UNIVERSITY FOR DEVELOPMENT STUDIES

BIRTH PREPAREDNESS AND COMPLICATION READINESS AMONG PREGNANT WOMEN IN THE BUILSA NORTH DISTRICT AND THE BUILSA SOUTH DISTRICT

DAVID ALATULE ALADAGO

FEBRUARY 2018

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(UDS/CHD/0081/12)

A THESIS SUBMITTED TO THE DEPARTMENT OF PUBLIC HEALTH SCHOOL OF ALLIED HEALTH SCIENCES UNIVERSITY FOR DEVELOPMENT STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF A MASTER OF SCIENCE DEGREE IN COMMUNITY HEALTH AND DEVELOPMENT

FEBRUARY 2018

DECLARATION

Student

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

Name: David Alatule Aladago

Candidate's Signature…… Date……

Supervisor

I hereby declare that, the preparation and presentation of the thesis was supervised in accordance with the guidelines laid down by the University for Development Studies.

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ABSTRACT

The maternal mortality ratio in Ghana is estimated at 319, which is above the global average of 216 maternal deaths per 100,000 live births. Whereas the institutional maternal mortality ratio of the Builsa North is 262, that of the Builsa South District is 79.1 maternal deaths per 100,000 live births. Literature suggests that despite the high obstetric disease burden, most pregnant women do not prepare for birth and complications. This cross-sectional study sought to ascertain and compare the level of birth preparedness and complication readiness among pregnant women in the Builsa North District and the Builsa South District, which can be used by the Ghana Health Service and the Ministry of Health to make informed maternal health improvement decisions. The study used both qualitative and quantitative research methods to collect the data. Primary data was collected through administration of questionnaires, focus group discussions and key informant interviews. Secondary data were obtained through review of both peer-reviewed articles and grey literature. The Johns Hopkins Program for International Education in Gynaecology and Obstetrics model on birth preparedness and complication readiness was adapted to form the theoretical framework. From a sample of 165 pregnant women from each district, the study found that 81.2% of Builsa North District and 49.1% of the Builsa South District were prepared for birth and complications. Pregnant women in the Builsa North District were four times more likely to prepare for birth and complications compared to those in the Builsa South District. Teaching occupation, gestational age 3-9 months, knowledge of at least three danger signs in pregnancy/labour and having primary, secondary or tertiary education were predictors of birth preparedness and complication readiness. However, second trimester pregnancy, parity, marriage and farmer/housewife occupation were not associated with birth preparedness and complication readiness. The study attributes the differences in levels of birth preparedness between the districts to the differences in literacy levels, health worker skill mix and infrastructure. This study recommends that the Ghana Health Service continue to educate pregnant women in the two districts on birth preparedness and complication readiness, prioritising those in the Builsa South District.

ACKNOWLEDGEMENT

I am grateful to my thesis supervisor Dr. Paul Armah Aryee and the co-supervisor Mr. Akwasi Boakye-Yiadom who worked tirelessly, encouraging and guiding me throughout my thesis work.

Furthermore, my profound gratitude goes to my parents Rev. and Mrs. Jeremiah Aladago, and to my siblings Solomon A. Aladago, Joel A. Aladago and Rachel A. Aladago for their financial and moral support throughout the course.

I am further thankful to my friends Augustine A. Atimbey, Dominic Yeboah, Akangandi Alex and Alhaji Adam Daabu Sabukum for helping me collect the data for this study.

I also acknowledge my friends, Messrs Titus Oosterink Alzumah and Timothy Tiswin Nehemiah for their moral support and for proof-reading this work.

Finally, my appreciation goes to my colleagues in the 2nd batch of Community Health and Development (Sandwich course), for the wonderful experiences and friendship that we shared during the course.

DEDICATION

To Jesus Christ my saviour and redeemer.

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LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care/Clinic
AOR	Adjusted Odds Ratio
BND	Builsa North District
BPCR	Birth Preparedness and Complication Readiness
BSD	Builsa South District
CHPS	Community-based Health Planning and Services
CI	Confidence Interval
DHIMS 2	District Health Information Management Software (version 2)
DHMT	District Health Management Team
DHS	Demographic and Health Survey
FGD	Focus Group Discussion
FGM	Female Genital Mutilation
GHS	Ghana Health Service
GMHS	Ghana Maternal and Health Survey
GSS	Ghana Statistical Service
HIV	Human Immunodeficiency Virus
iMMR	Institutional Maternal Mortality Ratio
IPTp	Intermittent Preventive Treatment of malaria in pregnancy
JHPIEGO	Johns Hopkins Program for International Education in Gynaecology and Obstetrics
JHS	Junior High School
LLIN	Long Lasting Insecticidal Net
MMR	Maternal Mortality Ratio

MoH	Ministry of Health
NGO	Non-Governmental Organisation
NHIA	National Health Insurance Authority
NHIS	National Health Insurance Scheme
OOP	Out of Pocket expenditure
OR	Odds Ratio
PMTCT	Prevention of Mother to Child Transmission of HIV
PPS	Probability Proportional to Size
RCH	Reproductive and Child Health
SBA	Skilled Birth Attendant
SDG	Sustainable Development Goal
SEM	Socio-Ecological Model
SHS	Senior High School
SSA	Sub-Saharan Africa
TBA	Traditional Birth Attendant
TFR	Total Fertility Rate
UER	Upper East Region
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter contains the background of the study, problem statement, justification, research questions, relevance of the study, research objectives, and the scope of the study. The conceptual framework and the structure of the thesis are also explained in this chapter.

1.2 Background of the study

According to the Johns Hopkins Program for International Education in Gynaecology and Obstetrics (JHPIEGO), birth preparedness and complication readiness (BPCR) means preparing for birth while anticipating possible complications (JHPIEGO, 2004b). BPCR has been promoted globally as an intervention that could reduce the risk of delays in access to care during antepartum, labour and puerperium (Hailu, Gebremariam, Alemseged, & Deribe, 2011; Udofia, Obed, Calys-Tagoe, & Nimo, 2013). A systematic review found that BPCR led to a statistically significant reduction of 18% risk of neonatal mortality and 28% risk of maternal mortality (Soubeiga, Gauvin, Hatem, & Johri, 2014). BPCR can loosely be categorised into two – the demand side and the supply side of BPCR (JHPIEGO, 2004b).

On the demand side, BPCR posits that women who plan to utilise skilled birth attendance and successfully implement those plans will reach care before developing any potential labour complications. Additionally, women, their families and communities who know the danger signs in pregnancy, labour, puerperium and on the neonate, will recognise potential complications and

promptly implement their BPCR plans (JHPIEGO, 2004b). Thus, maternal and child health programs encourage stakeholders on the demand side to make arrangements including saving money to pay for the services, identifying means of transportation and identifying a skilled birth attendant (SBA) during pregnancy. Making these plans could reduce the delay in deciding to seek care and actually reaching care (JHPIEGO, 2004b).

On the supply side, BPCR involves the healthcare delivery system (service providers and health facilities) and policymakers ensuring that clinical personnel are equipped with appropriate knowledge, skills, policy guidelines and other necessary resources. Supply side BPCR reduces the delays in receiving care at health facilities and enhances the effectiveness of maternal and child health interventions (JHPIEGO, 2004b).

Literature shows that the commonest determinants of BPCR are age, socio-economic status, educational status and geographical location (Ekabua, et al., 2011). Studies also suggest that a large percentage of women do not have BPCR plans (Hailu, et al., 2011; Mutiso, Qureshi, & Kinuthia, 2008). However, little is known about BPCR among pregnant women in the Builsa North District (BND) and the Builsa South District (BSD) of the Upper East Region (UER) of Ghana. Other studies in nearby districts focused on postpartum women (Kuganab-Lem, Dogudugu, & Kanton, 2014). Although both BND and BSD are rural, and share common socio-demographic characteristics, available data put the BND among the largest contributors to iMMR in the UER and the BSD among the least. This suggests that there may be differences in BPCR practices between the districts.

1.3 Problem statement

Globally, there are 830 maternal deaths daily; nearly all of them in developing countries. Sub-Saharan Africa (SSA) alone accounts for about 62% of global maternal deaths (WHO, 2015a; WHO, 2016a).

According to the Ghana Health Service (GHS), in 2015, Ghana failed to meet the Millennium Development Goal (MDG 5) target of reducing maternal mortality by 75% of the figures of the 1990s (GHS, 2017). Currently, Ghana's maternal mortality ratio (MMR) is estimated at 319, which is higher than the global average of 216 maternal deaths per 100,000 live births (World Bank, 2015). The institutional maternal mortality ratio (iMMR) rose from 142 in 2015 to 163.5 maternal deaths per 100,000 livebirths in 2016 (GHS, 2017). Although the UER had the lowest risk of maternal mortality in Ghana in 2016, it registered a rising trend of obstetric disease burden since 2015.

Data from the District Health Information Management Software (DHIMS) seem to show a (contradictory but generally) rising trend of iMMR in the two districts. Whereas the iMMR in the BSD rose slightly from 74.9 in 2015 to 79.1 in 2016, that of the BND more than doubled from 126 to 262 maternal deaths per 100,000 live births in the same period (Ministry of Health [MoH], GHS, 2016b). Oftentimes, maternal deaths in the communities are either unreported or underreported, which means that the recorded iMMR likely represent the tip of the iceberg. The risk of developing obstetric complications and dying from them is often higher in rural areas where infrastructure, midwives and essential obstetric services such as caesarean section are inadequate (MoH, 2011). The risk also increases when there is inadequate preparation for birth and complications by the service providers and the pregnant women (Soubeiga et al.,

2014). Yet, despite the BND's relatively more urban population, superior infrastructure and skill-mix of health staff, its iMMR appear to be extremely high compared to the BSD (GHS, 2011). This leads to the question whether there are differences in BPCR among the pregnant women in the two districts.

1.4 Justification

The Builsa North DHMT believes the high iMMR is partly due to referrals from nearby districts. That notwithstanding, the relatively large differences in maternal mortality between the two districts suggests that there may be differences in BPCR practices, which could have influenced the maternal outcomes. However, given the limited resources of the GHS, it is unable to conduct such a research. This study is therefore necessary to fill this knowledge gap on BPCR practices, focusing on pregnant women in the two districts.

This study is also necessary because the GHS could use the finding to determine whether to explore any potential best practices of BPCR in the apparently better performing district (BSD) that could be adopted by other districts.

1.5 Research Questions

The main research question and the specific research questions are as follows.

1.5.1 Main Research Question

Are there differences in the level of birth preparedness and complication readiness among pregnant women in the Builsa North District compared to the Builsa South District?

1.5.2 Specific Research Questions

i. What is the level of birth preparedness and complication readiness among pregnant women in the Builsa North District and the Builsa South District?

ii. How different are the birth preparedness and complication readiness practices among pregnant women in the Builsa North District compared to those in the Builsa South District?

iii. What are the main determinants of birth preparedness and complication readiness among pregnant women in both the Builsa North District and the Builsa South District?

1.6 Relevance of the study

According to the WHO, a global annual reduction rate of 7.3% is necessary to achieve the SDG 3.1 target of 70 maternal deaths per 100,000 live births by 2030 (WHO, 2016a). This study's findings are timely as it could help the two DHMTs and the RHD to make evidence-informed decisions on improving BPCR and skilled birth attendance in the districts towards achieving SDG 3.1. The MoH and the GHS, which are the policy making and the main implementing bodies respectively, can use this study's findings to prioritise and efficiently allocate resources to the district that needs the most support.

The findings can also be used by maternal and child health advocates such as UNICEF to campaign for more government attention in the two districts. The study findings could further serve as a wake-up call for pregnant women living in the BND and the BSD to improve upon their BPCR practices, to reduce the risk of maternal mortality.

Finally, this study adds to the existing literature on birth preparedness and complication readiness among pregnant women. It could, thus, form reliable baseline information for future research in both districts.

1.7 Research objectives

The main objective and the specific objectives of the study are as follows.

1.7.1 Main objective

The main objective of this study is to ascertain and compare the level of birth preparedness and complication readiness among pregnant women in the Builsa North District against those in the Builsa South District.

1.7.2 Specific objectives

i. To determine the level of birth preparedness and complication readiness among pregnant women in the Builsa North and the Builsa South Districts.

ii. To compare the birth preparedness and complication readiness practices among pregnant women in the Builsa North District against those in the Builsa South District.

iii. To identify the main determinants of birth preparedness and complication readiness among pregnant women in both the Builsa North and the Builsa South districts.

1.8 Scope of the study

This study limited itself to measuring the levels of BPCR among pregnant women in the BND and the BSD. The study does not attempt to establish the role of BPCR on the maternal mortality of the districts. Among the BPCR

indices in pregnancy, five were measured – antenatal clinic (ANC) attendance, planning for transportation, access to funds, use of SBA and identification of danger signs in pregnancy/labour.

1.9 Conceptual framework

The JHPIEGO (2004b) conceptual diagram of how BPCR may increase the use of skilled care (called the JHPIEGO BPCR model) was modified and used for this study. It is based on the premise that efforts by individuals, families and communities would lead to the reduction of preventable maternal and neonatal morbidities and mortalities. If they promote skilled care for all births; encourage early decision-making; encourage savings towards labour; raise awareness of danger signs and provide information of the sources of care, the delays in deciding to seek care and in reaching care will be reduced (JHPIEGO, 2004b). The third delay can be reduced if service providers, facility managers and policymakers improve supply and create the enabling environment including adequate staffing, equipment and policies, to ensure quality services are always available. The model outlines six levels/actors of BPCR, which can be grouped into demand side (the individual woman, household and community) and the supply side (provider, facility and the policy making) levels (JHPIEGO, 2004a; 2004b). The JHPIEGO model is attached as Appendix A.

On the supply side, preparations are primarily the responsibility of the healthcare delivery system and the policymakers. To be prepared for birth and complications on the supply side, there must be clear functional referral system and human resource that is fit-for-purpose and fit-for-service. Health workers must have the necessary skills and tools to employ sound normal birth practices

as well as treat or stabilise and refer women with complications to secondary/tertiary care facilities (JHPIEGO, 2004a; 2004b). Health facilities must constantly have in stock essential medicines such as oxytocin, amoxicillin and intravenous fluids. Basic tools such as foetal stethoscopes, clinical oral thermometers and oxygen-filled cylinders with carriers and keys are crucial (JHPIEGO, 2004b; MoH, 2011).

The demand side BPCR is the responsibility of individual women, spouses, families and communities (JHPIEGO, 2004a). At the individual level, the focus is primarily on postpartum, pregnant and reproductive-age women. Fecund and pregnant women are encouraged to plan for transportation, save money, identify skilled attendants and identify a place of delivery in advance (Kuganab-Lem, Dogudugu, & Kanton, 2014). In addition, pregnant women are expected to attend ANC regularly and identify a place for delivery. Fecund, pregnant and postpartum women should know the danger signs in pregnancy, labour, puerperium and on the neonate. It is only when these indicators (referred to as BPCR indices) are met that the woman can be considered prepared for birth and complications. Similarly, at the community and household/family level, the provision of blood donors, community transportation and financial support system are among the BPCR indices. BPCR is, therefore, a collective responsibility of all stakeholders to ensure the safety of both mother and new-born (JHPIEGO, 2004b). A list of the JHPIEGO indices in pregnancy (demand side) is attached as Appendix B.

The JHPIEGO model was determined as appropriate for this study because it defined the indices for determining BPCR in pregnancy. It was, however,

necessary to modify it since the target population of this study is pregnant women only. As a result, it was adapted as explained in the following section.

1.9.1 The modifications of the JHPIEGO BPCR model

The family, community and the entire supply side of BPCR was removed but the individual level (pregnant women) was maintained in order to suit the study group. The possible pathways were substituted with BPCR indices in pregnancy. The obligations were adapted to focus on the selected five BPCR indices in pregnancy. The selected indices are ANC attendance; access to funds to pay for birth or complication treatment; and the identification of a skilled birth attendant. The rest are the identification of means of transportation to the place of delivery and knowledge of danger signs in pregnancy/labour. The delays reduced at each phase (adapted to read “delay types reduced”) were limited to the delay in deciding to seek care (phase i) and the delay in reaching care (phase ii). The delay phase three was excluded because it was beyond the scope of pregnant women and the selected indices could not directly address it. The outcome of reduction of those two delays is timely and effective use of skilled birth attendance, which could ultimately lead to the reduction of maternal and neonatal morbidity and mortality.

