FACILITY-BASED DELIVERY IN GHANA:
A THREE-PART STUDY OF DRIVERS AND DETERRENTS

By

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DEDICATION

This research is dedicated to the millions of women around the world who have died in childbirth, for the millions of babies who have not lived to see their first birthdays, and for the families who have had to endure such tragedies.

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LIST OF ABBREVIATIONS

ANC – Antenatal Care

DHS – Demographic Health Survey

EmOC – Emergency Obstetric Care

FBD – Facility-Based Delivery

HCP – Health Care Provider

HDSS – Health and Demographic Surveillance System

SBA – Skilled Birth Attendance

TBA – Traditional Birth Attendant

GLOSSARY

Early Neonatal Mortality: Death of an infant within the first 7 days of birth.

Facility: Any building or structure in which health care is provided by trained professionals, where health care equipment and supplies are available, and the purpose of the building is to provide care – this includes such things as hospitals (national, provincial, district, municipal), health centers, health posts, dispensaries, and maternity centers.

Facility-Based Delivery: Delivery of an infant that occurs in a health care facility, including any type of building where health care is typically delivered by trained health care providers, e.g., community health center, clinic, regional hospital, tertiary care center, and where health care equipment and supplies are typically available.

Infant Mortality: Death of an infant within the first year of life.

Late Neonatal Mortality: Death of an infant between 7 and 28 days after birth.

Maternal Mortality: "The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes." - Tenth International Classification of Diseases

Neonatal Mortality: Death of an infant within the first 28 days after birth.

Skilled Birth Attendant: An accredited health professional (such as a midwife, doctor, or nurse) who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and

in the identification, management and referral of complications in women and newborns. (World Health Organization, 2004)

Skilled Birth Attendance: The process through which a woman is provided with adequate care during labor, birth, and the postpartum period, typically requiring both the presence of a skilled birth attendant and an enabling environment, including equipment, supplies, drugs, and the availability of transport for referral. (Bell et al., 2003)

Under-5 (U5) Mortality: Death of a child within the first 5 years of life. Note that U5 mortality figures are inclusive of infant and neonatal mortality figures.

ABSTRACT

Every year approximately 275,000 women die during and shortly after pregnancy, and 2.9 million infants die within the first month of their birth. One way to address both maternal and neonatal mortality is to ensure skilled obstetric care at the time of delivery, which is often achieved in sub-Saharan Africa by encouraging pregnant women to deliver their babies in health care facilities.

In this dissertation, the topic of "facility based delivery" (FBD) is explored through three separate studies. The first study is a systematic review of the research literature on FBD in sub-Saharan Africa, finding that maternal education, parity, rural/urban residence, household wealth, distance of the nearest facility, and number of antenatal care visits were the factors most consistently associated with FBD in this region.

The second study utilizes Ghana Demographic Health Survey (DHS) data from 2008 to examine access-related factors associated with FBD. The Five As of Access conceptual framework was used to guide analysis, and an additional category of "Social Access" was posited. The study focused on a weighted sample of 1102 women within the DHS who delivered an infant within the prior year. In multivariate analysis, affordability was the most important access barrier related to a woman's choice of delivery location. Availability, accessibility (with the exception of urban status), acceptability, and social access variables were not strong enough to remain significant in the final multivariate

models. However, social access may be working through maternal literacy, health insurance coverage, and household wealth.

In the third study, in-depth interviews and focus groups with 128 community members and 13 healthcare providers in northern Ghana were analyzed to explore the issue of maltreatment during FBD. Pursuant to the White Ribbon Alliance's 7 fundamental rights of childbearing women, respondents reported physical abuse, verbal abuse, neglect, and discrimination. One additional category of maltreatment identified in the data was denial of traditional practices. Unprompted, maltreatment was described by all types of interview respondents in this community, suggesting that the problem is not only widespread but that it is well-known to dissuade some women from seeking facility delivery.

In summary, simply encouraging more women to deliver in a facility is unlikely to achieve the desired result of healthier mothers and babies in sub-Saharan Africa. Future research, interventions, and policy experiments are needed that attempt to address the complex, multifaceted issues associated with facility-based delivery.

CHAPTER 1

Facility-Based Delivery in the Developing World: An Introduction

The United Nations Millennium Development Goals (MDGs) seek to reduce the under-5 child mortality by two-thirds and maternal mortality by three-quarters between 1990 and 2015. (UN, 2011) These goals, known as MDG 4 (child health) and MDG 5 (maternal health) have become critical targets for developing countries as they prioritize interventions and national health spending. Yet meeting MDGs 4 and 5 is proving challenging: mortality rates are decreasing, but not rapidly enough to meet the MDGs in most countries. (Rajaratnam et al., 2010; Hogan et al., 2010)

Approximately 275,000 women each year die during and shortly after pregnancy. (Lozano et al., 2011) While such numbers are encouraging in comparison to previous estimates that were nearly twice as high (WHO, 2008), it is noteworthy that 60% of the reductions in maternal mortality can be attributable to improvements in 7 countries: India, Ethiopia, Pakistan, Nigeria, Indonesia, China, and Afghanistan. (Lozano, et al., 2011) At the present pace, an estimated 96 countries in the world will take more than 20 years to reach MDG 5. Ghana, a small nation in West Africa, is not projected to meet MDG 5 until sometime after 2040. (Lozano et al., 2011)

Child health indictors have also improved substantially since the MDGs were originally developed. Yet currently, 7.2 million children under the age of 5 die each year,

40.3% in the first 28 days of life. In Ghana, for every 1000 live births, 25 infants do not survive past the first month. That compares to only 4 infants for every 1000 in the United States who do not survive 28 days after birth. (Lozano et al., 2011)

Maternal mortality (deaths associated with pregnancy)[*] and neonatal mortality (infant deaths within the first 28 days after birth)[†] have many causes. Two primary causes of maternal mortality include sepsis, a severe infection associated with non-sterile delivery, and hemorrhage, or unabated severe bleeding. Severe bleeding after birth can kill even a healthy woman within two hours if she is unattended. (WHO, 2008) The main direct causes of early neonatal deaths – or deaths that occur within the first 7 days – are preterm birth, severe infections, and asphyxia. (Bhutta et al., 2010) Such conditions, if treated rapidly and appropriately by knowledgeable health care providers, do not have to result in death.

One of the most important ways to address some of the key factors associated with both maternal and neonatal mortality is ensuring skilled obstetric care at the time of delivery. (Harvey et al., 2007; WHO, 2004) In the event of unexpected birth complications, which occur in approximately 1 out of every 10 deliveries, (Bacak et al., 2005) every moment of delay in receiving skilled care significantly increases the risks of stillbirth, neonatal death and maternal death. (Lee et al., 2009) It is estimated that having universal skilled birth attendance (SBA) could reduce maternal mortality by 13-33% and neonatal mortality 20-30% globally. (Graham et al., 2001; Darmstadt et al., 2005) Figure

[*] According to the Tenth International Classification of Diseases, maternal mortality consists of maternal deaths that are defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes."

[†] Neonatal mortality is defined as the death of an infant within the first 28 days after birth. Early neonatal mortality refers to deaths within the first 7 days of birth. Late neonatal mortality refers to deaths between 7 and 28 days after birth.

1.1 illustrates the relationship between skilled birth attendance and maternal mortality for 50 countries in the developing world, suggesting that the greater the percentage of skilled birth attendance in a country, the lower its maternal mortality rate. (Graham et al., 2001)

Definitions of Key Terms

A Skilled Birth Attendant is defined as an accredited health professional (such as a midwife, doctor, or nurse) who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management, and referral of complications in women and newborns. (World Health Organization, 2004) Skilled Birth Attendance (SBA), in contrast, requires not only the presence of a skilled attendant, but also an enabling environment in which the attendant works. This enabling environment, the components of which have not been explicitly defined, might include such things as equipment, supplies, medication, and the availability of transport for referral if necessary. (Bell et al., 2003) Given the limitations in terms of human resources, equipment, and supplies in most developing countries, SBA that includes both a well-trained attendant and an enabling environment is often difficult to achieve outside a health care facility.

With some exceptions, in most of sub-Saharan Africa, rates of skilled birth attendance map closely to the use of health facilities for births (also called Facility-Based Delivery (FBD); see Table 1.1). (Wang et al., 2011) Note that both SBA and FBD rates are typically assessed through women's self-reports regarding their most recent delivery. (WHO, 1999; Wang et al., 2011) Yet the assessment of 'facility-based delivery' does not require women to make distinctions between the skill level of the providers who

delivered their babies. For example, while many women might have difficulty distinguishing between a certified midwife (a "skilled attendant"), an uncertified midwife (an "unskilled attendant"), and a traditional birth attendant (also an "unskilled attendant"), most will know whether they delivered their infant at home or in a health facility. And if they indeed delivered in a health facility, the likelihood of being attended by a provider defined by the WHO as "skilled" is high. (Whether those providers do indeed have sufficient competency to be judged "skilled" by external examiners is a separate question beyond the scope of this research (see Harvey et al., 2007).) Thus facility-based delivery rates are often used as an indicator for skilled birth attendance coverage.

Facilities range in size, scope, and quality. Facilities may be as basic as a rural health center with minimal equipment, or they can be as large as a tertiary care hospital in a major urban center. The type and quality of facility in which a woman delivers is clearly an important factor in predicting maternal and infant outcomes. Yet in much of the published research literature, as seen in Table 1.1 (Wang et al., 2011), facilities are aggregated into a single measure. Thus "facility" is often seen as any building or structure in which health care is typically provided by trained professionals and the purpose of the building is to provide care – this could include hospitals (national, provincial, district, municipal), health centers, health posts, dispensaries, and maternity centers. This broad definition of facility is the one that will be used in these chapters. Disaggregating the differences between types of facilities or between individual facilities is beyond the scope of this research.

Focusing on Facility-Based Delivery

Recent efforts to reduce maternal mortality in developing countries have focused on two main interventions that have been shown to improve not only maternal but also child health outcomes: training, deploying, and encouraging the use of skilled birth attendants, and improving access to emergency obstetric care (EmOC). (WHO, 2004; Prata et al., 2011) Encouraging women to deliver in a health care facility is one way to address both initiatives.

As Table 1.1 illustrates, there is wide variability in rates of facility-based delivery across sub-Saharan Africa. (Wang et al., 2011) These differences stem from a host of factors, including such things as variability in the health care delivery systems, economic differences across nations, and average educational attainment among women of childbearing age. (Kruk et al., 2007; Kunst & Houweling, 2001; Kruk et al., 2008; Magadi et al., 2000) Within countries there is also wide variability, with urban / rural location, distance to facilities, and women's level of education creating the most obvious stratifications. For example, as of 2008, 34.6% of women with no education in Ghana were reported to have delivered in a facility, compared to 90.9% of women with at least a secondary education. (GSS, 2009) In addition, women in urban areas in Ghana are more than twice as likely to deliver in a facility than their rural counterparts (82.4% vs. 41.7%). (GSS, 2009)

While previous research has documented many of the factors associated with facility-based delivery, some significant gaps remain. First, most published research focuses on a handful of the same, well-known individual correlates, including age, parity, education, wealth, urban/rural status, distance to facilities, and utilization of antenatal

care. (e.g. Addai, 2000; Aremu et al., 2011; Gabrysch et al., 2011; Faye et al., 2011; Magadi et al., 2000; Mills et al., 2008; Buor, 2003) When exploring barriers to facility delivery, the overriding focus of many of the published studies to date is on logistical barriers, such as cost, transport, and distance to facilities. Less well-understood is the relative impact of "social barriers," such as the need to obtain permission from one's husband to go to the hospital or the preference for a female health care provider if one were to seek facility-based delivery. These barriers can be explored both qualitatively and quantitatively in a much more meaningful way than they have been to date.

Proposed Research

This dissertation addresses the factors associated with facility-based delivery in sub-Saharan Africa – and Ghana in particular – through a three-part investigation. In Chapter 2, the results of a systematic review of the literature surrounding factors associated with skilled birth attendance and facility-based delivery in sub-Saharan Africa are presented. This chapter focuses on two primary objectives: 1) documenting the research designs and data collection methodology used to explore factors associated with FBD in the published, empirical research literature; and 2) identifying the factors that are most commonly associated with facility-based delivery or skilled birth attendance in sub-Saharan Africa in studies employing quantitative methodology. The goal is to explore the existing empirical research and identify potential areas for further exploration.

In Chapter 3, Ghana Demographic Health Survey (DHS) data from 2008 is used to examine access-related factors associated with facility-based delivery. Chapter 3 relies upon the use of the Five As of Access framework, and the addition of another type of access is proposed: social access. This chapter focuses on women within the DHS who

delivered an infant within the prior year; multivariate logistic regression is used to determine the impact of affordability, availability, accessibility, acceptability, and social access factors. Accommodation factors were not available for analysis using the DHS.

In Chapter 4, qualitative interviews from women, grandmothers, community leaders, and health care providers in the Kassena-Nankana District of the Upper East Region in northern Ghana were examined to explore the issue of maltreatment during delivery in health care facilities. One hundred-twenty-eight individuals participated in 7 focus groups and 56 in-depth interviews on topics related to the perinatal period as part of a separate study of stillbirth and early neonatal mortality in northern Ghana. (Engmann et al., 2011; Moyer et al., 2012; Aborigo et al., 2012) A subset of the interview instrument asked respondents about their thoughts and attitudes regarding health care facilities, home births, delivering in a facility, and what they perceived to be the biggest barriers and incentives to facility-based deliveries. In this context, the topic of maltreatment by midwives during delivery was repeatedly mentioned as an issue preventing women from desiring a facility delivery. Data were analyzed using NVivo qualitative analysis software and qualitative methodology to compare data from northern Ghana against a framework posited by the White Ribbon Alliance for Safe Motherhood (Respectful Maternity Care Advisory Council, 2011) regarding seven categories of maltreatment that violate what the group proposes are seven fundamental rights for childbearing women.

In Chapter 5, the findings of the previous chapters are summarized and potential implications and directions for future intervention are discussed. The potential role for policy-makers in influencing facility-based delivery rates in Ghana is also discussed.

Taken together, the proposed research aims to improve understanding of both the drivers and deterrents of facility-based delivery in Ghana, with the hope that knowledge gained in Ghana can shed light on the issue in other sub-Saharan nations. For many different reasons, women in sub-Saharan Africa do not always choose to deliver in a facility – even when many of them attend the same facilities for antenatal care. (GSS, 2009; Mills, 2008; Rockers et al., 2009) Thus women can physically get to the facility, and they appear to value western health care provider input enough to warrant antenatal care visits, yet they may ultimately deliver at home. In Ghana, approximately 94% of pregnant women receive antenatal care, yet only about half of these women give birth in health facilities (Mills, 2008). This dissertation aims to examine the existing literature, explore access factors measured in the Ghana Demographic Health Survey, and analyze qualitative data from one region in northern Ghana to unpack the many factors that influence women's delivery location.

This research has several potential implications for both practice and policy. First, this research aims to improve understanding of the contextual factors associated with delivery decisions, and as Say and Raine noted in their 2007 review of maternal health care in developing countries, "An understanding of context is essential to design delivery mechanisms to redress such inequalities (in maternal and child health care utilization)." (Say and Raine, 2007, p 812) Second, this research aims to inform policy makers about some of the less well-understood factors that may encourage or deter women from delivering in a health care facility. For example, common policy interventions – including laudable efforts to provide free maternity care throughout Ghana – may benefit from supplementary emphasis on quality of care issues.

In summary, the proposed research was designed to not only inventory the current state of research on facility-based delivery in sub-Saharan Africa, but also to explore the social and contextual factors that influence where women ultimately deliver their babies in Ghana.

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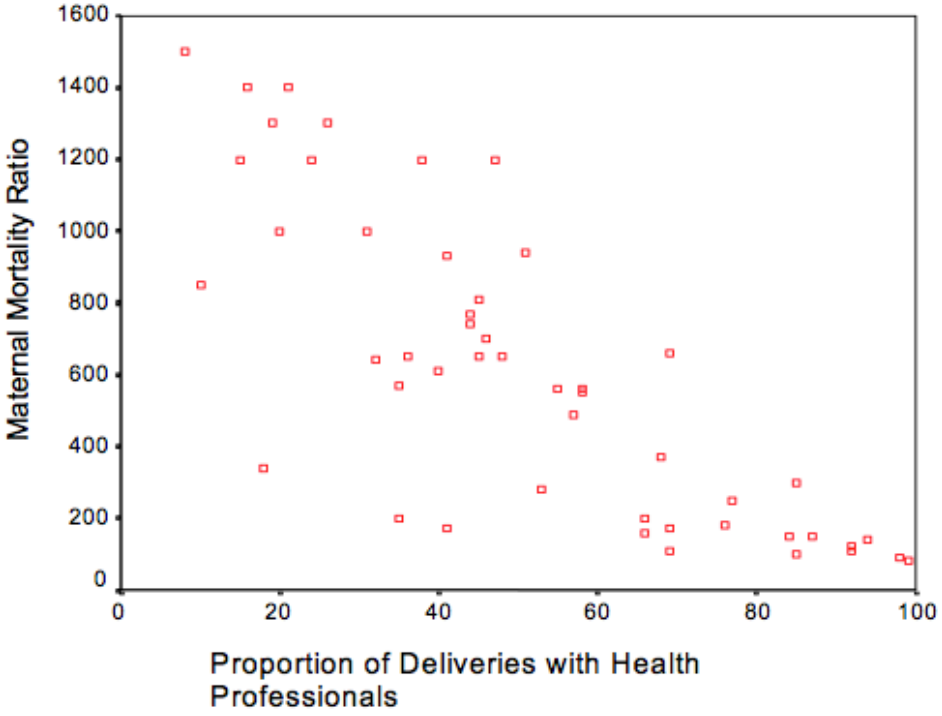
Table 1.1: Births with skilled attendants vs. facility-based deliveries in sub-Saharan Africa, as reported through national household Demographic Health Surveys (DHS)

Country/Year	Percent of women who reported having a skilled birth attendant	Percent of women who reported delivering in a health facility	Total number of women with a live birth in the 5 years preceding the survey
Benin 2006	76.2	80.5	10,521
Burkina Faso 2003	39.7	40.5	7,428
Cameroon 2004	61.9	61.8	5,303
Chad 2004	2.6	13.3	3,720
Ethiopia (year not reported)	-	6.4	7,307
Ghana 2008	57.8	60.1	2,099
Guinea 2005	30.5	31.8	4,447
Kenya 2008	48.0	46.8	3,973
Madagascar 2008-09	47.2	37.6	8,662
Malawi 2004	56.8	69.7	7,272
Mali 2006	28.8	47.5	9,087
Mozambique 2003	50.2	50.2	7,179
Namibia 2006-07	82.7	82.3	3,898
Niger 2006	18.7	18.1	6,300
Nigeria 2008	36.1	36.5	17,635
Rwanda 2007	50.7	49.6	3,658
Senegal 2005	47.2	64.1	6,928
Tanzania 2004-05	45.5	50.2	5,772
Uganda 2006	45.2	45.3	5,035
Zambia 2007	48.0	50.5	4,136
Zimbabwe 2005-06	70.1	69.5	4,100

Source: Wang et al., 2011

Figure 1.1: Proportion of deliveries with health professionals and the maternal mortality ratio in 50 developing countries, ~1990



[1] Defined in coverage statistics as "doctors, nurses and midwives" (WHO 1997)
[2] Maternal deaths per 100,000 live births (WHO 1996)

Source: Graham et al., 2001

CHAPTER 2

Systematic Review of the Empirical Literature on Facility-Based Delivery

Chapter Abstract

Background: The World Health Organization recommends universal skilled birth attendance, which in many developing countries is most easily accomplished by encouraging women to deliver in a health facility. Yet in much of sub-Saharan Africa, fewer than half of women deliver their infants in a facility. This study aimed to utilize the published literature to elucidate the most important factors associated with facility-based delivery (FBD) rates in sub-Saharan Africa.

Methods: A systematic search of the peer-reviewed literature from 1995 – 2011 was conducted to identify the published research surrounding the factors associated with delivery care in sub-Saharan Africa. Studies were included in the review if they were published in English between January 1995 and December 2011, were conducted entirely or in part in Sub-Saharan Africa, reported on the results of original research, and included a primary outcome variable of facility-based delivery, delivery location, or skilled birth attendance.

Results: Out of a total of 1,168 citations, 69 original research articles met inclusion criteria and were included in the review. Sixty-six of the 69 studies were cross-

sectional in nature, and 58/69 relied upon household survey data. Fewer than two-thirds (43) included multivariate models as part of their analyses. The factors found to be associated with facility delivery were categorized as maternal factors, social factors, antenatal-related factors, facility-related factors, and macro-level factors. Maternal factors were the most frequently studied, perhaps due in part to the reliance on household survey data in the literature. Multivariate analysis suggests that maternal education, parity / birth order, rural / urban residence, household wealth / socioeconomic status, distance of the nearest facility, and number of antenatal care visits were the factors most consistently associated with facility-based delivery.

Conclusions: Facility-based delivery is a complex issue that is influenced by a host of factors, including characteristics of the pregnant woman herself, her immediate social circle, the community in which she lives, the facility that is closest to her, and context of the country in which she lives. Research to date has been dominated by analysis of cross-sectional household survey data. More research is needed that explores regional variability and social factors as drivers of FBD, studies the impact of interventions to increase FBD, and documents the potential for policy experiments to play a role in boosting rates of facility delivery in sub-Saharan Africa.

Introduction

In sub-Saharan Africa in 2011, maternal mortality claimed the lives of an estimated 122,275 women, representing nearly half (44.7%) of worldwide burden that year. (Lozano et al., 2011) Skilled birth attendance is one of the main interventions to

combat maternal mortality, and the World Health Organization recommends all births be overseen by a skilled attendant. (WHO, 2004) Yet human resources are limited; and in many countries, achieving universal skilled birth attendance means encouraging women to deliver in facilities.

In much of sub-Saharan Africa, fewer than half of women deliver their infants in health facilities. (Wang et al., 2011) The reasons are myriad, and the published literature is replete with studies exploring the factors that are associated with utilization of delivery care services in the developing world. Understanding those factors is critical to identifying gaps in the existing research, planning interventions, and developing effective policies for addressing low facility-based delivery rates.

In response to these issues, the following systematic review of the research literature of empirical studies addressing factors associated with facility-based delivery aims to: 1) document the research designs and data collection methodology used to explore factors associated with facility-based delivery in the published literature; and 2) identify the factors that are most commonly associated with facility-based delivery or skilled birth attendance in sub-Saharan Africa. Results will be combined to identify gaps in the empirical literature and provide recommendations for future research.

The intended audience for this review includes researchers, public health practitioners, and policy makers working in sub-Saharan Africa. By elucidating the current state of the research literature, this manuscript aims to provide valuable guidance as researchers plan future studies, practitioners shape their interventions, and as policy makers conceptualize the most effective mechanisms to influence rates of facility-based delivery.

