

THE SOCIOCULTURAL INFLUENCES ON MATERNAL HEALTHCARE UTILISATION AMONG ADOLESCENT MOTHERS IN NIGERIA: A POOLED DATA ANALYSIS



by

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South Africa, in fulfilment of the requirements for the award of PhD in Demography and Population
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DECLARATION

I, Christiana Alake ALEX-OJEI, declare that this thesis is my own original work. It is being submitted for the degree of Doctor of Philosophy in Demography and Population Studies of the University of the Witwatersrand, Johannesburg. To the best of my knowledge, it has not been submitted before in part or in full for any degree or examination at this or any other University.



.....

21st December 2020

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ABSTRACT

Introduction

Adolescent pregnancy is a common occurrence in Nigeria, as nearly a quarter of girls aged 15-19 were either pregnant or had already given birth to at least one child in 2013. Studies have shown that pregnant adolescents have a higher risk of pregnancy morbidity and mortality compared to older mothers. To reduce the risks associated with adolescent pregnancy, adolescent mothers require antenatal, delivery and postnatal care to ensure that they and their children have good health outcomes. However, maternal healthcare utilisation in Nigeria has been lower for adolescent mothers than for mothers aged 20 and above. There needs to be an increased focus on access to and utilisation of maternal healthcare services for adolescent mothers if Nigeria is to meet the first, second and seventh targets of Sustainable Development Goal Three (SDG 3) to reduce maternal and child mortality, and ensure universal access to reproductive healthcare globally by 2030.

While previous literature has focused on the sociodemographic and socioeconomic factors that are associated with adolescent maternal healthcare utilisation in Nigeria, little is known about the sociocultural factors that determine service use among these mothers. Therefore, the study examined the patterns of maternal healthcare utilisation and the influence of sociocultural factors on pregnancy experiences and service use among adolescent mothers in Nigeria. The specific objectives of the study were, (i) to examine the patterns of maternal healthcare utilisation among adolescent mothers, (ii) to investigate the pregnancy, intrapartum, and postpartum experiences of adolescent mothers, (iii) to identify the sociocultural barriers and enablers of maternal healthcare utilisation among adolescent mothers, and (iv) to examine the proximate factors that moderate the relationship between sociocultural factors and utilisation of maternal healthcare services by adolescent mothers in Nigeria.

Theoretical Framework

The fifth revision of the Andersen Behavioural Model of Healthcare Utilisation (2008) was adopted as the study's theoretical framework. In addition to previous revisions of the theory, the 2008 revision recognised that both individual and contextual prevailing, enabling and need factors determined healthcare use.

Data and Methods

The study used the explanatory sequential mixed methods design. Quantitative data used were from the Women's Recode dataset of the Nigeria Demographic and Health Surveys carried out in 2003, 2008 and 2013, which were pooled to achieve a weighted sample size of 3,260 adolescent girls aged 15 to 19. Qualitative data were collected using semi-structured in-depth interviews with fifty-five young mothers who had given birth when aged 19 or younger, and whose ages

ranged from 15 to 22; nineteen of their own mothers or female guardians; and key informant interviews with six senior health workers and five female community leaders. For the qualitative study, respondents were drawn from urban and rural research sites in Ondo State in the South West zone, Katsina State in North West, and Imo State in the South East zone in Nigeria.

Quantitative data were analysed at three levels. The univariate level involved computing frequency distributions of the sociocultural and sociodemographic attributes of adolescent mothers, as well as their maternal healthcare utilisation patterns. At the bivariate level, chi square tests were conducted to identify the variables which were significantly associated with maternal healthcare utilisation. At the multivariate level, binary and multinomial logistic regression analyses were conducted to identify the independent variables and covariates which were significantly associated with maternal healthcare utilisation among adolescent mothers in Nigeria. Qualitative data were analysed using a thematic analysis approach, whereby verbatim quotes from respondents were transcribed, grouped and interpreted according to themes identified after examining the data.