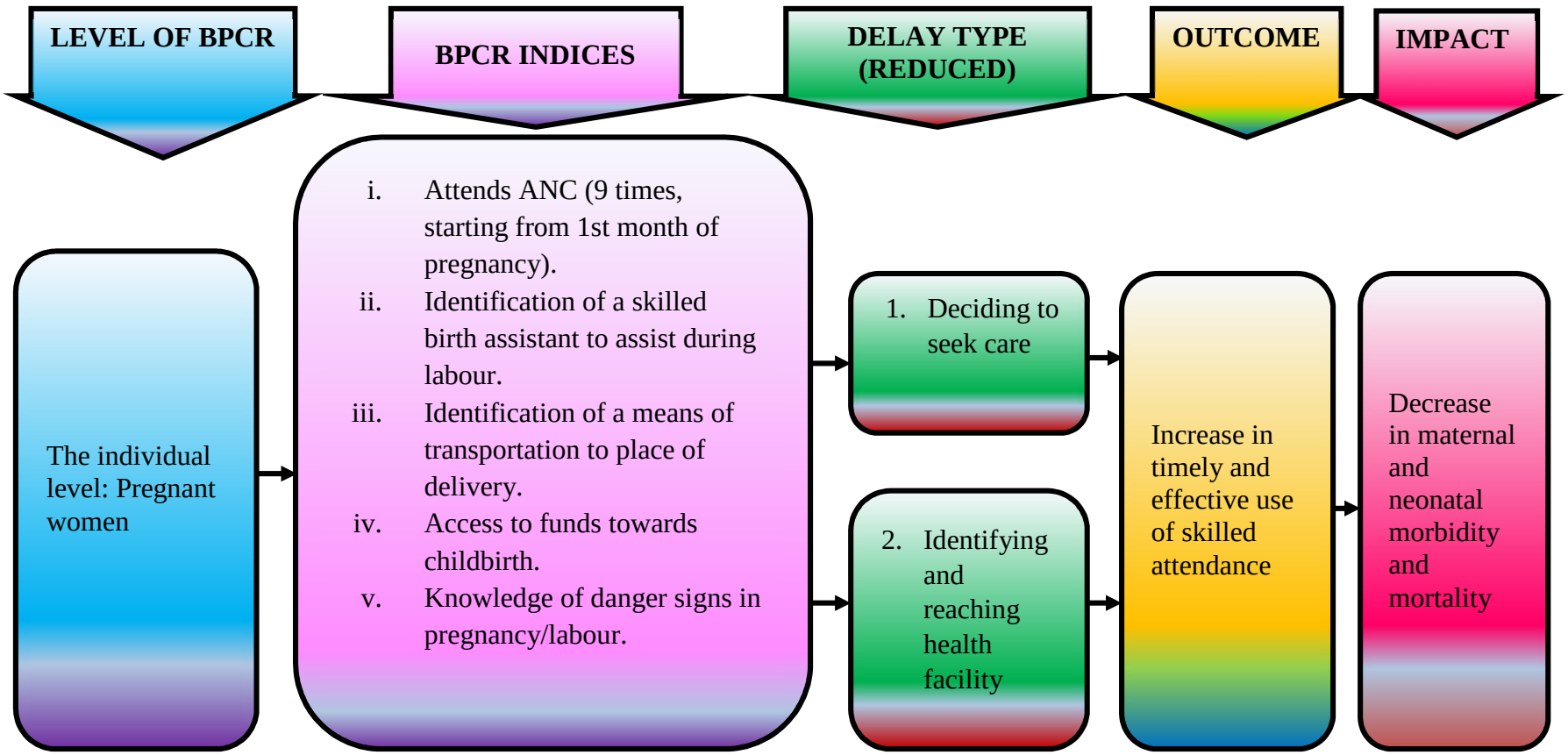

Figure 1.9.1.1 The adapted JHPIEGO BPCR model

Source: Adapted from JHPIEGO (2004b).

1.10 Structure of the thesis

The thesis is organised into six chapters. The first chapter introduces the reader to the background of the study, followed by the problem statement, justification and the research questions. The relevance of the study, the research objectives, the scope of the study and the conceptual framework are also explained in the first chapter.

Chapter Two contains a review of both grey and scientific literature on BPCR in pregnancy. It starts by defining maternal mortality and its causes. Literature on the BPCR and the selected indices in pregnancy are then reviewed. Lastly, the determinants of BPCR are examined.

The study methodology is described in Chapter Three. It comprises the study area, design, population and units. The sample size and characteristics, sampling technique, study variables, data collection and study instruments, quality control and research ethics are also explained. It also includes description of the data analysis and interpretation, and the limitation of the study.

In Chapter Four, the study results are presented and analysed in accordance with BPCR indices of the framework's and the study objectives. The results are presented in tables, diagrams and figures with brief descriptions. The results for both the BND and BSD are presented simultaneously for easy comparison. The determinants of BPCR are presented last.

The interpretations of the study findings are discussed in Chapter five. The findings are juxtaposed with similar findings in literature. Finally, a summary of the main findings including conclusions, recommendations and the future directions of the study are stated in Chapter Six.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter entails a review of both grey and scientific literature on BPCR in pregnancy. It introduces the reader to the concept of maternal mortality and its causes. Then, in accordance with the study framework, literature on BPCR and its indices – ANC attendance, identification of transportation, access to funds, identification of SBA, and knowledge of danger signs in pregnancy/labour – and the determinants of BPCR are reviewed.

2.2 Maternal mortality and pregnancy

The WHO defines maternal mortality as

> *"the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes"* (WHO, 2016b).

Global maternal mortality declined by about 44% between 1990 and 2015 (WHO, UNICEF, UNFPA, World Bank Group & UNDP, 2015). Every couple of minutes a woman dies of maternal causes with another 20 to 30 women encountering preventable life-long complications (UNFPA, 2016c). In 2015, there were about 303,000 maternal deaths globally, of which 99% occurred in developing countries and 66% in Sub-Saharan Africa. Moreover, whereas women in developed countries have estimated lifetime maternal mortality risk of 1-in-3,300, those in developing countries have about 1-in-41 (WHO, et al., 2015). In several developing countries, the lifetime risk of maternal mortality is

greater than 1-in-10 (Isyaku, Tilde, & Isah, 2015). In Ghana, where reliable MMR data is scarce, the iMMR is often used. However, caution should be taken when iMMR data from Ghana are compared with data from other countries because the GHS reports iMMR "per 100,000 live births", which is at variance with the WHO guidelines (GHS, 2011; MoH, GHS, 2016b; WHO, 2015b). In calculating iMMR (which should be expressed per 100,000 deliveries), the numerator is the number of institutional maternal deaths and the denominator is the total number of "deliveries" in institutions (WHO, 2015b).

2.3 Causes of maternal mortality

Most women die as a result of complications that develop during pregnancy and childbirth (direct obstetric causes) or as a result of existing health conditions that are worsened by the pregnancy or childbirth (indirect causes of maternal mortality). Some of the causes of maternal mortality include haemorrhage (mostly postpartum), sepsis, unsafe abortion, eclampsia and malaria (WHO, et al., 2015). Globally, the leading cause of maternal mortality is haemorrhage (27.1%); two-thirds of them occurring during postpartum (Say, et al., 2014).

The 2007 Ghana Maternal Health Survey (GMHS), which was carried out by the Ghana Statistical Service (GSS), the GHS and Macro International (2009), found that about a third of maternal mortality is due to indirect causes such as malaria or HIV and AIDS. The GMHS also revealed that haemorrhage is the major direct cause of maternal deaths in Ghana (30%), followed by eclampsia (15%) as shown in Figure 2.3.1 below.

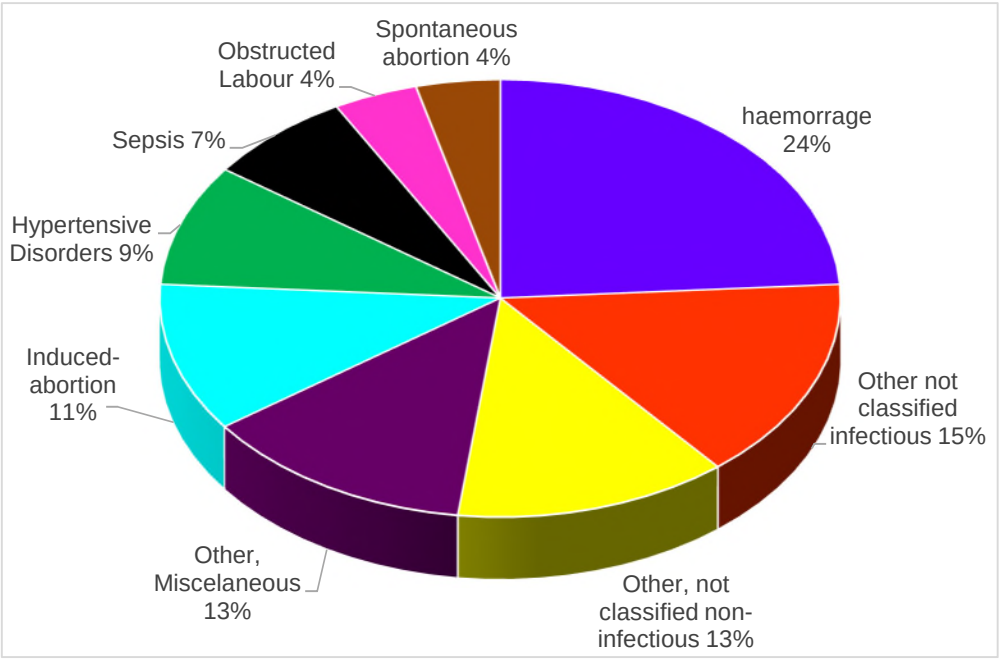

Figure 2.3.1 Causes of maternal mortality in Ghana

Source: GSS et al. (2009).

Majority of obstetric complications occur during labour or the immediate postpartum. Although most obstetric complications are not preventable, timely management could prevent needless maternal deaths (WHO, 2016d). Being prepared for birth and possible complications makes timely intervention possible as the three common delays are reduced. It also helps improve the effectiveness of maternal and neonatal health interventions as pregnant women and their families become actively involved (Agarwal, et al., 2010).

2.4 Birth preparedness and complication readiness

Ekabua et al. (2011) defined BPCR as planning for normal birth and anticipating the actions needed in case of an emergency. BPCR can also be described as a strategy to promote the timely use of skilled attendance, especially during childbirth. It is based on the theory that preparing for childbirth reduces delays associated with obtaining obstetric care. BPCR indices in pregnancy include

identifying an SBA; saving or securing funds for birth and emergency expenses; planning for transportation to a health facility for childbirth and obstetric emergency; and knowledge of danger signs in pregnancy, labour, puerperium and of the neonate (Hailu, et al., 2011; JHPIEGO, 2004a; 2004b). In operation, however, different programs have different indices for BPCR in pregnancy. Examples include identification of a companion or a decision-maker (in case of emergency), purchase of essential items for a clean delivery, food and dry clothes among others (Hiluf & Fantahun, 2008; JHPIEGO, 2004b; Kaso & Addisse, 2014; Markos & Bogale, 2014). In developing countries where most facilities are under-resourced, the pregnant woman may have to secure such items in advance. However, purchase of items such as food are not included in the JHPIEGO model of BPCR (Ekabua, et al., 2011; JHPIEGO, 2004a; 2004b). The JHPIEGO list of BPCR indices in pregnancy for women, their families and communities is attached as Appendix B.

Kuganab-Lem et al. (2014) found that less than a quarter (23%) of women had BPCR plans. They also found that multi-parity, higher education, marriage, ANC attendance, and knowledge of danger signs were associated with having a BPCR plan. Several studies outside Ghana, including Bintabara, Mohamed, Mghamba, Wasswa and Mpembeni (2015) and Hailu et al. (2011) also found that large proportion of women have no BPCR plans. A recent study in southern Nigeria, however, found that 82.1% of pregnant women were prepared for birth and complications (Sabageh, Adeoye, Adeomi, Sabageh, & Afolake, 2017).

2.5 Indicators/indices for BPCR in pregnancy

The selected BPCR indicators in pregnancy are regular antenatal attendance, having knowledge of the danger signs (in pregnancy or labour) and the identification of means of transportation to the place of childbirth. They also include having savings or access to funds and the identification of an SBA to assist during child delivery (JHPIEGO, 2004b). These indices are further discussed below.

2.5.1 Antenatal attendance

In 2008, GHS officially began to use focused-ANC, which involves ensuring that the same provider attends to the client during all ANC visits. It also implemented integrated ANC services, which included history-taking, physical and laboratory examinations, and the reduction of the number of ANC visits from 13 to four (Kuganab-Lem, Iddrisu, & Mustapha, 2015). Some important interventions provided at ANC are as follows (MoH, 2007).

- At least two doses, each, of tetanus toxoid vaccines and of Sulphadoxine-pyrimethamine as intermittent preventive treatment (IPTp) for malaria in pregnancy.
- Prenatal nutrition including iron and folate supplementation.
- Promotion of the use of Long Lasting Insecticidal Nets (LLIN) among pregnant women.
- Detection and treatment of anaemia in pregnancy.
- Counselling on BPCR.
- Prevention of mother to child transmission (PMTCT) of HIV.

In Ghana, three-quarters (76%) of pregnant women receive at least four ANC visits and a little over half (56.7%) receive skilled attendance at childbirth. In

the UER, skilled attendance is above the national average (75%), which is the highest in Ghana (GHS, 2015). The WHO currently recommends a minimum of eight ANC attendance instead of the previous policy of three (WHO, 2016c).

2.5.2 Identification of means of transportation

Making provisions for transportation prior to labour and childbirth is an essential index of BPCR (Ekabua, et al., 2011; JHPIEGO, 2004b). Slow non-motorised transportation prolongs the time taken to reach a hospital, which increases the woman's risk of developing complications and dying (Kumar, Dansereau, & Murray, 2014; Poku-Boansi, Ekekpe, & Bonney, 2010). Respectively, Hailu et al. (2011), and Gebre, Gebremariam and Abebe (2015) found that 7.7% and 18.1% of pregnant women in Ethiopia made preparations for transportation prior to childbirth. Similarly, Kuganab-Lem et al. (2014) found that 53.3% of rural Ghanaian women made arrangements for transportation before the onset of labour or childbirth; asserting that most rural women in Ghana die of eclampsia due to lack of transportation. In rural areas, problems of physical access and transportation of pregnant women to health facilities influence healthcare decision-making. About 70% of the poor in Ghana do not use healthcare services or accept referrals either due to the unavailability or the cost of transportation (Poku-Boansi, et al., 2010). About 69% of pregnant women in rural Ghana walk or ride bicycles to health facilities, which delay the time of reaching care (Poku-Boansi, et al., 2010). A reliable functional ambulance or other transportation system is necessary to enable pregnant women reach health facilities promptly when they recognise danger signs and decide to seek care (Soubeiga, et al., 2014). Prearranged transportation, thus, helps mitigate such delays during obstetric emergencies (Turkson, 2009).

2.5.3 Access to funds towards birth and possible complications

Ghana's Demographic and Health Survey (DHS) revealed that 97% of women in the high-income quintile deliver with the assistance of SBAs as against 47% of the lowest income earners (GSS, 2015). This suggests inequity in access to SBAs, despite Ghana's policy offering all pregnant women free access to healthcare and exemption from payment of the NHIS premium (MoH, 2015; NHIA, 2017). The free healthcare policy does not include indirect costs such as travel cost and under-the-table charges, leading to out of pocket (OOP) costs (NHIA, 2016; Witter, Garshong, & Ridde, 2013). A study in northern Ghana estimated (using 2013 exchange rates) that a household OOP expenditure on obstetric complications ranged from US$6.84 to US$58.33 (about Gh¢13.00 and Gh¢111.00 respectively). The study also noted that the largest portion (79%) of the total expenditure on maternal complications was indirect costs (Dalaba, et al., 2015). These amounts of OOP represent a substantial portion of the household income; necessitating a lengthy period of consistent savings to accomplish (Perkins, et al., 2009). Thus, despite the fact that most community beliefs and social norms support saving money for delivery, most families have no access to funds due to poverty (Donkor, 2011).

A study in rural northern Ghana found that, among postpartum women, less than half (46%) of them had saved money towards childbirth and possible complications (Kuganab-Lem, et al., 2014). Similarly, a study in Ethiopia found that 54.1% of pregnant women and their families saved money towards birth and complications (Gebre, Gebremariam, & Abebe, 2015). About 46%, 37% and 18% of funds for childbirth among Nigerian women come from both spouses, the woman only and the husband only respectively (Obi, Abe, & Okojie, 2013).