There have been three previous broad reviews of the literature surrounding facility-based delivery (Thaddeus and Maine, 1994; Say and Raine, 2007; Gabrysch and Campbell, 2009). The first review was not systematic, was conducted nearly 20 years ago, and the bulk of its references come from the mid 1980s. (Thaddeus and Maine, 1994) This review addressed the factors at the individual level that influenced the delay in deciding to seek care, the delay in getting to a health facility, and the delay in obtaining adequate care. The authors suggest that distance, cost, and quality of care are not sufficient to predict service utilization – other factors such as illness severity and socioeconomic status influence service use. This review resulted in what has come to be known as the Three Delays Model, perhaps one of the most commonly used conceptual frameworks in the maternal mortality literature. The second review focused on quantitative assessments of the impact of maternal health interventions on utilization. (Say and Raine, 2007) Included in the review were a total of 30 quantitative studies from around the world, only 8 of which included data from Sub-Saharan Africa. Say and Raine concluded that there is enormous variability in maternal health service utilization, and that utilization appears to be extremely dependent upon user-related factors such as age and education, as well as contextual factors such as supply of health care. (Say and Raine, 2007) The third review centered its assessment on references identified in the previous two reviews (Gabrysch and Campbell, 2009). The authors used the literature to categorize determinants of facility-based delivery into four main themes: sociocultural factors, perceived benefit or need of skilled attendance, economic accessibility, and physical accessibility. (Gabrysch and Campbell, 2009) The authors conclude from their review that most research downplays perceived need and physical accessibility as

significant barriers. Note that this review was not limited to any geographic region or any specific year range.

In addition to the three broad reviews described above, there have been two much more narrow reviews of a subset of the literature surrounding maternal health service utilization. Kunst and Houweling (2001) combined a review of the literature and Demographic Health Survey data from before 2000 to suggest that the rich-poor gap in maternal service utilization varies by country, with smaller gaps between rich and poor seen in countries with the highest overall literacy rates. McNamee et al. (2009) conducted a non-systematic review focused on education, socioeconomic status, and distance to facilities as correlates of facility-based delivery, finding that all three are repeatedly found to be significantly associated with increased facility-based delivery.

None of these reviews has been systematic, comprehensive, and focused on sub-Saharan Africa. Given inherent differences between sub-Saharan Africa and much of the rest of the developing world, a review that explicitly focuses on sub-Saharan Africa is critical. The review presented here also relies upon the inclusion of research studies published in non-indexed African journals. While some may argue that non-indexed African journals may include poorly-designed studies, they are also likely to include studies that are extremely pertinent to the local context, even if they may not find an audience in more mainstream journals. Understanding contextual variability is one key goal of the review presented here, and thus such regional journals – even if not considered "top tier" – are valuable sources for this review.

Methods

Search Strategy

A systematic search of the peer-reviewed, published literature from 1995 – 2011 was conducted to identify the published research surrounding the factors associated with delivery care in sub-Saharan Africa. Searches used the following databases: Ovid MEDLINE (1948 to December, Week 4, 2011), Ovid MEDLINE In-Process & Other Non-Indexed Citations (January 4, 2012), EBM Reviews (1991 – December 2011) (including ACP Journal Club, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Health Technology Assessment, and NHS Economic Evaluation Database), International Pharmaceutical Abstracts (1970 to December 2011), Journals@Ovid Full Text, CINAHL Plus with Full Text (EBSCO), PubMed, Africa-Wide Info, Psych Info, Global Health, Social Science Full Text, Google Scholar, BioMed Central, and African Journals Online. Initial searches were conducted on August 14 and September 5, 2011, and those searches were repeated on January 5, 2012.

The following key search terms were used in various combinations: maternal health services / utilization, developing country/ies, Africa, determinants or predictors, delivery services, facility-based delivery, facility delivery, institutional delivery, skilled birth attendance, skilled attendance, pregnancy. (Search strategy available upon request.) Additional hand searching was conducted by reviewing the references of all retrieved studies.

Study Selection and Data Extraction

Studies were included in the review if they were published in English between January 1995 and December 2011, were conducted entirely or in part in Sub-Saharan Africa, reported on the results of original research, and included a primary outcome variable of facility-based delivery, delivery location, or skilled birth attendance. Selected articles also needed to address determinants, predictors, or factors associated with women's delivery location. Literature review articles were included as well. Studies were excluded from this review if they were not published in the peer-reviewed literature (e.g. master's theses and dissertations were not included unless they were subsequently published in a peer-reviewed journal), if they did not include original data (e.g. editorials and commentaries were excluded), and if the focus was not explicitly on place of delivery or skilled birth attendance as an outcome. For example, many studies focus on maternal mortality as an outcome but include facility-based delivery as one determinant. Studies were excluded unless at least one of the primary outcome measures was facility-based delivery, place of delivery, or skilled birth attendance. Due to an explicit emphasis on identifying empirically-tested associations, qualitative studies were excluded from this review.

Study inclusion was determined in a multi-step procedure. First, bibliographic data and abstracts of studies identified through the systematic searches were evaluated for concordance with formal inclusion rules. Note that this first stage of searching included the search term "developing country" or "developing countries," but did not explicitly focus on African nations. At this first, most conservative decision point, studies were removed from further review if they were conducted in a Western setting, but those

conducted in developing countries were retained for closer inspection. Studies that clearly did not meet the remaining inclusion criteria were discarded at this stage.

The remaining studies were selected for full-text retrieval and each study was reviewed more closely to determine eligibility for inclusion. At this stage, publications that did not present empirical data or otherwise did not meet inclusion criteria were discarded, but not before hand-searching the references. Full text of the additional studies identified from the references were retrieved. In a final step, the remaining studies were examined in detail to identify the final sample of studies meeting all inclusion criteria.

From all remaining studies, the following data was extracted: author, year of publication, country of focus, data source, year data were collected, study design, sample size and description, main predictor variables assessed, main outcomes variables assessed, analysis method, main findings per delivery location, and whether a conceptual framework was utilized.

Analysis and Synthesis Strategy

Given the variety of types of studies included in this systematic review – including descriptive and evaluative studies that ranged from simple bivariate analyses to complex multivariate modeling – a meta-analysis was neither possible nor appropriate. A table was created that listed all identified correlates of facility-based deliveries. The table also included a synthesis of findings indicating the direction of the relationship, the countries in which the research was conducted, and the citations associated with the research. This table was used to address both aims of this study: 1) to document the research designs and data collection methodology used to explore factors associated with

facility-based delivery in the published literature; and 2) to identify the factors that are most commonly associated with facility-based delivery or skilled birth attendance in sub-Saharan Africa.

Results

Database searching yielded a total of 1,168 citations, of which 123 were retrieved for full-text review. Of the 1,045 that were eliminated, most were eliminated due to failure to focus on place of delivery as a primary outcome measure, conduct of research in a western setting, or the lack of original data. Of the remaining 123 articles retrieved for full-text review, an additional 43 studies were identified by searching the references. The vast majority of those 43 additional studies were published in non-indexed, regional journals. Thus a total of 166 articles were identified for full text review. A total of 97 were removed, including 22 that were conducted outside Sub-Saharan Africa, 20 whose focus was on an outcome aside from place of delivery, 35 that did not include original data, 12 that relied primarily upon qualitative data, 4 that were not published in the peer-reviewed literature, and 4 that were unable to be located. This left a total of 69 published studies that met all inclusion criteria and for which data were extracted. (See Figure 2.1.)

Pursuant to Aim 1 (*document the research designs and data collection methodology used to explore factors associated with FBD in the published literature*), all but 3 of the 69 published manuscripts included in this review were purely cross-sectional in nature. Ekirapa-Kiracho et al., 2011, Penfold et al., 2007, and Stanton et al., 2007 were the only studies to include a longitudinal component, although none followed the same women over time. Ekirapa-Kiracho et al. examined changes in skilled birth attendant

utilization after the implementation of transport voucher intervention, Penfold et al. interviewed women who had delivered before and others who delivered after the implementation of fee exemptions for delivery services, and Stanton et al. examined SBA rates over time using survey data from 73 countries between 1986 and 2003. Fifty-eight out of the 69 studies (84%) reviewed relied upon population-based household surveys, including 20 that used national Demographic Health Survey data collected once every four years, and 6 that relied upon regional Health and Demographic Surveillance Site data, which are collected at least twice per year. Nine out of 69 studies (13%) used medical records or facility assessment data, 4 used facility-based surveys of women, 4 relied upon previous literature, and 2 used Geographic Information System data. (See Table 2.1)

The sophistication of the data analysis varied widely across the 69 studies identified in this review. While 43 of the 69 studies (62%) included multivariate analysis, 20 (29%) included only descriptive statistics or a combination of descriptive statistics with bivariate associates explored. The remaining 6 studies included four reviews of the literature (Gabrysch and Campbell, 2009 (non-systematic overall review); Kunst and Houweling, 2001 (focused on SES and FBD); McNamee et al., 2009 (focused on education, economics, distance and FBD); Say and Raine, 2007 (focus on studies allowing for the calculation of odds ratios for FBD)) and three studies utilizing data compilation techniques to calculate rate ratios, odds ratios, or examine trends based on previously published literature or existing datasets (Say and Raine, 2007; Stanton et al., 2007; Houweling et al., 2007).

Pursuant to Aim 2 (*identify the factors that are most commonly associated with facility-based delivery or skilled birth attendance in sub-Saharan Africa*), Tables 2.2 – 2.6 illustrate the factors identified in the literature as being associated with delivery location. These factors were divided into the following categories: maternal factors, social factors, antenatal care-related factors, facility-related factors, and macro-level factors.

Table 2.2 addresses more than 30 different maternal factors that have been explored in sub-Saharan Africa pursuant to FBD, including such things as maternal age, education, religion, ethnicity, region of residence, urban/rural residence, socioeconomic status, employment, health insurance coverage, parity, and marital status. The most commonly identified factors are maternal education, urban/rural status, and socioeconomic status. However, a host of additional factors were found to be associated with FBD, including parity, perceived need for FBD, having means of transport to a facility, previous delivery location, and perceived complications. Many of these variables have a consistent and predictable relationship with facility-based delivery – such as greater education and higher socioeconomic status generally predicting greater utilization of facility-based delivery services. Others appear to have differential effects, based upon the study locale, design, or population. For example, marital status appears to be linked to facility delivery in some studies, yet not in others. Female autonomy appears to be associated with greater facility delivery rates in some studies, yet other studies indicate a strong interaction effect with wealth, suggesting that women's autonomy in the absence of material resources is insufficient to boost facility utilization.

Table 2.3 illustrates 15 different social factors found to be associated with facility-based delivery. Social factors include such things as non-male household head, husband's occupation, husband's education, small family norm, living in a socially disadvantaged neighborhood, or needing permission to go to a facility. Relative to the maternal factors described in Table 2.2, social factors appear to be much less studied, with 12 unique studies accounting for data pursuant to 15 identified social factors. The social factors most commonly cited as related to facility-based delivery include husband's education and occupation, as well as a village-level variable regarding the percent of the community rating the local facility as excellent. In terms of direction of influence, women with more educated husbands or husbands in non-agricultural occupations are more likely to deliver in a facility. In addition, women in communities that rank their local facility as 'excellent' are more likely to deliver in a facility.

Table 2.4 illustrates the role antenatal care may play in influencing facility based delivery, including factors such as attendance, early initiation, number of visits, seeing a physician during antenatal care, perceived quality of care, and being advised to deliver in a facility during antenatal care. With one exception, the results suggest that all such factors are linked to greater utilization of facility-based delivery services. Akazili et al. (2011) found that in northern Ghana, women who presented for antenatal care during the third trimester were more likely to deliver in a facility than women presenting in their first and second trimesters. The authors speculate that may be a result of women with complications presenting late for ANC and being strongly encouraged to deliver at a facility.

Table 2.5 illustrates the numerous facility-related factors that may influence whether women choose to deliver at home or in a facility. These factors include such things as distance, cost, promptness of care, perceived quality of care, presence of providers, availability of medicine and equipment, and staff attitudes and behavior. In this category, distance to facility is the most common factor studied and cited as a deterrent to facility-based delivery. In looking at the number of studies citing each factor, cost, perceived quality of care, and staff attitudes and behavior are the next most common facility-related factors identified in the literature.

Finally, Table 2.6 illustrates some of the macro-level factors that appear to be associated with facility-based delivery and skilled birth attendance rates. Skilled birth attendance appears to be higher in countries in which the government spends a larger percentage of its spending on health and in which there is higher total health expenditure per capita. In addition, countries with higher rates of female literacy are likely to have higher rates of skilled birth attendance than countries with lower female literacy rates.

Out of the 43 manuscripts reviewed that used multivariate modeling, 37 reported one or more models in their results in sufficient detail to allow for comparison across studies. “Full” models ranged from those that included only three variables (e.g. Kruk et al., 2007; Mulago et al., 2006; Penfold et al., 2007) to those that included 15 or more variables (e.g. Gabrysch et al., 2011; Spangler and Bloom, 2010; Stephenson et al., 2006). Across the multivariate models, the factors that showed the greatest consistency in their association with facility-based delivery were maternal education, parity / birth order, household wealth / socioeconomic status, rural / urban residence, distance to the nearest facility, and number of antenatal care visits. Only one of the published studies in

this review included a model with all of these variables, finding all to be statistically significant. (Magadi et al., 2000) One multi-country study included all but distance to facility, also finding the remaining variables simultaneously significant in most countries.[‡] (Stephenson et al., 2006) An additional 6 studies included the combination of maternal education, parity / birth order, rural / urban residence, and household wealth in their final models. (See Table 2.7) Of the 11 models run across those 6 studies, 1 found none of the 4 variables to be significant – instead citing health insurance and maternal age to be significant. (Smith & Sulzbach, 2008, Mali data) The same authors found rural / urban residence and household wealth to both be important predictors of facility-based delivery in Ghana, yet maternal education and parity were not found to be significant. (Smith & Sulzbach, 2008, Ghana data) In 3 of the 11 models, maternal education was significant while parity was not (Babalola and Fatusi, 2009; Stephenson et al., 2006, Tanzania and Burkina Faso data). In 2 of the models, rural / urban residence was not a strong enough predictor to remain significant in a model that included household wealth, yet in 8 of the other analyses it was indeed strong enough.

Beyond maternal education, parity, rural/urban residence, household wealth, distance to facility, and number of antenatal care visits, the host of additional variables studied in multivariate analysis were not consistently found to be associated with facility-based delivery. These included age-related variables (such as mother's age, age at marriage, age at most recent birth, and partner's age), ethnicity, religion, marital status, partner's occupation, previous health-related factors, and women's autonomy (as well as role in joint decision-making).

[‡] Parity was not found to be significant in Tanzania or Burkina Faso, rural / urban residence was not found to be significant in Kenya and was not included in the models in Burkina Faso or Ivory Coast.

Discussion

In summary, the vast majority of the empirical research conducted on facility-based delivery in sub-Saharan Africa is cross-sectional in nature and has relied upon data from household surveys. In addition, the literature to date is extremely variable in its analytical sophistication. Maternal factors – especially sociodemographic factors – appear to have been the most frequently studied and are among the factors most commonly linked to facility-based delivery rates. This may be a result of the overwhelming reliance on household survey data – where maternal sociodemographic factors are likely to be well-represented and non-maternal factors may be less consistently and accurately represented. Nonetheless, a host of non-maternal factors spanning social, antenatal care, facility-related, and macro-level factors emerge from this literature and appear to be associated with facility-based delivery rates in sub-Saharan Africa.

Despite the identification of 69 unique empirical studies of facility-based delivery or skilled birth attendance in sub-Saharan Africa published between 1995 and 2011, the research literature suffers from several obvious gaps, which can be illustrated through a discussion of suggested improvements in terms of study design, type of data used (and excluded), and the analysis of those data.

One critical gap in this literature is studies that include a longitudinal design. As mentioned, most studies in this region are cross sectional in nature. In many cases data are collected from women some time after delivery, and women are queried about their decision-making regarding delivery location. Such a design asks women to reflect back on the reasons that compelled them to stay home or deliver in a facility. While this may be the most practical and feasible way to gather such information, it may be subject to

recall bias and is likely to be influenced by women's experiences during delivery. In contrast, much could be learned if attitudinal and behavioral data were collected from women throughout their pregnancies, further examining those data – as well as post delivery data – in the context of their ultimate delivery location. Well-designed longitudinal studies that include data collection in the days leading up to delivery have the potential to vastly improve our understanding of women's decision-making around where they deliver.

Few studies to date have explored regional variability in facility-based delivery in a meaningful way. While many studies report regional differences, none in this review adequately explored the factors underlying those differences beyond attributing them to socioeconomic status, rural/urban differences, or ethnicity. Is there something about ethnicity, for example, that predisposes some women to deliver at home vs. delivering in a facility? Is ethnicity a proxy for education, or socioeconomics, or rural/urban status? And while socioeconomic status is generally seen as universally important to facility-based delivery rates, why does it appear to be less important in countries with higher female literacy rates? (Kunst & Houweling, 2001) The issue of regional variability – both in terms of regions of the African continent, and regions within nations – has not been adequately addressed in the literature.

Another gap in the facility-based delivery literature in sub-Saharan Africa related to study design is the dearth of intervention studies in this region. The absence of such publications could reflect several issues. It is possible that there are simply not enough intervention studies underway or completed in the region to be able to generate peer-reviewed publications. It is also possible that the interventions underway focus on

primary outcomes aside from facility-based delivery and thus were not picked up in this review. For example, Bellows et al. (2011) conducted a systematic literature review regarding the use of vouchers to encourage reproductive health service use that was not discovered through this review. Yet that review included only three studies conducted in Africa, one on sexually transmitted infection care and maternity services in Uganda (Arur et al., 2009) and two on family planning in Kenya that included a maternity services component (Janisch et al., 2010; Arur et al., 2009; Erulkar et al., 2004). It is also possible that research capacity in many of the developing nations of sub-Saharan Africa is such that translating research results into submitted publications is hampered by limited human resources. Regardless, intervention studies are needed to determine how to successfully boost facility-based delivery rates in sub-Saharan Africa.

With regard to type of data, the research literature to date has relied heavily on household surveys, especially the Demographic Health Surveys conducted every 5 years in many developing countries. While such data are plentiful and readily available for analysis, it is important to recognize the limitations associated with such data. First, household surveys are typically conducted through verbal interviews with women and/or heads of household. This format imposes the very real risk of social desirability bias, given that women may not want to discuss personal details associated with their pregnancy or delivery with a stranger. Household surveys also limit the number and type of questions that can be asked, which may affect the ultimate conclusions drawn. For example, in this review 11 studies relying upon household data found that antenatal care use, frequency, and perceived quality is associated with a greater likelihood of facility-based delivery (Adanu, 2010; Bazant et al., 2009; De Allegri et al., 2011; Fotso et al.,

2008; Fotso et al., 2009; Fotso et al., 2009A; Magadi et al., 2000; Ochaka et al., 2011; Rockers et al., 2009; Spangler & Bloom, 2010; Stephenson et al., 2006). However, this finding runs contrary to some of the qualitative literature that suggests that women who are told they have "normal" pregnancies during antenatal care assume they will have "normal" deliveries and thus don't need to deliver in a facility. (Amooti-Kaguna and Nuwaha, 2000; Magoma et al., 2010) While these two seemingly discrepant findings may both be valid, note that the latter could not have been detected in a cross-sectional household survey.

In addition, household surveys – by definition – focus on the individuals in a household. There is often limited information on some of the broader community and social-level variables that may influence delivery location. For example, household surveys are not ideal for measuring social norms, social networks, individual integration into social networks, availability of social support, community-level attitudes toward health behaviors, or decision-making patterns within extended families – all of which have the potential to vastly improve understanding of facility-based delivery in sub-Saharan Africa. Thus, another critical gap in the literature includes studies that move beyond household surveys to examine the social factors influencing delivery location.

In fairness, many household surveys – including the Demographic Health Surveys – are working to include better assessments of social- and community-level variables. And given the enormous logistical and financial challenges associated with wide-scale assessment of such things as social norms, social networks, and social integration, household surveys may indeed be the best data source available in many resource-constrained, developing countries.

Finally, this review illustrates the enormous variability with regard to the analysis of data associated with facility-based delivery. Nearly a third of the studies in this review were limited to descriptive and bivariate statistics. While such studies may provide insights into which variables require further research, multi-level and multi-variable modeling is important to advancing this literature. Nonetheless, caution is warranted: Results from sophisticated analytical procedures will only reflect the data being included in the models; and as described, key social and community-level components of the equation may be missing altogether.

This systematic review of the literature builds upon the previous reviews in several important ways. First, it focuses entirely on sub-Saharan Africa, explicitly including African journals. This is a departure from previous reviews. Thaddeus and Maine's 1994 review, while generally focused on maternal mortality in Africa, included articles from Central and South America and across Asia and the Middle East. Similarly Say and Rayne's 2007 review included only 8 articles from Africa, and Gabrysch and Campbell's 2009 review – which was based upon Thaddeus and Maine's and Say and Rayne's reviews – included studies across Latin America, Asia, and the Middle East. While such inclusivity might have been helpful at a time when there was comparatively little written about barriers to facility delivery, it is not nearly as useful today in planning interventions that speak to the local context. The review presented here focused exclusively on the issues pursuant to the sub-Saharan African context, something that has been sorely missing in the published literature. In addition, this review sought to include original research from the African sub-continent that was not published in mainstream western literature. This has complicated the search strategy for this review, and,

admittedly, it has increased the variability of the quality of studies reviewed. However, many of the articles retrieved from the African journals included in this search have shed valuable light on the phenomenon of facility-based delivery that might have otherwise gone unnoticed.

This review also challenges assumptions made in previous reviews about how to categorize the factors associated with facility-based delivery. Thaddeus and Maine categorize the primary drivers of facility delivery as distance, cost, quality of care, recognition of illness, and women's economic and educational status. (Thaddeus and Maine, 1994) Gabrysch and Campbell divide factors into four groups: sociocultural factors, perceived need, economic accessibility, and geographic accessibility. (Gabrysch and Campbell, 2009) This review proposes that the factors associated with facility delivery fall into five different categories: maternal factors, social factors, factors related to antenatal care, factors associated with the facility, and macro-level factors. Note that this categorization suggests a much broader lens than those posited previously. Maternal factors have always been a focal point of policy and programming, but social factors have received much less attention. Yet social factors such as community attitudes toward facility delivery may be an important intervention point. This review also suggests that women's experiences during antenatal care (and with the facility itself) may be extremely important in influencing future maternity service use. As such, the facility and those who staff it may be an important target of future interventions. In addition, researchers and policy makers must be mindful of the regional and national context. Low facility-based delivery rates may be a downstream effect of lack of national emphasis on education of girls, for example.

The findings of this review have several important implications for future research. First, studies including longitudinal designs that follow women from pregnancy through delivery are needed to better understand the relationship between attitudes, beliefs, intentions, and ultimate behavior. Second, studies that include data that transcend individual women's sociodemographic characteristics are an important component of future efforts. For example, studies that combine individual, community, and facility-level data will undoubtedly provide a more comprehensive picture of the primary drivers of facility-based delivery. Third, intervention studies focused on boosting facility delivery rates in sub-Saharan Africa are needed. This may be a genuine need for more intervention studies, or it may be a need for the intervention studies and programmatic efforts that are underway – often sponsored by non-governmental organizations who are more likely to publish in the gray literature than in academic journals – to be submitted for peer reviewed publication. Regardless, the literature reflects a large gap where intervention studies ought to reside. Finally, and perhaps most importantly, the current literature on facility-based delivery does not include studies designed to identify and test policies to boost facility delivery rates. A critical component to affecting change in this area is understanding which policy levers are likely to be the most influential. To date, the research literature does not include sufficient assessment of policies in sub-Saharan Africa to provide policy makers much guidance in this area. Policy-focused research is a critical missing link in the facility delivery literature.