Key findings

Objective 1: Patterns of maternal healthcare utilisation

The frequency distribution showed that the proportion of adolescent mothers made four or more antenatal care visits declined from 2003 to 2008, but increased in 2013. In 2003, 37.7% of adolescent mothers made four or more antenatal care (ANC) visits; in 2008, 33.1% made four or more ANC visits; and in 2013, 38.5% made four or more ANC visits. Proportions of adolescent mothers starting antenatal care early increased in 2008 from 2003, but declined in 2013. In 2003, 22.9% of adolescent mothers started ANC early; in 2008, 24.4% and in 2013, 21.8%. The proportion of adolescent mothers using skilled birth attendants (SBA) declined from 2003 to 2013. In 2003, 52.5% of adolescent mothers used SBAs during delivery. The figure declined to 34.6% in 2008, and 30.6% in 2013. The proportion of adolescent mothers using postnatal care (PNC) declined from 2003 to 2008 but increased in 2013. In 2003, 22.2% of adolescent mothers used PNC; in 2008, only 9.7% did, and in 2013, 21.1%.

Findings from the bivariate analysis show that age of respondent, age at birth, educational level, religion, ethnicity, partner educational level, getting money for treatment, distance to health facility, place and region of residence were significantly associated with the number of antenatal care visits ($p < 0.05$). Also, marital status, sex of household head, healthcare decision, partner age difference and getting permission to go to the health facility were significantly associated with the number of antenatal care visits ($p < 0.05$). Religion, ethnicity, region of residence, and healthcare decision-making were significantly associated with the timing of the first antenatal care visit ($p < 0.05$). Additionally, respondent's age, educational level, wealth status, religion, ethnicity, partner's educational level, distance to health facility, place and region of residence,

and number of antenatal care visits were significantly associated with the type of birth attendant used by adolescent mothers at delivery ($p<0.05$). The type of birth attendant was also significantly associated with respondent's marital status, sex of the household head, and getting permission to go to the health facility ($p<0.05$). Variables that were significantly associated with postnatal care were respondent's age, educational level, wealth status, religion, ethnicity, partner's educational level, distance to health facility, place and region of residence, number of antenatal care visits and type of birth attendant used ($p<0.05$). Also, marital status, sex of household head, healthcare decision-making, and getting permission to go to the health facility were associated with postnatal care use ($p<0.05$).

Objective 2: Pregnancy, intrapartum and postpartum experiences of adolescent mothers

Adolescent pregnancy was common in all the study sites except the urban South East zone. Findings showed that stigma relating to unmarried pregnancy was common, and there was high reporting of pregnancies as unwanted by unmarried girls. A good number of adolescent mothers reported receiving social support in form of financial and emotional support from their families and community, and maternal support was especially important to unmarried mothers. Findings also showed that modern healthcare use was high among participants in the rural South West, urban and rural South East. There were reports of complementary healthcare use and patronage of traditional- and alternative birth attendants in the urban South West and urban and rural North West. Also, there were few reported accounts of negative health worker attitudes.

Objectives 3 & 4: Factors associated with adolescent maternal healthcare utilisation

Adolescent mothers who could not obtain permission to go to the health facility had a significantly lower likelihood of making less than four, and four or more ANC visits, compared to those who could obtain permission [adjusted relative risk ratio (aRRR) =0.48; aRRR=0.65; $p<0.05$]. Findings from the qualitative study also showed that adolescent mothers sought antenatal care in situations where they could easily obtain permission to use the health facility. Also, having financial support was key to enabling adolescent mothers to seek antenatal care. Additionally, the qualitative data showed that healthcare preferences, and cultural and religious influences shaped antenatal care use among adolescent mothers. No sociocultural variables were significantly associated with timing of the first antenatal care visit by adolescent mothers. However, the qualitative data showed that the lack of family support, poor knowledge about sexual health and pregnancy symptoms and fear of stigma were some reasons for late antenatal care initiation. Adolescent mothers who lived in female-headed households were significantly less likely to use skilled birth attendants than those living in male-headed households (aRRR= 0.42, $p<0.05$). Qualitative data showed that the reasons for using certain types of birth attendants included the presence of financial support, personal and community healthcare preferences, cultural and religious beliefs, and health worker attitudes. Findings from the quantitative study showed that there were no sociocultural variables associated with postnatal care use. Findings

from the qualitative study showed that use of postnatal care was more common in the North West zone than in the South West and South East zones. Also, personal healthcare preferences and partner permission were reasons for seeking postnatal care.

