient supplementation. Women who took micro-nutrient supplementation had better gestational outcomes as compared to those who took the placebo.

Antenatal Clinics are an essential element of the health services provided during pregnancy. These clinics provide services such as screening, prevention, and treatment of pregnancy-related complications. The World Health Organization (WHO) recommends at least four standard quality antenatal care visits comprising interventions such as tetanus toxoid vaccination, screening and treatment for infections, and identification of warning signs during pregnancy. Antenatal care provides routine monitoring of height and weight gain, identification of medical maternal or foetal problems, counselling against tobacco or substance use, provide psychosocial support, nutritional advice, and early intervention which may reduction adverse pregnancy outcomes including LBW. Lack of access to ANC could be influenced by many factors including lower socio-economic status and poor knowledge. Therefore, utilization of ANC should be further investigated to understand obstacles and opportunities to improve services. (WHO, 2011).

Antenatal care of the pregnant mothers is one of the important risk factors contributing to low birth weight babies (Abdal Qader, 2012). A research done in Bihar, showed that mothers who had at least 3 antenatal visits were less likely to have low birth babies as compared to those who didn't have antenatal care (Dubey et al) The correlation between inadequate ANC and increased rate of maternal and perinatal morbidity has been known since as early as 1914, when studies reported that timely detection and prompt treatment of pregnancy complications considerably reduced perinatal mortality from a variety of causes, including prematurity, small for gestational age (SGA) and LBW new-born (Okoroh M, 2012). The number of visits by gestational age was associated with LBW in a study done in Brazil (Branco Da Fonseca, 2017)There is also a strong association between lack of ANC and adverse pregnancy outcomes

(Bernabe, 2004). According to a study done in India, there is a strong association between lack of antenatal care and low birth weight (Kader, 2014). A study done among teenage mothers found that ANC attendance was not associated with LBW (Louis, 2016). A study done in Iran also found no relationship between ANC and LBW (Mirzarahimi, 2013).

Short inter-pregnancy intervals may result in depletion of maternal nutrient stores and lead to reduced birth weight (Zhu, 2011). Birth spacing has become a major health promotion program strategy for mothers and children in recent decades in developing countries. The inter-pregnancy interval has been reported to influence the outcome of pregnancy and birth. Appropriate pregnancy spacing has been recommended to achieve better perinatal outcomes (Abdulbari, 2012).

Both short and long intervals between pregnancies have been associated with increased risk of a number of adverse perinatal outcomes, such as preterm birth, low birth weight, small size for gestational age, and perinatal death (King, 2003)Some researchers have argued that short intervals between pregnancies merely identify women already at higher reproductive risk, either because of underlying disorders, socioeconomic status or life style factors (Klebanoff, 2012). It has been claimed that women with closely spaced births have insufficient time to restore the nutritional reserves needed to support foetal growth and development in the subsequent pregnancy thus leading to low birth weight (King, 2011). Women who become pregnant soon after completing a pregnancy are considered to be at high risk for the delivery of a low-birth-weight infant. In Ethiopia it has been reported that conceiving within 12 months of a previous delivery is a critical interval for causing low birth weight. According to that study, the risk of low birth weight was higher in mothers with short (40.3%) and long birth intervals (35.1%). It was found that infants conceived 18-23 months after a live birth had the lowest risk of low birth weight in both the groups of low birth weight and normal weight children (24.6% & 21.8%) (Getachew, 2012). The risk for low birth weight was highest when the birth interval was the lowest, below 6 months (25.2%), and then the risk declined rapidly as the birth interval increased and was lowest for women with a birth interval of 23 months (Saleh, 2012) However, there was no significant association between short inter-pregnancy and low birth weight in study done by Kader and Perera. They assumed that if a woman regains her nutritional status before conception of another foetus, even in a short period it may possible to have a normal weight baby (Kader, 2014). Both short and long intervals between pregnancies have been associated with increased risk of low birth weight (King, 2003). A study found done in Brazil found that there was a statistical relationship between child spacing and LBW. (Bener, 2012).

A study done in Ethiopia also found a relationship between child spacing and LBW (Getachew, 2011).

Macro and micronutrient supplementation in a community-based trial in rural Gambia was associated with increases in maternal weight gain and mean birth weight, and a decrease in the number of LBW babies of borderline significance. Results showed that supplementing pregnant women with a high-energy groundnut snack significantly increased birth weight. Supplementation significantly increased birth weight (by 136 g, $P<0.001$). In contrast, a meta-analysis showed only modest increases in maternal weight gain and foetal growth and subsequently increased birth weight following dietary macro and micronutrient supplementation (Kramer, 2013). Folic acid supplementation is known to cause low birth weight (Katalin, 2012)

A systematic review found that maternal unmarried status is associated with an increased risk of LBW (Shah, 2011). A study done in Italy also found no relationship between marital status of the mother and low birth weight (Nobile, 2012).

The presence of parasites such as malaria in the placenta was found to be associated with reduced birth weight of 449 g in this study done in Owerri, Nigeria (Idih, 2016). A study done in Nigeria found no association between asymptomatic malaria and LBW (Bassey, 2015). A systematic review using articles from sub-Saharan Africa found that mothers with malaria were more likely have a low birth weight baby as compared to those without malaria. Another systematic review in Sub-Saharan Africa also found that there is an association between IPT treatment and birth weight. Women who took IPT were less likely to give birth to a low birth weight baby. According to WHO, women with malaria are more likely to deliver a low birth weight baby (WHO, 2017).

Alcohol intake during pregnancy is known to cause low birth weight. A study done in Brazil found that women who took alcohol were more likely to give birth to a low birth weight baby (Silva, 2011). A Tasmanian Infant Health Survey done in Australia found no statistical association between low birth weight and alcohol consumption during pregnancy (Wang, 2014). A study done in British found a negative association between alcohol consumption during pregnancy and low birth weight (Nykjaer, 2014). A study done in Japan found that there was no association between alcohol intake and low birth weight (Miyake, 2014). Another study also found no association between low birth weight and alcohol intake (Dumas, 2014). A study

found in Braford however found that there was a statistical significance between birth weight and alcohol intake during pregnancy.

In a prospective study from a highly developed area reported increased risk for small for gestational age birth by women with low vegetable intakes (odds ratio 3.1; 95% confidence interval 1.4–6.9; *P*=0.01); another large prospective study reported a 10.4 g increase in birth weight per quintile increase in fruit intake (95% confidence interval 6.9–3.9; *P*<0.0001) and increases of 8.4 or 7.7 g per quintile intake of fruits and vegetables (combined) or fruits, vegetables, and juice (combined), respectively. One retrospective study reported an association between low fruit intake and birth weight. (Smith KM, 2014).