In conclusion, facility-based delivery is a complex issue that is influenced by a host of factors, including characteristics of the pregnant woman herself, her immediate social circle, the community in which she lives, the facility that is closest to her, and

context of the country in which she lives. While multivariate analysis suggests that across sub-Saharan Africa, maternal education, parity, rural /urban residence, household wealth, distance to the nearest facility, and number of antenatal care visits are the factors most strongly and consistently associated with facility-based delivery, the literature suggests that dozens of additional factors appear to contribute to FBD rates in both bivariate and multivariate analyses. Further research is needed to determine the relative strength and the replicability of such findings, given the enormous variability seen within and across the nations of sub-Saharan Africa. In addition, quantitative studies that rely upon household survey data need to be supplemented by other forms of research – including policy experiments and intervention research – if researchers and policy makers are to truly understand how best to increase facility-based delivery in sub-Saharan Africa.

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Figure 2.1: Search results for systematic literature review

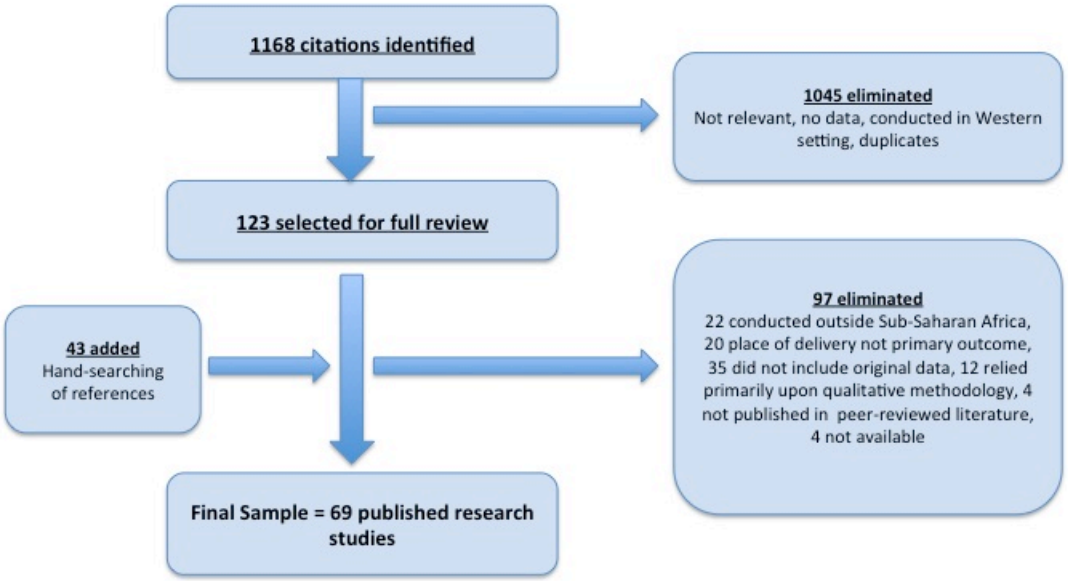

Table 2.1: Data sources in empirical literature surrounding facility-based delivery

Type of Data Source	Number of Studies Utilizing Source*	Percent of All Studies
Population-based / Household survey	58	84.0
- Demographic Health Survey Data	20	29.0
- Health and Demographic Surveillance Site Data	6	9.0
Medical Records / Facility Assessments	9	13.0
Facility-based Survey of Women	4	6.0
Published Literature	4	6.0
Geographic Information System Information	2	3.0

*Numbers total more than 69 because several studies used multiple data sources

Table 2.2: Maternal factors identified in relation to facility-based delivery rates in sub-Saharan Africa

MATERNAL FACTOR	Country in which it was studied	Direction of Influence	Cites
Maternal age	Botswana; Burkina-Faso; Ghana; Ivory Coast; Kenya; Malawi; Nigeria; Tanzania; 21 countries in Africa	Younger women more likely to deliver in a facility, except if very young (<18 yrs of age) ; inconsistently found significant	Addai, 2000; Aremu et al., 2011; Idris et al., 2006; Letamo and Rakgoasi, 2003; Magadi et al., 2007; Mpembeni et al., 2007; Mwaniki et al., 2002; Rockers et al., 2009; Stephenson et al., 2006
Maternal education	Botswana; Burkina Faso; Eritrea; Ethiopia; Ghana; Ivory Coast; Kenya; Malawi; Namibia; Nigeria; Tanzania; Uganda; multiple low-income, developing or African nations	Greater education is linked to higher levels of facility based delivery and skilled birth attendance	Addai, 2000; Ahmed et al., 2010; Aremu et al., 2011; Babalola and Fatusi, 2009; Bazant et al., 2009; Fotso et al., 2008; Fotso et al., 2009; Fotso et al., 2009A; Galaa and Daare, 2008; Gyimah et al., 2006; Hounton et al., 2008; Idris et al., 2006; Kruk et al., 2007; Kruk et al., 2008; Kunst and Houweling, 2001; Letamo and Rakgoasi, 2003; Magadi et al., 2000; Magadi et al., 2007; McNamee et al., 2009; Mekonnen and Mekonnen et al., 2003; Mpembeni et al., 2007; Mulogo et al., 2006; Nuwaha & Amooti-Kaguna, 1999; Ochaka et al., 2011; Oguntunde et al., 2010; Olusanya et al., 2010; Stephenson et al., 2006; Uzochukwu et al., 2004; van den Broek et al., 2003; Wanjira et al., 2011; Woldemicael, 2010; Zere et al., 2011
Religion	Ethiopia; Ghana; Nigeria; Uganda	Those who practice traditional or Muslim religions in some countries are less likely to deliver in a facility, although finding is not universal	Addai, 2000; Gyimah et al., 2006; Mekonnen and Mekonnen, 2003; Nuwaha and Amooti-Kaguna, 1999; Olusanya et al., 2010; Onah et al., 2006; Stephenson et al., 2006
Ethnicity	Burkina Faso; Ghana; Kenya; Nigeria; Tanzania; Uganda		Akazili et al., 2011; Babalola and Fatusi, 2009; Bazant et al., 2009; De Allegri et al., 2011; Fotso et al., 2009; Magadi et al., 2000; Nuwaha and Amooti-Kaguna, 1999; Ochaka et al., 2011; Olusanya et al., 2010; Spangler & Bloom, 2010

Table 2.2 (maternal factors, con't)

Region / province of residence	Ghana; Kenya; Rwanda; Tanzania; Uganda		Addai, 2000; Galaa and Daare, 2008; Gyimah et al., 2006; Hong et al., 2011; Magadi et al., 2000; Mbonye and Asime, 2010; Nuwaha and Amooti-Kaguna, 1999; Spangler & Bloom, 2010
Urban / Rural residence	45 developing countries; Botswana; Eritrea; Ethiopia; Ghana; Kenya; Mali; Namibia; Nigeria; Rwanda; Senegal; South Africa; Tanzania	Urban women more likely to deliver in a facility than rural women; however poverty is tightly linked to urban / rural status	Adanu, 2010; Babalola and Fatusi, 2009; Cronjé et al., 1995; Galaa and Daare, 2008; Gyimah et al., 2006; Hong et al., 2011; Houweling et al., 2007; Kunst & Houweling, 2001; Letamo and Rakgoasi, 2003; Magadi et al., 2000; Magadi et al., 2007; Mekonnen and Mekonnen, 2003; Ochaka et al., 2011; Onah et al., 2006; Smith and Sulzbach, 2008; Stephenson et al., 2006; Uzochukwu et al., 2004; Woldemicael, 2010; Zere et al., 2011
Wealth / SES / economic variables	31 countries in Africa; 45 developing countries; Botswana; Burkina Faso; Ghana; Kenya; Namibia; Nigeria; Rwanda; Tanzania; Uganda	Poorest women least likely to use delivery services; FBD seen as causing financial hardship; inequalities across wealth groups smallest in countries with highest female literacy rates	Ahmed et al., 2010; Babalola and Fatusi, 2009; Fotso et al., 2008; Fotso et al., 2009; Fotso et al., 2009A; Gyimah et al., 2006; Hong et al., 2011; Hounton et al., 2008; Houweling et al., 2007; Kruk et al., 2008; Kunst & Houweling, 2001; Letamo and Rakgoasi, 2003; Montagu et al., 2011; Nuwaha and Amooti-Kaguna, 1999; Ochaka et al., 2011; Olusanya et al., 2010; Spangler and Bloom, 2010; Uzochukwu et al., 2004; Zere et al., 2011
Maternal employment (status / occupation)	Eritrea; Ethiopia; Ghana; Kenya; Nigeria; Zimbabwe	Maternal employment positively linked to FBD	Addai, 2000; Fotso et al., 2009; Olusanya et al., 2010; Van den Heuvel et al., 1999; Woldemicael, 2010
Health insurance coverage	Ghana; Kenya; Mali; Nigeria; Rwanda; Senegal; Tanzania	Insurance coverage, fee exemptions linked to greater FBD rates; Membership in a voluntary community-based health insurance program was linked to increased FBD	Aremu et al., 2011; Hodgkin, 1996; Hong et al., 2011; Kruk et al., 2010; Penfold et al., 2007; Smith and Sulzbach, 2008

Table 2.2 (maternal factors, con't)

Parity / birth order	73 countries; Botswana; Burkina Faso; Ethiopia; Ghana; Ivory Coast; Kenya; Malawi; Nigeria; Tanzania	Higher parity, lower likelihood of FBD; No previous births linked to FBD; Birth order higher than 4, FBD less likely; Lower in the birth order, FBD more likely	Aremu et al., 2011; Bazant et al., 2009; Danforth et al., 2009; Fotso et al., 2008; Fotso et al., 2009; Kruk et al., 2010; Letamo and Rakgoasi, 2003; Magadi et al., 2000; Magadi et al., 2007; Mekonnen and Mekonnen, 2003; Mwaniki et al., 2002; Ochaka et al., 2011; Olysanya et al., 2010; Rockers et al., 2009; Spangler and Bloom, 2010; Stanton et al., 2007; Stephenson et al., 2006; Wanjira et al., 2011
Marital status	Ethiopia; Kenya; Tanzania; Uganda; Zimbabwe	Marital status linked to FBD in some studies, not linked in others	Mekonnen and Mekonnen, 2003; Mpembeni et al., 2007; Mulogo et al., 2006; Ochaka et al., 2011; Van den Heuvel et al., 1999
Polygamous union	Ghana; Senegal	Less likely to have FBD	Faye et al., 2011; Gyimah et al., 2006
Empowerment / Autonomy	31 countries in Africa; Eritrea; Ethiopia	Women with highest levels of empowerment most likely to seek FBD, have SBA; Other research suggests autonomy and wealth interact but autonomy alone is insufficient	Ahmed et al., 2010; Fotso et al., 2009A; Woldemicael, 2010
Attitude toward importance of FBD / perceived need	48 developing countries; Nigeria; Tanzania	"Childbirth is natural" - no need for FBD; "FBD is important" linked to higher utilization	Danforth et al., 2009; Ejembi et al., 2004; Kruk et al., 2010; Montagu et al., 2011; Rockers et al., 2009
Attitude toward skills of doctor vs. TBA	Kenya; Tanzania	Perceived similarity of skilled vs unskilled attendants linked to lower FBD rates	Danforth et al., 2009; Wanjira et al., 2011
Embarrassment / fear of being shamed	Tanzania	Not having clean clothes for self or baby, embarrassment of poverty linked to lower FBD	Spangler and Bloom, 2010
Discussion with male partner on place of delivery	Tanzania	Discussion with male partner linked to higher FBD rates	Mpembeni et al., 2007
Knowledge of pregnancy risk factors / safe delivery	Kenya; Tanzania	Greater knowledge linked to higher FBD rates	Mpembeni et al., 2007; Wanjira et al., 2011

Table 2.2 (maternal factors, con't)

Completion of a birth plan	Uganda	Completion of a birth plan linked to FBD	Mulogo et al., 2006
Concept of abnormal vs. normal pregnancy	Nigeria	"Normal" pregnancies mean home delivery is preferred	Ejembi et al., 2004
Having means of transport to facility /vouchers for transport	Ghana; Mali; Senegal; Uganda	No transport means FBD less likely	Ekirapa-Kiracho et al., 2011; Faye et al., 2011; Gage, 2007; Mills et al., 2008
Quality of previous delivery	Senegal	Poor quality previous delivery means less likelihood of FBD on subsequent deliveries	Faye et al., 2011
Location of previous delivery	Kenya; Uganda	Location of previous delivery predicts subsequent delivery location	Nuwaha and Amooti-Kaguna, 1999; Wanjira et al., 2011
Pregnancy wantedness	Kenya	Desired pregnancies more likely to be delivered in facility	Fotso et al., 2009; Fotso et al., 2009A; Magadi et al., 2000
Birth complications / perceived problems	Tanzania; Zimbabwe	When problems arose, women reported desire to be in a facility; Complications during previous pregnancy predictive of FBD	Spangler and Bloom, 2010; Van den Heuvel et al., 1999
Use of herbal drugs in pregnancy	Nigeria	Use of herbal drugs associated with lower FBD rates	Olusanya et al., 2010
Desire to appear modern	Tanzania	Greater desire to appear modern linked to greater FBD	Spangler and Bloom, 2010
Fear of episiotomy	Swaziland	Fear of episiotomy linked to lower FBD	Uyirwoth et al., 1996
Precipitate Labor	Ghana; Swaziland	Decreased likelihood of FBD	Galaa and Daare, 2008; Uyirwoth et al., 1996
Use of maternity waiting homes	Zimbabwe	Increased likelihood of FBD	Van den Heuvel et al., 1999

Table 2.3: Social factors identified in relation to facility-based delivery rates in sub-Saharan Africa

SOCIAL FACTOR	Country in which it was studied	Direction of Influence	Cites
Non-male household head	Kenya	Increased likelihood of FBD	Hodgkin, 1996
Husband's occupation	Kenya; Nigeria	Non-farmers have higher rates of FBD	Hodgkin, 1996; Idris et al., 2006
Husband/partner's education	Eritrea; Ethiopia; Kenya; Nigeria	Greater husband's education, greater FBD	Aremu et al., 2011; Bazant et al., 2009; Woldemicael, 2010
Small family norm (community level)	Nigeria	Small family norm linked to greater use of SBA	Babalola and Fatusi, 2009
Stigma / risk of gossip / onlookers	Uganda	FBD puts women at risk of gossip, stigma, social devaluation	Kyomuhendo, 2003
Living in a socioeconomically disadvantaged neighborhood	Nigeria	Linked to lower likelihood of FBD	Aremu et al., 2011
Permission from husband, TBA, mother, or mother-in-law	Gambia	Needing permission linked to lower likelihood of FBD	Telfer et al., 2002
Social influence of others	Tanzania	Attitudes of others encourage / discourage FBD rates	Danforth et al., 2009
Village level: % of village who agree that FBD is important	Tanzania	Higher percent linked to greater FBD rates	Kruk et al., 2010
Village level: % of village who rated local facility as "excellent"	Tanzania	Higher percent linked to greater FBD rates; Unrelated in Mills study	Kruk et al., 2010; Mills et al., 2008
Village level: % of village who attended 4+ ANC visits	Tanzania	Higher percent linked to greater FBD rates	Kruk et al., 2010
Village level: % of village who agreed doctors and nurses have good skills	Tanzania	Higher percent agreeing linked to higher FBD	Kruk et al., 2010
Village level: % of village who agreed TBAs have good skills	Tanzania	Higher percent agreeing TBAs have good skills linked to lower utilization of FBD	Kruk et al., 2010

Table 2.3 (social factors, con't)

Community perception of access to nearest facility	Ghana	Higher perception of access linked to higher FBD rates	Mills et al., 2008
Traditional views on delivery and motherhood	Swaziland	More traditional views yield lower FBD rates	Uyirwoth et al., 1996

Table 2.4: Antenatal Care (ANC) factors identified in relation to facility-based delivery rates in sub-Saharan Africa

ANTENATAL CARE FACTOR	Country in which it was studied	Direction of Influence	Cites
Attended ANC	Kenya	ANC attendance linked to higher likelihood of FBD	Ochaka et al., 2011
Timing of first ANC visit (early onset of ANC)	Tanzania; Ghana	Earlier ANC initiation linked to greater likelihood of FBD; Later ANC linked to FBD	Akazili et al., 2011; Spangler and Bloom, 2010
Number of ANC visits	Burkina Faso; Ghana; Ivory Coast; Kenya; Malawi; Tanzania	Fewer ANC visits linked to lower likelihood of FBD; 3+, 4+ visits linked to higher rates of FBD	Akazili et al., 2011; Bazant et al., 2009; De Allegri et al., 2011; Fotso et al., 2008; Fotso et al., 2009; Fotso et al., 2009A; Magadi et al., 2000; Rockers et al., 2009; Stephenson et al., 2006
Saw doctor at ANC	Ghana	Seeing a doctor at ANC linked to greater FBD	Adanu, 2010; Akazili et al., 2011
Quality of ANC	Ghana	Higher perceived quality linked to greater FBD	Adanu, 2010
Being advised to deliver in a facility during ANC	Ghana; Kenya; Tanzania	Higher likelihood of FBD	Fotso et al., 2009; Fotso et al., 2009A; Galaa and Daare, 2008; Mpembeni et al., 2007; Spangler and Bloom, 2010

Table 2.5: Facility factors identified in relation to facility-based delivery rates in sub-Saharan Africa

FACILITY FACTOR	Country in which it was studied	Direction of Influence	Cites
Distance to facility	Burkina Faso; Ghana; Kenya; Malawi; Mali; Nigeria; Senegal; Tanzania; Uganda; Zambia	Greater distance, lower likelihood of FBD	De Allegri et al., 2011; Ejembi et al., 2004; Faye et al., 2011, Gabrysch et al., 2011; Gage, 2007; Galaa and Daare, 2008; Hodgkin, 1996; Hounton et al., 2008; Magadi et al., 2000; Mpembeni et al., 2007; Mwaniki et al., 2002; Onah et al., 2006; Rockers et al., 2009; Spangler and Bloom, 2010; Tann et al., 2007; Van den Broek et al., 2003
Cost	Ghana; Nigeria; Uganda	Greater cost associated with lower likelihood of FBD	Ejembi et al., 2004; Gage, 2007; Mills et al., 2008; Onah et al., 2006; Osubor et al., 2006; Tann et al., 2007
Promptness of care	Nigeria	Perception of promptness of care linked to greater utilization	Onah et al., 2006
Perceived quality of delivery care	Ghana; Nigeria; Tanzania	Individual perceptions about higher quality of care linked to higher FBD rates. One study showed no relationship between community perceptions of quality and individual FBD	Galaa and Daare, 2008; Kruk et al., 2010; Mills et al., 2008; Onah et al., 2006; Osubor et al., 2006
Presence of any provider, presence of OB/GYN, 24-hour availability of provider	Nigeria	Higher likelihood of FBD	Onah et al., 2006; Osubor et al., 2006
Availability of medicine, equipment, emergency obstetric care	Nigeria; Tanzania; Uganda; Zambia	Increased FBD when medicine, equipment, higher level of emergency obstetric care available	Gabrysch et al., 2011; Kruk et al., 2009; Mbonye and Asime, 2010; Onah et al., 2006
Staff attitudes / behavior	Nigeria; Swaziland; Tanzania; Uganda	Negative staff attitudes, abusive treatment at hands of HCPs related to lower FBD	Ejembi et al., 2004; Kruk et al., 2009; Kyomuhendo, 2003; Onah et al., 2006; Uyirwoth et al., 1996
Culturally unacceptable	Nigeria; Swaziland	Less likely to deliver in a facility	Ejembi et al., 2004; Uyirwoth et al., 1996

Table 2.5 (facility factors, con't)

Previous delivery with male provider	Senegal	Less likely to deliver in a facility	Faye et al., 2011
Electricity, running water, radio communication at facility	Uganda	Presence of infrastructure linked to higher FBD rates	Mbonye and Asime, 2010

Table 2.6: Macro-level factors identified in relation to facility-based delivery rates in sub-Saharan Africa

MACRO-LEVEL FACTOR	Country in which it was studied	Direction of Influence	Cites
Government share of health care spending	42 low-income countries	Greater percentage of government spending, greater likelihood of SBA	Kruk et al., 2007
Female literacy rates (education)	42 low-income countries	Higher rates of female literacy in a country associated with higher rates of SBA	Kruk et al., 2007; Kunst and Houweling, 2001
Total health expenditures per capita	42 low-income countries	Higher total health expenditures per capita associated with higher rates of SBA	Kruk et al., 2007; Kruk et al., 2008
Gross national income per capita	21 sub-Saharan African countries	Higher gross national income per capita linked to FBD	Magadi et al., 2007

Table 2.7: Multivariate models including education, parity, rural / urban status, and wealth-related variables as correlates of facility-based delivery

	Aremu et al., 2011 - Nigeria	Babalola et al,. 2009 - Nigeria	Hong et al., 2011 - Rwanda	Letamo et al., 2003 - Botswana	Magadi et al., 2000 - Kenya	Smith, Sulzbach, 2008 - Mali	Smith, Sulzbach, 2008 - Ghana	Stephenson et al., 2006-Malawi	Stephenson et al., 2006 - Kenya	Stephenson et al., 2006 - Tanz.	Stephenson et al., 2006 - B. Faso	Stephenson et al., 2006 - Ghana	Stephenson et al., 2006 - I. Coast
Maternal age	*			*		*	ns	*	*	*	*	*	*
Age at last birth		ns	*										
Maternal education	*	*	*	*	*	ns	ns	*	*	*	*	*	*
Partner's education	*												
Age x parity interaction				*									
Parity / birth order	*	ns	*	*	*	ns	ns	*	*	ns	ns	*	*
Marital status				*				*	*	ns	ns	ns	*
Maternal occupation	*		*										
Religion						ns	ns	ns	*	*	ns	*	ns
Ethnicity		*			*	ns	ns						
Region	ns	ns	ns		*								
Rural / urban	ns	*	*	*	*	ns	*	*	ns	*		*	
Insurance	*		*			*	ns						
Household wealth / SES	*	*	*	*	*	ns	*	*	*	*	*	*	*
Neighborhood SES / slum residence	*												
Pregnancy intendedness					*								
Attitude toward family planning		ns						*	*	*	ns	ns	ns
Exposure to family planning info								*	*	*	*	*	ns
History of newborn death						ns	ns						
Ideal family size		ns											
Prevalence of small family norm		*						*	ns	ns	ns	*	ns
Media saturation		*											
Ever used modern contraception					*								
Previous hospital delivery								*	*	*	*	*	*
Number of antenatal care visits					*			*	*	*	*	*	*

Table 2.7 (multivariate models, con't)

Location / distance to nearest facility					*								
Percent of women w/secondary+ education								*	*	ns	*	*	ns
Rainfall category of Primary Sampling Unit (PSU)								ns	*	ns	ns	ns	ns
Percent of women in PSU w/1+ prior FBD								*	ns	*	*	*	*
Total # of variables in model	10	11	8	7	10	9	9	15	15	15	14	15	14

CHAPTER 3

How the Five As of Access Relate to Facility-Based Delivery in Ghana: An Analysis of 2008 Ghana Demographic Health Survey Data

Chapter Abstract

Background: The majority of maternal and early neonatal deaths in the developing world occur during or shortly after delivery. Encouraging facility-based delivery is one intervention strategy aimed at reducing both maternal and neonatal mortality. This study aimed to explore the role of access – broadly defined using the 5 As of Access conceptual framework – in determining facility based delivery in Ghana.