Conclusion

Adolescent mothers' usage of antenatal care, delivery and postnatal care was low in Nigeria. Although there was limited evidence from the quantitative data to show that sociocultural factors influenced maternal healthcare use, findings from the qualitative data showed that social support, personal, family and community healthcare preferences, and religious and cultural traditions played a major role in adolescent mothers' maternal healthcare use.

Implications of findings

Study findings showed that intervention programmes needed to engage adolescent mothers' families and communities to provide proper support for them during pregnancy to enable them to use maternal healthcare. Also, interventions to increase maternal healthcare use among adolescent mothers in Nigeria must use approaches that take into account the different religious and cultural contexts in the country. Additionally, there should be the establishment of specific programmes of action for maternal healthcare for adolescent mothers.

Frontiers for further research

Future quantitative investigations may be conducted to test the association of social support and healthcare preferences on maternal healthcare utilisation. Also, further qualitative studies may examine the sociocultural factors shaping adolescent maternal healthcare utilisation in other localities in Nigeria, especially among the minority tribes. Future studies may also examine the factors contributing to unwanted pregnancy among adolescent mothers in Nigeria.

Keywords and phrases: Adolescent mothers; maternal healthcare utilisation; antenatal care; skilled birth attendant; postnatal care; Nigeria; mixed methods.

LIST OF ACRONYMS

ANC Antenatal care

CI Confidence interval

DHS Demographic and Health Survey

MHC Maternal healthcare

MHCU Maternal healthcare utilisation

NDHS Nigeria Demographic and Health Survey

OR Odds ratio

PNC Postnatal care

RC Reference category

RRR Relative risk ratio

SBA Skilled birth attendant

SDG Sustainable Development Goals

TBA Traditional birth attendant

UNO United Nations Organisation

UNFPA United Nations Population Fund

UNICEF United Nations Children's Fund

WHO World Health Organisation

CHAPTER ONE

INTRODUCTION

1.0 Background

Adolescent pregnancy remains a cause for concern in resource-poor settings globally. Every year, approximately 21 million girls under the age of 19 get pregnant in less developed countries (World Health Organization, 2017). About one in nine births worldwide are to adolescent mothers, and this is most common in low-income countries (World Health Organization, 2017). The highest rates of adolescent pregnancy are found in sub-Saharan Africa, and prevalence rates range from just 4% in Rwanda to 39% in Niger (Doyle, Mavedzenge, Plummer, & Ross, 2012; Sedgh, Finer, Bankole, Eilers, & Singh, 2015). It is estimated that about 270,000 girls under the age of 15 give birth every year in Nigeria (Neal et al., 2012). The 2018 Nigeria Demographic and Health Survey also revealed that 19% of girls aged 15-19 had either given birth or were currently pregnant with their first child, and the adolescent fertility rate is estimated at 106 live births per 1,000 women (NPC and ICF International, 2019).

Adolescent pregnancy is linked to low socioeconomic and women's status. In such settings, there is a high likelihood of inadequate nutrition, which complicates pregnancy for adolescent girls (Banerjee et al., 2009; Bearinger, Sieving, Ferguson, & Sharma, 2007; Ogu, Agholor, & Okonofua, 2016; Wall, 1998). Pregnant adolescent girls are at high risk of anaemia, which has a negative impact both on themselves and their unborn babies (Banerjee et al., 2009; Conde-Agudelo, Belizan, & Lammers, 2005; Ibrahim & Owoeye, 2012; Onoh et al., 2014). Biologically, because they have not yet reached full physical maturity, adolescent girls are at higher risk of