2.5 Challenges faced by care givers.

A study done in Michigan showed that non-poor women are less likely to deliver LBW babies than poor women, although this was not consistently statistically significant. Wealth has been consistently reported to be associated with better pregnancy outcomes in diverse settings (Taylor, 2014). Another study done in South Carolina also showed that mothers who were poor were more likely to have low birth weight babies (Nkansah-Amankra, 2010). Women who grow up in poor households have smaller babies than those who do not, and a unit increase in the income/needs ratio (analogous to the poverty index), in non-poor households only, is associated with a 185 g [95% CI 70, 200] increase in infant birthweight (Astone, 2007). Women with low socio-economic status are more likely to have inadequate food intake, unhygienic housing and lack of sanitation, reduced ability to seek medical care and purchase medicine/supplements, which then affects the birth weight of their infants (Ohlsson, 2017). Further, in rural Kenya, a prospective study showed that socio-economic factors are the best predictors of LBW. Other associated factors were BMI, Hb level and MUAC of the mother (Dowding, 2011). Studies have also shown that women of a lower socio-economic level had a higher risk of LBW than those in the medium and high socioeconomic brackets (Bener, 2012). A study done in Iran found no statistical significance between socio-economic status and low birth weight (Mirzarahimi, 2013).

In a study comparing the wealth index in Ghana of households (used as a proxy for household income) was constructed in quintiles (1 = poorest, 2 = poorer, 3 = middle, 4 = richer, 5= richest). The results suggest that women in the poorest wealth quintile are less likely to have LBW compared to those in the highest income quintiles, though this was only significant at the 10% ($p = 0.065$). However, those in the poorer, middle and richer quintiles did not show significant association with LBW.

In contrast with another study of Torres-Arreola, 2007 found low socio-economic status as the most important risk factor for 8 Neonatal Care low birth weights.

According to Ghana multiple indicator cluster survey 2011, the incidence of LBW from a population-based study in Ghana is a little lower than that of Ghana MICS which found a low-birth-weight prevalence of 9.1 % and 11 % in 2006 and 2011 respectively. Our study revealed that having infant birth weight ≥ 2.5 kg is highly associated with socioeconomic status of women household. In contrast, the findings show a strong association between birth weight and socioeconomic status which is consistent with other studies which showed that higher socioeconomic status reduced the risk of LBW (Dowding, 2012).

Women who did not complete high school had a 9% higher probability of having a LBW child than women with high school or higher education level (Ahmed F, 2012). It was also observed that mothers with less than eight years of formal education are 1.5 times more likely to have LBW infants (Haider, 2001).

Mothers who had finished university or had a higher level of education had children whose weight was up to 82 g [95% CI: 4-160] higher than those who had completed only high school or had a lower level of education (Astone, 2010). Another study, using the same research object, verified that children born to mothers with low education significantly have a birth weight approximately 123 g lower than those born to mothers with higher education (Jansen, 2009) The rationale for the association between maternal education level and LBW appears to be related to the low socioeconomic level of mothers, who possibly have a lower weight gain during pregnancy, late start of prenatal care, and fewer consultations than recommended.

Regarding prenatal care, the number of consultations was also associated with maternal education. Mothers with higher levels of education were twice as likely to have more than six consultations during the prenatal period, and the first one occurred earlier (Haider, 2017). The association between the importance of maternal education on maternal-child health can be understood by the fact that women with higher levels of education are more prone to take care of themselves, have greater knowledge of the care that must be performed, have a higher socioeconomic status and better judgment when making decisions regarding their health and care. Several studies conducted in different countries have shown that education is the strongest socioeconomic predictor of health status, when considered alone, and the most important determinant of birth weight in a population (Maddah, 2005). In a nationally representative sample of Malawian women of age 15-49 years who had delivered a child in the past five years

prior to the survey, we found in multivariate analysis that women with no formal education were more likely to have delivered a LBW baby compared to those with at least primary education (Muula, 2011).

In Asia, a study conducted in Bangladesh showed that the incidence of LBW was 32.7% in children born to women who had no formal education, and 1.8% in those with high school or higher education level (Dhar, 2012). Women who did not complete high school had a 9% higher probability of having a LBW child than women with high school or higher education level (Ahmed F, 1989). It was also observed that mothers with less than eight years of formal education are 1.5 times more likely to have LBW infants (Haider, 2013). Mothers who had finished university or had a higher level of education had children whose weight was up to 82 g [95% CI: 4-160] higher than those who had completed only high school or had a lower level of education (Astone, 2011). Another study, using the same research objective, verified that children born to mothers with low education significantly have a birth weight approximately 123 g lower than those born to mothers with higher education (Jansen, 2009). The rationale for the association between maternal education level and LBW appears to be related to the low socioeconomic level of mothers, who possibly have a lower weight gain during pregnancy, late start of prenatal care, and fewer consultations than recommended. Lack of prenatal care and a low number of consultations was also associated with maternal education. Mothers with higher levels of education are twice as likely to have more than six consultations during the prenatal period which decreases the risk of them having low weight babies (Haider, 2013). The association between the importance of maternal education on maternal-child health can also be explained by the fact that women with higher levels of education are more prone to take care of themselves, have greater knowledge of the care that must be performed, have a higher socioeconomic status and better judgment when making decisions regarding their health and care. Several studies conducted in different countries have shown that education is the strongest socioeconomic predictor of health status, when considered alone, and the most important determinant of birth weight in a population (Maddah, 2011). In a nationally representative sample of Malawian women of age 15-49 years who had delivered a child in the past five years prior to the survey, we found in multivariate analysis that women with no formal education were more likely to have delivered a LBW baby compared to those with at least primary education (Muula, 2016). In contrast, a study done in Benin found that maternal education level was not associated with LBW (Oladeinde, 2015).

A mother's education has a significant impact on the life hope and children's health. Research undertaken in developing countries proves without any doubt that the new born's and children's health is going to suffer if the mother lacks education and this has been proven by numerous statistics. The influence of maternal education on birth weight can also be observed in different continents. In Iran, the prevalence of LBW in infants born to women with no education was 16.9%, decreasing to 5.4% ($p < 0.008$) with increasing level of schooling (Jafari, 2010).

Evidence suggests that financial support from spouse may be beneficial to maternal health. Male support in maternal health care has been described as a process of social and behavioural change that is needed for men to play more responsible roles in maternal health care with the purpose of ensuring women's and children's wellbeing. Paternal involvement financially is critical for foetal-infant health, but few studies have examined this construct (Alio, 2010).

Financial strength during pregnancy and childbirth influences pregnancy outcomes it reduces negative maternal health behaviour, risk of preterm birth, low birth weight, foetal growth restriction and infant mortality. There is epidemiological and physiological evidence that male involvement reduces maternal stress (by emotional, logistical and financial support), increases uptake of prenatal care, leads to cessation of risk behaviours (such as smoking), and ensures men's involvement in their future parental roles from an early stage. Uganda's Ministry of Health has a policy that also supports male involvement in reproductive health (Kaye, 2014)

A study done by Alio showed higher rates of low birth weight, very low birth weight, preterm birth, and SGA among children with limited financial support. The mothers in this study also had 87% increased risk of very preterm birth. This could be because paternal involvement may promote healthy prenatal behaviours. The same study also showed that women classified as poor were more likely to report prenatal smoking and more likely to have inadequate prenatal care (Alio, 2010). Low paternal support and chronic stress during pregnancy are potential risk factors for preterm birth, while women with moderate-to-high levels of support had better outcomes than those with low support (Jo Kay, 2010).

Married women are more likely to seek early prenatal care, and less likely to have low birthweight infants. Further, women who have relationships that are considered intermediates between married and unmarried (i.e. cohabitating with the father) have birth outcomes that are better than those of unmarried women, but poorer than for married women (Jo Kay, 2010).