Methods: This study uses data from the 2008 Ghana Demographic Health Survey (DHS) to examine the relationship between access-related factors and facility-based delivery among women delivering an infant within the prior year. Multivariate logistic regression was used to determine the impact of affordability, availability, accessibility, acceptability, and social access factors. Accommodation factors were not available for analysis using the DHS.

Results: A weighted sample of 1102 women reported delivering an infant within the previous year, 55% of which delivered in a health facility and 45% of which delivered at home. In bivariate analysis, affordability, accessibility and social access variables were

all significantly associated with facility delivery. In multivariate analysis, affordability was the most important barrier to access related to a woman's choice of delivery location. Even after adjusting for urban status and maternal literacy, being covered by health insurance is associated with a threefold increase in a woman's odds of delivering her baby in a health facility, and each unit increase on a 5-point wealth index nearly doubles a woman's odds of facility-based delivery. Availability, accessibility (with the exception of urban status), acceptability, and social access variables were not strong enough to remain significant in the final multivariate models. Social access variables, including needing permission to visit a health facility and not being involved in the final decision regarding health care, were significantly associated with a lower likelihood of facility-based delivery when looked at individually. However, multivariate analysis suggests that these variables may be working through maternal literacy, health insurance coverage, and household wealth – with all three variables attenuating the effects of social access. In addition, among women who did not deliver their most recent infant in a facility, the most commonly cited reasons were that it was not perceived as necessary, the facility was too far away, or they did not have transportation. In this population, social access and accessibility were the most commonly reported barriers to facility delivery.

Conclusions: The Five As of Access framework – including the addition of a social access category – is a valid way to conceptualize access to health care in the developing world. Future research is needed in the developing world that explores the concept of social access in greater detail, generates potential assessment tools to measure all types of access, and tests potential interventions to address access-related barriers.

Introduction

Maternal mortality and early neonatal mortality are significant problems in much of the developing world, with the vast majority of deaths occurring during or shortly after delivery (Lawn et al., 2009). Encouraging skilled birth attendance is one intervention strategy aimed at reducing the mortality burden for both mothers and their babies, yet the number of women delivering often far outstrips the number of skilled attendants available in low- and middle-income countries (LMICs). Given health care provider shortages, encouraging women to deliver their infants in health care facilities (facility-based delivery) is often seen as the best mechanism to boost rates of skilled birth attendance.

The literature suggests many factors are related to facility-based delivery, including number of previous births (Aremu et al., 2011; Bazant et al., 2009; Stanton et al., 2007), a woman's age (Addai, 2000; Aremu et al., 2011), household wealth (Ahmed et al., 2010; Gyimah et al., 2007; Ochaka et al., 2011), rural / urban status (Adanu, 2010; Babalola and Fatusi, 2009; Houweling et al., 2007; Woldemicael, 2010), and level of education (Addai, 2000; Ahmed et al., 2010; Hounton et al., 2008; McNamee et al., 2009; Stephenson et al., 2006; Wanjira et al., 2011). "Access to care" is also seen to be an important determinant, yet it is typically described in terms of distance to the nearest facility, the ability to find transport, and whether women are insured or can afford the services. Missing from the research literature is a more meaningful discussion of what "access to care" entails for women in much of sub-Saharan Africa.

More than 30 years ago, Penchansky and Thomas (1981) developed a conceptual framework of health care access, referred to as "the Five As of Access" and described access to care as including the concepts of availability, accessibility, accommodation,

affordability, and acceptability. *Affordability* refers to how the provider's charges relate to the patient's ability and willingness to pay for services. *Availability* measures the extent to which the provider has the resources, such as personnel and technology, to meet his or her patients' needs. In other words, is there a staffed clinic with adequate supplies? *Accessibility* refers to geographic accessibility, and perhaps most accurately reflects the way the term "access" is used to describe women's service utilization in the developing world. Accessibility refers to how easily a patient can physically reach the provider's location. Variables such as 'distance to the facility' and 'need to obtain transport' measure accessibility. *Accommodation* refers to the extent to which the provider's operation is organized in ways that meet the constraints and preferences of the client. This includes such things as hours of operation, how communications are handled, and the patient's ability to receive care without prior appointments. Finally, *acceptability* refers to the degree to which the client is comfortable with the characteristics of the provider, and vice versa. These characteristics may include such things as the age, sex, social class, and ethnicity of the provider (and of the patient). (Penchansky and Thomas, 1981; Wyszewianski, 2002)

The Five As of Access framework is a huge improvement over research that assumes distance and cost are the only two factors that impact a woman's ability to seek delivery services. Nonetheless, this framework has not been examined in a developing country setting. This research aims to apply the Five As of Access framework to data from the 2008 Ghana Demographic Health Survey (DHS) to examine the relationship between access factors and facility-based delivery among women delivering an infant within the previous year. In addition, this research will explore an additional category of

social access – or the extent to which social and cultural factors influence care seeking – to determine its relative merit when compared with the traditional Five As of Access.

The Ghana DHS includes several questions related to affordability, availability, accessibility, and acceptability. (See Table 3.1) The main body of the DHS is notably missing questions related to accommodation as defined in the west (hours of operation, how telephone communications are handled, and the client's ability to receive care without prior appointments (Wyszewianski, 2002)). Accommodation questions in the DHS are asked of women who chose NOT to deliver in a health care facility – thus rendering it impossible to include them in a multivariate analysis with facility delivery as the outcome. Nonetheless, four of the five As of access can be explored together in a multivariate model. In addition, the DHS includes several questions that speak to "social access," including such things as whether a woman has a role in the final say in health care decisions in her family, whether a woman needs permission to go to a facility, and whether she fears or is unable to go to a facility alone. It is unclear whether such factors are as important as the traditionally defined Five As of Access in relation to a woman's likelihood of delivering her baby in a health care facility.

The research questions addressed in this inquiry are: 1) which access factors (affordability, availability, accessibility, acceptability, and social access) are most strongly associated with facility-based delivery in Ghana as assessed in the 2008 Demographic Health Survey?; 2) are social access factors sufficiently robust as to warrant inclusion in a final multivariate model explaining facility-based delivery?; and 3) among women who did not deliver in a facility, what were the most common reasons reported, and how might those reasons be categorized using the Five As framework?

Methods

Demographic and Health Survey Data

The 2008 Ghana Demographic Health Survey is the fifth nation-wide demographic health survey conducted in Ghana as part of the global Demographic and Health Surveys program. (Other years included 1988, 1993, 1998, and 2004.) The 2008 sample included 12,323 households from all ten geographic regions within Ghana. In half of the households selected, all women aged 15-49 were eligible to be interviewed if they either lived in the household or were staying there the night before the survey. The Women's Questionnaire collected information about the women themselves and any children born to them within the previous 5 years. Topics included such things as education, residential history, reproductive history, family planning, antenatal and delivery care, infant nutrition, vaccinations, childhood illnesses, childhood mortality, and marriage and sexual activity.

All DHS data are available online to users who submit a proposal and seek permission for their use. Thus Ghana DHS data were obtained from the global DHS website (www.measuredhs.com), already formatted for use in Stata 10.0. Data for this analysis were derived from the "births" dataset, which includes all female respondents and a host of sociodemographic factors about each respondent, including information about those who have delivered an infant within each year of the study period.

In the households selected for individual interviews, researchers identified 5,096 eligible women. 4,916 of those women completed interviews, yielding a 97 percent response rate. (GSS, 2009) Response rates did not differ significantly by rural or urban status. (GSS, 2009) From among the 4,916 women included in the 2008 data, 2,992

women reported on the location of their previous delivery. From among those women, 1,177 reported delivering within the past year, and 1,161 indicated that their delivery was either in a home setting or a facility setting (as opposed to "other"). The sample of 1,161 was weighted per DHS analysis instructions (DHS Statistics Live, 2012) to account for the complex survey design of the DHS, yielding a weighted sample of 1,102 women. The analysis presented here focuses on a weighted sample of women who delivered an infant within the year leading up to the 2008 DHS data collection period and who also provided information on whether they delivered in a home or facility setting. The "previous year delivery" window was selected to minimize the difference between the time at which women were asked about their perceptions of various access barriers to general health care, and the time at which they delivered their infants either in a home or in a facility. Note that the questions about access to general health care services were asked in a separate section of the DHS from the questions about pregnancy and recent births.

Variables

The dependent variable of interest is "place of delivery," to which there are 10 different response options recorded in the DHS. These include respondent's home, other home, government hospital / polyclinic, government health center, government health post, other public sector health facility, private hospital / clinic, family planning clinic, maternity home, or other private sector health facility. For the purposes of this analysis, the 10 response options were collapsed into a dichotomous variable, "facility-based delivery yes/no." Deliveries reported to have occurred at the respondent's home or at another's home were combined to yield "facility-based delivery = no." The remaining

response options were combined to yield "facility-based delivery = yes." Out of 1,102 women, 490 (45%) delivered at home, and 612 (55%) delivered in a facility.

Independent variables are illustrated in Tables 3.1 - 3.3. Demographic factors included age-related variables, number of previous births, education, marital status, wealth, religion, and ethnicity. Table 3.1 uses the Five As of Access framework in illustrating the variables assessed among all women as well as those assessed only among women who did not deliver in a facility. Independent variables used in the multivariate analyses were selected from among those variables assessed among all women. As Table 3.1 illustrates, *affordability* is assessed by the following variables: mean wealth index (rated on a scale of 1 to 5, with 5 being the wealthiest), self-reported health insurance coverage, whether an insured woman could show a card for the Ghanaian National Health Insurance Scheme, and whether she indicated that the cost of treatment would be a big problem for her in seeking health care. Among all women, *availability* is assessed through two items in the DHS: concern about there being no provider at the facility as a barrier to seeking health care, and concern about there being no medication available at the facility as a barrier to seeking health care. *Accessibility* is assessed through the use of four variables from the DHS: distance to the nearest health care facility as a barrier to seeking health care, having to find transportation to a facility as a barrier to seeking care, rural / urban residence, and region of residence. The 10 administrative regions in Ghana were collapsed into 6 for these analysis, including: Greater Accra, which is largely metropolitan and home to the nation's capital; the Ashanti / Brong Ahafo region, which is home to Kumasi, the second largest city in Ghana; the Western / Central region, which shares a similar climatic zone and coastal and agricultural subsistence; the Volta / Eastern

regions, which border Togo and Lake Volta; the Northern Region, which has historically been among the least developed areas in Ghana; and the Upper West and Upper East regions, which border Burkina Faso and enjoy a more desert-like climate than southern Ghana. *Acceptability* is measured by one variable in the DHS: the concern that there will not be a female provider available as a barrier to seeking general health care services. *Social access* – defined as the extent to which social or cultural factors influence care seeking – is assessed through three primary questions in the DHS: needing permission to seek health care, not wanting to go to a health facility alone, and whether a woman participates in the final say in health care decisions.

Table 3.1 illustrates additional items from the DHS that were asked of women who chose not to deliver in a facility for their most recent birth.

Data Analysis

The DHS includes 412 enumeration areas across the country, requiring cluster weighting prior to analysis. In addition, sample weighting is required to adjust for the differential likelihood of some individuals being more likely to be sampled than others. Each analytical procedure was preceded with the appropriate weighting codes in STATA to ensure the ability to draw conclusions regarding the target population rather than the sample.

Univariate and bivariate statistics were calculated for demographic variables, health and health system utilization variables, and potential access barriers. Results are reported by "facility-based delivery yes/no."

For the multivariate logistic regression analysis, a final sample was created that excluded all women with missing data on any of the key variables found to be significant

in the bivariate analysis (8% of the sample). This resulted in a final weighted sample of 1,010 women to be included in all multivariate regression analyses. When women with missing data were compared with those in the final sample, there were no significant differences in terms of facility-based delivery rates or literacy. However, women with missing data were slightly younger (mean 25.6 vs. 29.0, $p<.001$) and reported fewer previous births (mean 2.8 vs. 3.7, $p=.003$).

Multivariate logistic regression was conducted with clusters of similar variables to identify the related variables that appeared to be the most strongly associated with facility-based delivery. For example, the 'education cluster' included a logistic regression with facility-based delivery as the outcome and maternal education, maternal literacy, and partner's education as predictors. Other clusters included age-related variables (current age, age at first birth, age at first marriage, age difference between woman and her partner), birth variables (total number of births, total number of living children, number of children age 5 and under living in the household), marriage variables (marital status, polygamy), region / ethnicity (traditional religion (yes/no), Muslim religion (yes/no), Christian religion (yes/no), urban/rural status, region, and ethnicity (Akan vs. not Akan)), and prior utilization (antenatal care with a doctor or a nurse / midwife, told where to go for complications at antenatal care, told about complications at antenatal care, and number of antenatal care visits). The access-related clusters that were examined reflected the groupings seen in Table 3.3, but analysis was limited to those factors found to be significant in bivariate analysis. The variables found to be significant within their clusters were carried forward for inclusion in more comprehensive models.

Forward stepwise multivariate logistic regression was conducted using the strongest predictors from each cluster to reach a final model.

For women who did not deliver in a facility, simple descriptive statistics were calculated regarding their self-reported reason for not delivering in a facility.

For all analyses, a p value of <0.05 was used to determine statistical significance.

Results

Table 3.2 illustrates the sociodemographic characteristics of the sample, stratified by place of delivery. Across the sample, women averaged slightly less than 29 years of age, had nearly 4 previous births, and had their first birth at an average age of 20. Nearly 70% of respondents could not read, and 63% lived in a rural area. Seventy three percent were married, and women were an average of 7 years younger than their partners/spouses. Bivariate analysis suggests that women who delivered in facilities were likely to be better educated, more literate, live in an urban area, identify as a Christian, in a non-polygamous union, and have partners with higher education than women who did not deliver in a facility.

Table 3.3 illustrates the access-related variables in the study sample. Across the sample, only 41% of respondents reported that they were covered by some form of health insurance. Of those, 94% reported being covered by Ghana's National Health Insurance Scheme, although a quarter were unable to provide a valid NHIS card. Bivariate analysis suggests that affordability, accessibility, and social access variables were significant correlates of facility-based delivery. Availability variables – while reported to be a big problem by approximately 40% of women – did not appear to significantly impact

facility delivery rates. Acceptability variables did not appear to present a big problem for most women, nor were they significantly associated with facility delivery.

Table 3.4 illustrates health service utilization variables and suggests that women averaged nearly 6 antenatal care visits with the most recent pregnancy, and 55% delivered in a facility. Bivariate analysis suggests that women who delivered in facilities had fewer previous births, were older at the time of their first birth, and had more antenatal care visits than women who did not deliver in facilities. Finally, women who delivered in facilities were more likely to have had antenatal care by a trained provider (doctor, nurse or midwife) ($p<.001$) and have been told about pregnancy complications during antenatal care ($p<.001$).

Pursuant to Research Question 1, bivariate analysis suggests that women who delivered in facilities had fewer affordability barriers, fewer problems with accessibility, and fewer challenges with regard to social access. (See Table 3.3) They were also likely to have higher previous health care utilization. (See Table 3.4) Availability and acceptability variables did not appear to be particularly salient in driving facility-based delivery.

In multivariate analysis, older age at first marriage was more strongly associated with facility-based delivery than other age-related variables and variables associated with number of children, although the effect was not large (OR=1.07, 95% CI (1.0, 1.1), $p<.05$; data not shown). (A woman's age is significantly correlated with both the number of deliveries and number of children ($p<.001$), thus the cluster of age-related variables was examined in combination with the birth-related cluster.) In the cluster of variables related to education, both maternal literacy and partner's highest level of educational

attainment were significantly associated with facility-based delivery. When compared to women who cannot read at all, women who can read partial sentences and those who can read complete sentences are 2.7 and 2.8 times more likely to deliver in a facility, respectively (OR=2.7, 95% CI (1.3, 5.4), p<.01; OR=2.8, 95% CI (1.5, 5.0), p<.001; data not shown), even when controlling for level of education of both the woman and her partner. Controlling for literacy and maternal level of education, women with partners who have a secondary education are 2.6 times more likely to deliver in a facility than women whose partners have no education, and women whose partners have greater than a secondary education are 7.7 times more likely to deliver in a facility than women whose partners have no education (OR=2.6, 95% CI (1.5, 4.5), p<.001; OR=7.7, 95% CI (2.3-25.7), p<.001; data not shown).

While marital status as a dichotomous variable (married yes / no) does not appear to be associated with facility-based delivery, not being in a polygamous relationship is associated with a doubling of a woman's likelihood of delivering in a facility (OR=2.0, 95% CI (1.3, 3.0), p<.01; data not shown).

When further analyses considered religion (traditional religion (yes/no), Muslim religion (yes/no), and Christianity (yes/no)), urban/rural status, region of residence, and ethnicity (Akan (yes/no)) together, only urban status (OR= 7.31, 95% CI (4.3, 12.7), p<.001; data not shown) and being from the Northern Region (compared to Greater Accra) were associated with facility-based delivery (OR=-2.2, 95% CI (0.08, 0.86), p<.05; data not shown). Religion appeared to be tightly linked with region of residence: 80 percent of those practicing traditional religion and nearly 60 percent of those practicing Muslim religions are from the Northern Region. When the model was re-run

without region of residence, urban status remained a strong correlate of facility delivery (OR=7.9, 95% CI (4.8, 12.9), p<.001; data not shown) and religion replaced region of residence as a significant factor: both Muslim religion (OR=0.40, 95% CI (0.17, 0.92), p<.05; data not shown) and traditional religion (OR=0.3, 95% CI (0.8, 1.1), p=.07; data not shown) reduced the odds of facility delivery.

In Model 1 in Table 3.5, the significant variables from the clusters described above were combined, including age at first marriage, maternal literacy, partner's education, polygamy, urban residence, traditional religion, and Muslim religion. Ethnicity was also included in the model. Maternal literacy, partner's education, urban status, traditional religion, and Muslim religion are the demographic variables that remain significant when combined.

Models 2-5 in Table 3.6 explore the relationship between various access-related variable clusters and facility-based delivery. In terms of affordability, both wealth index and having health insurance are associated with a more than doubling of a woman's likelihood of delivering in a facility. It is possible that women who intend to deliver in a facility are more likely to enroll in health insurance, so the direction of the relationship is not entirely clear. In terms of accessibility, urban location is associated with a six-fold increased likelihood of facility delivery, whereas living in the Northern Region of Ghana is associated with a significantly reduced likelihood of facility delivery (OR=0.2 (0.07 – 0.4)). Notably, distance to the facility and finding transport were not significantly related to facility-based delivery when entered into the model. Model 4 explores prior utilization variables and shows that number of antenatal visits increases the likelihood of facility delivery, whereas being told where to go for complications at ANC decreased women's

likelihood of facility delivery (although this latter finding may be reflective of sample size issues). Model 5 explores social access variables and indicates that needing permission to go to a facility and not participating in the final say in health care decisions are both significantly associated with a lower likelihood of facility delivery.

When the significant variables from all previous models were entered into a single model together (not shown), wealth index, health insurance, urban location, and maternal literacy were all associated with an increased likelihood of facility delivery, while being told where to go in the event of complications during antenatal visits and traditional and Muslim religion were associated with a decreased likelihood of facility delivery. In the final model, Model 6, the nonsignificant variables were removed and results suggest that wealth index, having health insurance, being told where to go for complications during ANC, maternal literacy, and Muslim religion are the factors most strongly associated with facility delivery – even after adjusting for urban status. In the terminology of the Five As of access, affordability is one of the most important access-related factors in influencing facility-based delivery. The ongoing influence of Muslim religion also indicates the importance of social access.

Pursuant to Research Question 2, social access factors (aside from the influence of Muslim religion) were not sufficiently robust to warrant inclusion in a final multivariate model explaining facility-based delivery. Once affordability and accessibility variables were entered into the model (see Model 6), the impact of social access was significantly attenuated. To further explore this finding, Table 3.7 illustrates how the odds ratios and levels of significance for the strongest social access variables (needing permission to go to a health facility and not participating in the final say in

health care decisions) change with the addition of each factor included in the final models in Table 3.6. Individually, maternal literacy, health insurance coverage, and wealth index each overpower the statistical significance of the social access variables.

Religion – specifically practicing traditional or Muslim religion – does not substantially influence social access factors. This finding is noteworthy given that needing permission to seek care is associated with traditional religious practice ($p=0.01$ in Chi Square analysis). When all factors were entered together, health insurance coverage (OR=2.9, $p<0.001$), maternal literacy (ability to read at least partial sentences, OR=2.7, $p<0.01$), and wealth index (OR=2.1, $p<0.001$) remain significant, while religion and the social access factors do not. This suggests that while social access factors such as not having a final say in health care decisions and needing to seek permission from someone else to attend a health care facility are important as potential determinants of facility-based delivery, they are likely to be linked to lower educational attainment, lack of health insurance, and lower household wealth. This is borne out in cross-tab analyses, whereby needing permission is significantly related to literacy ($p=0.002$), insurance coverage ($p<0.001$), and wealth index ($p=0.001$), and not being involved in the final decisions about health care is related to insurance coverage ($p=0.04$) and wealth index ($p=0.04$) but not literacy ($p=0.17$).

Finally, in response to Research Question 3, Table 3.8 illustrates the reasons that women gave for delivering at home rather than in a facility. The most commonly reported reasons included nearly 30 percent saying that it was not necessary to deliver in a facility and 28.5 percent suggesting it was too far or they did not have transportation. Nearly 12 percent reported that it cost too much, 9.2 percent said that the service was inconvenient,

and 7.5 percent reported that facilities had long wait times. When examined through the lens of the Five As of access, accessibility and social access were the most frequently cited factors among women who did not deliver in a facility.

Discussion

In Ghana in 2008, affordability was the most important access barrier related to a woman's choice of delivery location. Despite a host of variables associated with facility-based delivery that span the 5 As of Access Framework in bivariate analysis, multivariate analysis indicates that even after adjusting for urban status and maternal literacy, being covered by health insurance is associated with a threefold increase in a woman's odds of delivering her baby in a health facility, and each unit increase on a 5-point wealth index nearly doubles a woman's odds of facility-based delivery. Interestingly, availability, accessibility (with the exception of urban status), acceptability, and social access variables were not strong enough to remain significant in the final multivariate models.

Social access variables, including needing permission to visit a health facility and not being involved in the final decision regarding health care, were significantly associated with a lower likelihood of facility-based delivery when looked at individually. However, multivariate analysis suggests that these variables may be working through maternal literacy, health insurance coverage, and possibly household wealth. The addition of maternal literacy, health insurance and wealth to regression analyses exploring the relationship between social access and facility based delivery each attenuated the strength of the association, suggesting that the impact of social access may be being at least partially mediated by variables of maternal literacy, health insurance and

wealth. In other words, social access (such as needing permission to seek health care) may influence maternal literacy, health insurance, and wealth (perhaps women who need permission to seek health care also need permission to attend school, get health insurance, and get a job, and therefore have lower literacy, are less likely to have health insurance, and are less likely to have a steady income and accumulate family wealth), which in turn influences facility delivery rates. Such a mediating relationship is plausible give the data presented here.