pregnancy complications, obstructed labour, and other pregnancy-related morbidity and mortality (Wall, 1998). Young maternal age, where the pelvis is incompletely developed, is a major risk factor for obstructed labour, which without medical intervention may lead to the development of obstetric fistulae (Wall, 1998). Also, pregnancy-related mortality is the major cause of death among girls aged 15-19 globally (World Health Organization, 2017). In Nigeria, 30.5% of deaths among girls aged 15-19 are from maternal causes (NPC and ICF International, 2014). Adolescent mothers in Nigeria have higher incidences of perinatal mortality than older mothers (Adebowale & Akinyemi, 2016; Mairiga & Saleh, 2009). Adolescent mothers are also more likely to have low birth-weight, preterm and stillborn babies (Ibrahim & Owoeye, 2012; Olusanya & Ebuehi, 2012; Onoh et al., 2014). The children of adolescent mothers also have short and long-term morbidity and mortality risks (Adebowale & Udjo, 2016; Adedini, Odimegwu, Imasiku, Ononokpono, & Ibisomi, 2015; Coovadia, Jugnundan, & Ramkissoo, 2016; Woldemichael, 2006).

In order to mitigate the risks of adolescent pregnancy, adolescent mothers require adequate access to maternal and child healthcare services for proper pregnancy care and favourable health outcomes for themselves and their children. Prenatal, intrapartum and postnatal care are essential in ensuring the wellbeing of mother and child through prompt identification and treatment of pregnancy and postpartum complications, provision of emergency obstetric care if needed, screening for HIV and other sexually transmitted infections, and the prevention of mother to child transmission of HIV (United Nations Population Fund, 2016). However, adolescent mothers' use of antenatal, skilled delivery and postnatal care services is much lower than that of older women in Nigeria (Babalola & Fatusi, 2009; Dairo & Owoyokun, 2010; Idowu,

Olowookere, Abiola, Adebowale, & Adegbenro, 2017; Ovikuomagbe, 2017). A review of maternal healthcare indicators based on Demographic and Health Survey and Multiple Indicator Cluster Survey data revealed that only 38% of adolescent mothers in Nigeria had at least four antenatal care visits, compared with the global average of 51% (United Nations Children Education Fund, 2016).

Several initiatives have been introduced at the global, regional and national level to increase healthcare utilisation among pregnant women. The first, second and seventh targets of the third Sustainable Development Goal address the reduction of maternal and child mortality by 2030, as well as increasing access to sexual and reproductive healthcare, with special focus on less developed countries. The First Ten-Year Implementation Plan of the African Union Agenda 2063 aimed in a similar manner to reduce maternal mortality by half, and increase access to sexual and reproductive health services for women and adolescent girls by 30% by the year 2023. In addition, existing policies in Nigeria have focused on addressing the issue of reducing maternal morbidity and mortality. The Nigerian National Reproductive Health Policy of 2001 aimed to reduce maternal mortality and morbidity by 50% by increasing access to quality maternal healthcare services by 40% between 2001 and 2006. One of the objectives of the 2007 National Policy on Adolescent Health was to reduce the prevalence of adolescent pregnancy by 50%, and maternal mortality among young females by 75% by the year 2015. Also, the reproductive, maternal, neonatal, child and adolescent health goal of the National Health Policy of 2016 was to reduce morbidity and mortality among these groups and to increase comprehensive healthcare access across the life cycle for all citizens. Furthermore, several programmes have been implemented to address maternal health service delivery and access in Nigeria, such as the Integrated

Maternal, New-born and Child Health program launched in 2007; the Midwives' Service Scheme targeting rural areas launched in 2009, and the Saving One Million Lives initiative, the MamaYe! Programme and the SURE-P Maternal and Child Health initiative all launched in 2012. However, no special provisions for increasing adolescent utilisation of maternal health services were made in these programmes.

A considerable body of literature exists on maternal healthcare utilisation among women of reproductive age in Nigeria (Adebowale & Akinyemi, 2016; Aremu, Lawoko, & Dalal, 2011; Babalola & Fatusi, 2009; Dahiru & Oche, 2015; Emelumadu et al., 2014; Okigbo & Eke, 2015; Ovikuomagbe, 2017). These studies found that socioeconomic and demographic factors such as wealth status, education, place and region of residence, parity, religion and distance to health facility significantly influenced maternal health service usage. Fewer studies have focused exclusively on adolescent mothers, and these studies also found similar factors influencing maternal healthcare usage among pregnant adolescents (Kupoluyi & Oyinloye, 2014; Olusanya & Ebuehi, 2012; Rai, Singh, & Singh, 2012).