2.6 Conclusion

In conclusion, literature has revealed that Low birth weight is prevalent in almost all the parts of the world with sub-Saharan Africa having the highest prevalence rates.

Several studies of the literature about the determinants of low birth weight among infants delivered depict that socio-economic factors and financial support highly contribute to the prevalence of low birth weight among infants.

However, little is written about the community contribution in this as we are also aware that a poor health care system can also in one way contribute to the mothers delivering low birth weight infants if they are short of adequate health information.

CHAPTER THREE

METHODLOGY

3.0 Introduction

This chapter includes the study design, study area, study population, sample size calculation, sampling techniques, Data collection techniques, Data collection procedures, Data collection tools, Data analysis plan and ethical considerations that were followed during the study.

3.1 Study design

The study employed both qualitative and quantitative method of data collection.

Objectives one and two were used to obtain information on (Demographic data socio-economic status and financial support) whereas objective three was used to generate qualitative data from midwives.

The non-probability sampling method was employed to determine the respondents.

3.2 Study population

The target population were Mothers who delivered live full-term babies at Tokora Health Centre IV, Nakapiripirit District.

273 mothers and midwives were interviewed to provide adequate information on the determinants of low birth weight among infants delivered from Tokora HC IV.

3.3 Sample size.

Using Leslie Kish's formula,$n = \frac{z^2pq}{\delta^2}$ was used where the prevalence of low birth weight in Tokora HC IV was 23.1%, using 95% CI (z=1.96) and error allowance of 5%

$$n = \frac{z^2pq}{\delta^2}$$

$$n = \frac{1.96^2 * 0.231 * 0.769}{0.05^2}$$

$$n = 272.9$$

$$\cong 273$$

A total of 273 mothers who delivered from Tokora HC IV participated in the study. The qualitative sample was a total 4 midwives who provided qualitative information about the determinants of low birth weight among infants delivered in Tokora HC IV.

3.4 Sampling techniques

The 273 Mothers who delivered live full-term babies and attended post-natal care were selected using simple random sampling from a sampling frame that was developed from

Health facility records of post-natal care ward. A table of random numbers was used to select the respondents.

Purposive sampling was used for selecting respondents who participated in the qualitative aspect of the study. Only midwives who work in the post-natal care ward were selected for the study.

3.5 Data collection techniques

Quantitative data was collected using face to face interviews with the respondents. Key informant interviews were used for collecting qualitative data with midwives working at the PNC ward of Tokora Health Centre IV, Nakapiripirit District at the time of the study.

The research study was conducted for a period of 1 months that included time for data collection and data analysis.

3.5.1 Data collection tools

The study used semi- structured questionnaires which were designed to collect quantitative data from women who delivered live born full-term babies and attended postnatal care ward of Tokora Health Centre IV, Nakapiripirit District.

Qualitative data was collected using Key informant interview guide.

3.5.2 Data collection procedures

The filled in questionnaires were cross checked, edited daily by the principal investigator. Data was coded and entered into Epi data and then exported to SPSS for cleaning and analysis.

3.6 Data analysis plan

Uni-variable analysis was done using descriptive statistics. The means, standard deviation and proportion used for numerical variables that include maternal age, child spacing, gestational weight gain, dietary history, number of ANC visits and low birth weight, For categorical variables such as socio economic status, underlying medical conditions, alcohol intake during pregnancy, iron and folic acid supplementation and financial support, analysis was done using frequencies and percentages.

Data was presented using tables, pie charts and graphs.

3.7 Quality control measures

3.7.1 Validity

Pretesting of questionnaires

The quantitative and qualitative questionnaires were pretested among a randomly selected sample of mothers at the maternity ward in another heath facility (Facility not under study-Namalu HCIII).

The mothers with whom the questionnaire was pretested did not participate in the final sampling frame. Pretesting was done to increase validity of the questionnaires. The pre-test was done among 30 women of reproductive age.

3.7.2 Reliability

Quality control was adhered to by ensuring that the questionnaires were pretested, there were training and supervision of research personnel, adequate check for completeness of research questionnaires, periodic data cleaning, checking storage and securing of paper copy data safely under lock, limiting access by having a computer password and regularly backing up data to avoid losing it.

Training of research assistants

A total of 4 enumerators were trained on data collection methods and techniques, sampling procedures and ethics of research. They were also trained on how to collect and fill data correctly on the study questionnaires.

3.8 Ethical Considerations

Informed consent was obtained by explaining to the respondents the purpose of the study, duration of the study, the study area and procedures, benefits of the study, potential risk factors and the relevance of the study.

Permission was sought from Tokora health facility HC IV in-charge and maternity ward in-charge to collect Quantitative and Qualitative data for the study.

Confidentiality in this study constituted privacy with all information obtained from respondents not disclosed to any third party.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

Whereas the study targeted 273 (100%) respondents, only 269 (98.5%) were interviewed.

This study was carried out to identify the determinants of low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

The results obtained were analyzed and presented in statistical tables and figures according to the objectives of the study.

The objectives of the study were; To find out the prevalence of low birth weight among infants delivered in Tokora HC IV, Assess the factors that determine low birth weight infants delivered from Tokora HC IV and to find out challenges caregivers/parents face in keeping normal weights of infants in Tokora HC IV, Nakapiripirit District.

4.1 Uni-Variable analysis

In this section, Uni-variable analysis was done using descriptive statistics and the means, standard deviation and proportion used for numerical variables were populated.

4.1.1 Maternal factors

The study of the determinants of low birth weight among infants delivered in Tokora Health Centre IV was conducted successfully, the study participants constituted of mothers who delivered from Tokora Health Centre IV and attended post-natal care ward at 24 hours, 6 days and 6 weeks.

The sample size was 273 respondents however, only 269 respondents participated in the study and the key variables results with percentage proportions from the study were as below;

Table 2: The table below shows individual characteristics of respondents.

Variable	**Response**	**Frequency (N=269)**	**Percentage (100%)**
Marital status	Single	16	5.9
	Married	107	39.7
	Widowed	2	0.8
	Cohabiting	137	51
	Others (Specify)	7	2.6
Residence	Urban	88	32.6

	Rural	152	56.5
	Peri-urban	29	10.9
Weeks of gestation	>37-42 weeks	69	26%
	<37-42 weeks	200	74%
How many kilograms was child [Name] at birth?	Number in kilograms >=2500g <2500g	 190 79	 70.59 29.4
Maternal age	15-19	32	11.8
	20-24	114	42.6
	25-29	73	27.1
	30-34	43	15.9
	35-39	5	1.8
	40-44	2	0.8
Number of biological children	<=5	141	52.4
	>5	128	47.6
Average child spacing	<=2 years	190	70.6
	>2 years	79	29.4
Number of ANC visits	>= 4 visits	127	47.1
	<4 visits	142	52.8
Attended ANC services with spouse	Yes	192	71.2
	No	77	28.8
Reason for spouse not attending ANC	He was busy	151	56
	He did not want to come for ANC	109	40
	Did not know he was supposed to attend ANC	9	4
Spouse attended all ANC visits	Yes	252	93.8

	No	17	6.2
Number of ANC visits attended with spouse	< 4 times	236	87.9
	>=4 times	33	12.1
Spouse encouraged/advised you to attend ANC	Yes	245	90.9
	No	24	9.1
Regular intake of iron folic acid supplementation	Yes	215	80.0
	No	54	20.0
Suffered from illness during pregnancy	No	157	58.2
	Yes	112	41.8
Type of illness suffered from during pregnancy	Malaria	101	37.4
	Others (flu, cough, hypertension, UTI, typhoid)	168	62.6
Number of meals eaten during pregnancy	>=5 meals	65	24.1
	<5 meals	204	75.9
Alcohol intake during pregnancy	No	261	97.1
	Yes	8	2.9
Number of times alcohol was taken	Once a week	6	2.4
	More than once a week	2	0.6
	Did not take any alcohol	261	97.0

From the table above, out of the 269 respondents who participated in the study, majority of the respondents 152/269 (56.5%) were from a rural area. Majority of the respondents 200/269 (74%) had a gestation of less than 37 to 42 weeks of pregnancy.