The findings reported here are in keeping with other published research from Ghana and other parts of sub-Saharan Africa. At least 18 different studies in Africa have found that the poorest women in a community are the least likely to use delivery services. (Ahmed et al., 2010; Fotso et al., 2008; Fotso et al., 2009; Fotso et al., 2009A; Gyimah et al., 2006; Hong et al., 2011; Hounton et al., 2008; Houweling et al., 2007; Kruk et al., 2008; Kunst and Houweling, 2001; Letamo and Rakgoasi, 2003; Montagu et al., 2011, Nuwaha and Amooti-Kaguna, 1999; Ochaka et al., 2011; Olusanya et al., 2010; Spangler & Bloom, 2010; Uzochukwu et al., 2004; Zere et al., 2011) At least 6 have reported on the direct relationship between insurance coverage and facility-based delivery rates. (Aremu et al., 2011; Hodgkin, 1996; Hong et al., 2011; Kruk et al., 2010; Penfold et al., 2007; Smith and Sulzbach, 2008) Yet none of these studies has compared social access factors to affordability factors in their analyses. The findings presented here suggest that social access is a valuable construct, yet it may be working through educational and wealth-related indicators.

Nearly half (47%) of the women in this sample reported cost of treatment as a big problem in seeking health care services, a higher percentage than any other barrier

reported. This is in a country with national health insurance that covers both antenatal and delivery care in full. It is also worth pointing out only 41% of this sample reported having health insurance. Enrollment in Ghana's National Health Insurance Scheme (NHIS) is variable across the country and has been slowly increasing since its introduction in 2003. (Mensah et al., 2010; Sarpong et al., 2010; Witter and Garshong, 2009) Enrollment occurs in numerous settings throughout Ghana, including road-side stands and many non-facility sites, and it is expected that data from the next wave of the DHS in 2012 will reflect much higher uptake of insurance. In addition, in 2008, pregnant women were exempted from paying national health insurance enrollment premiums. Thus future research is needed that explores the impact of the implementation of national health insurance and enrollment premium exemptions for pregnant women on facility-based delivery rates.

This research raises some important questions with regard to health care policy. Ghana is a forerunner in the developing world in its implementation of a National Health Insurance Scheme that offers free maternity services. Yet as mentioned, a full five years after NHIS was implemented, only 41% of women who had delivered a baby within the previous year reported having health insurance. This may be a result of the need to sign up for NHIS – even though women can sign up when they present to the facility in labor. Such low uptake raises the question of whether automatic enrollment with tax-based premiums may be preferable to a system requiring individuals to "opt in" and pay their premium on the spot. (In Ghana, where the annual per capita income is $1600 (US Dept of State, 2011), the annual insurance premium is approximately $5. This equates to about 0.4% of an individual's income. In the United States, approximately 4.8% of per capita

income is spent on health insurance premiums. (Bureau of Business and Economic Research, 2012; eHealth, 2010) Future research that compares automatic enrollment against voluntary enrollment in the developing world and examines resulting maternal health services utilization is needed to help understand the optimal way for a national health insurance program to truly reach the majority of its population.

This research also juxtaposes multivariate analyses that suggest affordability variables are the most important correlate of facility-based delivery against self-report among women who did not deliver in a facility. Only 12% of women who did not deliver in a facility cited cost as a significant barrier. Much more important to those women was that they did not perceive facility-based delivery to be necessary. Admittedly, "not being necessary" is a vague and multi-faceted phrase that may represent a host of factors – including the potential for mental cost-benefit analyses that render facility delivery not necessary given the many costs, financial and otherwise. Nonetheless, only 1 in 10 women who did not deliver in a facility cited financial costs – affordability – as a significant barrier. It is possible that women may not consciously realize that their wealth quintile or health insurance status (and thus the relative cost for them of care seeking) has a profound impact on decision-making. Similarly, it is often difficult for women to identify, articulate, and quantify the impact of various social and community-level influences; likely minimizing their relative impact in a quantitative dataset such as the DHS. Taken together, this suggests that more nuanced qualitative work may be needed to explore social access variables relative to the other types of access.

The reasons women gave for not delivering in facilities shown in Table 3.8 map well to the published literature documenting barriers to facility delivery. For example,

cost as a barrier to facility delivery is cited repeatedly in the literature. (Ejembi et al., 2004; Gage, 2007; Mills et al., 2008; Onah et al., 2006; Osubor et al., 2006; Tann et al., 2007) The availability factor of concern about a facility not being open has been described elsewhere (Onah et al., 2006; Osubor et al., 2006), as has the accessibility factor of the not having transportation to the facility (Ekirapa-Kiracho et al., 2011; Faye et al., 2011; Gage, 2007; Mills et al., 2008) or the facility being too far away. (De Allegri et al., 2011; Ejembi et al., 2004; Faye et al., 2011, Gabrysch et al., 2011; Gage, 2007; Galaa and Daare, 2008; Hodgkin, 1996; Hounton et al., 2008; Magadi et al., 2000; Mpembeni et al., 2007; Mwaniki et al., 2002; Onah et al., 2006; Rockers et al., 2009; Spangler and Bloom, 2010; Tann et al., 2007; Van den Broek et al., 2003) Several authors describe concerns about quality of care influencing women's delivery decisions (Galaa and Daare, 2008; Kruk et al., 2010; Mills et al., 2008; Onah et al., 2006; Osubor et al., 2006), and in keeping with the finding that nearly 30 percent of women in this sample did not think facility delivery was necessary, research in Nigeria, Tanzania and across 48 developing countries reported perceived need as a significant correlate to facility delivery. (Danforth et al., 2009; Ejembi et al., 2004; Kruk et al., 2010; Montagu et al., 2011; Rockers et al., 2009)

This study applied the conceptual framework of the Five As of Access to a developing country setting and posited the addition of a social access category. Bivariate analysis confirmed the value of affordability, accessibility, and social access categories of access in examining relationships to facility delivery. The access categories of availability and acceptability did not appear to be related to facility delivery rates when measured using the DHS-specific variables. In multivariate analysis, affordability appears

to trump the other categories of access – which is not surprising given the extent and degree of poverty in much of Ghana. Yet accessibility and social access variables are also important correlates of facility-based delivery; although they may be working through other variables, such as maternal literacy, insurance status, and household wealth. The findings presented here suggest that the Five As framework may be a valuable lens with which to view access to health care in the developing world. Future research would benefit from an explicit inclusion of accommodation variables, unavailable in the DHS data, to determine their relative impact compared to the other aspects of access. Future research would also benefit from a more robust assessment of availability and acceptability variables.

This research has several potential limitations worthy of discussion. First, cross-sectional data such as the DHS does not allow for determination of causation. Conclusions must be tempered by the notion that correlation is not necessarily indicative of causation. Second, this inquiry asks women in a single 2-hour interview about both their perceived barriers to seeking general health care services and about their last delivery. It is possible that these questions create an endogeneity bias, where women are citing barriers to explain their delivery behavior, rather than independently reporting barriers to care and their most recent delivery experience. Running contrary to this limitation, however, is the length of the DHS survey instrument and the placement of the questions. Women are asked about their pregnancies early in the interview, which then proceeds to cover childhood illnesses, family planning, HIV/AIDS, nutrition, domestic violence, and several other large topic areas. Question number 1,013 asks women to report on barriers to seeking general health care. It is unlikely that – after such a lengthy

interview – women would be unduly influenced by responses they gave nearly 2 hours prior.

Other potential limitations in this research relate to challenges inherent in using DHS data. First, analysis is necessarily limited to the items included in the DHS assessments. Several variables that would be useful to include in these analyses – such as those pursuant to accommodation – are not available in the DHS. For example, this study did not ask women who delivered in facilities why they chose a facility delivery. It explored the characteristics and attitudinal measures available in the DHS to determine relationships between those factors and facility delivery. Thus it was not possible to directly compare responses to the two separate but complementary questions of "Why did you choose to deliver in a facility?" versus "Why did you choose not to deliver in a facility?" This may explain some of the differences seen across those two separate samples in terms of the importance of affordability, accessibility, and social access. The DHS also provides self-reported data generally uncorroborated by other objective measures. Self-reported data is not always the most insightful, especially as it pertains to social influences. The influence of social relationships and community structures are often very subtle and may not be clearly manifest to the individual responding to the survey. The DHS also relies upon sampling to achieve representativeness across Ghana. Sampling across 10 administrative regions, for example, meant that the sample analyzed here reflected approximately 100 women per region. Such small numbers make it difficult to conduct meaningful regional comparisons using DHS data. Nonetheless, DHS data are extremely well-regarded for both rigor and comprehensiveness, and the volume of data available through the DHS regarding health and demographic information in a

low-resource setting like Ghana is remarkable. The limits imposed by the structure and methods of the DHS are likely outweighed by the benefits of the quantity and quality of data available.

One final potential limitation is that this study combines many different types of facilities into one unit for the purposes of analysis. Future research that parses out the various types of facilities, ranks them according to quality or services offered, and examines the differential factors influencing deliveries at different types of facilities is warranted. Such studies have been undertaken with varying levels of sophistication in Gambia (Telfer et al., 2002), Nigeria (Aremu et al., 2011; Onah et al., 2006), Uganda (Mbonye and Asime, 2010; Tann et al., 2007), and Kenya (Bazant et al., 2009; Fotso et al., 2008; Fotso et al., 2009; Fotso et al., 2009A). But in Ghana, the only known study comparing women who delivered at hospitals, health centers and government maternity homes was conducted in 1995 (Martey et al., 1995) and was limited to descriptive statistics. Further research with more complex analyses is needed to help understand the distinctions between facilities both in terms of perceived access and ultimate delivery outcomes.

In summary, the results demonstrate that in Ghana in 2008, affordability variables were a significant correlate of facility-based delivery among women who delivered an infant within the previous year. Accessibility and social access variables were also associated with facility-based delivery, yet affordability variables were much stronger in the multivariate models. Among women who did not deliver in a facility, simple descriptive statistics suggested that cost (affordability) was not nearly as strong of a barrier for them as perceived necessity of delivering in a facility (social access). Taken

together, these results indicate that the Five As of Access framework – including the addition of a social access category – is a valid way to conceptualize access to health care in the developing world. As researchers and policy makers work to improve access to care for pregnant women around the world, it is critical to remember that the Five As of Access form a chain that is only as strong as its weakest link. (Wyszewianski, 2002) As these data illustrate, improving affordability by making health insurance available to all women will not necessarily improve access and utilization if women don't perceive facility delivery to be necessary or social norms dictate they must seek permission before going to a clinic, for example. Future research is needed in the developing world that explores the concept of social access in greater detail, generates potential assessment tools to measure all types of access, and tests potential interventions to address access-related barriers.

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Table 3.1: The Five As of Access as assessed in the 2008 Ghana Demographic Health Survey

		ITEMS FROM THE GHANA DHS	
5 As of Access Category	5 As of Access Definition	Respondents: All women Starred questions focused on barriers to utilization of general health services (big problem vs. not a big problem)	Respondents: Only women who did not deliver in a facility All questions ask women to respond yes/no to reasons for not delivering in a facility
Affordability	How the provider's charges relate to the patient's ability and willingness to pay for services	Mean wealth index Health insurance coverage (+ able to produce health insurance card) *Cost as perceived barrier	Cost too much
Availability	Extent to which the provider has the resources, such as personnel and technology, to meet his or her patients' needs	*Concern about there being no provider at the facility *Concern about there being no medication available at the facility	Facility was not open (yes / no as reason for not delivering in a facility)
Accessibility	Geographic accessibility	*Distance to nearest facility *Having to find transport Rural / urban residence Region of residence	Too far / didn't have transportation Did not know where to go
Accommodation	Extent to which the provider's operation is organized in ways that meet the constraints and preferences of the client	N/A	Inconvenient services at facility Long wait time
Acceptability	Degree to which the client is comfortable with the characteristics of the provider, and vice versa	*Concern about there being no female provider	No female provider Don't trust facility Afraid to go

Table 3.1: (five As of access, con't)

Social Access	N/A (social access is not included in the original 5As of access model) Working definition: Degree to which social and cultural factors influence care seeking.	* Needing permission to seek health care * Not wanting to go alone Who has final say in health care decisions?	Didn't think it was necessary Father didn't think it was necessary Family didn't think it was necessary Not customary No one to accompany me Not my first child

Table 3.2: Socio-demographic characteristics, stratified by place of delivery

Variable	Weighted sample (N=1102) Mean	Women who delivered in a facility (55.5%, N = 612) Mean	Women who did not deliver in a facility (44.5%, N = 490) Mean	P value[a]
Age	28.6	28.6	28.6	NS
Age of respondent at first birth	20.2	20.8	19.3	0.001
Age at first marriage	19.0	19.8	18.0	<0.001
Age difference between woman and partner (negative = woman is younger than partner)	-7.2	-6.7	-7.9	0.045
Total number of births	3.6	3.2	4.0	<0.001
Number of living children	3.2	2.9	3.5	<0.001
Number of children 5 and under in household	2.0	1.9	2.2	0.002
	Column %	Column %	Column %	
Highest level of education				
No education	34.9	22.9	50.2	<0.001
Primary school	24.0	22.7	26.9	
Secondary school	37.6	49.5	22.7	
Higher	3.4	5.9	0.2	
Literacy				
Cannot read at all	69.6	55.2	87.1	<0.001
Read partial sentences	11.0	15.6	5.2	
Read complete sentences	19.4	28.7	7.7	
Partner's level of education				
No Education	29.3	16.6	45.0	<0.001
Primary School	11.2	9.4	13.3	
Secondary School	51.5	60.9	40.0	
Higher	8.0	13.1	1.7	
Religion				
Christian	67.6	76.2	57.0	<0.001
Muslim	21.4	18.0	25.6	
Traditional	6.0	1.8	11.2	
No religion	5.0	4.0	6.2	
Marital status				
Not married	26.8	24.6	28.6	NS
Married	73.2	75.4	71.4	
No polygamist union				
Has other wives	26.8	21.6	33.3	0.002
No other wives	73.2	78.4	66.8	

Table 3.2 (Sociodemographics, con't)

Variable	Weighted sample (N=1102)	Women who delivered in a facility (55.5%, N = 612)	Women who did not deliver in a facility (44.5%, N = 490)	P value[a]
	Column %	Row %	Row %	
Ethnicity				
Akan	41.0	63.8	36.2	<0.001
Ga / Dagm	4.7	53.1	46.9	
Ewe	14.1	65.1	34.9	
Guan	3.3	40.9	59.1	
Mole-dag	21.3	46.1	53.9	
Grussi	3.8	65.6	34.4	
Gruma	6.9	22.5	77.5	
Mande	0.5	83.6	16.4	
Other	4.8	51.7	48.3	

[a] means compared using binary logistic regression for continuous variables, chi-square for categorical variables

Table 3.3: Variables reflecting the 5 As of Access *

AFFORDABILITY VARIABLES	Weighted sample (N=1102)	Women who delivered in a facility (N=612)	Women who did not deliver in a facility (N=490)	P value[a]
Mean Wealth Index (scale of 1-5)	2.7	3.3	1.9	<0.001
	Column %	Column %	Column %	
Covered by health insurance				
No	58.7	42.7	78.7	
Yes	41.3	57.3	21.3	<0.001
Of yes to health insurance, holds valid NHIS card				
No	6.2	6.0	6.9	NS
Yes, card not seen	24.2	25.1	21.2	
Yes, card seen	69.6	68.8	71.9	
Cost of treatment as a factor in preventing care seeking				
Not a big problem	52.7	60.5	42.9	<0.001
A big problem	47.3	39.5	57.1	
AVAILABILITY VARIABLES				
Concern there's no provider as barrier to seeking health care				
Not a big problem	58.7	58.1	59.6	NS
A big problem	41.3	41.9	40.4	
Concern no drugs available as barrier to seeking health care				
Not a big problem	57.5	59.3	55.3	NS
A big problem	42.5	40.7	44.8	
ACCESSIBILITY VARIABLES				
Distance to facility as barrier to seeking health care				
Not a big problem	70.3	76.2	62.9	0.001
A big problem	29.7	23.8	37.1	
Having to find transport as barrier to seeking health care				
Not a big problem	70.9	76.4	64.1	0.004
A big problem	29.1	23.6	35.9	
Rural /Urban residence				
Urban	37.0	55.0	14.6	<0.001
Rural	63.0	45.0	85.4	

Table 3.3 (variables reflecting Five As of Access, con't)

ACCESSIBILITY VARIABLES	Weighted sample (N=1102)	Women who delivered in a facility (N=612)	Women who did not deliver in a facility (N=490)	P value[a]
	Column %	Row %	Row %	
Region of Residence				
Greater Accra	10.8	79.4	20.6	<0.001
Western / Central	21.5	56.1	43.9	
Volta / Eastern	17.7	56.9	43.1	
Ashanti / Brong Ahafo	24.0	67.2	32.8	
Northern	18.5	23.0	77.0	
Upper West / Upper East	7.5	60.1	39.9	
ACCEPTABILITY VARIABLES	Column %	Column %	Column %	
Concern no female provider as barrier to seeking health care				
Not a big problem	81.2	83.6	78.3	NS
A big problem	18.8	16.4	21.7	
SOCIAL ACCESS VARIABLES				
Needing permission as barrier to seeking health care				
Not a big problem	90.5	93.3	87.0	0.007
A big problem	9.5	6.7	13.0	
Not wanting to go alone as barrier to seeking health care				
Not a big problem	84.2	87.3	80.2	0.008
A big problem	15.8	12.7	19.8	
Who has final say in health care decisions?				
Woman Alone or w/Partner	59.9	63.6	55.2	0.04
Partner, Someone Else	40.1	36.4	44.8	

[a] means compared using binary logistic regression for continuous variables, chi-square for categorical variables

* No accommodation variables included for women who delivered in a facility, see Table 3.1

Table 3.4: Health service utilization variables, stratified by delivery location

PRIOR UTILIZATION VARIABLES	Weighted sample (N=1102) Column %	Women who delivered in a facility (N=612) Column %	Women who did not deliver in a facility (N=490) Column %	P value[a]
Prenatal care from a doctor, nurse, or midwife				
No	15.8	7.3	28.7	<0.001
Yes	84.2	92.7	71.3	
Told about pregnancy complications at ANC				
No	31.6	22.9	45.8	<0.001
Yes	68.4	77.1	54.2	
Told where to go for complications during ANC				
No	7.1	7.2	6.9	NS
Yes	92.9	92.8	93.1	
	Total sample mean	Facility delivery mean	Non-facility delivery mean	
Mean number of ANC visits	5.8	6.6	4.5	<.001

[a] means compared using binary logistic regression for continuous variables, chi-square for categorical variables

Table 3.5: Forward stepwise logistic regression with facility-based delivery in Ghana as outcome variable, demographic variables as predictors (N= 1010, Odds Ratios (95% CI))

	Model 1: Combined Demographic Variables OR (95% CI)
Age at first marriage	1.1 (0.9-1.1)
Maternal literacy	
(Ref: Cannot read)	-
Read partial sentences	3.0** (1.4-6.0)
Read complete sentences	2.3** (1.3-4.2)
Partner's education	
(Ref: No education)	-
Primary	1.5 (0.7-3.0)
Secondary	1.7* (.99 – 2.9)
Higher	4.6** (1.5-13.9)
No polygamy	0.9 (0.6 – 1.6)
Urban residence	5.2*** (3.0-8.9)
Traditional religion	0.4* (0.1, 0.9)
Muslim religion	0.4** (0.2, 0.8)
Ethnicity (Akan)	1.0 (0.6, 1.6)

*p<.05, **p<.01, ***p<.001

Table 3.6: Forward stepwise logistic regression with facility-based delivery in Ghana as outcome variable, access clusters as predictors (N= 1010, Odds Ratios (95% CI))

	Model 2: Affordability OR (95% CI)	Model 3: Accessibility OR (95% CI)	Model 4: Prior utilization OR (95% CI)	Model 5: Social access OR (95% CI)	Model 6: Final model OR (95% CI)
Affordability					
Wealth Index	2.3*** (2.0-2.7)				1.8*** (1.4 – 2.2)
Insurance	2.7*** (1.8 – 4.2)				2.8*** (1.9 – 4.2)
Cost of treatment as barrier	0.7 (0.4 -1.0)				
Accessibility					
Distance as barrier		0.6 (0.3 – 1.2)			
Finding transport		1.0 (0.5 – 2.2)			
Urban location		6.3*** (3.8 – 10.6)			1.9* (1.0-3.6)
Region (ref: Accra)					
Western / Central		0.7 (0.3 – 1.8)			
Volta / Eastern		1.1 (0.4 – 3.1)			
Ashanti / Brong Ahafo		1.4 (0.5 – 3.6)			
Northern		0.2*** (0.07-0.4)			
Upper West / East		1.5 (0.5 – 4.2)			
Prior Utilization					
ANC w/ MD			1.4 (0.8-2.6)		
ANC w/ nurse or midwife			1.6 (0.9-2.8)		
Told where to go for complications at ANC			0.4*** (0.3 – 0.7)		0.7*** (0.6-0.9)
Told about complications at ANC			0.4 (0.1 – 1.0)		
Number of ANC visits			1.5* (1.0 – 2.2)		

Table 3.6 (forward stepwise logistic regression, con't)

	Model 2: Affordability OR (95% CI)	Model 3: Accessibility OR (95% CI)	Model 4: Prior Utilization OR (95% CI)	Model 5: Social Access OR (95% CI)	Model 6: Final Model OR (95% CI)
Social Access					
Needing permission				0.5* (0.3 – 0.9)	
Not wanting to go alone				0.7 (0.4 – 1.0)	
Not having final say in health decisions				0.7* (0.5 – 0.9)	
Maternal literacy (Ref: Cannot read)					-
Read partial sentences					2.7** (1.3-5.7)
Read complete sentences					1.6 (0.9 – 3.0)
Traditional religion					0.6 (0.3-1.6)
Muslim religion					0.5* (0.3, 0.9)

*p<.05, **p<.01, ***p<.001

Table 3.7: Forward stepwise logistic regression with facility-based delivery in Ghana as outcome variable, social access factors as predictors (N= 1010, Odds Ratios (95% CI))

Social Access (SA)	SA Model 1 OR (95% CI)	SA Model 2 OR (95% CI)	SA Model 3 OR (95% CI)	SA Model 4 OR (95% CI)	SA Model 5 OR (95% CI)	SA Model 6 OR (95% CI)
Needing permission	0.5** (0.3 – 0.8)	0.6 (0.3 – 1.0)	0.6 (0.3 – 1.1)	0.7 (0.4 – 1.4)	0.5* (0.3 – 0.9)	1.0 (0.5 – 1.8)
Not having final say in health decisions	0.7* (0.5 – 1.0)	0.8 (0.5 – 1.1)	0.7 (0.5 – 1.0)	0.9 (0.6 – 1.3)	0.7* (0.5 – 0.9)	0.9 (0.6 – 1.4)
Maternal literacy (Ref: Cannot read)						
Read partial sentences		4.4*** (2.3 – 8.3)				2.7** (1.3 – 5.5)
Read complete sentences		6.5*** (3.7 – 11.4)				1.7 (0.9 – 3.2)
Covered by health insurance			4.7*** (3.1 – 7.0)			2.9*** (1.9 – 4.3)
Wealth index				2.5*** (2.1 – 2.9)		2.1*** (1.8 – 2.5)
Traditional religion					0.1*** (0.05-0.4)	0.6 (0.2 - 1.5)
Muslim religion					0.5** (0.3 – 0.8)	0.6 (0.4 – 1. 0)

*p<.05, **p<.01, ***p<.001

Table 3.8: Reasons given for not delivering in a facility (Weighted Sample N = 261)

	N (%)*
AFFORDABILITY	
Costs too much	30 (11.6)
AVAILABILITY	
Facility not open	10 (3.9)
ACCESSIBILITY	
Too far/ no transportation	74 (28.5)
Did not know where to go	1 (0.4)
ACCEPTABILITY	
No female provider	0 (0)
Don't trust facility / poor quality service	3 (1.0)
Afraid to go	9 (3.3)
ACCOMODATION	
Inconvenient service	24 (9.2)
Long wait time	20 (7.5)
SOCIAL ACCESS	
Didn't think it was necessary	78 (29.9)
Father did not think it was necessary	1 (0.4)
Family didn't think it was necessary	13 (4.9)
Not customary	1 (0.4)
No one to accompany	10 (3.9)
Not the first child	11 (4.4)

* Percents total more than 100 because some women gave more than one response

CHAPTER 4

"They treat you like you are not a human being":

Midwifery maltreatment in northern Ghana

Chapter Abstract

Background: Maltreatment during labor and delivery is an important potential deterrent for women in the developing world to seeking facility delivery. However, very little research exists that addresses this issue.