2.5.4 Identification of a skilled birth attendant to supervise delivery

The WHO (2015c) describes a skilled birth attendant (SBA) or a skilled attendant as a health professional, such as a midwife, doctor or nurse, who has the knowledge and skills to manage uncomplicated or normal pregnancy, labour and the immediate postpartum. The SBA must also be educated and trained to proficiency of recognising, diagnosing, managing and/or referring the woman and her new-born with complications to a higher level of care. Skilled birth attendance is thus, quality care provided by an SBA to a woman during pregnancy, childbirth and puerperium, and her neonate (WHO, 2015c).

According to UNICEF (2017), an estimated 21% of births worldwide (equivalent to 31 million births in 2016) are not supervised by SBAs with rural areas bearing the largest burden. The WHO (2015c) estimates that less than half (46%) of women in low-income countries benefit from skilled care during childbirth. In West Africa, about half (51%) of births are supervised by SBAs, which suggests traditional birth attendants (TBAs) fill the gap of SBAs service shortage (UNICEF, 2017).

Kuganab-Lem, et al. (2015) found that about 38% of postpartum women in rural Ghana planned to utilise skilled birth attendance. Gebre et al. (2015) also found that 10.7% of pregnant women in Ethiopia identified an SBA prior to childbirth. In Kenya, Mutiso et al. (2008) concluded that lack of SBA at birth was partly responsible for the country's high maternal mortality.

Studies suggest that some socio-cultural practices influence the use of skilled birth attendance. According to Sessions (2012) some societies perceive pregnancy as a socially-constructed event although fraught with unpredictable outcomes. Yidana and Kuganab-Lem (2014) explained that some societies

perceive pregnant women as people who are fulfilling their gender roles of procreation. Thus, they metaphorise maternal mortality as women *"falling on the battlefield in the line of duty*' (Kyomuhendo, 2003, as cited in Yidana & Kuganab-Lem, 2014). Such perception together with socio-cultural practices and beliefs that promote home delivery may also delay decisions to seek timely skilled birth attendance (Gabrysch & Campbell, 2009). Some socio-cultural practices that promote home delivery and could lead to adverse obstetric outcomes include the following.

- Trying to obtain a confession when the baby fails to emerge (Amnesty International, 2009).
- Insertion or ingestion of herbal concoctions to quicken labour (Maputle, Mothiba, & Maliwichi, 2015).
- Avoiding ANC in a bid to Keep the pregnancy secret due to taboos (Maputle, et al., 2015).
- Hitting the woman in labour with a broom or other objects when she is perceived as not pushing hard enough (including some hospital settings) (Goer, 2010).
- Infibulation, a form of female genital mutilation (FGM), which is associated with increased risk of complications during labour (Amnesty International, 2009).

2.5.5 Knowledge of danger signs in pregnancy and labour periods

The danger signs are not the actual obstetric complications, but signs and symptoms that are identifiable by the pregnant woman or caregivers, which may indicate complications (JHPIEGO, 2004b). According to Mbalinda et al. (2014) knowledge of obstetric and neonatal danger signs do not form part of BPCR.

However, knowledge of danger signs in pregnancy, labour, puerperium and the neonate are part of JHPIEGO BPCR indices. Knowledge of danger signs in pregnancy/labour is necessary to trigger the timely execution of the other indices of the BPCR plan during the pregnancy or labour (JHPIEGO, 2004b; Nahar, Banu, & Nasreen, 2011).

Some key danger signs during pregnancy include haemorrhage, blurred vision and oedema (Hailu & Berhe, 2014; Hailu, Gebremariam, & Alemseged, 2010). During labour, prolonged labour (that is labour lasting more than 12 hours), convulsions and retained placenta are some of the key danger signs that a pregnant woman or the caregiver must note (Hailu & Berhe, 2014; Hailu, et al., 2010; JHPIEGO, 2004b).

Koenig, et al. (2007) found that although majority (89%) of women in Bangladesh could mention at least one obstetric danger sign, less than half of them (42%) could mention three or more danger signs. Sabageh et al. (2017) found that majority (70.8%) of pregnant women in southwest Nigeria had knowledge of danger signs in pregnancy. Sabageh et al. (2017) study also found that the commonest mentioned obstetric danger sign in pregnancy was haemorrhage.

2.6 Determinants of BPCR among pregnant women

Studies have shown that age, parity, education, socio-economic status, marriage, employment, residence and proximity to health facility are associated with BPCR (Debelew, Afework, & Yalew, 2014; Urassa, Pembe, & Mganga, 2012). A study among antenatal attendants in Ethiopia found statistically significant association between women who had tertiary level education, knowledge of

danger signs and BPCR (Musa & Amano, 2016). In Tanzania, Bintabara et al. (2015) found that among postpartum women, maternal education, spouse employment, having four or more ANC visits and knowledge of key danger signs were predictors of BPCR.

2.7 Summary

Pregnant women can reduce the risk of the first two delays by developing a BPCR plan, which involves the identification of transportation and SBA, regular ANC attendance, access to funds and knowledge of danger signs in pregnancy/labour (JHPIEGO, 2004b). Some determinants of BPCR at the individual level include parity, marriage, education and knowledge of danger signs (Debelew, et al., 2014; Sabageh et al., 2017; Urassa, et al., 2012).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter contains a description of the study methodology. It comprises the study area, study design, study population and study units. In addition, the sample size and characteristics, sampling technique, study variables, data collection and study instruments, and data quality control measures are explained in this chapter. The research ethics, data analysis and interpretation, and the limitations of the study are also explained.

3.2 The study area

This study was carried out in two districts – the Builsa North and the Builsa South Districts – in the UER of Ghana. Prior to 2012, the two districts were one district, called the Builsa District. On 7th June 2012, the erstwhile Builsa District was divided into two by the Local Government Act 1993 (Act 462), Legislative Instrument (LI 2104) of 2012 (GSS, 2014b). It was split from west to east, thus, the northern and the southern parts were named the Builsa North District and the Builsa South District respectively. The district map for the BND and the BSD are attached as Appendixes C and D respectively (GSS, 2014b; 2014c). A concise description of the BND and the BSD is presented as follows.

3.2.1 Builsa North District

The BND has about 56,477 people, out of which 51.8% are females and 89.5% live in rural areas. The female literacy rate is 47.4%; (GSS, 2014c). Estimates by the District Health Information Management Software (DHIMS 2) put the population of 2016 at 64,143 people. About 14,560 women were in reproductive

age (15-46 years) (MoH, GHS, 2016a). It has a total fertility rate (TFR) of 3.6 live births per woman aged 15-49 years. Agriculture is their main (83.1%) source of livelihood. About 51% of females aged 12 years and older are married (GSS, 2014c). The district has one Medical Officer, six Physician/Medical Assistants, 31 Midwives, 14 Professional Nurses, 75 Community Health Nurses and 83 Enrolled Nurses (MoH, GHS, 2016a). This translates to a doctor, nurse and midwife to population ratio of about 3.3:1000, which exceeds the 2.3:1000 minimum recommended by WHO (2016d), which is necessary to ensure a healthy population.

The DHMT supervises five sub-districts – Sandema East, Sandema West, Wiaga, Siniensi and Chuchuliga. It has a hospital, two health centres, two clinics and five functional Community-based Health Planning and Services (CHPS) centres (Builsa North DHMT, 2016). In 2015 and 2016, ANC clients who had at least four visits were 84.3% and 79.5% respectively. Skilled birth attendance was 65.4% and 47.1% in 2015 and 2016 respectively (MoH, GHS, 2016b). The district hospital is a referral point for obstetric complications from the BSD and other neighbouring districts, which may partly explain the high iMMR (Builsa North DHMT, 2016).

3.2.2 Builsa South District

According to the 2010 population census, the BSD has a population of 36,514; about half of them (50.4%) female (GSS, 2014b). The DHIMS estimates the district's 2016 population at 41,566 and women in reproductive age (15-49 years) at 9,414 (MoH, GHS, 2016a). All the population is rural and the female literacy rate is 35%. About 96% of the population is employed in agriculture. The district has a TFR of 4.3 live births per woman aged 15-49 years, which is

the highest in the UER. About 56% of females aged 12 years and older are married (GSS, 2014b).

The District has six sub-districts – Donninga, Fumbisi, Gbedema, Kanjarga, Uwasi and Wiesi. It has no hospital, four health centres (one privately owned) and 13 CHPS centres (Builsa South DHMT, 2016). There is no Doctor in the district, however, there is one Physician/Medical Assistant, 13 Midwives, 11 Professional Nurses, 64 Community Health Nurses and 28 Enrolled Nurses (MoH, GHS, 2016a). This translates to a doctor, nurse and midwife to population ratio of about 2.8:1000, which is also above the WHO (2016d) minimum requirement. Skilled birth attendance was 46.1% in 2015 but fell to 34.5% in 2016. According to the DHIMS, about 75% and 79% of ANC attendants had at least four visits in 2015 and 2016 respectively, which suggests that about half of the women who attend ANC deliver without SBA.

3.3 Study design

This is a descriptive cross-sectional study, using mixed (both quantitative and qualitative) research methodology. Both secondary and primary data were used in this study. The study was conducted in the following order. First, literature was reviewed for in-depth knowledge of BPCR, including potential research gaps and theoretical frameworks. Formulation of the problem, a reconnaissance survey and further literature search and review followed in that order. The study objectives were then formulated after which the study tools were developed. A proposal was then written and ethical approval obtained before the data collection tools were pre-tested. After recruitment and training of the research

assistants, the questionnaires were finalised for data collection. Analysis, writing-up, printing and photocopies were carried out last.

3.4 Study population

The study population was all currently pregnant women irrespective of gestational age, who were aged 15-49 years and who were residents of the respective BND and BSD. This population was chosen because according to JHPIEGO (2004b), they are the primary target for most BPCR initiatives. They were also targeted for this study because, unlike postpartum women, they have less risk of recall bias as the pregnancy is ongoing and the BPCR plans are expected to be in place.

Data available in the DHIMS show that in 2016, the estimated pregnancies (16.7% of the population) were 2,427 for the BND and 1,569 for the BSD (MoH, GHS, 2016b).

3.5 Study units

The study unit was a currently pregnant woman regardless of her gestational age, between the ages 15 and 49 years, who was a resident of either the BND or the BSD. Although the pregnancy status of each participant was verified through her ANC card or a pregnancy test results, ANC attendance status was not a determinant of participation in the study. Secondly, the residential status of each pregnant women was confirmed by any member of her household or the residential address on her ANC card. Pregnant women who were too ill to participate or had no scientifically verifiable evidence of pregnancy were excluded in this study. Additionally, pregnant women who fell outside the

reproductive age group (15-49 years) as defined by Ghana's 2014 DHS (GSS, 2015), were excluded in order to avoid the influence of potential outliers. In households with more than one pregnant woman, a coin was tossed to randomly select one of them to participate in the study.

3.6 Sample size and characteristics

The sample size was estimated based on 95% confidence interval and 5% precision level (P = 0.05). An online sample size calculator by Creative Research Systems (2012) was used to calculate the sample size. The calculator used the following formula.

Equation 3.6.1 sample size calculation formula

$$SS = \frac{Z^2 * (P) * (1 - P)}{C^2}$$

Source: http://www.surveysystem.com/sample-size-formula.html.

Where: SS = sample size; Z = z-score at 95% confidence (1.96); C = confidence level (5%); P = the proportion of pregnant women who have BPCR plans (a default value of 50% was used because the actual proportion is unknown). The calculator returned a sample size of 305 and 8% non-response (rounded up to 25 pregnant women) was added to the sample, totalling 330 pregnant women in all.

3.7 Sampling technique

Multistage random sampling was used to select the required sample. Probability proportionate to size (PPS) sampling (with replacement) technique was used to select the clusters (sub-districts and communities) in the first and the second stages respectively. However, a uniform number of pregnant women were

selected from each of the final cluster (communities), which results in a probability inversely proportionate to size.

According to the Skinner (Skinner, 2016), PPS is more appropriate for clusters with varied population sizes. PPS gives clusters with larger population a higher probability of selection and smaller clusters a lower probability of being selected. In order to ensure that all units (pregnant women) have the same probability of selection irrespective of cluster population size, the same number of units has to be sampled from each of the final selected clusters. The sampling of equal units at the final stage gives those women in larger clusters a lower probability of being selected whiles giving those in smaller communities a higher probability of selection (probability inversely proportional to size). This compensates the previous stages, thus, ensuring each pregnant woman in the population has equal probability of being sampled (Piazza, 2010). This also eliminates the need for weighting during analysis, although the larger community may be under represented whereas the smaller communities may be over represented in the sample.

In the first stage, a list of all sub-districts and their respective estimated population of pregnant women were obtained from the two DHMTs. For each district, 3 sub-districts were randomly selected by first calculating the cumulative sum of the estimated population from the sub-districts. A sampling interval was then calculated by dividing the total population by the desired sample of three (sub-districts). The excel command of RAND was used to generate a random starting point between one and the sampling interval. After selecting the first sub-district, the sampling interval was added to the random number, consecutively and cumulatively to select additional sub-districts. The

selected sub-districts were those for which the cumulative population contained either the random number or the results of any of the subsequent additions. The process was repeated until the 3 sub-districts for each district were selected. Large sub-districts that were sampled more than once were recorded for the first time only.

The same procedure was used in the second stage to select the sample communities (5 each) from the six selected sub-districts. In all, 30 communities were randomly selected (15 from each district). Finally, to ensure that every pregnant woman had equal probability of selection irrespective of community population size, the sample of 330 was distributed uniformly among the selected communities.

In addition, purposive sampling technique was used to select the two key informants and 21 focus group discussions (FGDs) participants. The midwife-in-charge of Fumbisi health centre and the Sandema hospital were selected as key informants. They were selected because they had knowledge of the effects of government policies on BPCR among pregnant women in their respective districts. There were seven people for each of the three FGD sessions. They comprised a TBA, two pregnant women, a household head, a postpartum woman, a midwife/nurse and an opinion leader. The FGD participants were selected because they all understood the local context of pregnancy and birth preparedness. Three communities were randomly picked from the list of participating communities for the FGDs, using the lottery method, without replacement.

3.8 Study variables

The independent variables collected in this study included the district of residence, age, marital status, parity, level of education, occupation, gestational age and decision makers. On the other hand, the dependent variables included ANC attendance, planning for transportation, access to funds, use of SBA, knowledge of danger signs and BPCR status.

3.9 Data collection and study instruments

Table 3.9.1 below contain a summary of the research tools used in this study. The primary data were obtained through administration of semi-structured questionnaires adapted from the JHPIEGO (2004b). The questionnaires were administered because they are useful in eliciting both quantitative and in-depth and sensitive individual experiences and opinions regarding BPCR, which they may be unwilling to discuss in group setting.

In each community, the first household was selected by spinning a pencil at the assumed centre of the community to choose the direction to start interviewing. All pregnant women in households on that direction were interviewed. However, in households with more than one pregnant woman, one of them was randomly selected for the interview by tossing a coin. The process was repeated until the sample size was met.

Moreover, key informant interviews were conducted using interview guides and field notebooks. The Key informant interviews were necessary for the triangulation of issues raised at the FGDs and to gather data on the policy implications of BPCR in both districts. FGD guides, field notebooks and an audio recorder were used to record information from FGDs. FGDs were

conducted because they are effective for collecting data on a range of group norms and individual-level nuances, connections and contradictions regarding BPCR. FGDs are also efficient methods of collecting qualitative data as a large amount of data can be gathered within a short period of time.

The questionnaire, the FGD guide and the key informant interview guide that were used in this study are attached as Appendixes E, F and G respectively.

Table 3.9.1 Data collection methods and tools

Data Collection Method	Data Collection Tool	Quantity /Frequency
In-depth interviews	Semi-structured questionnaires	330 questionnaires
Key informant interviews	Interview guide and a field notebook	2 persons
Focus group discussions	FGD guide, a field notebook and an audio recorder	3 sessions

Source: Author's construct.

In addition to the primary data, secondary data were obtained from the review of both published scientific and grey literature. Secondary data is easier to gather than primary data. The literature formed the basis for the comparisons and interpretations of the results of the primary data. The search term "birth preparedness and complication readiness among pregnant women in Ghana" was used to retrieve relevant secondary data from PubMed. Grey literature including policy documents and reports were obtained from the official websites of the GHS, WHO and MoH, among others.

3.10 Quality control

To maintain consistency, the questionnaires were translated from English to the Buli dialect and back-translated to English with the help of an expert in Buli.

The adapted questionnaires were pretested to 5% of the sample size in non-participating communities that had similar characteristics as the participating ones.