Its noted that majority of the mothers were cohabiting accounting for 137/269 (51%) whereas only 107/269 (39.7%) were married Majority of the respondents 144/269 (42.6%) were aged

20 – 24. 3/2692 (11.8%) were aged between 15 -19 years. Most of the respondents 141/269 (52.4%) had biological children <=5.

Most of the respondents 215/269 (80%) took iron folic acid regularly.

Majority of the respondents 157/269 (58.2%) did not suffer from any illness during pregnancy. 112/269 (41.8%) of respondents suffered from an illness during pregnancy and the most common illness was malaria that accounted for 37.4%. Most of the respondents 204/269 (75.9%) ate less than < 5 meals during pregnancy as compared to 64/269 (24.1%) that had >=5 meals.

Most of the respondents 261/269 (97.1%) did not take alcohol during pregnancy and 8/269 (2.9%) took alcohol during pregnancy.

4.1.2. Prevalence of low birth weight

The figure below shows the prevalence of low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

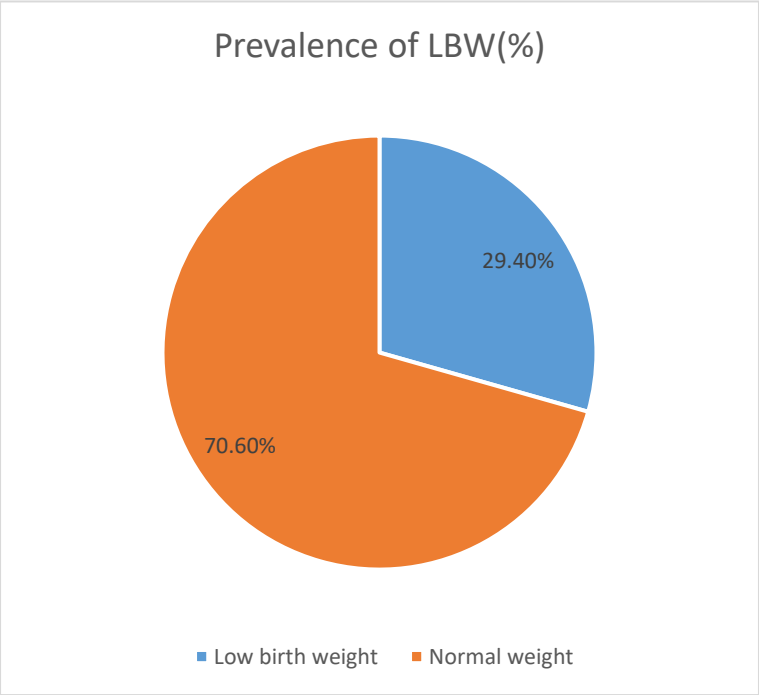

Figure 2, Prevalence of low birth weight (%)

According to the pie chart above, 269 respondents participated in the study and out of 190 infants had normal birth weight of >2500g while 79 out of 269 infants had low birth weight of <2500g and therefore, the prevalence of low birth weight was 79 (29.4%) as the majority of the respondents gave birth to a normal weight baby 190 (70.6%). The mean birth weight was 2.9 (SD ± 0.64). a large proportion of children had normal birth weight.

4.2 Socio-Economic Factors

From the study objective and the conceptual framework for the determinants of low birth weight among infants, socio-economic factors are reflected to have a direct influence on birth outcomes among mothers who deliver and the study findings are below;

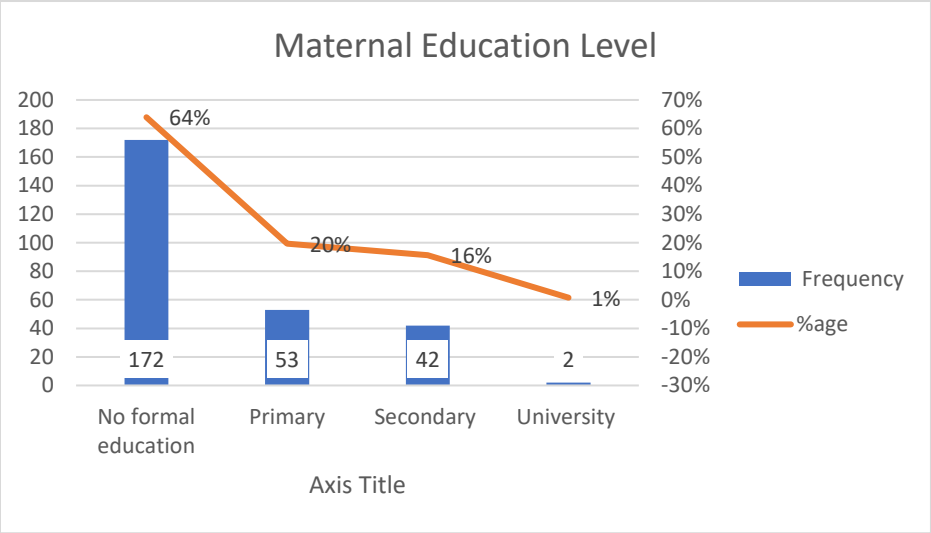

Figure 3 shows findings on Maternal Education Level

According to the findings, majority of the respondents had no formal education accounting for 172/269 (64%) while 53/269 (20%) attained secondary, 42/269 (16%) attained primary education and only 2/269 (1%) of the mothers had attained university education.