Methods: This study aimed to explore community and health-care provider attitudes toward maltreatment in the delivery setting, comparing findings against The White Ribbon Alliance's 7 fundamental rights of childbearing women. (Respectful Maternity Care Advisory Council, 2011) In-depth interviews and focus group discussions were conducted in the Upper East Region of northern Ghana among women with newborn infants, grandmothers, household heads, compound heads, community leaders, traditional birth attendants, traditional healers, and formally trained health care providers. All interactions were audiotaped, transcribed, and analyzed using NVivo 9.0.

Results: 128 community members participated in 7 focus groups and 43 individual interviews. An additional 13 health care providers participated in individual interviews. Despite the majority of respondents reporting positive experiences in health care settings, unprompted, 6 out of 7 community focus groups included a discussion of maltreatment, 14 out of 43 community interviews included descriptions of maltreatment, and 8 out of 13 interviews with health care providers included discussion of maltreatment. Pursuant to the 7 fundamental rights of childbearing women, respondents reported physical abuse, verbal abuse, neglect, and discrimination. One additional category of maltreatment identified in the data was denial of traditional practices. Without being asked about maltreatment, it was described by all types of interview respondents in this community, suggesting that the problem is not only widespread but that it is well-known to dissuade some women from seeking facility delivery.

Conclusion: In summary, maltreatment during labor and delivery, while not universal, is a problem for women in northern Ghana that may prevent some women from seeking facility-based delivery. Both community members and health care providers describe midwives subjecting laboring women to physical abuse, verbal abuse, neglect, discrimination, and denial of traditional practices. Future research is needed that attempts to quantify these behaviors, including the development of a validated instrument that can be used to assess the true magnitude of the problem of maltreatment. Future interventions are necessary to address and correct the problem, ensuring that all women who arrive at a facility receive timely, professional, non-judgmental, high-quality delivery care.

Introduction

Every year in the developing world, nearly a quarter of a million women die as a result of pregnancy-related causes, and approximately 3 million babies die in the weeks immediately following delivery. (WHO, 2012; Lozano et al., 2011) Facility-based delivery has been identified by the World Health Organization as a critical strategy for reducing these deaths, based on the idea that skilled birth attendance and increased access to emergency obstetric care and qualified neonatal care are more likely if women in the developing world deliver their infants in a health care facility. (WHO, 2004; Prata et al., 2011)

Nonetheless, many things prevent women from delivering their babies in a health facility, including logistical factors such as cost (Ahmed et al., 2010; Hong et al., 2011; Montagu et al., 2011; Ochaka et al., 2011; Olusanya et al., 2010; Spangler and Bloom, 2010; Zere et al., 2011), distance to facilities and lack of transportation (De Allegri et al., 2011; Faye et al., 2011, Gabrysch et al., 2011; Hounton et al., 2008; Mpembeni et al., 2007; Rockers et al., 2009; Spangler and Bloom, 2010; Tann et al., 2007), and unexpected, rapid, or ill-timed onset of labor. (Galaa and Daare, 2008; Uyirwoth et al., 1996) Social factors, such as the need to seek permission from others before going to a health facility, can also prevent women from delivering anywhere but at home. (Bazzano et al., 2008; Danforth et al., 2009; Jansen, 2006; Lori and Boyle, 2011; Magoma et al., 2010; Mills and Bertrand, 2005; Mpembeni et al., 2007)

In addition, research suggests that women's perceptions regarding the quality of delivery care they will receive at a facility can influence delivery choices (Galaa and Daare, 2008; Kruk et al., 2010; Mills et al., 2008; Onah et al., 2006; Osubor et al., 2006),

as can women's perceptions of staff attitudes and behavior in facility settings. (Ejembi et al., 2004; Kruk et al., 2009; Kyomuhendo, 2003; Onah et al., 2006; Uyirwoth et al., 1996) Although much of the quality of care literature focuses on perceived competence of the health care provider, an important factor that is not well-documented but can have profound effects on women's delivery choices is mistreatment at the hands of midwives at a health facility.

Mistreatment in health facilities (often called "maltreatment" in the African context) has been described or alluded to as part of larger studies in Ghana (Bazzano et al., 2008; D'Ambruoso et al., 2005; Mills and Bertrand, 2005), Nigeria (Asuquo et al. 2000; Ejembi et al., 2004; Onah et al., 2006), Swaziland (Uyirwoth et al., 1996; Thwala et al., 2011), Tanzania (Kruk et al., 2009; Spangler and Bloom, 2010), and Uganda (Kyomuhendo et al., 2003). There is no uniform definition of maltreatment used throughout the research literature, and there is no standardized instrument to measure its prevalence. Maltreatment has been conceptualized as general abusive treatment toward women (Asusquo et al., 2000), negative or unfriendly staff attitudes (Asusquo et al., 2000; D'Ambruoso et al., 2005; Mills and Bertrand, 2005), verbal abuse (Mills and Bertrand, 2005), or sexual abuse (d'Oliveira, et al., 2002). Editorials have added bullying and medical treatment under false pretenses to the list of behaviors that qualify as maltreatment. (Hodges, 2009) In the 'grey literature' associated with advocacy organizations, non-governmental organizations, and government-sponsored reports, maltreatment has been described as encompassing neglect (FIDA-Kenya, 2007; Bowser and Hill, 2010; Human Rights Watch, 2011), physical and verbal abuse (FIDA-Kenya, 2007; Bowser and Hill, 2010; Human Rights Watch, 2011), detention at facilities if

women are unable to pay for services (FIDA-Kenya, 2007; Bowser and Hill, 2010), non-consented care (Bowser and Hill, 2010; Human Rights Watch, 2011), discrimination based on patient attributes (Bowser and Hill, 2010), and health care workers delivering services in exchange for bribes. (Human Rights Watch, 2011)

The drivers of maltreatment, which is most often discussed in the context of nurse or midwife interactions with pregnant or delivering women, are not well understood. In many developing countries, nurses in the public sector are working long hours in harsh conditions, and there are extreme power differentials between them and their predominantly poor, illiterate patients. (Jewkes et al., 1998) "In these situations nurses have been reported to employ humiliation, verbal coercion, and even physical violence to assert their authority and control patient behavior." (Jewkes et al., 1998, p 1781) Anecdotal reports from midwives in rural Ghana suggest that they will do whatever it takes to help a woman deliver a healthy baby – even if that means hitting her to help her focus on pushing during delivery.

In 2010, US-AID sponsored a meeting of governmental and non-governmental public health and human rights organizations active in the area of maternal health to review the topic of respectful and disrespectful birth care, including abusive maternal care. (Bowser and Hill, 2010) Out of this meeting, the Translating Research into Action Project (TRAction Project) generated a comprehensive review of the evidence to date regarding respectful care; including available evidence on the scope, contributors, impact, and promising intervention approaches. Notably, the TRAction team concluded that despite general agreement in the maternal and child health community about the importance of respectful, non-abusive care, very little formal research has been

conducted. Nonetheless, what research has been conducted suggests that "disrespect and abuse may sometimes act as more powerful deterrents to skilled birth care utilization than other more commonly recognized deterrents such as geographic and financial obstacles." (Bowser and Hill, 2010, p 3)

In 2011, the advocacy organization The White Ribbon Alliance for Safe Motherhood published a charter to formally recognize seven fundamental rights of childbearing women, which map to seven categories of disrespect originally put forth by Bowser and Hill (2010). These include: physical abuse, non-consented care, non-confidential care, non-dignified care (including verbal abuse), discrimination based on specific patient attributes, abandonment of care, and detention in facilities. (Respectful Maternity Care Advisory Council, 2011) Notably, these categories are not meant to be mutually exclusive as many types of maltreatment encompass multiple categories.

This study sought to explore the issue of maltreatment in rural northern Ghana using a broad cross-section of community respondents as they discussed the myriad issues surrounding childbirth in this region as part of a larger study. (Engmann et al., 2012; Moyer et al., 2012; Aborigo et al., 2012) The initial focus of this study was to determine whether maltreatment was a topic that was mentioned by community members without prompting. Next, the categories of maltreatment described in the existing literature were compared against those identified in this region of Ghana. Finally, data from a range of respondents – including health care providers – were examined to illustrate the types of maltreatment occurring in facilities in rural northern Ghana and the frequency with which maltreatment was brought up during interviews and focus groups.

Methods

This study grew out of the Stillbirth And Neonatal Death Study (SANDS) in northern Ghana from July through October 2010. (Engmann et al., 2012; Moyer et al., 2012; Aborigo et al., 2012) The qualitative methodology of the SANDS study is described in detail elsewhere. (Moyer et al., 2012; Aborigo et al., 2012) This study focuses on interview and focus group data spanning the antenatal and perinatal period and excludes interactions solely focused on an infant's first seven days of life.

Study Setting

The SANDS research team collected all data in the Kassena-Nankana District of the Upper East region of northern Ghana. Approximately 90% of the district's 150,000 inhabitants live in rural settlements. Subsistence agriculture is predominant and poverty is widespread. Settlement patterns are often characterized by extended families living in collections of small mud huts, or compounds, surrounded by farmland. (Ngom et al., 2003) The society is patrilineal, and each compound is typically headed by the most senior male who often serves as the ultimate decision-maker for the compound. The compound head is said to be responsible for the social, religious, economic, and political well-being of all members of his compound. (Ngom et al., 2003) The Kassena-Nankana district has five health centers that refer to one major hospital in the district capital of Navrongo.

Data Collection

Members of the research team conducted in-depth interviews and focus group discussions among a wide cross-section of individuals, illustrated in Table 4.1. Focus groups and interviews were conducted using several variants of a semi-structured

interview tool that was developed by the investigators for the SANDS study based on "Saving newborn lives, tools for newborn health: Qualitative research to improve newborn care practices, 2004." (Parlato et al., 2004) The tool varied based upon the type of interaction (interview vs. focus group) and the type of respondent.

Selection of Participants

The Kassena-Nankani District is divided into four zones for enumeration purposes: two were randomly selected for data collection in this study.

Community Participants

Community Key Informants (CKIs) provided a list of women who delivered infants within the previous 29 days in each selected zone. CKIs live within the community and work with the Navrongo Health Research Center (NHRC), an INDEPTH Demographic Health Surveillance Site, to routinely collect information on vital events including births, deaths, pregnancies and marriages. The research team categorized the list of mothers into strata based on literacy, place of delivery, and number of previous deliveries to maximize the variability of the sample. Based on recommendations from the CKIs within the two zones, the team purposely selected traditional birth attendants (TBAs), herbalists, and other local healers outside the formal health care system. Researchers conducted in-depth interviews with all of these types of respondents.

The research team randomly selected 10 community clusters across the 2 selected zones for the purpose of focus group recruitment. CKIs who live in those communities identified grandmothers with relevant experience in neonatal health. In addition, the Navrongo Demographic Surveillance Site database generated a random list of 20 household heads and 20 compound heads from the same communities to recruit

participants for focus group discussions. The research team then contacted individuals in the order that they appeared on the list and invited the first 12 to grant consent to participate in the discussions.

Health Care Providers

The research team also selected a purposive sample of health care providers working in the region, including nurses, midwives, nurse/midwives, medical assistants (the equivalent of high school graduates with less than 2 years of health care training), and physicians. Medical doctors practice in the only hospital in the district, thus interviewers selected and recruited doctors for the in-depth interviews at the district hospital. All health care providers were interviewed individually.

The Interviewers

Trained field staff employed by the NHRC conducted all community-based interviews, while graduate students from the United States conducted health care provider interviews. One of the co-investigators (RA) led a week-long interviewer training session for all interviewers, totaling nearly 25 hours of instruction and mock interviews. All interviewers conducted a pretest interview that was reviewed and discussed to optimize data collection. Half of the interviewers had received similar training in the past, due to their involvement in previous NHRC studies. A total of 6 individuals conducted the interviews and focus groups for this project. Four were Ghanaian (2 undergraduates and 2 graduate students at a nearby university; 3 were male, 1 was female) and 2 were from the United States (both were female medical students). The American interviewers conducted interviews with English-speaking health care providers; the Ghanaian interviewers conducted all remaining interviews. Ghanaian interviewers were fluent in both the

respondent's native language (either Kasem or Nankani) but also in English, the official language in Ghana. Although they were fluent in the local languages, the Ghanaian interviewers did not come from the communities where the interviews were conducted. There were no known relationships between interviewers and participants.

In-Depth Interviews(IDIs)

Interviewers worked in pairs to conduct in-depth interviews with community members, relying upon a semi-structured instrument and detailed probes to guide the discussion. Interviews occurred mostly in respondents' homes except for those with health care workers, which were held in local clinics and the district hospital. Sessions typically lasted approximately an hour. All interviews were audio-recorded, and a second field team member took field notes. Interviews were conducted with women with newborn infants, traditional birth attendants, and herbalists in the respondent's native language (either Kasem or Nankana). The interview team then transcribed all interviews into English, with unique words and phrases – or those that were difficult to translate – remaining in the local language. Interviewers conducted in-depth interviews with health care providers in English and transcribed the audiotape of the interview verbatim.

Focus Group Discussions (FGDs)

Eight to ten community members participated in each focus group. The interviewer posed questions to the group and then took responses one by one, moving the hand-held microphone closer to the respondent who was speaking. The interviewer worked with an assistant who took notes and kept track of respondents who were not fully participating to ensure all voices were heard. Focus groups typically lasted 60 to 90

minutes. All focus groups were audio-recorded, conducted in the local language, and transcribed into English.

Permission and Invitation to Participate

Investigators sought and obtained permission to conduct focus groups in the community from compound heads and/or community leaders. Investigators also sought and obtained permission to conduct interviews at the health facilities from the appropriate authorities at each facility.

Interviewers described study objectives and logistics of participation to each potential participant. Each was taken through a verbal informed consent process, including seeking permission to audio-record their interview or focus group. Each participant was assigned a unique ID number that reflected the survey format, the type of respondent, their ethnicity, and the number of the interview. Thus IDI-WNI-K2 reflected the second interview with a woman with a newborn infant of Kassena ethnicity.

Participants were not financially compensated for participating in the study; however, interviewers gave community-based respondents two cakes of soap as a token of appreciation for their participation. This study was approved by the institutional ethics review committees of the Navrongo Health Research Center and the Universities of Michigan, North Carolina, and Ghana.

Data Analysis

Interviewers transcribed all data into Microsoft Word for Windows. If the audiotape or translated interpretation was unclear, all interviewers and the Project Director listened to the tape and/or discussed the translation and came to consensus on the best translation. In select cases, the original word or phrase in Kasem or Nankani was

left in the transcript. In addition, interviewers transcribed field notes into the research record.

Field staff and one of the investigators reviewed all transcripts for errors. Transcripts were adjusted only after discussing the transcription with the interviewer/transcriber to ensure appropriate meaning.

At least 3 of the investigators (CM, RA, CE) read each transcript and performed "in vivo" coding to identify main codes. This involved making written notes on hard copies of the transcripts and reviewing the notes together. From the in vivo coding, a preliminary coding structure was agreed upon and a codebook was created. Transcripts were entered into NVivo 9.0 qualitative software. Four separate coders used the codebook to conduct focused coding. Coders included one of the investigators (CM) and 3 master's level public health researchers.

The coding team met regularly to discuss the meaning and application of codes. New themes that had arisen were discussed and the project codebook was updated to incorporate new codes and revise existing codes.

All codes pursuant to providers' treatment of women in facility settings as well as perceived barriers to facility delivery were examined. All such "nodes" in NVivo were examined with an eye toward categorizing provider treatment into one of the following 7 categories as described by The White Ribbon Alliance (Respectful Maternity Care Advisory Council, 2011): physical abuse, verbal abuse (non-dignified care), neglect (abandonment of care), discrimination, non-consented care, non-confidential care, and detention of women for failure to pay. One additional code was identified during this process: denial of traditional customs.

Data for this study were analyzed in two stages. First, data were analyzed from all respondents together, and then the data from health care providers was disaggregated and examined separately. Themes found in overall analysis were compared against provider-specific themes.

Note that data from individual, in-depth interviews were analyzed together with data from focus groups. Individual interviews are often hallmarked by a greater depth of exploration encouraged by one-on-one interaction between interviewer and respondent. (Reed and Payton, 1997) Focus groups often generate a dynamic discussion among their multiple participants as the group members negotiate the shared meaning of a concept, and some have suggested they may provoke 'considerably greater spontaneity and candor than can be expected in an individual interview.' (Goldman, 1962) While some qualitative methodologists advocate separate analysis of focus group data to allow for exploration of such things as conversational sequence and the impact of dominant members, data were combined for this analysis due to the study's explicit emphasis on exploring spontaneously generated content across a variety of respondents in both in-depth interviews and focus group settings. The research presented here is less focused on how subjects interact than on the topics about which they are interacting – thus the decision to combine focus group and interview data for analysis.

Results

The SANDS research team interviewed 43 community members, including 23 women with newborn infants, 7 traditional birth attendants and herbalists, and 13 community leaders. The team conducted 7 focus groups with 72 community members, including 30 grandmothers, 22 compound heads, and 20 heads of household. Interviewers

also conducted one-on-one interviews with 13 health care providers in the region, including physicians, nurses, midwives, and medical assistants. (See Table 4.1.) Data from providers is reported separately from community members.

Across all types of community respondents, maltreatment was spontaneously mentioned when respondents were asked to describe potential barriers to facility delivery or asked how women were treated at facilities. Six out of seven focus groups with community members included discussion of maltreatment, and 14 out of 43 individual interviews with community members included mention of maltreatment. (See Table 4.1.)

Respondents described maltreatment as encompassing physical abuse, verbal abuse, neglect, discrimination, and denial of traditional customs. (See Tables 4.2 and 4.3a – 4.3c for selected, illustrative quotes across respondent categories.) Respondents did not report non-consented care, non-confidential care, or detention at health facilities for inability to pay.

Physical Abuse

Women, grandmothers, household heads, and compound heads all described women in labor being hit, slapped, kicked, or beaten – most often in an attempt to get women to push.

> *Interviewer: "Do you think most women here like to deliver at home?"*
> *Respondent: "Yes."*
> *Interviewer: "Why?"*
> *Respondent: "They said they nurses beat them." (laughter)*
> *Interviewer: "Why do you think they beat them?"*
> *Respondent: "If the nurses asked the women to push for the baby to come out and they feel lazy to push for the baby to come out, they beat and shout at them."* (IDI, Woman with Newborn Infant)

One respondent, a male head of household, described how fear of physical abuse delayed his wife's arrival at the clinic. Notably, he blamed his wife's stubbornness rather than the nurses' maltreatment for her refusal to go to the facility when first in labor.

> *"What they have said is true … my wife was in labour for two days, the first day I told her to go to hospital and she refused. The following day she said the pains has stop, she will not go to the hospital for the nurses to be insulting her and kicking her. I then told her that now that she is sitting she is weak, so if something happens to her that will not be my problem. It was on the third day I saw her putting her clothes together so I also came to inform my friend who is having a taxi to come and carry her to the hospital. When they got to the hospital she did not even keep long in the room when she gave birth. When the baby came out too, the baby was weak and the nurses said there was too much "**Puya**" (malaria) in the baby so they treated the baby and now the baby is fine. So some of the women is stubbornness, they do not listen to advises. So those type of women, when they die is it my fault or their fault?"* (IDI, Household Head)

None of the respondents interviewed described abuse at the hands of a traditional birth attendant or midwife outside a facility setting.

Verbal Abuse

Respondents reported that midwives and nurses shouted at women, spoke about inappropriately intimate things ("talking to them by heart"), insulted them, and spoke harshly. This occurred during labor as well as at routine prenatal and post-natal care visits.

> *"When she is going to deliver, shouting at them, insults, (the nurse) insults her and talks to her by-heart, which should not have been so because as she is delivering she is suffering."* (IDI, Traditional Healer)

> *"… Let me add that some of our nurses have to handle the women with care, because when a woman is in pain what the nurses would say is when you were enjoying (your sex) was I there? But professional you are there for that. So I think they should handle them with care. One day a woman slapped a nurse after delivery because of the treatment she had from her."* (IDI, Assemblyman)

Respondents indicated that such treatment is likely to have a negative effect on desire to deliver at a facility in the future:

> *"Like if a woman goes there to deliver and she is not due you will see them shouting at her telling her that she is making noise. If she is lucky and delivers, next time when she is in labor and you ask her to go to the hospital she will not go. The nurses shout on them that is why some of them do not go to the hospital."* (FGD, Grandmother)

This belief was reiterated by women with newborns, traditional birth attendants, household heads, and compound heads.

> *"In the house the old women will pamper you, but in the hospital they will be shouting on you treating you as if you are not a human being."* (IDI, Woman with Newborn Infant)

> *"Yes most women will like you to help them deliver in the house because when they go to the clinic the woman shouts on them telling them that they are being pampered whiles it is paining them, so most women will tell me to help them deliver in the house."* (IDI, Traditional Birth Attendant)

> *"Out of fear of what the nurses might say and the way and manner they say it harshly can prevent you from taking your wife or child to the facility."* (FGD, Compound Head)

> *"But some of the nurses that insult the women who come there to deliver have forgotten that they are also women who have given birth before and even that it is through birth that is why they are sitting there calling themselves nurses. When a woman is in labour she is like a child. It is after delivery that the woman can rest. If it is like that next time when you ask her to go, will she go? She tells you that it is better for her to deliver in the house than to go to the hospital for them to insult her. That is why most of them do not go to the hospital to deliver."* (FGD, Household Head)

In addition to being treated poorly during labor and delivery, respondents reported that women were sometimes not treated well when they came to clinic for antenatal care:

> *"If a woman was supposed to come for weighing and she failed and go another time, they will just raise insults on her and ask her why she did not come when she knew she was due for weighing."* (IDI, Chief)

Insults included mocking women who were pregnant at an older age:

> *"Like at the antenatal they can ask a woman why at her old year she still gets pregnant, this offense to the women instead of advise them and educating them to know that at certain age is not good to get pregnant, they speak harshly to them which prevents them from going back to the clinic."* (IDI, Chief)

Neglect

Respondents described several situations in which laboring women or women who had recently delivered were left alone or ignored in a manner they perceived to be inappropriate. One traditional birth attendant described begging a nurse to attend to a laboring mother who was very close to delivery, only to be told to take the woman out for a walk. The woman began to deliver as soon as they went outside. A woman with a newborn infant described being left alone to deliver, and it was only after she finished delivering that the midwives attended to her. (See Table 4.3)

> *"Some nurses do not handle the women well because when you go there, they do not have time for the pregnant women, they only dump you on the bed for you to be having your pains there while she is sitting somewhere."* (FGD, Grandmothers)

> *"Some of the nurses will not even pay any attention to you and your daughter and you will be sitting there crying. This is why some of them also refuse to go to hospital and will deliver in the house."* (FGD, Grandmothers)

Discrimination

All types of community respondents suggested that the poorest women and the women with the least education were the most likely to experience discrimination and neglect when they visited health facilities. One compound head reported nurses ignoring his family while they attended to the families with money.