Moreover, four research assistants – two community health officers, a health educationist and a disease control officer – were trained to administer the questionnaires and were closely supervised throughout the data collection process. The research assistants confirmed verbally from the household heads that each woman being interviewed was a resident. They also used antenatal cards or pregnancy test results to confirm pregnancy. Any participant whose pregnancy status could not be verified was not included in the study.

3.11 Data analysis and presentation

Epidata Manager software (version 4.0.1.97) was used to design and code the questionnaires. Epidata Entry Client (version 4.0.1.45) was used for the data entry. Qualitative data from FGDs and key informant interviews were transcribed from the audio files and entered into Microsoft Excel 2016. Both Microsoft Excel 2016 and IBM SPSS Statistics 23 software were used for the data analysis. The study results were presented in tables, charts and figures.

BPCR status of pregnant women in each district was determined based on two criteria. First, pregnant women who planned/prepared on any four or more BPCR indices were interpreted as "*prepared*". On the other hand, pregnant women who prepared less than four BPCR indices were interpreted as "*less prepared*".

The association between the independent variables such as parity, marital status, level of education, district of residence and the dependent variable BPCR were

examined using multiple logistic regression. The results were adjusted to account for age as a potential confounder. This was necessary because younger age (less than 20 years) is a known strong predictor of BPCR (Ekabua et al., 2011; Sabageh et al., 2017). A univariate analysis of the association between the independent variable district of residence and the dependent variables ANC attendance, identification of transportation, identification of SBA, access to funds and knowledge of danger signs in pregnancy/labour, which constitute the BPCR indices were also examined using logistic regression. Some dependent variables – ANC attendance and knowledge of danger signs – were also tested for their relationship with BPCR. All the statistical tests were calculated at 95% confidence interval (95% CI) with the alpha (significance) set at five percent ($p < 0.05$).

3.12 Ethical considerations

First, approval for the study was obtained from the Upper East Regional Health Directorate of the GHS and from the Institutional Review Board of the University for Development Studies. A written informed consent, adapted from the JHPIEGO (2004b) was given or read to participating pregnant women for endorsement (the consent form has been attached as Appendix H). Participants who did not feel comfortable signing or thumb-printing the written consent form were permitted to give verbal consent, with at least one relative/friend bearing witness. The pregnant women's privacy, right to withdraw or not to participate in the study were communicated to them and were respected. They were also informed that this study will be published, but it will not contain any individually identifiable information. For confidentiality, all unprocessed hard copies of data

were locked up and soft copies (including audio recordings) protected by passwords, which are only accessible to the research team. To preserve participant anonymity, only codes were used in the analysis and presentation of data. Accurate information on BPCR was given to every pregnant woman after the interview, as proposed by Hailu et al. (2011).

3.13 Limitations of the study

The study sample size was relatively small (330 pregnant women), which may have limited its power to detect the relationship between some of the known determinants such as parity or marriage and BPCR.

Methodologically, the allocation of equal sample sizes to both districts meant that the BND which has the larger population may have been under represented whereas the BSD may have been over represented. That means that the findings of the BSD and overall are more precise than that of the BND. That notwithstanding, the study results from the BND does not suggest that the relatively lower sample size affected the study's power to detect any differences.

Additionally, the number and specific types of BPCR indices measured by different studies vary. This may have led to discrepancies during the interpretation of the findings as some of the BPCR indices were either not measured by this study or the other studies reviewed.

As a cross-sectional study, it is unable to predict any seasonal variations; thus, the findings may only represent a point estimate BPCR in the BND and BSD.

CHAPTER FOUR

STUDY RESULTS AND ANALYSIS

4.1 Introduction

The study results are presented in this chapter. The results are organised in the order of the BPCR indices specified in the theoretical framework, then by the study specific objectives. First, the socio-demographic and obstetric characteristics of the pregnant women in both districts are presented. Then the findings on the BPCR indices – ANC attendance, access to funds, plans for transportation, identification of SBA and knowledge of danger signs – are then presented concurrently for both the BND and BSD. In addition, the data have been analysed to determine the association between the district of residence and each BPCR index. In line with the study objectives, the levels of BPCR in each district are analysed simultaneously after which a comparison is made to determine the association between the districts and BPCR. Finally, different independent variables are tested to identify the likely determinants of BPCR in the study area.

4.2 Socio-demographic and obstetric characteristics of respondents

Overall, 330 pregnant women participated in the study; 165 each from the BND and the BSD. Overall, the minimum age of the pregnant women was 15 years and a range of 25 years. The mean, median and modal ages were 25.96 ±5.2, 25 and 24 years respectively. Forty-four (13.3%) of them were 15-19 years and about half 163 (49.4%) were 25 years of age or above. Overall, majority of the pregnant women 102 (30.9%) fell between the ages 20-24 years. As shown in Table 4.2.1 below, pregnant women between 15-19 years of age formed less

than a tenth 12 (7.3%) of the BND participants but nearly a fifth 32 (19.4%) of the BSD participants. Whereas pregnant women aged 25-39 years formed majority 57 (34.5%) in the BND, they were second largest in the BSD 42 (25.5%). On the other hand, those aged 20-24 years in the BSD were majority 53 (32.1%) compared to 49 (29.7%), which is the second largest age group in the BND. Whereas 3 (1.8%) of the pregnant women in the BND were 40 years or above, none of those in the BSD were aged 40 years or above.

Overall, nearly a third 96 (29.1%) of participants were nulliparous. In both the BND and the BSD, primigravidae formed about a third of the pregnant women 45 (27.3%) and 51 (30.9%) respectively. Almost a quarter of pregnant women in BND and BSD 41 (24.9%) and 39 (23.7%) respectively were primiparous. Multiparous pregnant women were the largest number 79 (47.8%) and 75 (45.5%) in the BND and BSD respectively.

Furthermore, nearly all (97.3%) of the 321 of the pregnant women from both districts were married or in a union and six (1.8%) were single and never married. Fewer 158 (95.8%) pregnant women in the BND were married or in a union compared to 163 (98.8%) in the BSD.

In general, of the 328 pregnant women, majority 138 (42.1%) had no formal education and 85 (25.9%) completed secondary school – senior high school (SHS), junior high school (JHS) or Middle school. The rest, 68 (20.7%) and 37 (11.3%) completed primary and tertiary education respectively. However, of the 164 pregnant women in the BND, majority 66 (40.2%) completed second cycle schools compared to 19 (11.6%) in the BSD. Majority 98 (59.8%) of the 164 pregnant women in the BSD had no formal education as against 40 (24.4%) in the BND. Tertiary graduates were seven (4.2%) and the lowest in the BSD, but,

second to the least in the BND 30 (18.3%). The smallest proportion of pregnant women in the BND was primary school graduates 28 (17.1), which was the second highest 40 (24.4%) in the BSD.

Finally, the overall majority 105 (32.8%) of the 320 pregnant women were either housewives or farmers, followed by the unemployed 98 (30.6%) and traders/artisans 74 (23.1%). Of the 154 and 156 pregnant women in the BND and BSD respectively, majority 54 (32.9%) of those in the BND were traders compared to 20 (12.8%) in the BND. Housewives/farmers were, however, majority 75 (48.1%) in the BSD as against 30 (18.3%) in the BND.

Table 4.2.1 Socio-demographic characteristics of participants

		BND		BSD		TOTAL	
		Freq.	% of BND	Freq.	% of BSD	Freq.	% of Total
Age-group (Years)	15-19	12	7.3	32	19.4	44	13.3
	20-24	49	29.7	53	32.1	102	30.9
	25-29	57	34.5	42	25.5	99	30
	30-34	31	18.8	31	18.8	62	18.8
	35-39	13	7.9	7	4.2	20	6.1
	40+	3	1.8	0	0	3	0.9
Total		**165**	**100**	**165**	**100**	**330**	**100**
Parity	0	45	27.3	51	30.9	96	29.1
	1	41	24.9	39	23.7	80	24.2
	>2	79	47.8	75	45.4	154	46.7
Total		**165**	**100**	**165**	**100**	**330**	**100**
Marital Status	Single	4	2.4	2	1.2	6	1.8
	Married/In union	158	95.8	163	98.8	321	97.3
	Divorced	2	1.2	0	0.0	2	0.6
	Other	1	0.6	0	0.0	1	0.3
Total		**165**	**100**	**165**	**100**	**330**	**100**
Level of Education	None	40	24.4	98	59.8	138	42.1
	Primary	28	17.1	40	24.4	68	20.7
	JHS/SHS/Middle	66	40.2	19	11.6	85	25.9
	Tertiary	30	18.3	7	4.2	37	11.3
Total		**164**	**100**	**164**	**100**	**328**	**100**
Occupation	Unemployed	45	27.4	53	34.0	98	30.6
	Housewife/ Farmer	30	18.3	75	48.1	105	32.8
	Teacher	26	15.9	6	3.8	32	10.0
	Trader/Artisan	54	32.9	20	12.8	74	23.1
	Other	9	5.5	2	1.3	11	3.5
Total		**164**	**100**	**156**	**100**	**320**	**100**

Source: Field work.

4.3 Antenatal attendance

From Table 4.3.1 below, overall, 52 (15.8%), 137 (41.5%) and 141 (42.7%) of the pregnant women were in their first, second and third trimesters respectively. In the BND, majority of pregnant women 108 (65.4%) were in their third trimester, followed by 46 (27.9%) and 11 (6.7%) in their second and first trimester respectively. In the BSD however, pregnant women in their second trimester 91 (55.2%) were majority, followed by first trimesters 41 (24.8%) and least of them, those in their third trimester 33 (20%).

Similarly, out of the 165 pregnant women in each district, majority 157 (95.2%) of the BND and 163 (98.8%) of the BSD attended ANC at least once. Out of those who attended ANC in the BSD, 34 (20.9%) received exactly three ANC visits compared to 24 (15.3%) of the BND. In the BND, majority 31 (19.7%) had five ANC visits only compared to 25 (15.4%) of the BND. Pregnant women who attended at least three ANCs were 144 (91.7%) and 107 (65.6%) in the BND and BSD respectively.

Overall, about a third 106 (32.1%) of the 330 pregnant women intended to attend a total of nine ANCs. More than a third of pregnant women in the BND 59 (35.8%) intended to attend nine ANCs as against 47 (28.5%) in the BSD. In contrast, over a third of those in BSD 63 (38.2%) intended to attend eight ANCs compared to 32 (19.4%) of the BND. Overall, one pregnant woman (0.3%) and none from the BSD wanted to attend ANC exactly trice.

Table 4.3.1 ANC attendance by district

		BND		BSD		Total	
		Freq.	% of BND	Freq.	% of BSD	Freq.	% of Total
Current gestational	1-3	11	6.7	41	24.8	52	15.8
Age (Months)	4-6	46	27.9	91	55.2	137	41.5
	5-9	108	65.4	33	20	141	42.7
Total		**165**	**100**	**165**	**100**	**330**	**100**
Attends ANC	Yes	157	95.2	163	98.8	320	97.0
	No	8	4.8	2	1.2	10	3.0
Total		**165**	**100**	**165**	**100**	**330**	**100**
Number of ANCs	1	5	3.2	24	14.7	29	9.1
attended/received	2	8	5.1	32	19.6	40	12.5
	3	24	15.3	34	20.9	58	18.2
	4	25	15.9	32	19.6	57	17.8
	5	31	19.7	25	15.4	56	17.5
	6	26	16.6	8	4.9	34	10.6
	7	14	8.9	5	3.1	19	5.9
	8	17	10.8	1	0.6	18	5.6
	9	7	4.5	2	1.2	9	2.8
Total		**157**	**100**	**163**	**100**	**320**	**100**
Total intended	1	1	0.6	2	1.2	3	0.9
number of ANC	2	1	0.6	1	0.6	2	0.6
attendance	3	1	0.6	0	0.0	1	0.3
	4	7	4.2	3	1.8	10	3.0
	5	10	6.1	6	3.6	16	4.9
	6	29	17.6	10	6.1	39	11.8
	7	25	15.1	33	20.0	58	17.6
	8	32	19.4	63	38.2	95	28.8
	9	59	35.8	47	28.5	106	32.1
Total		**165**	**100**	**165**	**100**	**330**	**100**

Source: Field work

On the whole, 10 (3%) pregnant women from both districts did not attend ANC, of which eight (80%) were from the BSD. In all, six (60%) of them cited taboo/religion as a barrier to accessing ANC, as shown in figure 4.3.1 below. The remaining four (40%) were equally split between four reasons – no experience of previous complications, unaffordable cost of accessing ANC, absence of health facility in the community and poor attitude of health workers.

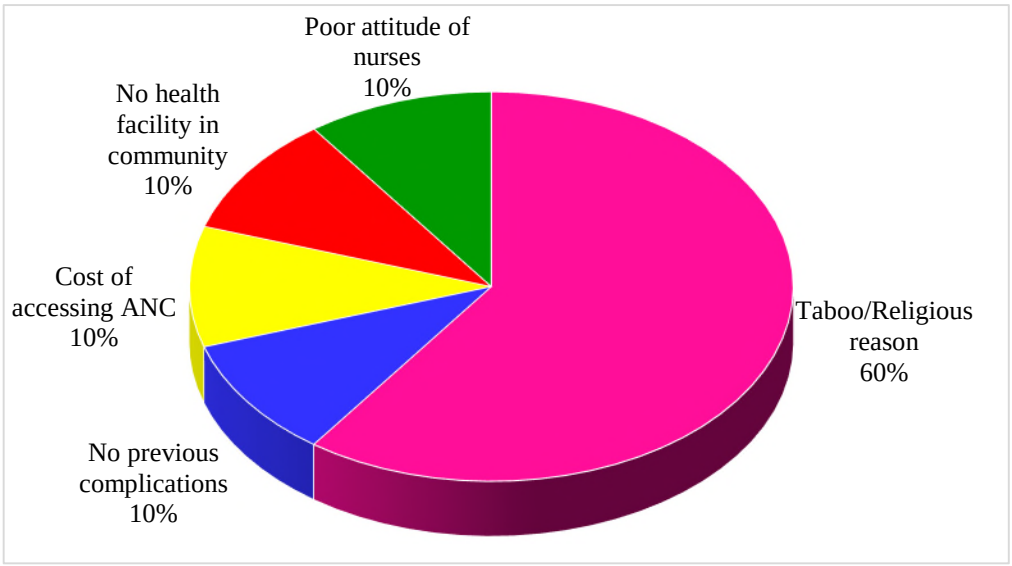

Figure 4.3.1 Reasons for not attending ANC

Source: Field work.

From figure 4.3.2 below, most pregnant women 91 (55.8%) out of the 163 in the BSD who attended ANC at least once, started their ANC in the first month of pregnancy compared to 31 (19.7%) of those in the BND. The greatest number 56 (35.7%) out of the 157 in the BND who attended ANC, had their first ANC in the second month of pregnancy compared to 49 (30.1%) of those in the BSD. Those who received their first ANC in the second trimester or later were 34 (21.7%) and 10 (6.1) in the BND and BSD respectively.

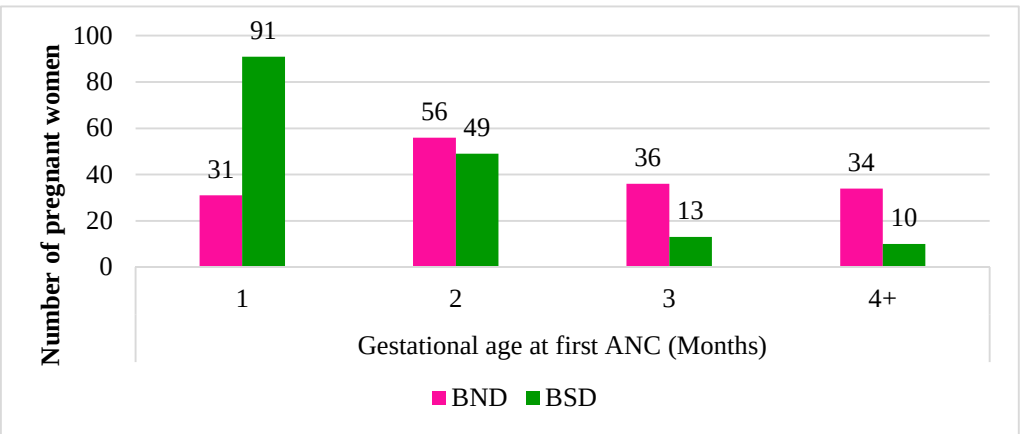

Figure 4.3.2 Gestational age at first ANC by district

Source: Field work.

In table 4.3.2 below, the study results show no statistically significant association between a pregnant woman's district of residence and ANC attendance status. Pregnant women in the BND were 24% less likely to attend ANC compared to those in the BSD (OR 0.24; 95% CI = 0.05, 1.15; P = 0.075).