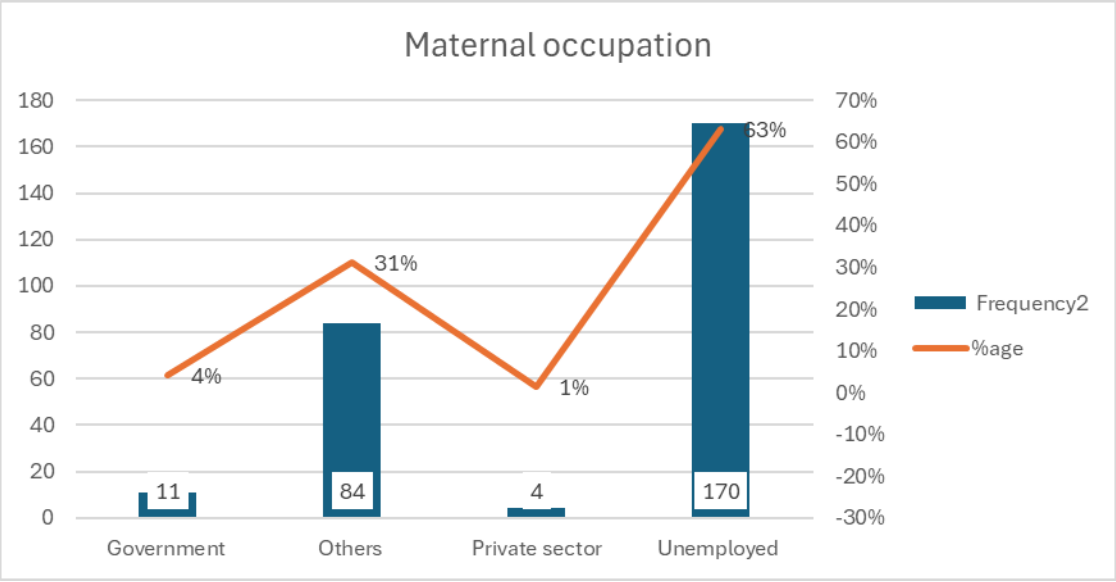

Figure 4 Shows findings on Maternal Occupation

The findings of the study revealed that majority of the repsondents (Mothers) were nemployed 170/269 (63%), 11/269 (4%) were Government employed, 4/269 (1%) were working in the private sector and 84/269 (31%) were neither employed nor employed.

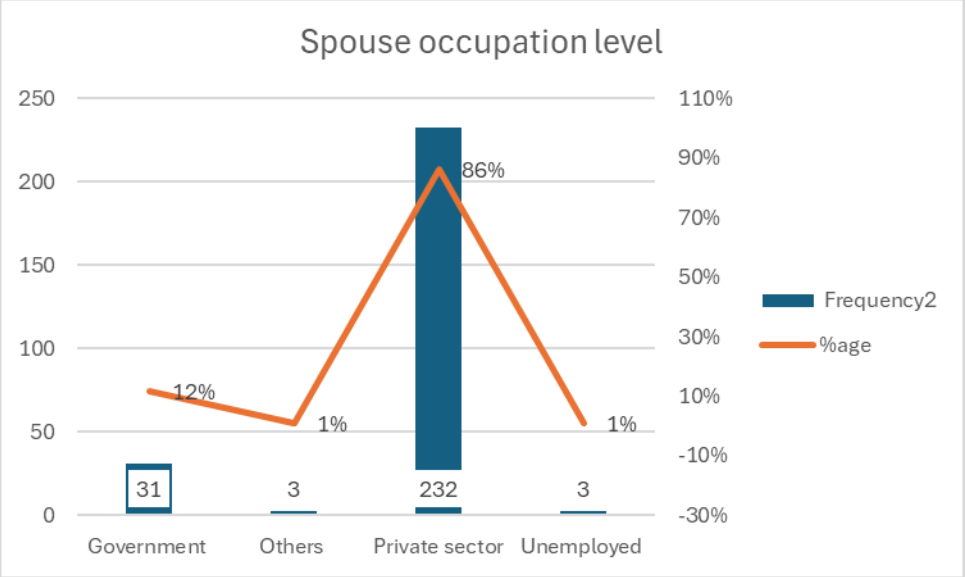

Figure 5 shows findings on Spousal Occupational

The findings in the figure above shows that 232/269 (86%) of the spouses were working in the private sector, 31/269 (12%) were working with Government, 3/269 (1%) were neither employed nor employed and 3/269 (1%) were not employed.

4.3 Financial suppport

According to the study objective on the assessment of the determinants of low birth weight among infants, spousal support also contributes to the mother's birth outcomes and the findings of the study were as below;

Table 3: Ownership of business by spouse

Variable	**Response**	**Frequency (N=340)**	**Percentage (100%)**
Does your spouse own any business?	Yes	23	9
	No	246	91

The findings in the table above show that majority of the respondents did not own any business 246/269 (91%) whereas 23/269 (9%) owned some ofrm of business.

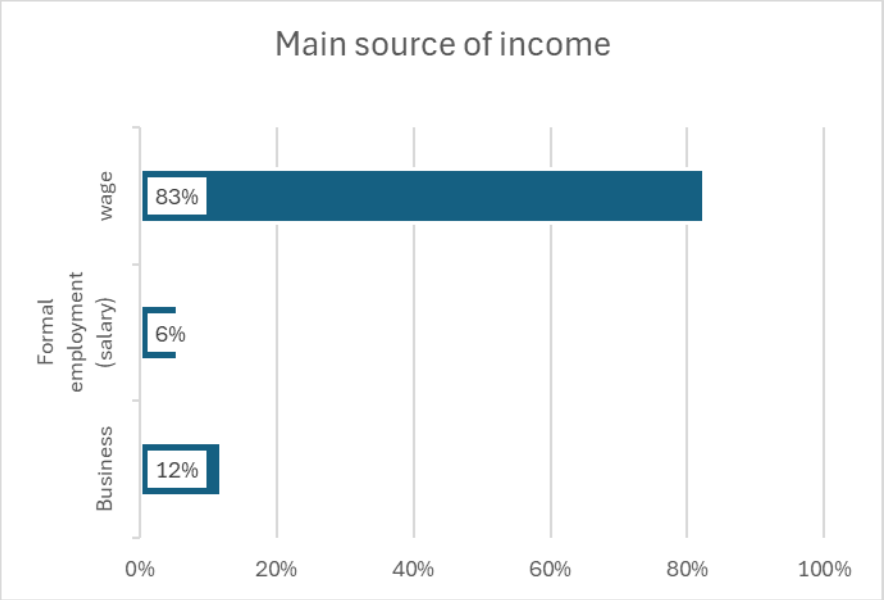

Figure 6 shows findings on the main source of income

According to the findings of the study, 83% of the respondents had the main source of income as wage, 12% rely on business whereas 6% receive salary as the main source of income.

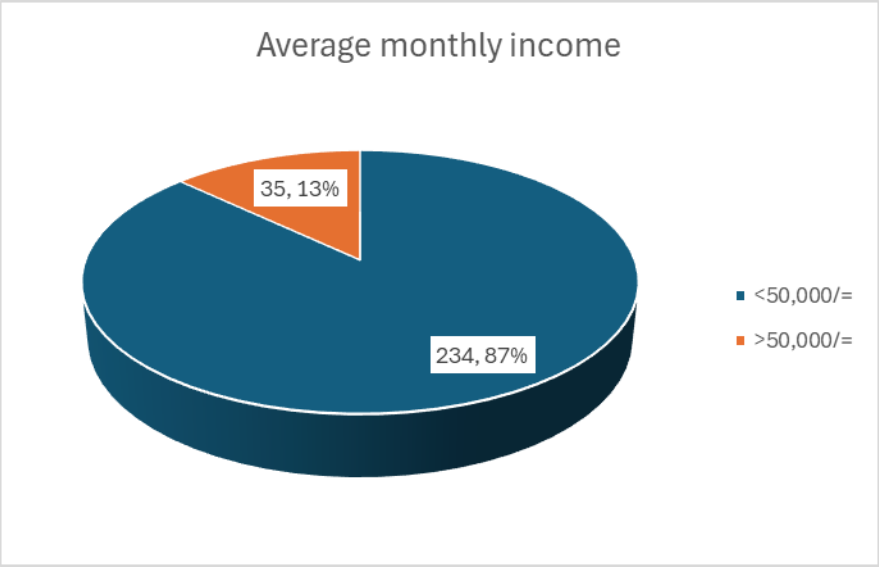

Figure 7 shows findings on the householed avearge monthly income

According to the research findings, 234/269 (87%) of the respondents had an average monthly income of less than 50,000 Ugshs and only 35/269 (13%) of the respondents had an average monthly income more than 50,000 Ugshs.