However, despite the programmes and policies to improve maternal healthcare usage among adolescent mothers, low rates of utilisation persist among them in Nigeria. The persistent low utilisation of maternal healthcare services by adolescent mothers suggests the need for further investigation into the factors that contribute to poor uptake of services among this segment of the population beyond what is already known. Social and cultural attitudes and norms towards adolescent motherhood such as gender and power relations in the family, cultural acceptance or non-acceptance of adolescent pregnancy, the presence or absence of social support, and type of preferred healthcare have been identified as being important influences of

healthcare utilisation among adolescent mothers in studies done in Uganda and Bangladesh (Atuyambe, Mirembe, Annika, Kirumira, & Faxelid, 2009; Shahabuddin, Nostlinger, et al., 2017). However, little is presently known about how these sociocultural factors influence adolescent mothers' pregnancy experience and their usage of maternal healthcare services in Nigeria. It then becomes important to examine whether these factors are in any way responsible for the current low maternal healthcare utilisation rates in the country.

This study examines the challenges of adolescent motherhood, and the sociocultural factors which serve as enablers and barriers of maternal healthcare access and utilisation thereof among married and unmarried adolescent mothers aged 15-19 in Nigeria. It is a mixed methods study, using nationally-representative quantitative and qualitative data. It examines the patterns of usage of antenatal care, skilled delivery and postnatal care services among adolescent mothers. The study pays special attention to how gender and power relations at the household level, cultural norms and attitudes towards adolescent motherhood, presence of social support for adolescent mothers, healthcare preferences, health worker attitudes, marital status and pregnancy intention influence usage of services. It also examines how education, wealth status, place and region of residence, partner age difference, sex of household head, and health facility accessibility influence maternal healthcare utilisation among pregnant adolescents. An in-depth understanding of factors influencing maternal healthcare utilisation by adolescent mothers is important in designing interventions to improve the uptake of services among this segment of the population. It further enhances the understanding of past and current patterns of adolescent motherhood and maternal healthcare utilisation in low-resource settings, and could also be a basis for future research.

1.1 Statement of the Problem

Nigeria was unable to meet the Millennium Development Goal Five target of achieving a 75% reduction in maternal deaths by 2015. Increasing the usage of antenatal and delivery care services is essential if the country is to meet the Sustainable Development Goal Three target of reducing maternal deaths to less than 70 per 100,000 births, as well the African Union 2023 target of increasing health service access by 30% among adolescent girls, and reducing maternal mortality to less than half of 2013 rates. However, current initiatives in Nigeria have focused on increasing health access and delivery for women of all reproductive ages. None of them has explicitly addressed increasing service usage for adolescent mothers, despite the fact that their enablers and barriers to usage differ from older women's. Also, the National Adolescent Health Policy, despite its objectives of reducing unwanted pregnancies and maternal mortality among adolescent mothers, does not include strategies for increasing healthcare access and utilisation among this segment of the population. While the National Health Policy proposes increasing sexual and reproductive healthcare access for adolescents, it also does not present strategies for increasing maternal healthcare access for adolescent girls in need of such services.

Previous studies on maternal healthcare utilisation in Nigeria have identified low usage of health services among adolescent mothers (Aremu et al., 2011; Babalola & Fatusi, 2009; Dahiru & Oche, 2015; Dairo & Owoyokun, 2010; Ibrahim & Owoeye, 2012; Idowu et al., 2017; Ovikuomagbe, 2017). Only a handful studies have directly examined the predictors of adolescent maternal healthcare utilisation. Rai et al. (2012), using data from the 2008 Nigeria DHS, found that women's education predicted antenatal and skilled delivery care usage, but not postnatal