Table 4.3.2 Comparison of ANC attendance in the BND against the BSD

	Attending ANC	
District	**P-value**	**Odds ratio (95% CI)**
BND	0.075	0.24 (0.05-1.15)
BSD		1

Source: Field work.

4.4 Planning for transportation

The results in table 4.4.1 revealed that more than three-quarters 128 (77.6%) of the 165 pregnant women in the BND prepared/planned for transportation compared to about half 86 (52.1%) of the 165 in the BSD. Overall, 214 (64.8%) of them made provisions for transportation to the place of delivery.

Furthermore, of 204 women from both districts, 118 (57.9%) planned to use their private vehicles, 37 (18.1%) commercial vehicles, 10 (4.9%) bicycles/animal-drawn carts and 39 (19.1%) other types of transportation. Similarly, majority of the 120 pregnant women in BND and 84 in BSD relied on their private means of transportation 66 (55.0%) and 52 (61.9%) respectively. A third 39 (32.5%) of BND pregnant women planned to use other means of transportation. Less than a tenth, six (5.0%) against four (4.8%) of the pregnant women in the BND and BSD respectively, intended to use bicycle/animal-drawn cart.

Most pregnant women 68 (53.5%) out of 120 in the BND and 69 (86.2%) of 84 in the BSD chose their mode of transportation because it is the only/major means of transport accessible to them. Nineteen (15%) in the BND were influenced by

cheaper cost compared to 11 (13,8%) in the BND. In general, other reasons for chosen mode of transportation accounted for a little less than a fifth 40 (19.3%). In the BND, the main decision makers on the use of transportation were the pregnant women themselves 93 (73.2%) followed by their husbands 25 (19.7%). In the BSD, however, the husbands were the main decision makers 62 (72.1%) followed by the pregnant women themselves 23 (26.7%).

More than half 21 (58.3%) of the 36 pregnant women in the BND and nine (11.7%) of the 77 in the BSD who had not planned for transportation intended to plan later during the pregnancy. Overall, 30 (26.5%) of the respondents who did not plan for transportation intended to arrange for transportation later in the pregnancy.

Closed proximity to the place of delivery was the commonest reason for not arranging for transportation 12 (75%) in the BND against 60 (95.2%) in the BSD. The rest cited other reasons for not arranging for transportation.

Table 4.4.1 Planning for transportation by pregnant women

		BND		BSD		Total	
		Freq.	% of BND	Freq.	% of BSD	Freq.	% of Total
Planned for transportation	Yes	128	77.6	86	52.1	214	64.8
	No	37	22.4	79	47.9	116	35.2
Total		**165**	**100**	**165**	**100**	**330**	**100**
Chosen mode of transportation	Private vehicle	66	55.0	52	61.9	118	57.9
	Commercial	9	7.5	28	33.3	37	18.1
	Bicycle/animal-drawn carts	6	5.0	4	4.8	10	4.9
	Others	39	32.5	0	0	39	19.1
Total		**120**	**100**	**84**	**100**	**204**	**100**
Reason for chosen transportation	Least expensive	19	15.0	11	13.8	30	14.5
	Availability	68	53.5	69	86.2	137	66.2
	Other	40	31.5	0	0	40	19.3
Total		**127**	**100**	**80**	**100**	**207**	**100**
Decision maker on transport	Respondent	93	73.2	23	26.7	116	54.5
	Husband	25	19.7	62	72.1	87	40.8
	Other	9	7.1	1	1.2	10	4.7
Total		**127**	**100**	**86**	**100**	**213**	**100**
Intend to plan for transportation	Yes	21	58.3	9	11.7	30	26.5
	No	15	41.7	68	88.3	83	73.5
Total		**36**	**100**	**77**	**100**	**113**	**100**
Reason for not intending to arrange for transportation	Resides near health facility	12	75.0	60	95.2	72	91.1
	Other	4	25.0	3	4.8	7	8.9
Total		**16**	**100**	**63**	**100**	**79**	**100**

Source: Field work.

The study results show a statistically significant association between district of residence and planning for transportation to the place of childbirth ($P < 0.001$). As presented in table 4.4.2 below, pregnant women who resided in the BND were three times more likely to plan for transportation compared to their colleagues in the BSD (OR = 3.18; 95% CI = 1.97, 5.12).

Table 4.4.2 Comparison of transportation plans in the BND against the BSD

District of Residence	Planning for transportation towards birth and complications	
	P-value	Odds ratio (95% CI)
BND	<0.001	3.18 (1.97-5.12)
BSD		1

Source: Field work.

4.5 Access to funds or saving money towards birth and complications

Pregnant women who had access to funds as presented in table 4.5.1 below, were 121 (73.3%) and 65 (39.4%) out of the 165 in each of the BND and BSD respectively. Overall, 186 (56.4%) of the 330 respondents had access to funds. Out of the 112 pregnant women in the BND who indicated their source of funds, majority 66 (58.9%) were from their personal savings followed by 44 (39.3%) from spouses or family members. In the BSD however, nearly all 48 (98%) of the 49 who indicated their source of funds were from personal savings and one (2%) from her spouse/family. Overall, 114 (70.8%) personally saved money.

In all, out of the 134 pregnant women who had no access to funds, about a fifth 26 (19.4%) intended to start saving money later on during the pregnancy. In the BND, half 19 (50%) of the 38 pregnant women who had no access to funds intended to save later on, compared to seven (7.3%) in the BSD.

Majority 88 (98.9%) of the 89 pregnant women in BSD who did not intend to save money intended to depend on their valid NHIS or the free maternal healthcare compared to two (11.1%) in the BSD. In the BND however, half 9 (50%) said they could not save due to unemployment or lack of income, whilst the rest gave other reasons.

Table 4.5.1 Access to funds by pregnant women in the BND and BSD

		BND		BSD		Total	
		Freq.	% of BND	Freq.	% of BSD	Freq.	% of Total
Access to funds towards childbirth	Yes	121	73.3	65	39.4	186	56.4
	No	44	26.7	100	60.6	144	43.6
Total		**165**	**100**	**165**	**100**	**330**	**100**
Source of funds	Personal savings	66	58.9	48	98.0	114	70.8
	Spouse/family	44	39.3	1	2.0	45	28.0
	Other	2	1.8	0	0.0	2	1.2
Total		**112**	**100**	**49**	**100**	**161**	**100**
Intention to save money	Yes	19	50.0	7	7.3	26	19.4
	No	19	50.0	89	92.7	108	80.6
Total		**38**	**100**	**96**	**100**	**134**	**100**
Reason for not securing money for childbirth	NHIS/free healthcare	2	11.1	88	98.9	90	84.1
	No income	9	50.0	1	1.1	10	9.3
	Other	7	38.9	0	0.0	7	6.6
Total		**18**	**100**	**89**	**100**	**107**	**100**

Source: Field work.

Table 4.5.2 below, shows that pregnant women in the BND were four times more likely to save/secure funds towards childbirth and complications compared to those in the BSD (OR = 4.23; 95% CI = 2.66, 6.74; p < 0.001).

Table 4.5.2 Comparison of access to funds by pregnant women in the BND against BSD

District of Residence	Access to funds (Securing/saving money)	
	P-value	**Odds ratio (95% CI)**
BND	<0.001	4.23 (2.66-6.74)
BSD		1

Source: Field work.

4.6 Planning to utilise skilled birth attendance

As presented in table 4.6.1 below, out of the 165 pregnant women in each district, nearly all 163 (98.8%), 164 (99.4%) and 327 (99.1%) in the BND, BSD

and overall respectively, had identified an SBA to assist them during delivery. Almost all the pregnant women in the BND 158 (97.6%) and in the BSD 162 (99.4%) who identified SBAs chose either a doctor, nurse or midwife.

Moreover, majority 140 (89.1%) of the 157 pregnant women in the BND indicated that their choices of SBAs were informed by the skills or friendliness of the service providers, compared to 153 (97.5%) of those in the BSD. Affordability/providers' acceptance of NHIS cards influenced the choices of seven (4.5%) and four (2.5%) pregnant women in the BND and BSD respectively. Other reasons accounted for 10 (3.2%) overall.

In addition, majority 126 (77.8%) of the 162 decision makers on the use of SBA in the BND and 144 (87.8%) of the 164 in the BSD were the pregnant women themselves. Husbands were the second major decision makers on the use of SBA in the BSD 20 (12.2%) but not in the BND 14 (8.6%). Out of the three people who did not plan for an SBA, two (66.7%) intended to identify an SBA later on during the pregnancy. The sole remaining pregnant woman who did not and would not be identifying an SBA, indicated that she did not know its importance.

Table 4.6.1 Planning to use SBA by pregnant women in BND and BSD

		BND		BSD		Total	
		Freq.	% of BND	Freq.	% of BSD	Freq.	% of Total
Has identified a SBA	Yes	163	98.8	164	99.4	327	99.1
	No	2	1.2	1	0.6	3	0.9
Total		**165**	**100**	**165**	**100**	**330**	**100**
Type of SBA	Doc./Nurse/ midwife	158	97.6	162	99.4	320	98.5
	Other	4	2.4	1	0.6	5	1.5
Total		**162**	**100**	**163**	**100**	**325**	**100**
Reason for chosen birth assistant	Affordable/accepts NHIS	7	4.5	4	2.5	11	3.5
	Skill/friendliness	140	89.1	153	97.5	293	93.3
	Other	10	6.4	0	0.0	10	3.2
Total		**157**	**100**	**157**	**100**	**314**	**100**
Decision maker on use of SBA	Respondent herself	126	77.8	144	87.8	270	82.8
	Husband	14	8.6	20	12.2	34	10.5
	Others	22	13.6	0	0.0	22	6.7
Total		**162**	**100**	**164**	**100**	**326**	**100**

Source: Field work

Table 4.6.2 below show no statistically significant association between pregnant women district of residence and planning to use an SBA (OR = 0.42; 95% CI = 0.10, 1.65; p = 0.265).

Table 4.6.2 Comparison of plans to use SBA by pregnant women in the BND against the BSD

District of Residence	Planning to use an SBA (Doctor/nurse/midwife)	
	P-value	Odds Ratio (95% CI)
BND	0.265	0.39 (0.08-2.04)
BSD		1

Source: field work.

4.7 Knowledge of danger signs in pregnancy/labour

In Table 4.7.1 below, the results show that majority 147 (89.1%) and 160 (97%) of the 165 pregnant women in each of the respective BND and BSD ever heard of danger signs in pregnancy or labour. However, 140 (84.9%) in the BND could mention three or more danger signs compared to 81(49.1%) in the BSD and 221 (67%) overall. Out of the 165 pregnant women in each district, 147 (89.1%) of those in the BND could mention at least one danger sign in pregnancy/labour compared to 144 (87.3%) in the BSD. A little over a tenth 18 (10.9%) in the BND and 21 (12.7%) in the BSD could not mention any danger sign. Out of those who ever heard of the danger signs, about two-thirds 97 (69.3%) of the 140 in the BND compared to almost all 131 (99.3%) of the 132 in the BSD got the information from health workers or at ANC. The rest, 43 (30.7%) in the BND and one (0.7%) in the BSD got their information from other sources.

Table 4.7.1 Knowledge of danger signs among pregnant women

		BND		BSD		Total	
Danger signs in pregnancy or labour		**Freq.**	**% of BND**	**Freq.**	**% of BSD**	**Freq.**	**% of Total**
Ever heard of danger signs	Yes	147	89.1	160	97	307	93
	No	18	10.9	5	3	23	7
Total		**165**	**100**	**165**	**100**	**330**	**100**
Number of danger signs mentioned	0	18	10.9	22	13.3	40	12
	1-2	7	4.2	62	37.6	69	21
	3 or more	140	84.9	81	49.1	221	67
Total		**165**	**100**	**165**	**100**	**330**	**100**
Source of Information on Danger signs	Health worker/ANC	97	69.3	131	99.3	228	83.8
	Others	43	30.7	1	0.7	44	16.2
Total		**140**	**100**	**132**	**100**	**272**	**100**

Source: Field work.

Figure 4.7.1 below shows that the commonest danger signs of pregnancy or labour mentioned by the pregnant women was bleeding in pregnancy. In the BND 100 (68%) of the 147 mentioned bleeding compared to 47 (32.9%) of 144 in the BSD. Danger signs including severe abdominal pain 12 (8.2%) against 41 (28.7%); severe headache five (3.4%) against 28 (19.6%); and oedema three (2%) against 14 (9.8%) were mentioned by pregnant women in the BND against the BSD respectively. Other danger signs were mentioned by 27 (18.4%) in the BND and 13 (9.1%) in the BSD.

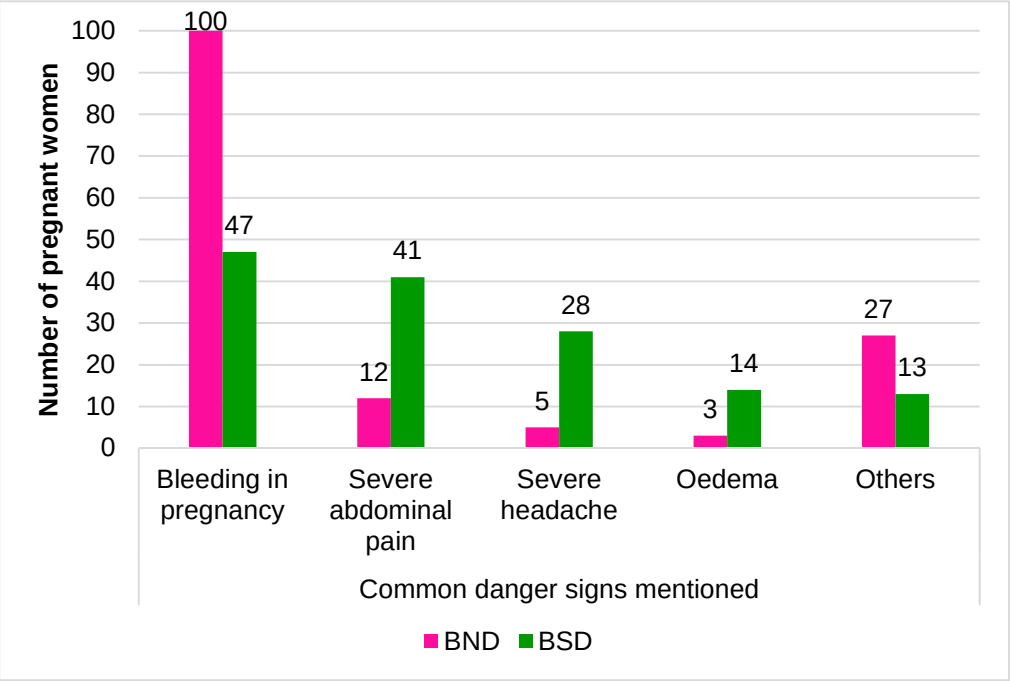

Figure 4.7.1 Commonly cited danger signs in pregnancy or labour

Source: Field work.

From Table 4.7.2 below, pregnant women residing in the BND were nearly six times more likely to know at least three danger signs compared to pregnant women in the BSD (OR = 5.807; 95% CI = 3.44, 9.80; $p < 0.001$).

Table 4.7.2 Comparison of knowledge of danger signs by pregnant women in the BND against BSD

District of residence	Knowledge of 3 or more danger signs in pregnancy/labour	
	P-value	Odds ratio (95% CI)
BND	<0.0005	5.807 (3.44-9.80)
BSD		1

Source: Field work.

4.8 Level of BPCR among pregnant women in the BND and the BSD

Table 4.8.1 below shows that majority of pregnant women 134 (81.2%) in the BND against 81 (49.1%) in the BSD, planned for four or more BPCR indices. The indices included ANC attendance, identification of SBA, transportation, access to funds and knowledge of danger signs. Unlike the BND, where less than a fifth 26 (15.8%) prepared on any three BPCR indices, nearly a third 46 (27.9%) of pregnant women in the BSD prepared on any three BPCR indices. Overall, 41 (12.4%), 72 (21.8%) and 215 (65.2%) prepared on any two, any three and at least four BPCR indices respectively.

Table 4.8.1 Number of BPCR indices prepared by pregnant women

		BND		BSD		Total	
		Freq.	% of BND	Freq.	% of BSD	Freq.	% of total
Number of BPCR indices prepared	Any 1	0	0	2	1.2	2	0.6
	Any 2	5	3	36	21.8	41	12.4
	Any 3	26	15.8	46	27.9	72	21.8
	Any 4+	134	81.2	81	49.1	215	65.2
Total		**165**	**100**	**165**	**100**	**330**	**100**

Source: Field work.