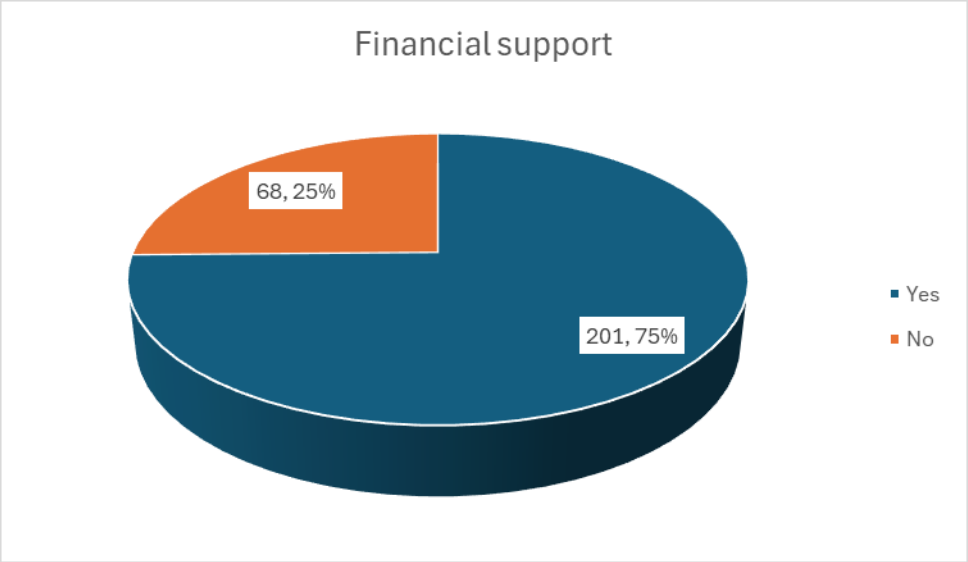

Figure 8 shows findings on the financial support from the spouse

According to the data, majority of the respondents 201/269 (75%) did not get financial support from their spouse during pregnancy while 68/269 (25%) received some financial support from spouse during pregnancy.

4.4 Qualitative results

According to the health workers, the maternal characteristics that affect My perceptions are; *"One is the mother's nutrition; Medical seeking behaviours are poor, because when they fall sick they don't come for treatment in time thus leading to low weight babies or still birth for example when they have pre-eclampsia they come when it is too late to help them. Some of them believe in clinics first. Mainly malaria, high blood pressure, bleeding, Colonitis are common during pregnancy. (KII 2) Mainly its multiple pregnancies like twins, medical diseases like pre-eclampsia and malnutrition that cause LBW (KII 2).*

Medical workers do not take some of the things very serious like trying to find out why a mother's weight is like this because the work load is too much and yet we are supposed to know. We also don't follow up whether the mothers have syphilis and all that we find out is about HIV." (KII 1).

"*Majority of the mothers are 16 years and above although we get mothers whose age is between 12 to 15 years and incidentally they give birth to healthy babies. Majority of the mothers gain weight but there's a little percentage that doesn't attain it because of other related reasons (KII 2)." "Yes they do gain the recommended weight gain during pregnancy" (KII3)*

Most of them come from within Nakapiripirit area, maybe far areas like Nabilatuk, Amudat and Iriiri and their birth weights are normal except for some mothers with multiple pregnancies they can have the low birth weight. Except for when a mother has a long standing condition and stays for a long time on the ward. Yes these days most of our mothers attend antenatal. Normally, they are supposed to attend ANC four times if one doesn't have other complications but they are allowed to come in if they feel unusual"(KII 2). "70% of the mothers attend antenatal and they attend about four times" (KII 3). *"Yes they are given iron folic acid supplementation and they adhere to taking it because they are told that if you don't you'll produce a baby with abnormalities"* (KII 2)

"Normally they are given medication (Fasidar) for malaria"

"Yes those mothers who stay near deliver normal weight babies because we monitor them from when they attend antenatal up to delivery because we teach them what to do. The referrals are the ones that usually have the low birth weight babies" (KII 4).

According to the health workers, reported the following on socio-economic characteristics

"Low or poor lebel of education contributes to low birth weight because mothers will understand the importance of attending antenatal care regularly as recommended ." (KII 1). *Yes income level affects LBW because malnutrition is caused by low income levels because if you have the money you'll be able to eat whatever you're supposed to eat* (KII 2). *"Majority of the mothers here are housewives and can't afford good food"* (KII 3).

According to financial support, the respondents reported the following

"Most mothers are not financially being supported by their spouses during pregnancy" (KII 4). "Not all of them but majority of the mothers are illiterate. Some do not come with their spouses at times their men do not stay with them, the ego in men, others say they are looking after cows." (KII 2). *All spouses do not really, some come once and others who are committed come for all" (KII2). "Their spouses can't provide what they need like treatment, proper feeding, transport to the health facility" (KII3).*

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter includes a summary of the research findings, conclusions and the recommendations the researcher suggested to address the findings.

5.1 Summary of findings

The study of the determinants of low birth weight revealed the current prevalence of low birth weight in Tokora Health Centre IV and identified the correlation between low birth weight and the factors.

This study has established that the current prevalence of low birth weight in Tokora HC IV is 29.4%. Ngare DK et al 2000 in Kenya found out that the prevalence of low birth weight was 11.2% however the study design was observational in which the independent variable was not under the control of the researcher due to ethical concerns.

This study established that there was a significant relationship between low birth weight and gestational age where majority of mothers who had gestational age of less than 37-42 weeks delivered low birth weight babies.

This is in line with the study done in Brazil (Branco Da Fonseca, 2017) which revelaed that low gestational age was associated with LBW. There is also a strong association between lack of ANC and adverse pregnancy outcomes (Bernabe, 2004).

In a prospective study from a highly developed area reported increased risk for small for gestational age birth by women with low vegetable intakes (odds ratio 3.1; 95% confidence interval 1.4–6.9; P=0.01).

This could be attributed to the fact that the fetus is not fully developed at the age of 37 weeks and below.

The data also reveals that there is a relationship between marital status and low birth weight in which mothers who are not married (cohabiting) are likely to deliver low birth weight babies the results show that most of the respondent 51% were cohabiting.

This could be attributed to the lack of spousal support to the mother during pregnancy.

The study also revealed that there is a relation between maternal education and low birth weight because the majority of mothers had no formal education 64%. Women who did not complete high school had a 9% higher probability of having a LBW child than women with high school

or higher education level (Ahmed F, 2012). It was also observed that mothers with less than eight years of formal education are 1.5 times more likely to have LBW infants (Haider, 2001).

This could be attributed to the literacy level in which mothers who are not learnt have inadequate knowledge on health seeking behaviours.

Maternal occupation also influences birth outcomes, according to the study majority of the mothers were not employed at 74%.