Several respondents indicated that nurses expected women to bring various things to the facility for delivery, such as clean clothes for the baby, a clean receiving blanket, and soap for the nurses to wash their hands. If women didn't have those things at delivery, the nurses were more likely to treat women poorly.

> *"At times, they demand for soaps knowing very well that we are poor and we don't (have) anything."* (IDI Women with Newborn Infant)

> *"In the hospital if a woman goes there to deliver and she did not buy the baby's clothes and things, the nurses will be insulting her."* (FGD, Household Head)

Denial of Traditional Customs

The maintenance of traditional customs surrounding childbirth appeared to be a controversial topic in our data, with many respondents saying that nothing like that happens anymore, "*We had that in the old days*." (IDI, Chief) However, women and providers disagreed over whether women were allowed to keep the placenta for burial after delivery, how they were allowed to labor once they arrived at the facility, and what women were allowed to do at the facility. As one new mother described, "*Some people demand for (the placenta) to take home but these days, the nurses don't agree to give them. They ask, 'Why you want the placenta?' The nurses keep it but I don't know what exactly they do to it.*" (IDI, Woman with Newborn Infant)

Several respondents indicated this can be a problem, given the cultural significance of the placenta:

> *Respondent #2: If it is buried in the house is a sign of identification that the baby is really a true member of the house*
> *Respondent #3: It is good to bury it in the house because it keeps the baby's spirit and soul healthy.* (FGD, Household Heads)

Counter Perspectives

Despite the number of respondents who brought up maltreatment, many had only positive things to say about midwives, nurses, and delivering at a facility. *"It is just fine, when you go there and see the way the nurses treat (the women), it is fine and you will like to ask your child to go there if she is pregnant."* (FGD, Grandmother) A woman who recently delivered at a facility also described a very positive experience at her most recent delivery:

> *"Also the Nurses that received me were caring enough because time to time they come to me to see whether the baby's head was coming or I had to wait a bit. They were telling me to be patient, relax or telling me to do this or that so in fact, they were caring enough and I think everything was done successfully."* (IDI, Woman with Newborn Infant)

A local traditional birth attendant also suggested that facilities treated women well. *"They are always treated well because the(y) get better drugs and look healthy. Women are always happy the way they always handle them."* (IDI, Traditional Birth Attendant) Similarly, a local traditional healer described nurses that treated women with respect, *"...When she handled her softly until she delivered without any shouts, without doing anything that showed she was angry, she could say that, 'Oh, this nurse did well.'"* (IDI, Traditional Healer)

One woman's responses reflected the variability seen across providers within the region.

> *"The nurses differ from one another, some of them, those who have patience, they will have time and sit you down and talk to you very calmly. Some too, the moment you get to the clinic the way the nurse will make her face will not let you discuss freely with her, you will not say some of the things you came with. So the nurses are in differences. Some of them when you even get there, you will not even talk and she will know all that is worrying you because the way she will interact with you will answer all questions that you had come with. Others too, all that they will do is for*

> *you to lay down for them to examine you and you will go back home. When you want to talk to them about things that are worrying you, they will tell you to go and see the doctor."* (IDI, Woman with Newborn Infant)

Provider Perspectives on Maltreatment

Similar to community members, health care providers also spontaneously brought up the issue of maltreatment during labor and delivery. Eight out of 13 providers described instances of maltreatment. Although providers did not describe explicit physical and verbal abuse or neglect, many described midwives' negative attitudes toward laboring women, discrimination, and denial of traditional customs.

With regard to negative attitudes toward women, one physician said that, *"(Women) fear to come to the hospital or the health facility because they feel the attitudes there are not friendly."* (IDI, Health Care Provider (physician)) Another suggested that nurses needed to "*tone down the judgment, so to speak*." (IDI, Health Care Provider (physician))

Providers also described discrimination in facility settings.

> *"…The other issue too also has to do with the perceived attitude of health workers to, to these, to these women. They feel they don't, they, they, they get treated like equals. They don't want to come into the hospital. Health workers are perceived to be judgmental, so a lot of people stay away from, from these hospitals."* (IDI, Health Care Provider (physician))

> ***"****Some of them feel when they come to the hospital we will say that … they should have this or have this, but because they don't have even the rag (or) the towel to receive the baby … they don't want to come for the nurses."* (IDI, Health Care Provider)

Health care providers suggested that for some women, denial of traditional practices may be an important deterrent to delivering in a facility.

> *"In fact, probably that's one of the reasons people don't come to deliver. That's a point because some might have some rituals to perform and they*

know when they come here to deliver, they won't get the placenta. You see, so these are all, eh, reasons. Yeah." (IDI, Health Care Provider (physician))

"In the hospitals it's a little more restricted. They are not allowed to do things their way. They have to lie in a certain way and so on." (IDI, Health Care Provider)

Several providers reported that women often want to drink a herbal concoction that they believe facilitates labor, but such a practice is not allowed in the hospital.

"Sometimes when they come and … maybe if the baby is not out they should wait. Some don't want (it) that way and we are trying our best to let them understand. They want to just drink their concoction and deliver, but we always want them to understand so we are trying our best and that is the barrier." (IDI, Health Care Provider)

"Maybe when they check and it's not 10 cm, we tell them not to push. So they want to drink their concoction, they will not allow them to drink it here. So those things are some of (the reasons) they don't want to come." (IDI, Health Care Provider)

As with community-based respondents, not all providers agreed that midwifery maltreatment was a problem. According to one midwife, when asked if she thought there was anything that would prevent a woman from delivering at a facility:

"No. Because we are lovely. We don't discriminate. So I don't think there's something that can prevent anyone, any pregnant woman who is in labor not to come here. Except they will come and then we will refer when it's beyond our distance then we'll refer. (Or) our management. If we cannot manage, then we'll refer." (IDI, Health Care Provider (midwife))

Frequency of Unprompted Mentions of Maltreatment

Despite not asking respondents about maltreatment directly, the topic was spontaneously mentioned repeatedly throughout the data collection period. Fourteen out of 43 interviews with community members contained explicit descriptions of maltreatment, 8 out of 13 interviews with health care providers described maltreatment,

and 6 out of 7 focus groups with grandmothers, household heads, and compound heads included discussions of maltreatment. All of these discussions were unprompted. These numbers are not indicative of the prevalence of maltreatment, yet they speak to the common understanding within this community – and among health care providers – that maltreatment is sufficiently problematic to include in discussions about why women may opt against facility delivery.

Meta Themes

Throughout the data on maltreatment, two overarching "meta themes" were identified that are worthy of further exploration. The first theme is the potential impact of socioeconomic status on women's delivery experiences. The second is the power differentials within the health care setting appear to have a profound effect on women's delivery experiences. While each of these themes is worth discussing independently, the boundaries between them are likely rather amorphous.

The Role of Socioeconomic Status

Socioeconomic status (SES) in this community refers to the differences seen by levels of literacy (ability to read whole sentences vs. parts of sentences vs. unable to read) and the degree of engagement in the formal economy (e.g. subsistence farming, selling vegetables in the market, owning a small business, employment in the formal sector). This sample consisted of a fairly homogenous group of rural mothers and grandmothers who rely largely on subsistence farming. However, data reflect literate and illiterate women, as well as women's group leaders and assemblywomen. While women of varying levels of education and SES reported being ignored by health care providers, made to feel ashamed of their poverty, and spoken to in disrespectful tones, these

findings appeared to be more common among illiterate women. As one illiterate woman with a newborn infant described, "*At times (the nurses) demand for soaps knowing very well that we are poor and we don't (have) anything."*

The maltreatment category of 'discrimination' in this setting in northern Ghana is also almost entirely hinged on socioeconomic differences. Community members repeatedly reported being ignored in favor of patrons with money or being "disturbed" by the nurses if they are not clean or not dressed well.

> *"Some of the women will say when they go there, the people at the hospital disturbs them because she has not got good clothes… when you tell her to go she will tell you that she will not go because of those things."* (FGD, Household Head)

Power Differentials

A second theme that permeated the data related to the power differentials within the health care setting. Physicians reside at the top of the hierarchy, but they only practice in the largest hospitals in the region. In the smaller regional health care centers, nurses and midwives are often in charge. Below the nurses and midwives are the assistants and the clerks. All of these people are employed, and all of these people earn a consistent paycheck – which is quite different than the subsistence farming that predominates among community members. Women entering a facility are often made aware of their position in the hierarchy immediately: They are at the bottom. "*When we go to the hospital, the doctors do not even (take) time to ask us why we are there. It is the lucky ones that can see the doctor, they do not even look at us*." (IDI, Traditional Birth Attendant) And women feel limited recourse when they are ignored or mistreated: "*Some of the nurses will not even pay any attention to you …. This is why some of them also refuse to go to hospital….*" (FGD, Grandmothers)

It is unclear whether the source of these behaviors is best attributed to socioeconomic differences and the chasm of 'social distance' between providers and their patients, or whether the power hierarchy that separates patients from the nurses, midwives and physicians in charge is a stronger determinant.

Discussion

This study found that women delivering in facilities in rural northern Ghana experienced physical abuse, verbal abuse, neglect, discrimination, and denial of traditional customs. These findings do not suggest that such occurrences are ubiquitous, and many women report receiving excellent care in a facility setting. Nonetheless, there is a consistent undercurrent of fear of maltreatment in this population.

In comparing these findings to previously published frameworks for understanding maltreatment (Respectful Maternity Care Advisory Council, 2011), these data confirm the categories of physical abuse, verbal abuse (non-dignified care), neglect (abandonment of care), and discrimination based on specific patient attributes. These data do not include instances of non-consented care, non-confidential care, or detention at facilities if women are unable to pay. Note, however, that specific questions about any of those occurrences were not asked. One additional category of maltreatment was identified that has not been previously described in the literature: denial of traditional customs.

These results corroborate the limited research literature on maltreatment during delivery. Verbal abuse has been reported previously by Bazzano et al. (2008) in Ghana. "Abusive treatment" has been described by Asuquo et al. (2000) in Nigeria, and negative and unfriendly staff attitudes as a barrier to seeking facility delivery have been reported

throughout sub-Saharan Africa (Asuquo et al., 2000 (Nigeria); D'Ambruoso et al., 2005 (Ghana); Kruk et al., 2009 (Tanzania); Ejembi et al., 2004 (Nigeria); Onah et al., 2006 (Nigeria); Mills and Bertrand, 2005 (Ghana); Uyirwoth et al., 1996 (Swaziland)). In addition, the fear of being shamed (Spangler and Bloom, 2010 (Tanzania)) and the fear of being "treated like a child or a fool" (Kyomuhendo et al., 2003 (Uganda)) have been reported as barriers to facility delivery. Finally, Thwala et al. (2011) conducted a study in Swaziland that reported on the taboos associated with not keeping traditional practices, which are often not allowed in facilities. Taken together, these results support the categories of maltreatment presented in Tables 1 and 2. Maltreatment at the hands of nurses and midwives in health facilities is a multi-faceted problem that will likely require multi-faceted solutions.

Numerous studies have documented the relationship between lower socioeconomic status and lower rates of facility-based delivery. The causal pathway is typically described as wealth being related to health insurance coverage, ability to pay for services, ability to seek transport to a facility, and proximity and access to higher-quality, more desirable facilities. What has not been explored, however, is the relationship between SES and some of the social factors that also influence facility-delivery, including midwifery maltreatment. The results presented here suggest that low socioeconomic status may be a risk factor for especially challenging interactions in a facility setting given the increased "social distance" between providers and their clients. This is corroborated by a study by Jewkes et al. in South Africa, where the authors conclude that "nurses were engaged in a continuous struggle to assert their professional and middle class identity and in the process deployed violence against patients as a means

of creating social distance." (Jewkes et al., 1998, p 1781) If women of lower SES are more likely to experience maltreatment in a facility setting, it raises questions about the long-term impact on women's attitudes toward western medicine and health-seeking behavior. Several respondents indicated that women who were maltreated were not likely to return to the clinic for their next deliveries. If those women are disproportionately of lower socioeconomic status, maltreatment can increase the well-documented divide in health-seeking behavior between wealthier, better-educated women and those with less education and fewer economic resources. It is also possible that if women of lower SES avoid the clinic for fear of maltreatment – and perhaps turn to traditional treatments instead – it may reinforce their beliefs about the value of traditional medicine. Thus it is possible that maltreatment reinforces and exacerbates the existing differences seen in the literature indicating that women with the lowest SES are the least likely to deliver in a facility and are also the most likely to endorse traditional treatment.

Physicians interviewed for this study suggested that the nurses and midwives needed to "tone down the judgment, so to speak." Yet these data do not elucidate where the nurses and midwives who mistreat women learned that behavior. Did they learn it within the health care hierarchy by being treated similarly by physicians? None of the midwives in this sample described being mistreated by physicians, but it was also not a question that was explicitly asked. It is possible that they are modeling behavior they have seen elsewhere, perhaps exaggerated in a setting where there is no accountability or consequences as the nurses and midwives are ultimately in charge.

These data also do not address the differences between midwives, specifically why some treat women kindly while others treat them in a more adversarial manner.

Multiple quotes allude to midwives taunting women, suggesting that the midwife wasn't there while the woman was having sexual intercourse so she shouldn't have to listen to her complain about the consequences (pain of delivery). This sentiment – cited repeatedly throughout the data – suggests an undercurrent of judgment and disapproval on the part of midwives. The data fail to explore this issue in great detail, but it raises questions about whether there are characteristics of the midwives that predispose some to be more judgmental than others. Are midwives from urban areas more likely to be judgmental of women in rural areas? Are midwives of certain religious backgrounds more disapproving than others? Or are these learned attitudes that span sociodemographic characteristics? Our data also raise the question of whether such statements are reserved for the poorest women, the women with multiple previous births, or the women for whom midwives deem reproduction to be less desirable.

This study has several notable strengths. First, this sample consists of 128 community members representing a diverse cross-section of the population of the Kassena-Nankana District in rural northern Ghana. The SANDS team purposely selected a diverse group of respondents that included women with newborn infants, grandmothers, household heads, compound heads, community leaders, traditional birth attendants, herbalists, midwives, nurses, and physicians. Even among this diverse group, and across both individual interviews and focus groups, the results were remarkably consistent: while maltreatment doesn't occur in every facility with every provider, it is still a significant problem that deters some women from seeking facility delivery in this community. These findings are especially compelling given that respondents were not prompted to discuss maltreatment – it was described spontaneously as part of more

general discussions about the delivery process in this region. Another strength of this study is its explicit identification of the types of maltreatment described and comparison against a previously posited framework. Identification and categorization is a fundamental prerequisite to being able to address and correct maltreatment.

Despite its strengths, there are limitations to this study. First, interviewers did not explicitly ask about maltreatment in interviews and focus groups. Thus it is possible that additional types of maltreatment may have been identified had the topic been addressed directly in our interview instrument. Second, it is possible that selection bias may have influenced the responses, given that this study relied upon both purposive sampling and the identification of respondents based upon those who agreed to participate from previously generated lists. It is possible that those individuals who were purposely selected based on their knowledge of maternal and child health issues in this region of Ghana may have had disproportionate exposure to issues of maltreatment, and it is also possible that those who volunteered to participate may have had different experiences in facilities than women who refused to participate. However, given the number and diversity of respondents and the consistency of the findings, selection bias is unlikely to have had a significant impact on the ultimate findings.

An additional limitation of the study is that undergraduate- and graduate-student interviewers conducted all IDIs and FGDs. Results may have been different if the community members perceived the interviewers to be more similar to themselves. It is also possible that community members were less guarded among students than they might have been with local peers. Yet the volume of information readily volunteered and the 20-year history of the Navrongo Health Research Center conducting interviews in the

community with interviewers very similar to those used in this study suggests that the student status of interviewers is unlikely to have biased the data collected. This study relied upon self-reported data and did not obtain first-hand observations of the treatment women receive when they visit a facility. Nonetheless, the consistency of the findings and the wide variety of respondents who reported similar occurrences suggest that the self-reported data were valid. An additional limitation is that among community members, interviewers collected data in one language and translated it into English for analysis. It is possible that subtleties in meaning were lost in that process, despite efforts to maintain data integrity by retaining local words when the English translation seemed inadequate. Future studies would benefit from analysis conducted in the local languages.

Finally, this study found a divide in the data between those who described maltreatment in detail and those who had very positive experiences in facilities. In the name of anonymity and increasing respondents' comfort with participating in interviews and focus groups, detailed socioeconomic and demographic data were not collected on each of the respondents. While this may have increased participation and encouraged more unfiltered interactions, the lack of individual sociodemographic identifiers precludes the ability to situate discrepant experiences within different social and demographic groups. For example, it may be that the wealthier, better educated women were the ones describing all of the positive experiences. However, the data do not allow for such exploration. Future research is needed that collects detailed social, cultural, and demographic data on individual respondents to encourage a more thorough examination of which women are most likely to experience maltreatment.

The results presented here have several implications for research, practice, and policy. Additional research is needed to better understand the prevalence of abuse in facilities, as well as discovering the precipitating factors and root causes. Are midwives being mistreated by physicians or those higher up in the hierarchy and simply repeating an interaction style they have learned? Are midwives overworked and lack the tools to cope effectively? Is classism and social distance the root of the problem? What are the variables in the health care system in Ghana that allow maltreatment to occur? And where is the threshold of tolerance, whereby strong admonitions (common in Ghanaian culture) become verbal abuse? Research that explores the long-term impact of maltreatment during delivery on the women themselves is also warranted. For example, are women who are maltreated during delivery more likely to suffer post-partum depression? Are they less likely to deliver subsequent children in a facility? These and other questions are critical to address in future research endeavors.

There are several programmatic or practice-focused implications of the research presented here. This research did not set out to challenge the validity of the WHO recommendation that skilled birth attendance – including an 'enabling environment' for providing emergency care and referral, which effectively means facility delivery in sub-Saharan Africa – is the best course of action in reaching the true goal: improved maternal and neonatal outcomes. Yet many women's descriptions of their experiences in facilities fell short of what might be considered ideal – although in fairness, pregnancy and birth outcomes were not assessed. One critical question raised by this research is whether there are programmatic interventions that can be designed to improve the treatment women receive upon arriving at a facility. Another critical question is whether, in a developing

country setting, an alternative model of skilled birth attendance with an enabling environment can be developed that does not require women travel to facilities.

With regard to policy implications, the results presented here suggest that maltreatment in facility settings in rural northern Ghana is sufficiently common to warrant intervention. However, more research is needed to understand the causes of maltreatment and the true magnitude of the problem – without which it is difficult to make comprehensive policy recommendations. Both prevalence studies (that include the use of a validated instrument to assess maltreatment) and exploratory research (to determine the roots of maltreatment among practicing midwives) are needed.

Nonetheless, the findings presented here suggest that, as a starting point, health care worker education and training ought to include modules addressing psychosocial elements of care providing. In addition, curricula that include sensitization to issues of poverty and health disparities and provide health care workers with communication tools to assist in their interactions with their patients is needed to change the climate in health care settings. As Yakong et al. (2010) reported, nursing education in Ghana in particular must emphasize basic relational practices to improve the interactions between women and their nurses. Perhaps equally important is the need to develop accountability measures that are applied to all facilities and that are attached to consequences - including incentives and rewards for performing well and censure for poor performance. At a minimum, policies that mandate women be allowed to bring a family member with them into the labor and delivery ward (which is not allowed at most facilities) will provide witnesses to the care that is being provided and may have a dampening effect on midwife maltreatment.

In summary, maltreatment during labor and delivery, while not universal, is a problem for women in northern Ghana that may prevent some women from seeking facility-based delivery. Community members and health care providers themselves describe midwives subjecting laboring women to physical abuse, verbal abuse, neglect, discrimination, and denial of traditional practices. Future research is needed that attempts to quantify these behaviors, including the development of a validated instrument that can be used to assess the true magnitude of the problem of maltreatment. Future interventions are necessary to address and correct the problem, ensuring that all women who arrive at a facility will receive timely, professional, non-judgmental, high-quality delivery care.