4.9 Differences of BPCR in the BND against the BSD

Based on the pre-set criteria that a pregnant woman must plan for any four or more BPCR indices to be considered prepared, Table 4.8.2 below shows a statistically significant association between the district of residence and BPCR. Pregnant women in the BND were at least four times more likely to be prepared for birth and complications compared to those in BSD (OR = 4.483; 95% CI = 2.731, 7.359; $p < 0.001$). Additionally, due to the relatively larger proportion of younger pregnant women in the BSD (19.4%) compared to the 7.3% in the BND, and the fact that only the BND had pregnant women above 40 years old (1.8%), age was adjusted as a possible confounder. After adjusting for age, pregnant women in the BND remained over four times more likely to be prepared for birth and complications compared to those in the BSD (AOR = 4.211; 95% CI = 2.551, 6.952; $p < 0.001$).

Table 4.8.2 Comparison of BPCR by pregnant women in the BND against the BSD

	Being prepared (preparing on 4 or more BPCR indices)			
District of Residence	**P-value**	**Crude Odds ratio (95% CI)**	**P-value**	**Age-adjusted Odds ratio (95% CI)**
BND	<0.001	4.483 (2.731-7.359)	<0.001	4.211 (2.551-6.952)
BSD		1		1

Source: Field work.

4.10 Determinants of BPCR among pregnant women in BND and BSD

The factors associated with BPCR are based on the overall sample. As presented in table 4.9.1 below, the results were adjusted for age, to reduce the possibility of it confounding the results. This was necessary because pregnant women

above 40 years were found only in the BND. The study found no statistically significant association between pregnant women who were married or in a union and BPCR (OR = 3.890; 95% CI = 0.954, 15.854; P = 0.058) and the results did not change after accounting for age.

Without adjusting for age, pregnant women who were teachers by occupation were about 10 times more likely to be prepared for birth and complications compared to those who were not employed (OR = 10.345; 95% CI = 2.339, 45.762; P = 0.004). After adjusting for age teachers were nearly nine times more likely to be prepared for birth and complications (AOR = 8.897; 95% CI = 1.996, 39.657; P = 0.002). Similarly, those who were traders/artisans by occupation were nearly three times more likely to be prepared for birth and complications compared to the unemployed (OR = 2.713; 95% CI = 1.353, 5.437; P = 0.005). After controlling for age, traders/artisans were twice more likely to be prepared for birth and complications compared to the unemployed (AOR = 2.369; 95% CI = 1.167, 4.809; P = 0.017).

On the other hand, there was no statistically reliable association between pregnant housewives/farmers and being prepared for birth and complications (P = 0.330) and after adjusting for age (P = 0.1490). The study also showed no statistically significant association between multiparous or primiparous pregnant women and being prepared for birth and complications (P = 0.776 and P = 0.906 respectively). Additionally, there was no statistically significant association between pregnant women at gestational age 4-6 months and BPCR (AOR = 0.846; 95% CI = 0.443, 1.613; P = 0.0611).

When age was accounted for, women who were in their third trimester of pregnancy were over three times more likely to be prepared for birth and

complications compared to those in their first trimester of pregnancy (AOR = 3.281; 95% CI = 1.631, 6.601; P = 0.001).

The study further found statistically significant association between ANC attendance and being prepared for birth and complications. After adjusting for age, every additional ANC attended by a pregnant woman, makes her 26.9% more likely to prepare for ANC (AOR = 1.269; 95% CI = 1.116, 1.443; P < 0.001).

There was statistically significant association between BPCR and all levels of education attained by pregnant women. After adjusting for age, pregnant women who attained tertiary, secondary and primary education were about six times, four times and twice more likely to prepare for birth and complications compared to those who had no education (AOR = 5.762; 95% CI = 2.108, 15.754; P = 0.001), (AOR = 4.229; 95% CI = 2.234, 8.003; P < 0.001) and (AOR = 1.884; 95% CI = 1.015, 3.498; P = 0.045) respectively.

Finally, before adjusting for age as a possible confounder, pregnant women who knew three or more danger signs in pregnancy/labour were over nine times more likely to be prepared for birth and complications compared to those who did not know up to three danger signs of pregnancy/labour (OR = 9.438; 95% CI = 5.593, 15.927; P < 0.001). After adjusting for age as a possible confounder, the association between knowledge of at least three danger signs in pregnancy/labour and BPCR remained statistically significant (AOR = 9.272; 95% CI = 5.472, 15.712; P < 0.001).

Table 4.9.1 Determinants of BPCR in the BND and BSD

	Being Prepared for Birth and Complications			
Variable	**P-value**	**Crude Odds Ratio (95% CI)**	**P-value**	**Age-Adjusted Odds Ratio (95% CI)**
Marital Status:				
Married/Union	0.058	3.890 (0.954-15.854)	0.086	3.459 (0.839-14.263)
Not married/union		1		1
Occupation:				
Housewives/farmers	0.330	0.759 (0.435-1.323)	0.149	0.654 (0.367-1.165)
Teachers	0.002	10.345 (2.339-45.762)	0.004	8.897 (1.996-39.657)
Traders or Artisans	0.005	2.713 (1.353-5.437)	0.017	2.369 (1.167-4.809)
Unemployed		1		1
Parity:				
Multiparous	0.174	1.447 (0.848-2.464)	0.776	0.908 (0.466-1.770)
Primiparous	0.650	1.152 (0.629-2.126)	0.906	0.962 (0.510-1.817)
Nulliparous		1		1
Gestational age:				
7-9 months	<0.0005	3.508 (1.754-7.017)	0.001	3.281 (1.631-6.601)
4-6 months	0.628	0.853 (0.449-1.621)	0.611	0.846 (0.443-1.613)
1-3 months		1		1
Number of ANC attendance:				
ANC attendance	<0.001	1.288 (1.135-1.42)	<0.001	1.269 (1.116-1.443)
Level of Education:				
Tertiary	<0.001	6.039 (2.222-16.415)	0.001	5.762 (2.108-15.754)
JHS/SHS/Middle	<0.001	3.328 (1.810-6.119)	<0.001	4.229 (2.234-8,003)
Primary	0.056	1.805 (0.986-3.305)	0.045	1.884 (1.015-3.498)
No Education		1		1
Knowledge of danger signs in pregnancy/labour:				
Knows 3 or more	<0.001	9.438 (5.593-15.927)	<0.001	9.272 (5.472-15.712)
Knows less than 3		1		1

Source: Field work.

CHAPTER FIVE

DISCUSSIONS

5.1 Introduction

In this chapter, the study results are interpreted and compared with similar studies in Ghana and elsewhere and the implications discussed. It starts with the description of the socio-demographic and obstetric characteristics of the study participants. As in the conceptual framework, BPCR indices are then discussed. Finally, the discussion follows the objectives of the study first two objectives under the heading differences in BPCR in the BND against the BSD and concluding with the determinants of BPCR.

5.2 Socio-demographic and obstetric characteristics of respondents

About half of the pregnant women in both districts were 25 years or less. About a fifth of the pregnant women in the BSD were teenagers (15-19 years), which is at least 12% more than those in the BND. This might indicate the need for increased contraceptive education and availability for adolescents in the BSD as most of them may have unmet need for contraception. It may also underscore the need for education on early marriage and teenage pregnancy in the BSD. Pregnant women who were at least 25 years in the BND were more than those in the BSD (63% against 55.8% respectively).

Whereas the proportion of gravida-2-para-1 women was about the same in both districts (24% of the BND and 25% of the BSD), there were more multiparous pregnant women in the BND (48%) compared to the BSD (45%). There was a higher proportion of nulliparous pregnant women or primigravidae in the BSD

(30.9%) compared to those in the BND (27.3%) partly due to the higher proportion of teenagers among those in the BSD.

Furthermore, nearly all pregnant women were married or in a union (95.8% and 98.8% in the BND and the BSD respectively). This is higher than the 51% and 56% marriage among females aged 12 years and older in the BSD and the BND respectively (GSS, 2014b; 2014c). This suggests that pregnant women are more likely to be married compared to the general population.

Majority (75.6%) of pregnant women in the BND and less than half (40.2%) of the BSD had at least primary education, which is higher than their respective female literacy rates of 47.4% and 35% (GSS, 2014b; 2014c). This could mean that most of the pregnant women were previously students. This also suggest inequity in access to education as the BSD, which is more rural has less literate pregnant women compared to the relatively more urban BND.

Finally, a third of the pregnant women in the BND (33%) were either traders or artisans compared to a tenth (12.8%) of the BSD. Nearly half of those in the BSD were farmers/housewives (48.1%) compared to less than a fifth (18.3%) of the BND. The larger proportion of farmer/housewives in the BSD compared to the BND may be due to the relatively more rural nature of the BSD. Moreover, the farmers among them are fewer than the general population engaged in agriculture partly because most women lack the land and other inputs to cultivate their own farms. It is also likely that some housewives and subsistent farmers may have identified themselves as unemployed because they usually offer unpaid labour.

5.3 Antenatal attendance

The study found that 65.4% of pregnant women in the BND were in their third trimester whereas majority (55.8%) of those in the BSD were in their second trimester. This means that majority of them had at least four months to plan for birth and complications.

Furthermore, majority of pregnant women in the BND (95.2%) and in the BSD (98.8%) had attended ANC at least once, which is about the same as their respective districts' ANC coverage (MoH, GHS, 2016b). The study's reliance on ANC cards or laboratory results for evidence of pregnancy and inclusion may have also led to a selection bias in favour of ANC attendees. Nonetheless, the study did not find any statistically significant difference between district of residence and ANC attendance ($P>0.05$). About a third of pregnant women in each district intended to receive nine ANCs, which indicates that the pregnant women may be ready to comply with the WHO (2016c) recommendations. Majority (91.7% and 65.6%) of those in the BND and the BSD respectively, received at least three ANCs in accordance with the existing MoH recommendations. This suggest that more education is needed to get more pregnant women to attend the minimum of eight ANCs.

Although the proportion of pregnant women who did not attend ANC in the BSD (1.2%) is similar to the 1.5% found by Kuganab-Lem et al. (2014), the BND's 4.8% is four times higher. This could be due to lower ANC coverage in the BSD compared to the BND. The most prominent reason why pregnant women did not attend ANC was due to taboos or religious barriers (60% overall). An FGD in Siniensi in the BND revealed that a taboo (called "*nyarik*" in the Buli dialect) prohibited the pregnant woman from "*taking her pregnancy outside*" (disclosing

its presence) until the household head performs certain rites. They believed that violating the taboo could lead to spontaneous abortions, which is often blameable on the pregnant woman. When this rite is delayed, the pregnant women tend to initiate ANC late or avoid ANC altogether and any public discussion of their pregnancies. Moreover, from all the other FGDs, financial cost, poor attitude of health workers and lack of health facilities in communities were cited as barriers to accessing ANC. Indirect costs such as transportation and under-the-table charges were also cited as disincentives for ANC attendance and facility delivery.

Majority of pregnant women in the BSD received their first ANC in the first month of pregnancy but those in the BND tend to report in the second month of gestation. Those who received their first ANC in the second trimester or later were 34 (21.7%) and 10 (6.1) in the BND and BSD respectively, which makes them unlikely to receive the recommended minimum of eight ANCs (WHO, 2016c). Overall, the study found no difference between district of residence and ANC attendance ($P > 0.05$). This could be due to the fact that neither districts lacked the minimum number of health workers to deliver ANC services or because the study sample size was relatively small.

5.4 Planning for transportation

More than three-quarters of pregnant women in the BND planned for transportation to the place of childbirth compared to a little over half of their colleagues in the BSD (77.8% against 52.1% respectively). Although the finding from the BND was higher than the 53.3% found by Kuganab-Lem et al. (2014), that of the BSD is similar. The findings from both districts are however higher

than the 7.7% and 18.1% discovered among pregnant women in Ethiopia by Hailu, et al. (2011) and Gebre et al. (2015) respectively. The differences in the findings may be due to different levels of literacy, income or availability of transportation options.

The commonest type of transportation in both districts was private motorcycle (55% and 65.9% of BND and BSD respectively). Although the motorbikes are not convenient means of transportation for women in labour, the women say they have few commercial options. Contrary to Poku-Boansi et al. (2010), this study found that fewer pregnant women planned to travel to their place of childbirth on foot, by bicycle or by other non-vehicular means (37.5% and 4.8% of the BND and BSD respectively). The differences may be partly attributable to increased availability of private motorcycles, and partly because most of them stay quite far from the health facility. Majority of those who did not plan for transportation, however, resided closed to the place of delivery.

The study also found that pregnant women in the BND were about three times more likely to plan for transportation compared to the BSD ($p < 0.0005$). FGD findings revealed that pregnant women in the BND had more access to alternative means of transportation compared to those in the BSD. For example, pregnant women in Kalijiisa community in the BND had access to a community-owned and managed ambulance (commonly called *motorking*). Others in the BND mentioned access to the Ghana Ambulance Services and the district hospital's ambulance, which were absent in the BSD. The in-depth interviews in both districts indicated that transportation challenges included poor road network, poor telecommunication network, frequent breakdown of vehicles and the inability of some pregnant women to pay the ambulance fee. Most pregnant

women (53.5% and 86.2%) in BND and BSD respectively, chose their mode of transportation simply because it was available. This means that some may be willing to pay if commercial transportation services are available.

Majority of pregnant women in the BND (73.2%) made their own decisions on transportation, which contrasts with the 72.1% in the BSD whose husbands' make the decisions. This may be due to the fewer transport options or less autonomy of women in the BSD compared to the BND. This may also explain why fewer pregnant women in the BSD planned for transportation compared to the BND.

5.5 Access to funds

Majority (73.3%) of the pregnant women in the BND had access to funds for childbirth and complications compared to less than half (39.4%) of the BSD. This study also found that pregnant women in the BND were at least four times more likely to have access to funds compared to those in the BSD ($P < 0.05$). Although the finding in each district is at variance with the 54.1% and 46% found by Gebre et al. (2015) and Kuganab-Lem et al. (2014) respectively, the average of both districts (56.4%) is about the same as Gebre et al. (2015). The larger proportion of the usually unpaid housewives/farmers together with the unemployed in the BSD (totalling 82.1%) compared to 43.7% of the BND, may explain the differences in access to funds between the districts. Another reason is that 39.3% of pregnant women in the BND compared to 2% in the BSD were funded by their spouse/family members. The spousal financial support in the BND is more than double the 18% found in Nigeria by Obi et al. (2013). This suggests that family support is essential in BPCR among pregnant women. For

example, half (50%) of those in the BND who did not have access to funds cited lack of income as the reason for not saving for birth and complications. In the BSD, nearly all (98.9%) of the pregnant women who had no access to funds intended to depend on their NHIS or the free maternal services. This means that financial support from their families or spouses could empower them economically.

5.6 Planning to use a skilled birth attendant

Nearly all of the pregnant women had planned to use skilled birth assistance (98.8% against 99.4% in the BND and BSD respectively). However, in Ghana, only doctors/nurses/midwives may be considered as SBAs because their trainings are consistent with the WHO (2015c) definition of SBAs. Accordingly, nearly all those who planned to use skilled birth attendance actually identified an SBA (97.6% and 99.4% of the BND and BSD respectively). These findings are at least twice the 38% found among postpartum women in rural Ghana (Kuganab-Lem, et al., 2014) and nearly 10 times the 10.7% among pregnant women in Ethiopia (Gebre et al., 2015). In reality, most pregnant women in rural Ghana tend to deliver without SBAs, which means that studies among postpartum women offer a truer reflection of SBA-related behaviour than among pregnant women. That notwithstanding, ANC and skilled birth attendance data from both districts show that about half of women who attend ANC eventually deliver without the help of SBAs. For example, in 2016, 79.5% and 79% of pregnant women in the BND and the BSD respectively, had at least four ANC visits. However, skilled birth attendance for the respective BND and BSD dropped to 47.1% and 34.5% in the same year. This means that about two out of

every five ANC attendees in the BND and more than half of those in the BSD delivered outside health facilities, despite several contacts with the healthcare delivery system during pregnancy. This suggest inadequate follow-ups by midwives prior to delivery, clients' perceived poor quality of skilled birth attendance or that the healthcare delivery system is not responsive enough to meet the needs of women in labour. This appears to be supported by the fact that there was no statistically significant difference between the two districts and identification of an SBA ($P > 0.05$).