This study determined that there was a relationship between financial support from spouse and low birth weight. Mothers who had financial support were 3% less likely to have a low birth weight baby. This is because the mother shall be able to afford nutrient dense dietary substrates and access better health care services hence prevent or reduce chances of low birth weight outcomes.

5.2 CONCLUSION

The study provided information on the prevalence of low birth weight and its determinants.

Objective 1:

This study established that the prevalence of low birth weight among infants delivered in Tokora Health Centre IV was 29.4%. The prevalence of low birth weight was more than double of the national level of low birth weight reported by the Ministry of Health in 2020.

Objective 2:

This study also found out that maternal factors associated with low birth weight included weeks of gestation, cohabiting and maternal age among others.

Socio-economic factors were education level and the financial support factors were household average monthly income and financial support from spouse.

Objective 3:

Mothers are constrained and would deliver Low birth weight babies because of lack or inadequate support from spouses in terms of attending ANC together and limited financial support, Low education level also hikes low birth weight deliveries among mothers.

5.3 RECOMMENDATIONS

From the results obtained in this study, I have recommended that:

Due to the high prevalence of low birth weight, Tokora Health centre IV and the line Ministry of Health should enforce a shift from health service delivery to health systems strengthening at facility and community platforms by improving the capacity to deliver an integrated package of maternal, neonatal and child health service delivery.

At community level, the ministry of health should prioritize health care interventions that target women of reproductive age and adolescent girls through strengthening existing health service delivery structures for example village health system structures to promote community-based packages of care.

The study found a relationship between low birth weight and receiving financial support from the spouse. Health workers should sensitize pregnant women to be coming with their spouses for antenatal care so that they can be educated on the importance of supporting women financially during pregnancy.

At national level, there is need to prioritize and support functionality of social protection systems for women like cash transfer programs in vulnerable populations to support improve healthcare visits since financial support was found to have a significant relationship with low birth weight.

Further studies should be carried out to determine the associations between the dependent, independent and intervening variables for the determinants of low birth weight among infants delivered in Tokora HCIV and forge a wayforward on how to underpin the drivers.

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APPENDICES

Appendix 1: consent form for mothers

CONSENT FORM FOR MOTHERS

Title of study: Determinants of low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

My name is Ngiro Sunta Joy from Uganda Christian University, I am conducting a study about low birth weight among infants delivered in Tokora Health Centre IV.

The study aims to identify the determinants of low birth weight among infants delivered in Tokora Health Centre IV. In addition, the study will determine the prevalence of low birth weight among infants delivered in Tokora HC IV.

Procedures,

This will be a researcher administered questionnaire.

Why was the participant chosen?

You have been selected to participate in this study because you have just delivered a live born baby at term at Tokora Health Centre IV, Nakapiripirit District and I would like to determine the influence of individual attributes of mothers, social economic factors and financial support on low birth weight among infants delivered.

Risks and how you intend or plan to minimize them.

There may be some psychological or mental discomfort to some sensitive questions. There will be no tests involved. The questions are structured and will require less than 20 minutes of the respondent.

Benefits:

There may not be direct benefits to the participants but rather the information generated may inform the current policy reviews to guide healthcare service providers in reproductive, maternal neonatal and child health reduce on subsequent risks associated with exposure to low birth weight among infants who are delivered.

Alternatives:

The participant has a choice to join or withdraw from the study. This doesn't stop him or her from accessing the services offered at the facility.

Compensation for participation including time lost and inconveniences from procedures:

There will be no monetary reward for participation in this study.

Name of Contact person on study team with phone:

Ngiro Sunta Joy (0771 826026) in case of questions about the study.

Voluntary consent;

You are free not to participate in this study and you have the right to refuse to answer any question that you feel uncomfortable with, without loss of benefits.

By signing below, you indicate that you have understood the information presented to you concerning this study and you voluntarily give your consent to participate.

Literate Participant Name……

Signature..... Date……

Thumb print for illiterate participant .....……

Literate witness Name…….

Signature ..... …. Date.....

THANK YOU FOR YOUR PARTICIPATION.

Appendix 2: Consent form for midwives

CONSENT FORM FOR MIDWIVES

Title of study: Determinants of low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

My name is Ngiro Sunta Joy from Uganda Christian University, I am conducting a study about low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

The study aims to identify the determinants of low birth weight among infants delivered in Tokora Health Centre IV. In addition, the study will determine the prevalence of low birth weight among infants born at Tokora Health Centre IV.

Procedures,

This will be a researcher administered questionnaire.

Why was the particular participant chosen?

You have been selected to participate in this study because you are a midwife working at the postnatal care ward in Tokora Health CentreIV. I believe that your experience as a midwife can contribute much to our understanding and knowledge of low birth weight among infants delivered by mothers in Tokora HC IV.

Risks and how you intend or plan to minimize them.

This includes psychological or mental risks: This will be a researcher administered questionnaire cross sectional study. There will be no tests involved. The questions are structured and will require less than 20 minutes of the respondent.

Benefits:

There may not be direct benefits to the participants but rather the information generated may inform the current policy reviews to guide healthcare service providers in reproductive, maternal neonatal and child health reduce on subsequent risks associated with exposure to low birth weight among infants.

Alternatives:

The participant has a choice to join or withdraw from the study. This doesn't stop him or her from accessing the services he or she has come for.

Storage of specimens for future use:

There will be no specimen collected during this study.

Compensation for Injury:

This study will not cause you any physical harm. However, it will take less 20 minutes of your time as you answer the questions.

Compensation for participation including time lost and inconveniences from procedures:

There will be no monetary reward for participation in this study.

Name of Contact person on study team with phone:

Ngiro Sunta Joy (0771826026) in case of questions about the study.

Voluntary consent.

You are free not to participate in this study and you have the right to refuse to answer any question that you feel uncomfortable with, without loss of benefits.

By signing below, you indicate that you have understood the information presented to you concerning this study and you voluntarily give your consent to participate.

Midwife Name…….

Signature..... Date…….

Witness Name…….

Signature……..... Date.....

THANK YOU FOR YOUR PARTICIPATION

Appendix 3: Quantitative Questionnaire

Quantitative questionnaire for determinants of low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.			
Nº	QUESTIONS	CATEGORIES	Codes
MATERNAL FACTORS			
1	Observe Sex of child	Female …… Male	1 2
2	What is your marital status?	Single ……..... Married …… Widowed …… Cohabiting …… Others (Specify)……	1 2 3 4 5
3	Where do you live?	Urban …… Rural …… Peri-urban …….	1 2 3
4	How many weeks of gestation were you when you gave birth to child [Name]	37-42 weeks ……... More than 42 weeks……	1 2
5	How many kilograms was child [Name] at birth?	Number in kilograms >=2500g 2500-3000g >3000g	
6	How old are you?	Number of years	

7	How many biological children do you have?	<=5 Children >5 Children	
8	What is the average spacing between your biological children?	<=2 years >2 years	
9	How many times did you attend ANC in this pregnancy?	Did not attend ANC .....……... One …… …… Twice ……. Three times ……. Four times ……. Others (Specify) ……	0 1 2 3 4 5
10	Did you attend ANC services with your spouse?	No ……... Yes ……..	
11	If no, why didn't he go with you for ANC?	He was busy …… He did not want to come with me for ANC…… He did not know he was supposed to attend ANC with me	1 2 3
12	Did your spouse attend all ANC with you when you were pregnant with child	No…….. Yes…….	0 1
13	If yes, how many times did he go with you for ANC when you were pregnant with child [Name]?	Number of times	☐