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Table 4.1: Participants, operational definitions, and reports of maltreatment

Type of respondent	How identified	Operational definition	Number of interactions (interviews or focus groups)	Number mentioning mal-treatment
In-depth Interviews				
Women with newborn Infant	Community key informant	Women who had delivered an infant more than 4 weeks prior but not longer than 12 weeks prior. This timeframe was chosen to minimize stress on respondents but maximize accuracy of recall	23	5
Traditional birth attendants	Community key informant	Women in the local community who attend to births outside the health facility and are not considered to be formally trained	4	1
Herbalists	Community key informant	Traditional healers in the community who provide herbal and traditional remedies for health problems	3	1
Community leaders	Community key informant	Women's group leaders, assembly men and assembly women, local tribal chiefs	13	8
Health care providers	Employment roster at health facility	Medical assistants, midwives, nurse/midwives, nurses, physicians who were employed by one of the local health facilities	13	7
Focus Group Participants				
Grand-mothers (N=30)	Community key informant	Any woman who had at least one grandchild within the past year	3	2
Compound heads (N=22)	Navrongo Demographic Surveillance System	Leaders of the 'compounds' where clusters of families live, usually an elder male who oversees multiple related households of extended family	2	2
Household heads (N=20)	Navrongo Demographic Surveillance System	Leaders of a single household, usually the father or elder male in charge of one house within a compound	2	2

Table 4.2: Type of maltreatment identified in northern Ghana

Type of Maltreatment Identified	Examples
Physical abuse	Hitting, beating, slapping
Verbal abuse	Scolding, yelling, shaming
Neglect	Leaving women to deliver alone, ignoring pleas for assistance
Discrimination	Treating women poorly if they are unable to purchase necessary labor and delivery supplies (including soap for the midwives to wash their hands)
Denial of traditional practices	Not allowing women to squat during labor, not allowing women to keep the placenta after delivery

Table 4.3a: Facets of maltreatment as illustrated by type of respondent in the Kassena-Nankana District in northern Ghana, 2010: Physical and verbal abuse

As reported by….	Physical Abuse	Verbal Abuse
Women with newborn infants (in in-depth interviews)	"… They don't want to go there and get beaten by the Nurses because they are adults."	" Those who are also used to the home delivery do not want to go to the hospital because they said the nurses shout and insult at them so they will not go."
Grandmothers (in focus group discussions)	"If you are going to question her (the midwife), she will slap you and tell you that when you were enjoying their sex she was not there. That is what some of the nurses do, which is not good."	"What she has said is true, in hospital when a woman in labor and she goes there they will be beating them and telling the women that they are making noise with their crying. The nurses will ask them when they were enjoying their sex were they there. That is why when some women are in labor they like us to support them than go to the hospital."
Household heads (in focus groups)	"My wife was in labour for two days, the first day I told her to go to hospital and she refused. … she will not go to the hospital for the nurses to be insulting her and kicking her."	"Some of the nurses … will see that the woman will be in labor and because of that they will be shouting and these nurses will still be insulting them. So because of these behaviors by the nurses the women will be in labour and will not like to go to the hospital and deliver. The nurse's attitudes are also contributory factor so they have to change their behaviors."
Compound heads / community leaders (in both interviews and focus groups)	"Some of the women say when they go to hospital the nurses worrying them, they slap them; so when she is going to deliver, she is scared to go to the hospital." (IDI, Compound Head)	"Out of fear of what the nurses might say and the way and manner they say it harshly can prevent you from taking your wife or child to the facility." (FGD, Compound head)
Traditional birth attendants (in interviews)	-	"Yes, most women will like you to help them deliver in the house because when they go to the clinic the woman shouts on them telling them that they are being pampered whiles it is paining them, so most women will tell me to help them deliver in the house."
Health care providers (in interviews)	-	"(They) fear to come to the hospital or the health facility because they feel the attitudes there are not friendly." (Physician)

Table 4.3b: Facets of maltreatment as illustrated by type of respondent in the Kassena-Nankana District in northern Ghana, 2010: Neglect and discrimination

As reported by….	Neglect	Discrimination
Women with newborn infants (in interviews)	Interviewer: "When your final labor time came and they attended to you, what did they do to you?" Respondent: "They (the midwives) did not do anything, it was when I had finished delivering that they came and cleaned me."	"At times, they demand for soaps knowing very well that we are poor and we don't (have) anything."
Grandmothers (in focus groups)	"Some nurses do not handle the women well because when you go there they do not have time for the pregnant women, they only dump you on the bed for you to be having your pains there while she is sitting somewhere."	I: "So what things prevent women from going to the hospital to deliver?" R: "It is the paying, because she may not have anything and it is paining her when you take her to the hospital and they ask you to pay and you do not have money to pay. Some of the nurses will not even pay any attention to you and your daughter and you will be sitting there crying. This is why some of them also refuse to go to hospital and will deliver in the house."
Household heads (in focus groups)	-	"Some of the women will say when they go there, the people at the hospital disturbs them because she has not got good clothes, she does not follow their teachings, when you tell her to go she will tell you that she will not go because of those things."
Compound heads / community leaders (in both interviews and focus groups)	"They used to take care of us very well, but now it has changed. One of my mothers was sick and went there for treatment; she was told they wouldn't be able to treat her because they were preparing to cook. She came back and… was told the same thing."	"Maybe some are ashamed because they don't have nice clothes to cover the baby after delivery and end up not going." (IDI, Chief)

Table 4.3b (neglect and discrimination, con't)

Traditional birth attendants (in interviews)	"When we got the clinic the nurse was not there so I asked someone to call her to come and she final(ly) came, she said the girl was not due for labour (and) I am only pampering her, I should let her get down from the bed. I begged the nurse to see to my daughter because … the baby is about to come. The nurse said I should allow the girl to go out and walk for a while and I told the nurse if let this girl go out, she is going to deliver outside there. The nurse challenged and asked me to let her go out and deliver for her to see… When we got out of the building, the girl almost gave birth there I had to carry her with my hands supporting her front to prevent the baby from falling…"	"Also when you go to deliver they Nurses demand for soap to wash their hands. But at times they don't ask for them." (IDI, Traditional birth attendant) "When we go to the hospital, the doctors do not even time to ask us why we are there. It is the lucky ones that can see the doctor, they do not even look at us."
Health care providers (in interviews)	-	"…The other issue too also has to do with the perceived attitude of health workers to, to these, to these women. They feel they don't, they, they, they get treated like equals. They don't want to come into the hospital. Health workers are perceived to be judgmental, so a lot of people stay away from, from these hospitals."

Table 4.3c: Facets of maltreatment as illustrated by type of respondent in the Kassena-Nankana District in northern Ghana, 2010: Denial of traditional customs and counter quotes

As reported by….	Denial of Traditional Customs	Counter Quotes
Women with newborn infants (in interviews)	"Some people demand for (the placenta) to take home but these days, the nurses don't agree to give them. They ask, 'Why you want the placenta?' They nurses keep it but I don't know what exactly they do to it."	"They were telling me to be patient, relax or telling me to do this or that so in fact, they were caring enough and I think everything was done successfully."
Grandmothers (in focus groups)	"If the woman delivered in the hospital there is nothing like the woman carrying (the placenta to) the rubbish dump for it to be bury. After delivery the nurse will call someone to come and collect the placenta for disposal, it does not come to the house for any burial."	"Because nowadays those things do not prevent a woman from going to the hospital. The nurses will take good care of her and other nurses too will not be nice to the women but in all these the women do not mind and will still go to the hospital to deliver."
Household heads (in focus groups)	Interviewer: "Do you usually request for the woman's placenta or the nurses voluntarily give it to you?" R1: "They voluntarily give us." R2: "Some ask for it, but others don't ask." R1: "We ask for it because we don't know what they are going to do with it so we can't leave it with them." R2: "If it is buried in the house is a sign of identification that the baby is really a true member of the house." R3: "It is good to bury it in the house because it keeps the baby's spirit and soul healthy."	"What I think is that the way they treat them it is fine, because when my daughter was pregnant she was attending weighting (ANC) and when she gave birth she was fine." "Some of them, the nurses will give their mobile phone numbers to them so that when they are in labour they can call them to come or the nurse will tell the woman to come to clinic."
Compound heads / community leaders (in both interviews and focus groups)	"…Most women usually deliver at the hospital and can't tell how they dispose of (the placenta) there, but at home they usually put it in a mud pot and bury it at the refuse dump." (IDI, assemblyman)	R: "My opinion on that is that when they go to the clinic they are treated well in my community, I know the ladies there they get treated well. Once a while I visit them at the clinic to see what is happening I behave as if I am one of the clients." (IDI, assembly woman)

Table 4.3c (denial of traditional customs and counter quotes, con't)

Traditional birth attendants (in interviews)	"The placenta, like what we used to do in the old day, it is kept in a pot with the remaining cord kept on it and the whole pot is buried in a rubbish dump… So now even if you gave birth at the hospital when they give you the placenta you still have to come home and do the same thing with the placenta."	"They are always treated well because the(y) get better drugs and look healthy. Women are always happy the way they always handle them."
Health care providers (in interviews)	"First, we knew of the positioning. You know, they squat in the house. And here it's a bed. So some are not used to the bed. So sometimes it's always a problem for them to come and lie."	"… We are lovely. We don't discriminate. So I don't think there's something that can prevent anyone, any pregnant woman who is in labor not to come here."

CHAPTER 5

Conclusions and Implications

The research presented in the previous chapters demonstrates the complexity of the issues surrounding where women deliver their infants in sub-Saharan Africa, and in Ghana in particular. In this dissertation, the topic of facility-based delivery was approached from three different perspectives using three different methodologies: in the first study a systematic literature review was conducted to examine what has been published in the peer-reviewed literature in the past 15 years on facility delivery in sub-Saharan Africa; in the second study multivariate analysis of nationally-representative survey data in Ghana was conducted; and in the third, in-depth qualitative data from one region in northern Ghana was used to explore the issue of maltreatment during facility delivery. Each of these studies provides unique insight into the factors associated with facility-based delivery.

The first study, described in Chapter 2, reports on the results of a systematic literature review reflecting original quantitative research conducted in sub-Saharan Africa between 1995 and 2011. Chapter 2 demonstrates that maternal factors have been the most frequently studied, perhaps due in part to reliance on household survey data in the literature. Studies relying upon multivariate analyses showed that maternal education, parity / birth order, rural / urban residence, household wealth / socioeconomic status, distance of the nearest facility, and number of antenatal care visits were the factors most

consistently associated with facility-based delivery across a variety of countries and settings. Nonetheless, Chapter 2 suggests that more research is needed that explores regional variability in facility-based delivery. In addition, the role of social factors as drivers of FBD and the impact of interventions to increase FBD are both notably underrepresented in the research literature to date.

In Chapter 3, the Five As of Access framework was used to examine data from the 2008 Ghana Demographic Health Survey and found that nationwide, 55% of women who delivered an infant in the previous year did so in a health facility and 45% delivered at home. In multivariate analysis, affordability factors were found to be the most important access barriers related to a woman's choice of delivery location. Being covered by health insurance was associated with a threefold increase in a woman's odds of delivering her baby in a health facility. Availability, accessibility, acceptability, and social access variables were not strong enough to remain significant in the final multivariate models. Social access variables, including needing permission to visit a health facility and not being involved in the final decision regarding health care, were significantly associated with a lower likelihood of facility-based delivery when looked at individually. However, multivariate analysis suggests that these variables may be working through maternal literacy, health insurance coverage, and household wealth – each of which attenuates the effect of social access. In addition, among women who did not deliver their most recent infant in a facility, the most commonly cited reasons were that it was not perceived as necessary, the facility was too far away, or they did not have transportation. In this population, social access and accessibility were the most commonly reported barriers to facility delivery. Future research is needed that explores

the concept of social access in greater detail, generates potential assessment tools to measure all types of access, and tests potential interventions to address access-related barriers.

In Chapter 4, qualitative data from northern Ghana were examined to explore the issue of maltreatment during delivery in influencing women's delivery location. Chapter 4 illustrates that despite the majority of respondents reporting positive experiences in health care settings, many women reported fear of maltreatment at the hands of nurses and midwives in facilities. When comparing these findings to the White Ribbon Alliance's seven categories of maltreatment, these findings dovetailed with their categories of physical abuse, verbal abuse, neglect, and discrimination. One additional category of maltreatment identified in these data was denial of traditional practices. Unprompted, maltreatment was described by all types of interview respondents in this community, suggesting that the problem is not only widespread but that it is well-known to dissuade some women from seeking facility delivery. Two overarching yet related themes permeated the data: the role of low socioeconomic status as a risk factor for maltreatment and the significance of the power hierarchy between women and health care providers in facility settings.

Taken together, these three chapters underscore the multidimensional nature of delivery decisions in the developing world. They also illustrate the challenge of integrating what researchers have learned through analysis of standardized household survey data – and its focus on demographic characteristics and factors that can be easily quantified – with the more subtle and often difficult-to-compare data collected through qualitative methodology. For example, while social factors may not appear to be as

strongly associated with facility delivery as economic factors in multivariate analysis, simply addressing economic factors without attention to the many social factors at play will likely fall short in accomplishing the goal of increased facility delivery and improved outcomes for mothers and babies.

These three studies open the door for several areas for further research. First, future research that explores the sustained impact of the National Health Insurance Scheme in Ghana is likely to shed light on both the impact and the limits of providing health insurance as a means to increase facility delivery. By the time the 2012 Ghana DHS data are available, Ghana will have had national health insurance in place since the mid 2000s. And since the late 2000s, pregnant women will have been guaranteed free maternity care. The question for the 2012 Ghana DHS is who are the women who continue to deliver outside facilities, and why? What are the characteristics of those women? And are there certain facility catchment areas that have lower rates than others, suggesting there may be problems with individual facilities? Ghana provides an unusual natural experiment to examine what barriers remain when one of the key economic disincentives – lack of insurance – has been mitigated.

A second area of research that is sorely needed relates to assessing the true prevalence of maltreatment in facility settings. To date, there is no validated instrument that can be used to quantify maltreatment. Nor are there data to verify that what Western researchers are defining as maltreatment is indeed perceived as such in every developing country setting. For example, harsh admonitions and raised voices are not uncommon in Ghana. At what point do harsh admonitions cross the line to verbal abuse? And is that line the same in Eastern Ghana as it is in Western Ghana? Is it the same in Ghana as it is

in Ethiopia? And is its impact on women's mental health and future delivery choices the same? Is it possible to have one instrument that can generate comparable data across the developing world? Such questions provide rich fodder for a largely untapped area of research.

Research that explores the impact of maltreatment on future delivery decisions is also needed. Are women who have experienced maltreatment likely to have a different pattern of decision-making regarding where to deliver their next baby than women who have not? And how do experiences with maltreatment weigh against economic factors that have been found to be paramount in previous research? Perhaps as more women are covered by the NHIS in Ghana and have the economic burden of facility-based delivery minimized, maltreatment and other "quality of care" issues may become more prominent in women's decision making.

To that end, research that tests interventions designed to improve quality of care in facilities in developing country settings will be important if the issue of maltreatment is to be addressed. While individual interventions, such as workshops and 'sensitivity training' for nurses and midwives, may seem the most feasible course of action in reducing maltreatment and improving quality of care, Jewkes et al. (1998) suggest that any intervention focused on nurses must proceed side-by-side with improvements in working conditions and democratization of nursing. "The first step … is for the leaders of the nursing profession to acknowledge that there is a problem and to embrace processes to further investigate this and seek solutions …" (Jewkes et al., 1998, p 1793)

Some of those solutions may require bold steps – including holding a mirror to the current system and engaging community members and local women's health advocates to

help clarify what is and is not acceptable in the local context and demanding that changes be made. Simple changes, such as allowing family members to accompany women to the delivery room who can serve as a witness to the care women receive, may have a profound impact on the likelihood of maltreatment. More complex changes, including such things as augmenting health care provider curricula to include an emphasis on respectful care and patient-provider communication, may take longer to implement and affect care, but may also have a stronger ultimate impact. Perhaps most importantly, addressing maltreatment in a facility setting is unlikely to be successful without looking at the societal factors in place that tolerate its presence. For example, research has suggested there is a disconnect between health care providers and their patients – with providers having little understanding of community beliefs, attitudes, and behaviors with regard to health. (Moyer et al., 2012) Research has also suggested that discrimination in society often translates to discrimination in health care settings. (Anderson, 2009) Thus addressing an issue that may be rooted in societal norms may require innovative approaches, such as interventions that encourage health care providers to work with traditional providers to better integrate the care provided, or campaigns that engage local religious leaders to champion the cause of humane treatment of all women, regardless of their social standing.

Another area of research suggested by the findings presented here relates to the overlap between traditional and contemporary practices when it comes to childbirth in Ghana. As Jansen (2006) writes, childbirth decisions are never as simple as all traditional or all contemporary – they are contingent upon the situation and the perceived need. How do women and the decision-makers in rural Ghanaian communities determine which

situations warrant contemporary intervention at a facility, which warrant traditional intervention outside a facility, and in what order? Is it possible to integrate traditional and contemporary practices in a way that makes sense to community members and honors their belief systems, and yet meets the approval of those seeking to adhere to the biomedical model of care?

Anecdotal reports from rural areas in Ghana lend credence to the suggestion that integrating traditional childbirth practices into contemporary settings is not only possible, but can indeed improve facility delivery rates. In one area in northern Ghana, rates of facility delivery were reported to increase after the facility began making available a local millet drink that women traditionally drank during labor. Similarly, providers have seen rates of facility delivery increase after introducing the option to use a modified delivery bed that allows women to squat during delivery rather than lying prone. These examples and others like it are a testament to the importance of providers at health care facilities working with the local community to determine whether there are traditional practices that may be able to be safely incorporated into the facility setting.

This dissertation has focused on facility delivery, largely following a Western model of care provision. Maternal and neonatal mortality have been so high in the developing world for so long that the leading priority has been to bring mortality rates down through any means possible. The means that is best known by the Western establishment – and those who run the World Health Organization, donor agencies, and the most influential non-governmental organizations (NGOs) – is to set up a system that mimics Western health care. Given the limited human resources, lack of emergency transport, and the difficulty of rural travel in much of the developing world, it has made

sense to ask women to come to providers, rather than the other way around. Getting women to deliver in facilities theoretically maximizes the likelihood of high quality care, access to emergency obstetric care, and access to neonatal resuscitation.

However, our findings raise questions about the quality of care delivered in some facilities. Delivery care is more than simply having a facility with trained clinicians, it is also a question of how nurses, midwives, and physicians perform and behave (Bergström 2001, Buekens 2001). Women in the developed world have denounced the medicalization of childbirth and its reliance upon physicians and health centers and worked to reclaim their vision of a more natural delivery by advocating for home births attended by a midwife. This model works well in places like the Netherlands, where approximately a third of women deliver at home (Amelink-Verberg et al., 2008), the ideology supports minimal intervention during childbirth (Van der Hulst et al., 2007) and the infrastructure is in place for women with potential complications to be screened out a priori, and for woman to be transferred from home to a hospital should complications arise. (Amelink-Verberg et al., 2008) In sub-Saharan Africa, where so many women and infants die in childbirth and such infrastructure is largely absent, how does the concept of medicalization fit? Will concerns about the medicalization of childbirth ever outweigh the risks to mothers and babies of delivering at home? And should it?

One vital question worth asking is whether there is an alternative – or adjunct – model to facility delivery that may be effective in developing countries in reducing maternal and neonatal mortality. This concept is extremely controversial to broach. Studies have suggested that even though planned home births in the West are associated with fewer interventions for the mother, they are associated with a doubling (Evers et al.,

2010) or tripling (Wax et al., 2010) of neonatal mortality rates. Despite challenges to the methodology of both studies (Michal et al., 2011; Hayden, 2011; DeVries and Buitendijk, 2012) and studies that determined women with uncomplicated pregnancies in the Netherlands were equally safe at home and in the hospital (de Jong et al., 2009; Janssen et al., 2009), few can argue that the environment in which such studies were conducted is comparable to sub-Saharan Africa. Such findings come out of high-resource settings where women are generally healthy, have had adequate prenatal care, and have access to emergency transport – a situation far different from that which is found in many developing countries. Data also suggest that national facility delivery rates and both maternal and neonatal mortality are correlated, (Graham et al., 2001) reaffirming for many the notion that facility delivery is the best course of action – at least for women with complications.

Yet there are examples of low-resource settings in which significant gains have been made in improving maternal mortality rates without a huge emphasis on institutionalization of births. For example, Thailand reduced its maternal mortality ratio from 400 to 50 deaths per 100,000 live births between 1960 and 1984; generally attributed to a combination of factors including long-term investment in midwifery training, increased access to care by reducing financial barriers, and emphasis on developing a supportive system with regulation, control, and supervision of the medical and midwifery profession. (Liljestrand and Pathmanathan, 2004; Ronsmans et al., 2006) In rural Matlab, Bangladesh, maternal mortality rates have dropped from 600 to 200 deaths per 100,000 live births between 1976 and 2001, despite the majority of women still delivering at home without a professional attendant. (Ronsmans et al., 2006) Matlab

has been a site for intense intervention surrounding improved family planning services and increased access to surgical obstetric care. These factors, together with a reduction in deaths from abortion, lower fertility, and general improvements in health (as indicated by lower all-cause death rates for women), are thought to explain part of the decline. (Dieltiens et al., 2005; Ronsmans et al., 2006)

Other models in the developing world that have not traditionally focused on delivery care may be worth exploring as well, such as the team-based deployment model of community care in Brazil. (Pinto et al., 2012) In each small community, a team of providers is deployed together – including at least one physician, at least one nurse, and as many as 15 trained community health workers. This team approach ensures that no provider is alone – and therefore unaccountable – and that each small community where they are deployed has access to a range of skills. This model could be easily translated to regional maternal and child health teams in rural regions of Africa consisting primarily of lower-level providers trained to spot complications and implement basic emergency care, while being able to activate higher-level providers as needed.

With regard to policy, this research points to the need for quality of care to be addressed in concert with training more health care providers in developing countries. Much of sub-Saharan Africa suffers from deficiencies with regard to human resources for health: in many parts of Africa there are simply not enough doctors, nurses, and midwives. While increasing the number of maternal and child health providers needs to be an important focus in the coming years, policy makers must ensure that such an increase does not come at the expense of quality. Providers need not only technical skills, they also need training in cultural awareness, empathy, communication, and in

providing care in a way that engenders mutual respect. Policies that mandate the inclusion of such modules in traditional educational curricula as well as in continuing education offerings will be useful in bridging the gap between communities and providers that was suggested by this research.

In addition to training more and respectful providers, the issue of the 'enabling environment' required to satisfy the World Health Organization's definition of skilled birth attendance cannot be overlooked. To date, an enabling environment that turns a skilled birth attendant into one who can provide skilled birth attendance to a laboring woman has not been well defined. Researchers have suggested an enabling environment might include such things as equipment, supplies, medication, and the availability of transport for referral if necessary. (Bell et al., 2003) But what exactly is an enabling environment? And which elements can be considered essential, without which the environment is deemed inadequate? Efforts to increase skilled birth attendance and address quality of care must focus on the environment as well as encouraging women to seek out skilled providers. For example, if a laboring woman successfully arrives at a facility that has run out of medication, is staffed by midwives untrained to perform an emergency cesarean section, and has no means to transfer her to a facility with an obstetrician/gynecologist if needed, did encouraging facility delivery meet the objective of obtaining skilled birth attendance to improve outcomes? One might argue that without an enabling environment, facility deliveries in developing country settings are not substantially different than home deliveries in terms of the potential risks to both mothers and babies. Such a contention is borne out by recent data suggesting that despite increasing facility delivery rates in urban Accra, maternal mortality rates have increased

rather than decreased. This raises important questions about what is meant by an enabling environment – even in large tertiary care centers and urban hospitals such as are located in Accra. Future research and policy initiatives are needed that identify, codify, and mandate certain key elements of the facility environment to ensure that all women who arrive at a facility do indeed obtain skilled birth attendance.

Another quality of care issue worthy of attention is the accountability to which providers are held for how patients are treated. National policies that mandate a clear reporting structure for filing patient grievances are warranted. Given the challenges in literacy levels in much of sub-Saharan Africa, this may require appointing independent patient advocates who can speak on behalf of patients who feel they have been treated poorly. While such a policy is undoubtedly rife with logistical challenges, a situation needs to be created where women and families know the process for filing a complaint, those complaints are articulated clearly and lodged formally, and providers know that they risk consequences if they mistreat their patients.

In sum, enormous opportunities exist to improve the delivery care women get in the developing world to ultimately improve both maternal and neonatal outcomes. But there is no magic bullet. Returning to the question that was asked in Chapter 1, why is it that more than 90 percent of women in Ghana will attend antenatal care, yet only half deliver in a facility? The answers are myriad, including such things as the perceived cost of delivery, logistical challenges associated with transportation, and social and cultural factors that may ask women to choose between a solitary delivery in a facility where they risk maltreatment at the hands of a midwife, or a delivery at home, surrounded by loving family members and compassionate traditional attendants. The solutions to improving

women's access to and experiences with delivery care are every bit as complex as the problems of maternal and neonatal mortality themselves. The research presented here reinforces the idea that alongside traditional interventions aimed at such things as reducing economic barriers to facility delivery, providers, researchers, and policy makers need to pay attention to the many social factors that are likely to exert an important – although sometimes not easily visible – effect on women's delivery choices and ultimate delivery experiences.

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