The main reason for their choice of SBA was due to providers' skills or friendliness (89.1% against 97.5% in the BND and BSD respectively). The decisions to use SBA were mostly made by the pregnant women (82.2% overall). Thus, the potentially huge demand for doctors/nurses/midwives indicate that pregnant women may have appreciated the importance and quality of SBA. More than half of those who had not decided on SBA intended to make the decision later on in the pregnancy.

5.7 Knowledge of danger signs in pregnancy or labour

Majority of pregnant women were aware/heard of danger signs in pregnancy/labour (89.7% against 97% in the BND and BSD respectively). However, 84.9% of pregnant women in the BND compared to less than half (49.1%) of the BSD could mention at least three such danger signs. Whereas findings in the BND is closed to Sabageh et al. (2017) finding of 70.8%, that of the BSD is nearly the same as Koenig et al. (2007) findings of 42%. Overall, 84.8% said their main source of information on the danger signs were from nurses or ANCs. The evidence also shows that pregnant women in the BND

were over six times more likely to know at least three danger signs in pregnancy/labour compared to those in the BSD ($P < 0.001$). This is attributed to the relatively higher proportion of literate pregnant women in the BND.

5.8 Differences in BPCR among Pregnant women in the BND and BSD

Although BPCR should not be seen as an end in itself, it is an indispensable means to achieving reduction in the risk of maternal and neonatal mortality and morbidity. This makes the BPCR concept more important as Ghana strives to achieve SDG 3.1 and 3.2.

First, the study revealed that majority of pregnant women in the BND and about half of those in the BSD had planned for at least four BPCR indices, the criteria for determining BPCR. More than four-in-five pregnant women in the BND (81.2%) compared to about half (49.1%) of the BSD were prepared for birth and complications. Both findings exceed the one-in-four found by Kuganab-Lem et al. (2014) among postpartum women. This study's finding of higher proportion of BPCR compared to Kuganab-Lem et al. (2014) may partly be attributed to recollection bias, which is inherent in the latter's research as their primary population were postpartum women. For example, at the time of the study, some postpartum women may have forgotten most of the BPCR indices that they had planned prior to childbirth.

On the other hand, the finding in the BND is consistent with Sabageh et al. (2017) findings of 82.1% preparedness among pregnant women in Nigeria. The differences in level of BPCR between the BND and the BSD may be attributed to the differences in the effectiveness of the healthcare delivery systems in their respective districts. The BSD is particularly younger in age and less developed

with inadequate infrastructure and skill mix of health workers compared to the BND. For example, unlike the BND, BSD has no district hospital and no doctor. Thus, although the doctor, nurse and midwife to population ratio in the BSD may be adequate the district lacks adequate skill-mix of human resource for health and the necessary resources to effectively support pregnant women on BPCR.

Secondly, the study found that pregnant women in the BND were at least twice more likely to prepare for birth and complications compared to those in BSD ($P < 0.05$). Moreover, due to the relatively larger proportion of younger pregnant women in the BSD (19.4%) compared to the 7.3% in the BND, and the fact that only the BND had pregnant women above 40 years old (1.8%), age was adjusted as a possible confounder. This was necessary because several studies including Sabageh et al. (2017) found age as a strong predictor of BPCR. This study results, however, remained almost unchanged after adjusting for age ($p < 0.05$). The higher proportion (75%) of literate pregnant women in the BND, compared to 40.2% of the BSD and the 56.7% found by Kuganab-Lem et al. (2014) may explain the higher likelihood of BPCR in the BND. Moreover, majority of the pregnant women in the BSD were either unemployed or farmers/housewives who perform unpaid labour and may not have access to funds and transportation, which are interlinked with access to ANC and use of SBA. The financial support that pregnant women in the BND receive from their spouse/family members may have facilitated their BPCR.

Although not part of the objectives of this study, it is worth noting that the findings do not suggest that the lower iMMR of the BSD is associated with any higher BPCR compared to the BND. This means that factors other than BPCR

among pregnant women may have accounted for the disparities in maternal mortality between the two districts.

5.9 Determinants of BPCR among pregnant women in the BND and BSD

This study revealed that the main determinants of BPCR among pregnant women in the study area are teaching occupation, gestational age 7-9 months, ANC attendance, completing primary, secondary or tertiary education, and knowledge of at least three danger signs.

After controlling for age, pregnant women who were teachers were over eight times more likely to be prepared for birth and complications compared to the unemployed ($P < 0.05$). Teachers in Ghana are educated, which may explain the strong association between teaching and BPCR. Similarly, traders/artisans who also have access to income were almost trice more likely to be prepared for birth and complications compared to the unemployed. The difference remained statistically significant after adjusting for age ($P < 0.05$). The results appear to be in line with the findings of Kuganab-Lem et al. (2014), Debelew et al. (2014) and Urassa et al. (2012). However, unlike the previous studies, this study compared specific common occupations among pregnant women in the study area. This reduces the risk of ecological fallacy as this study found no statistically significant association between pregnant women who are housewives/farmers and BPCR ($P > 0.05$).

Pregnant housewives or farmers tend to perform unpaid domestic labour and may lack the income to help them attend ANC or pay for transportation to the place of childbirth, hence their inability to prepare adequately for birth and complications. This may also explain why some pregnant women may regard

the housewives and peasant farmers as unemployed. In addition, they may have no education, which is a known determinant of the BPCR. They are also more likely to reside in the rural areas where access to SBAs, transportation and ANC services are limited and the influence of taboos are stronger. This means that more attention should be paid to educating housewives and farmers on BPCR. It also suggests that women who are given formal teaching jobs may be in positions to prepare adequately for birth and complications, hence the need for girl-child education.

Contrary to the findings by similar studies in Ghana and elsewhere, (Debelew, et al., 2014; Kuganab-Lem, et al., 2014; Urassa, et al., 2012), this study found no statistically significant association between parity and BPCR. Neither primiparity nor multiparity were associated with BPCR ($P > 0.05$). This implies all pregnant women in both districts, irrespective of parity, need education on BPCR. It also suggests that experience in childbirth does not influence a pregnant woman's plan for childbirth and complications.

However, this study found statistically significant association between third trimester of pregnancy and BPCR ($P < 0.05$). Women who were 7-9 months pregnant were about three times more likely to prepare for birth and complications compared to pregnant women who were in their first trimester, even after adjusting for age. This could mean that pregnant women in the two districts prefer to wait until the last three months of pregnancy to plan towards birth and complications. Although there is no gestational limit to start BPCR, this finding suggests early planning for birth and complications should be added to ANC messages.

On the other hand, this study found no statistically significant association between second trimester of pregnancy and BPCR ($P > 0.05$). This may be partly explained by revelations during the FGDs that taboos preventing discussion of a pregnancy in early stages exist in the study area.

In line with Kuganab-Lem et al. (2014) and Bintabara et al. (2015), this study discovered that having an education, irrespective of the level, was associated with BPCR. Respectively, pregnant women who completed primary, secondary and tertiary education were about two times, four times and six times more likely to prepare for birth and complications compared to those without education ($P < 0.05$). This is also in conformity with studies by Musa and Amano (2016) and Sabageh et al. (2017) in Ethiopia and Nigerian respectively, which found statistically significant association between education of pregnant women and BPCR. This further suggests that efforts aimed at improving BPCR (and ultimately, maternal and child health) must not be limited to the health interventions, but should include broader social efforts aimed at educating females.

Additionally, similar to Kuganab-Lem et al. (2014), Musa and Amano (2016), Bintabara et al. (2015) and Sabageh et al. (2017) this study revealed that knowledge of at least three danger signs were associated with BPCR, even after controlling for age ($P < 0.05$). Pregnant women who knew at least three danger signs in pregnancy/labour were over nine times more likely to prepare for birth and complications compared to those who did not know up to three danger signs. Among the determinants of BPCR discovered by this study, knowledge of at least three dangers signs in pregnancy/labour is the strongest predictor of BPCR. This suggests that knowledge of potential risks and complications of

pregnancy/labour could motivate pregnant women to prepare for birth and complications. This also implies that most pregnant women who have BPCR plans may be able to identify danger signs and promptly execute their plans.

In a nutshell, this study revealed that majority of pregnant women in the BND and about half of those in the BSD were prepared for birth and complications. Teaching occupation, gestational age 7-9 months, primary, secondary or tertiary education, and knowledge of at least three danger signs in pregnancy or labour were the determinants of BPCR. However, parity, farmer/housewife occupation, second trimester gestation and marriage had no effect on BPCR among pregnant women in the study area.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents a summary of the main findings of the study, the study conclusions, the recommendations based on the findings presented earlier in chapter four and the future directions.

6.2 Summary of key findings of the study

This study found that there were differences in birth preparedness and complication readiness among pregnant women in the two districts. Majority of pregnant women (81.2%) in the BND and about half (49.1%) of their colleagues in the BSD were prepared for birth and complications.

Secondly, after controlling for age as a potential confounder, the study revealed that pregnant women in the BND were four times more likely to prepare for birth and complications compared to those in the BSD ($P < 0.05$). This suggests that the lower maternal mortality in the BSD is not associated with a relatively higher level of BPCR compared to the BND.

Finally, the study found that teaching occupation, third trimester pregnancy, primary, secondary and tertiary levels of education and knowledge of at least three danger signs in pregnancy/labour were determinants of BPCR among pregnant woman in the BND and BSD ($P < 0.05$). On the other hand, marriage, parity, being a housewife/farmer by occupation, first trimester and second trimester pregnancies were not predictors of BPCR among pregnant women in both the BND and BSD ($P > 0.05$).

6.3 Conclusions

Regarding the overall objective, the study found that there were indeed differences in the level of BPCR among pregnant women in the BND and those in the BSD.

On the first objective, the study found that majority (81.2%) of the pregnant women in the BND were prepared for birth and complications. That notwithstanding, a significant proportion remained less prepared for birth and complication. In addition, the study discovered that about half (49.1%) of pregnant women in the BSD were prepared for birth and complications. This means that half the population of pregnant women in the BSD were less prepared for birth and complication, thus they are exposed to the risk of delays in obstetric emergencies.

For objective two, the study found that pregnant women in the BND were four times more likely to prepare for birth and complications compared to those in the BSD ($P < 0.05$). The study attributes this to the relatively higher financial support that pregnant women in the BND receive from their spouses and families compared to those in the BSD. The study also suggests that inadequate skill mix of health staff, infrastructure and other resources in the BSD may be contributory factors. This implies that BPCR may not have played any significant role in creating the differences in maternal mortality of the two districts.

Finally, with regards to objective three, the study revealed that the determinants of BPCR among pregnant women in both districts were teaching occupation, third trimester pregnancy, having either primary, secondary or tertiary education and knowing at least three danger signs in pregnancy/labour ($P < 0.05$). However, marriage, parity, second trimester of pregnancy and

housewife/farming occupation, were not predictors of BPCR among pregnant women in both districts (P > 0.05).

6.4 Recommendations

The MoH, GHS and NGOs working on maternal health in the BND and BSD should intensify education on birth preparedness and complication readiness at ANC. However, priority in terms of resource allocation, should be given to the BSD where about half of the pregnant women are less prepared for birth and complications.

Secondly, the GHS should emphasise on danger signs in pregnancy or labour during ANC sessions, as it has the strongest potential of improving birth preparedness and complication readiness among pregnant women in both the BND and the BSD.

Finally, the MoH and the GHS should collaborate with the Ministry of Education, and the Ghana Education Service to advocate for the improvement of female education in both districts as teaching occupation and education are among the strongest predictors of BPCR by the pregnant women in the study area.

6.5 Future directions

BPCR plans by pregnant women are essentially intentions, which may be executed during labour or complications. A longitudinal study will be necessary to ascertain the feasibility and effectiveness of such plans during labour or complications.

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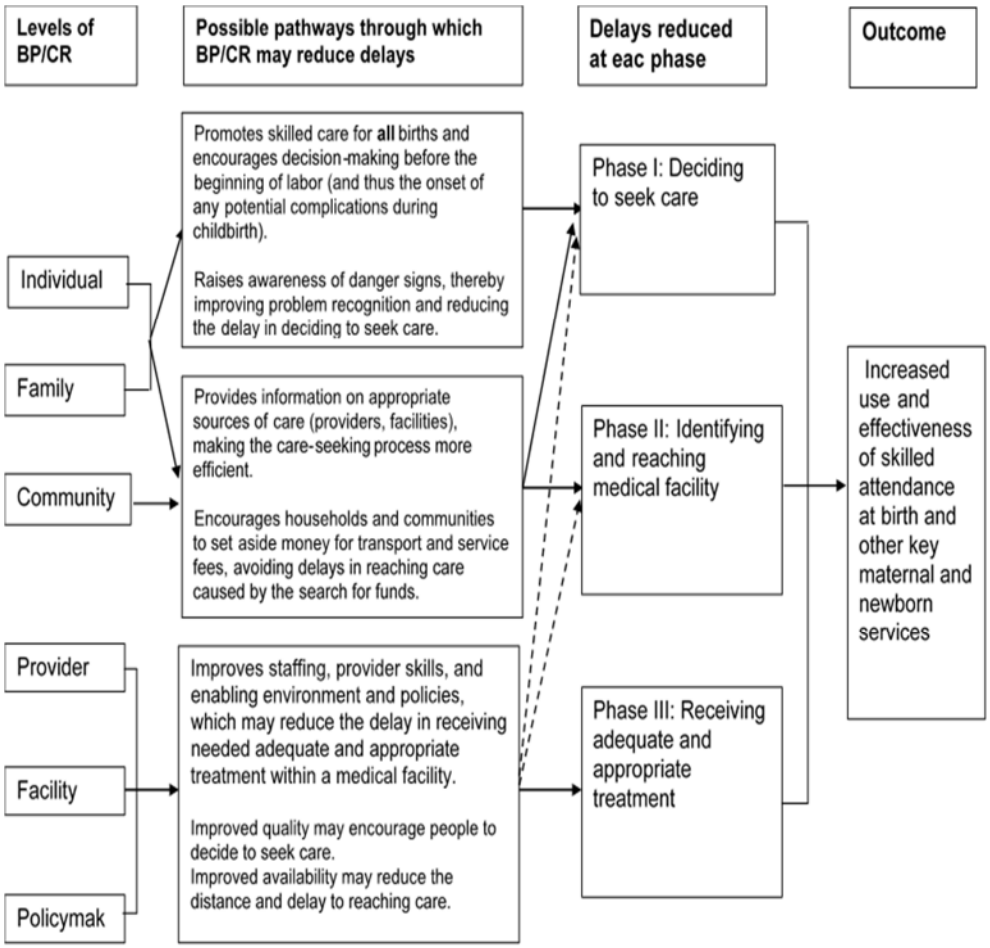
APPENDICES

APPENDIX A: THE JHPIEGO CONCEPTUAL DIAGRAM OF HOW BP/CR MAY INCREASE THE USE OF SKILLED CARE



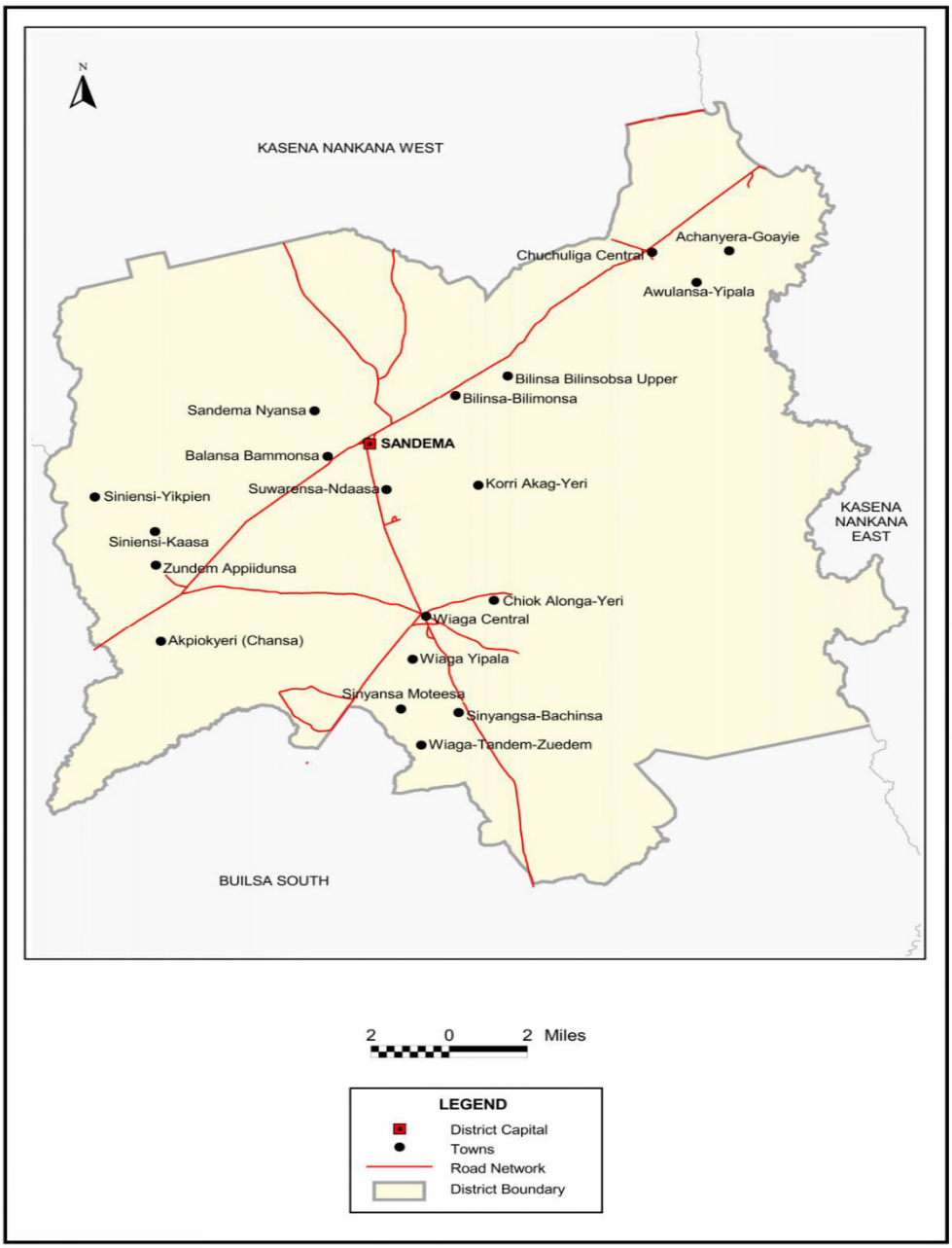
Source: JHPIEGO (2004b).