14	Did your spouse encourage/advise you to attend ANC?	No …… Yes ……...	0 1
15	Did you take iron/folic acid supplementation every day during your pregnancy?	No …….. Yes ……	0 1
16	Did you suffer from any illness when you were pregnant with child [name]	No …… Yes ……	0 1
17	If yes, what illness did you suffer from?	Malaria ……. Others (Specify)…….	1 2
18	How many meals did you usually have (including snacks) when you were pregnant with child [Name]?	One …… Two ……... Three ……. Others (Specify) ……	1 2 3 4
19	Did you take alcohol when you were pregnant with child	No …… Yes ……	0 1
20	How many times did you take alcohol when you were pregnant with child [Name]?	Daily …….. Once in a week ……... More than once a week? ..... Others (Specify) ……	1 2 3 4
SOCIO-ECONOMIC STATUS			

21	What is the highest level of school you have completed?	Primary school…….. Secondary school……. Higher / university……. Don't know……. No formal education…….	1 2 3 4 5
22	What is your occupation?	Unemployed …… Government employment …….. Private …….. Self-employed ……. Others (Specify) ……..	1 2 3 4 5
23	What is your spouse's occupation?	Unemployed …… Government employment …….. Private …….. Self-employed ……. Others (Specify) ……..	1 2 3 4 5
FINANCIAL SUPPORT			
24	Does your spouse oen any business?	Yes No	
25	What is your house hold's average monthly income?	<50,000/= >50,000/=	
26	What is the main source of income for your spouse?	Business Formal employment (salary) Wage	1 2 3

27	Did you get any financial support from your spouse when you were pregnant with child [Name]?	No …… Yes …….	0 1
28	If yes, what was the frequency of receiving financial assistance	Daily Weekly Monthly	1 2 3

Appendix 4: Qualitative Questionnaire

Qualitative questionnaire for the determinants of Low Birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

Sex of respondent…….

Cadre…….

Date of interview…….

What is the average birth weight of babies born at term at Tokora Health Centre IV? (*Probe for the average weight of mothers in the 1st & last trimesters, Probe if most mothers attain the recommended weight gain during pregnancy if yes why and if no why?).*

What are the perceptions of mothers about giving birth to low weight babies? (*Probe: Personal and community/ cultural perceptions*)

What is the average age of mothers that give birth to new borns in Tokora health Centre IV?

Where do majority of mothers who give birth in Tokora Health Centre IV live? (Probe *for the average birth weight of rural Vs urban mothers, do mothers in rural give birth to similar weight as those in urban areas: if yes* why? If no, why??)

Rural	
Urban	

Do most mothers who deliver from Tokora Health Centre IV attend ANC? (*Probe: Average number of visits attended, reasons why they attend, what nature/kind of ANC package do they receive?*

Nutrition interventions *Probe for regular consumption of fruits and vegetables, if yes why, and if no why?* *Probe for regular consumption of protein and what type of protein?* *Same for carbohydrate…*	Nutrition education and counselling (*Probe for types of foods consumed, meal frequency, what do they usually talk about in nutrition education and counselling…)* -Iron and folic acid supplementation

	(Probe for adherence to IFA for the 9 months, if not why???
Maternal Assessment	-Tobacco use/exposure to 2nd hand smoke and alcohol consumption. -Gestational Diabetes mellitus
Preventive measures	-Malaria prevention (IPT)

Do women who give birth in Tokora Health Centre IV attend ANC with their spouses? (*Reasons why their spouses come/don't come for ANC, what is done to encourage their spouses to attend? do their spouses usually participate during ANC sessions?) Do women who attend ANC with their spouses complete the recommended ANC visits?*

In your opinion, what could be some of the causes of low birth weight among infants delivered in Tokora Health Centre IV?

In your opinion, what are the common illnesses that women who deliver from Tokora Health Centre IV suffer from? (Probe *for malaria episodes, Anaemia, Gestational diabetes mellitus, and at what stage/level of the pregnancy?*

In your opinion does level of income relate to low birth weight? (*Probe for if yes how*?...

Thank you for participating in the interview. Are there any other issues that you would like to discuss concerning low birth weight among infants in Tokora Health Centre IV?

UGANDA CHRISTIAN
UNIVERSITY
A Centre of Excellence in the Heart of Africa
MBALE UNIVERSITY COLLEGE

Office of the Academic Registrar

To THE IN-CHARGE..
TOKORA HEALTH CENTER IV.

TOKURA HC IV
20 MAR 2024
P. O. BOX 1 NAKAPIRIPRIT
Received

Dear Sir/Madam,

Re: Academic Research

Christian greetings!

We are honored to introduce to you Mr. Mrs./Miss. NGIRO SUNTA JOY.

Of Registration Number; BSW21/UCU/BSW/036 pursuing a Masters' Degree/Postgraduate Diploma / Bachelor's Degree SOCIAL WORK AND SOCIAL ADMIN

He/ she is required to carry out an academic research on the topic

THE DETERMINANTS OF LOW BIRTH WEIGHT AMONG INFANTS IN TOKORA HEALTH CENTER IV NAKAPIRIPIRIT, DISTRICT.

and thereafter produce a well bound hard cover research report (MAROON) in color for undergraduate and three (BLACK) copies for Postgraduate students as a University requirement for the award of a degree/diploma in the academic discipline that he / she is pursuing.

We shall be grateful for the help you may offer to him or her accordingly.

Thank you.

Yours faithfully,

26 MAR 2024

Mr. Akampurira Timothy

Academic Registrar

Tokora Health Centre IV

Nakapiripirit District LG

1st/April/2024

To: Ngiro Sunta Joy

Nakapiripirit District

+256 771826026/778112723

Madam

RE: PERMISSION TO CARRY OUT RESEARCH IN TOKORA HEALTH CENTRE IV, NAKAPIRIPIRIT DISTRICT.

Reference is made to your letter requesting to carryout research on the determinants of low birth weight among infants delivered in Tokora Health Centre IV.

I am pleased to inform you that Tokora Health centre IV staff conducted a meeting with the in-charge of maternity to discuss the potential and justification to allow you carryout research on the subject topic.

The staff approved your request to proceed with your research study in Tokora Health Centre IV (maternity and post natal department).

As a principal investigator of the research, you are responsible for fulfilling the following requirements.

1. All co-investigators must be kept informed of the status of the research.
2. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit should be reported to the health facility in-charge.
3. Only approved \consent forms and questionnaires should be used in the study.
4. Service delivery MUST not be interfered during your study.
5. Findings of the study should be shared with the management of the health facility.

This letter is to grant you permission to carryout research on the determinants of low birth weight among infants delivered in Tokora Health Centre IV, Nakapiripirit District.

Looking towards seeing you in Tokora Health Centre IV

Yours faithfully,

Dr. Tapem Philip Palma

In-charge Tokora Health Centre IV,

Nakapiripirit District Local Government.

TOKORA HC IV

01 APR 2024

P. O. BOX 1 NAKAPIRIPRIT