APPENDIX B: THE JHPIEGO BPCR INDICES IN PREGNANCY (COMMUNITY, FAMILY AND INDIVIDUAL / WOMAN LEVELS)

COMMUNITY	FAMILY	WOMAN
Advocates and facilitates preparedness and readiness actions.	*Supports pregnant woman's plans during pregnancy, childbirth and the postpartum period.*	*Prepares for birth, values and seeks skilled care during pregnancy, childbirth and the postpartum period.*
Supports and values the use of antenatal care Supports special treatment for women during pregnancy Recognizes danger signs and supports implementing the Complication Readiness Plan Supports mother- and baby-friendly decision-making for normal births and obstetric emergencies Has a functional transportation infrastructure for woman to reach care when needed Has a functional blood donor system Has community financing plan for obstetric emergencies Can access facility and community emergency funds Conducts dialogue with providers to ensure quality of care Dialogues and works together with provider on expectations Supports the facility that serves the community Educates members of the community about birth preparedness and complication readiness Advocates for policies that support skilled healthcare Promotes concept of birth preparedness and dispels misconceptions and harmful practices that could prevent birth preparedness and complication readiness	Advocates for skilled healthcare for woman Supports and values the woman's use of antenatal care, adjusts responsibilities to allow attendance Makes plan with woman for normal birth and complications Identifies a skilled provider for childbirth and the means to contact or reach the provider Recognizes danger signs and facilitates implementing the Complication Readiness Plan Identifies decision-making process in case of obstetric emergency Knows transportation systems, where to go in case of emergency, and support persons to accompany and stay with family Supports provider and woman in reaching referral site, if needed Knows supplies to bring to facility or have in the home Knows how to access community and facility emergency funds Has personal savings for costs associated with emergency care or normal birth Knows how and when to access community blood donor system Identifies blood donor	Attends at least four antenatal visits (obtains money, transport) Makes a birth plan with provider, husband, family Decides and acts on where she wants to give birth with a skilled provider Identifies a skilled provider for birth and knows how to contact or reach the provider Recognizes danger signs and implements the Complication Readiness Plan Knows transportation systems, where to go in case of emergency, and support persons to accompany and stay with family Speaks out and acts on behalf of her and her child's health, safety and survival Knows that community and facility emergency funds are available Has personal savings and can access in case of need Knows who the blood donor is

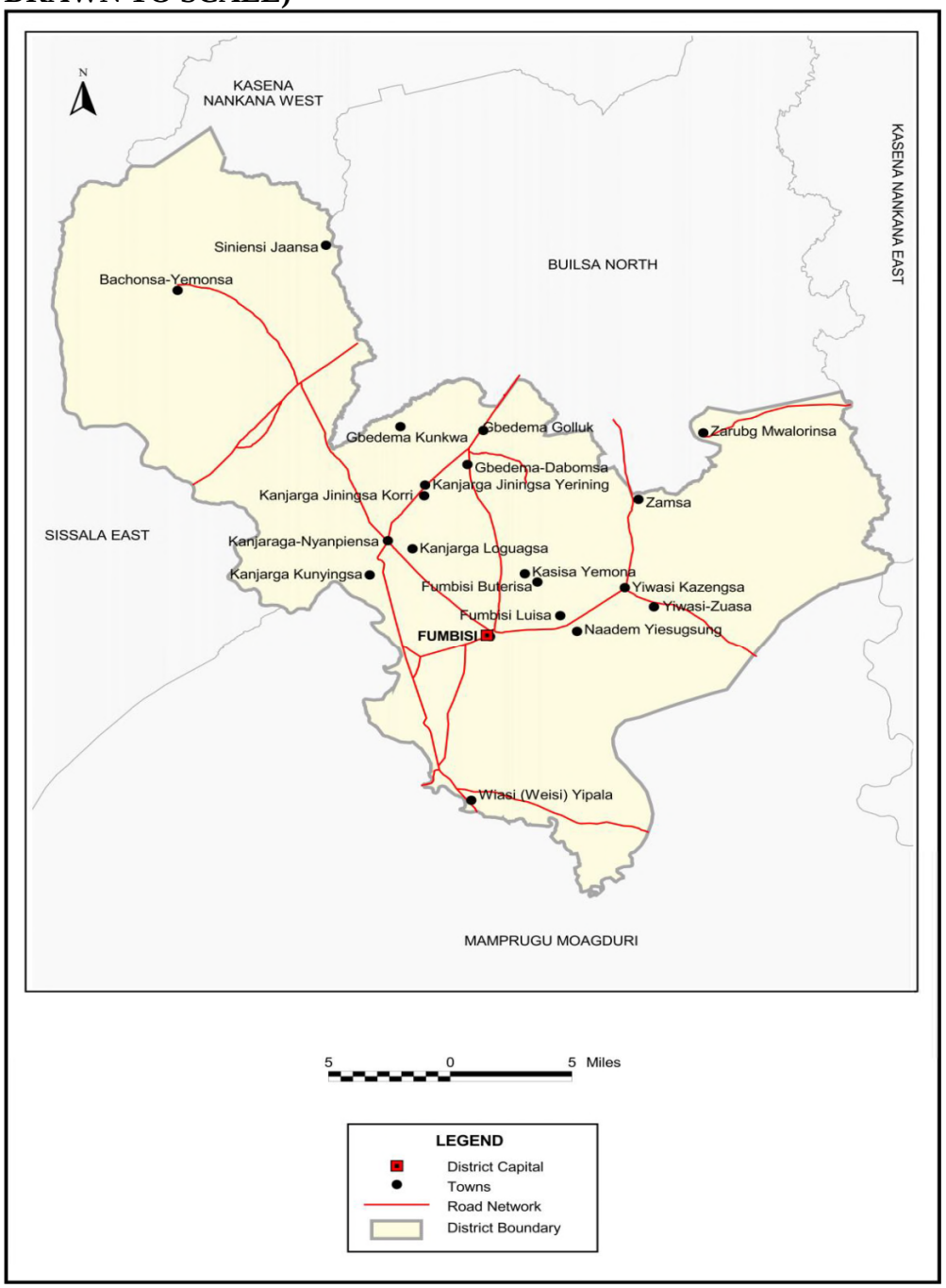
Source: JHPIEGO (2004a).

APPENDIX C: MAP OF THE BUILSA NORTH DISTRICT (NOT DRAWN TO SCALE)



Source: GSS (2014c).

APPENDIX D: MAP OF THE BUILSA SOUTH DISTRICT (NOT DRAWN TO SCALE)



Source: GSS (2014b).

APPENDIX E: STUDY QUESTIONNAIRE

QUESTIONNAIRE NUMBER: ☐☐ NAME OF INTERVIEWER: ……

NAME OF DISTRICT: ……... NAME OF SUB-DISTRICT: …….

DATE OF INTERVIEW: …… NAME OF COMMUNITY: ……...

Name of House: ……..…… Name of Household Head: ……..…...…..……

Please circle the appropriate code numbers for the responses; like this ①.

SECTION A: SOCIO-DEMOGRAPHIC AND OBSTETRIC INFORMATION			
Q#	**Question**	**Codes**	**Skip**
1.	Please, how old are you?	☐☐	
2.	Do you usually live in this household?	Yes…….1 No…….2	If 'NO' STOP the interview.
3.	Are you pregnant now?	Yes…….1 No……2	
4.	How many times have you delivered children before?	☐☐	
5.	Are you currently married, widowed, single, separated or divorced?	Single/never married. 1 Married/in union…....2 Widowed.....3 Divorced……....4 Other……..….5	
6.	What is the level of the last school you attended?	None.....1 Primary……..2 JHS/SHS/Middle…...3 Tertiary.....….4	
7.	What main work do you do for a living?	Unemployed…….....1 Housewife/Farmer.....2 Teacher...….....3 Trader/Artisan…....4 Other (specify).....5	
SECTION B: ANTENATAL (ANC) ATTENDANCE			
8.	How old is your pregnancy now? *(in months*).	☐☐	
9.	Have you seen any nurse for antenatal care during your current pregnancy?	Yes……..1 No……...2	If 'NO' skip to Q12
10.	How many months pregnant were you when you first received antenatal care for this pregnancy?	☐☐	
11.	How many ANCs have you attended already?	☐☐	

12.	Do you intend to see any nurse for ANC during your current pregnancy?	Yes……..……..1 No……..…..…….2	If 'NO' skip to Q14
13.	How many (more) antenatal visits do you plan to make during this pregnancy?	☐☐	
14.	Why don't you want to see any nurse for antenatal care during this pregnancy? *(Probe and record all responses - multiple responses allowed).*	Taboo/religion…..…..….1 No previous complications…2 Its costly…….…….3 Poor nurse attitude…… 4 No health facility in community ……5 Other (specify) ……..…..6	
SECTION C: SKILLED BIRTH ATTENDANCE			
15.	Have you identified a health worker to assist you deliver your child?	Yes……...…..…..1 No……....2	If 'NO' skip to Q19
16.	Which type of health worker have you decided to assist you deliver your baby?	Doctor/Nurse/midwife …1 Other (specify)…...……..2	
17.	Why did you choose that (*chosen in Q16 above*) type of SBA to assist you deliver your child? *(multiple responses allowed).*	Distance is shorter .....1 Cheaper/accept NHIS….2 No health workers……..3 SBA skill/friendliness…4 Other (specify) ……5	
18.	Who made the final decision about the worker to help you deliver your child?	Pregnant woman herself…1 Husband.....2 Mother/Father-in-law ……3 Other (specify)……..5	
19.	Do you intend to make your mind, later in this pregnancy, whether to use a nurse to deliver your child?	Yes……....1 No……..….2	If 'YES' skip to Q21
20.	Why don't you want to decide later in this pregnancy whether to nurse to help you deliver your baby? *(probe and record all responses)*	Don't know it's important .1 Cultural/religious……..2 Other (specify)……..3	
SECTION D: PLANNING FOR TRANSPORTATION			
21.	Have you identified a means of transportation to take you to the place you will deliver your child?	Yes……..1 No……...2	
22.	What is your chosen mode of transportation to the place where you will deliver your child?	Private vehicle……1 Commercial vehicle.....2 Bicycle/Donkey cart …..3 Other (specify)…….4	

23.	Who made the final decision about the mode of transport to the place of where you will deliver your child?	Pregnant woman herself .1 Husband.....2 Other (specify)……4	
24.	Why did you chose that mode of transportation to go to the place of delivery?	Least expensive……..1 It the means available …2 Other……...3	
25.	Do you intend to decide on a means of transportation to the place where you will deliver your baby?	Yes……....1 No…….……2	If 'YES' skip to Q27
26.	Why don't you want to decide on a means of transportation to the place of delivery? *(probe and record all responses).*	Place of birth is near……1 Want to deliver at home ..2 Taboo/religious reason …3 Other (specify)…….4	
SECTION E: ACCESS TO FUNDS			
27.	Have you saved or secured funds towards your child's birth or in case of complications?	Yes……..……1 No…….…..2	If 'NO' skip to Q29
28.	What's the source? *(Probe: multiple responses allowed)*	Personal savings….....1 Spouse/family member ...2 Other (specify) ……....3	
29.	Do you intend to speak with anyone outside of a health facility about (or on your own make) arrangements for funds/finances towards birth?	Yes……..1 No……2	If 'YES' skip to Q31
30.	Why don't you want to save or speak with anyone outside of a health facility about arrangements for funds towards birth? *(probe and record all responses)*	Has NHIS/free delivery ..1 No income/Unemployed 2 Other (specify)……3	
SECTION F: KNOWLEDGE OF DANGER SIGNS IN LABOUR/PREGNANCY			
31.	In your opinion, can unforeseen problems related to pregnancy/labour occur during any pregnancy/labour that could endanger the life of the woman or her unborned child?	Yes……..……1 No…….…..2 Don't know…….....3	If 'NO' thank her and end the interview
32.	In your opinion, what are some of the serious health problems that can occur during pregnancy/labour that could endanger the life of a pregnant woman or her unborned baby? *(probe and record all responses)*	Bleeding in pregnancy.....1 Severe headache…….....2 Severe abdominal pain …3 Swollen hands/face.....4 Other (specify)…….5	
33.	From who or where did you get the information on the danger signs in pregnancy/labour?	ANC/health worker…….1 Others…….……2	

THANK YOU FOR YOUR COOPERATION.

APPENDIX F: FOCUS GROUP DISCUSSION GUIDE (1 hour 30 minutes)

1. What support system does this community have for pregnant women (e.g. transportation or funds)?
2. Why do pregnant women delay planning for birth and possible complications?
3. How do you get transport to the health facility in emergencies?
4. How to you secure money for childbirth?
5. Why don't some women save money towards delivery?
6. What are the common taboos or rules for pregnant women in this community?
7. What are the commonest health problems for pregnant women?
8. What are the common health problems (complications) during childbirth/labour in this community?

THANK YOU ALL FOR YOUR TIME AND SACRIFICES

APPENDIX G: KEY INFORMANT INTERVIEW GUIDE FOR FACILITY MIDWIFE/NURSE IN-CHARGES OF REPRODUCTIVE AND CHILD HEALTH (RCH) UNIT OF THE DISTRICT HOSPITAL/FACILITY.

1. What is the GHS policy on BPCR education during ANC?
2. What topics/issues/indices of BPCR do you discuss during ANC?
3. What other preparations do pregnant women make towards birth/complication?
4. What do your facility do to attract pregnant women to patronise of skilled deliveries?
5. How are obstetric referrals done? How long does it take to refer a pregnant woman to the next higher facility?
6. Do women in labour pay any fees for the ambulance services in this district?
7. What are some of the direct and indirect financial cost at pregnancy and delivery?
8. What obstetric costs are not included by the NHIS and are frequently borne by the pregnant women in this district?
9. How do you communicate with pregnant women in your coverage area besides ANC?
10. What are some of the transportation challenges in this district?

THANK YOU FOR YOUR COOPERATION

APPENDIX H: INFORMED CONSENT FORM (JHPIEGO, 2004b)

Good morning/afternoon/evening. My name is David Aladago (*Interviewer*). I am a student of the University for Development Studies. You have been selected for the interview by means of a random or chance selection process, much like picking a mango out of a basket without looking. The results of this survey will be used for academic purposes only.

I would like to ask you a few questions if I may, but you can refuse to answer any question I ask. You may end the interview at any time. You can also refuse to participate in the study entirely. The interview will last approximately 1 hour. The information we collect from you will not be shown to anyone outside of this project. The information I collect will be put together and published, but will not contain your name or identity or any other participant. If you have any question about this study, you may ask me now or call me on 0243575290.

May I proceed with the questions? Yes/No

_____ Date _____

Name and signature of interviewee

_____ Date _____

Name and signature of interviewer