care, while husbands' educational status was associated with use of all three health services. Wealth status and mass media exposure were found to be associated with antenatal and delivery care usage, but not postnatal care. Region of residence was also associated with usage. Adolescent mothers in the North East were less likely to use ANC and skilled delivery, but were more likely to use postnatal care, while those in the North West and South West were less likely to use antenatal and delivery care. They also found that full antenatal care use was associated with facility delivery, as those who had four or more antenatal care visits were more likely to deliver in health facilities and use postnatal care. Olusanya and Ebuehi (2012) conducted a facility-based study of adolescent mothers in Lagos, Nigeria, and they found that adolescent mothers were less likely to deliver in the hospital, were more likely to use traditional birth attendants and have children who were malnourished. Kupoluyi and Oyinloye (2014), using secondary data from the 2013 NDHS, examined the determinants of antenatal, delivery and postnatal care among young women aged 15-24 in Nigeria. They found that the place and region of residence and husband's education level were associated with antenatal care use; region and husband's education level were associated with the use of skilled birth attendants, and the age at first birth and length of birth intervals were associated with postnatal care usage.

These studies have mainly focused on the demographic and socioeconomic predictors of adolescent maternal healthcare utilisation. However, to enable more effective policy action towards increasing maternal healthcare utilisation among adolescent mothers in Nigeria, investigating the sociocultural factors that influence their health-seeking behaviour is important for several reasons. It has been shown that the cultural acceptance (or non-acceptance) of adolescent pregnancy plays a major role in whether adolescent mothers are able to use

healthcare services appropriately (Atuyambe et al., 2009). When stigma towards adolescent pregnancy is present, pregnant girls find it difficult to move around freely and make use of health facilities (Agunbiade, Titilayo, & Opatola, 2009; Atuyambe et al., 2009). Also, individual and family maternal healthcare preferences will influence an adolescent mother's access to and use of services (Shahabuddin, De Brouwere, et al., 2017; Simkhada, Teijlingen, Porter, & Simkhada, 2008). In addition, adolescent girls often have lower personal and financial autonomy than older mothers, and this means that the majority of their healthcare decisions will be taken on their behalf by others, such as husbands/partners, and their family members or in-laws (Atuyambe et al., 2009). Furthermore, the presence of social support for adolescent mothers makes the pregnancy process easier and encourages their use of maternal health services (Bantebya-Kyomuhendo, 2004; Bunting & Mcauley, 2004; Chaibva, Roos, & Ehlers, 2009; Yeboah, 2012).

This study examines the sociocultural factors influencing maternal healthcare utilisation among adolescent mothers in Nigeria, and identifies and explores the ways in which these factors work as enablers of and barriers to their healthcare utilisation. It also provides a deeper understanding of the role of sociocultural influences on maternal healthcare utilisation for younger mothers in Nigeria and similar low and medium-income countries. In addition, identifying the social and cultural enablers and barriers to utilisation of maternal healthcare services by pregnant adolescents is important for informing policies and strategies to improve service uptake and achieve national and global development goals.

1.2 The Purpose Statement

The purpose of this study was to examine and explore how maternal healthcare utilisation among adolescent mothers in Nigeria is influenced by sociocultural factors. Sociocultural factors were measured by gender and power relations at the household level, cultural norms and attitudes towards adolescent motherhood, presence of social support for adolescent mothers, healthcare preferences, health worker attitudes, marital status and pregnancy intention. Maternal healthcare was measured by antenatal care use and timing of first ANC visit, delivery and postnatal care. The study tested the Andersen behavioural model of healthcare utilisation (Andersen, 2008). The study employed a mixed method design using secondary quantitative data and primary qualitative data collection methods. The influence of other demographic and socioeconomic variables such as the pregnant woman's age, her age at the last childbirth, education level achieved, wealth status, place and region of residence, partner age difference, sex of household head, and health facility accessibility on adolescent maternal healthcare utilisation were also examined in the study.

1.3 Research Questions

1.3.1 Main Question

What are the patterns of maternal healthcare utilisation, and how do sociocultural factors influence pregnancy experiences and service use among adolescent mothers in Nigeria?

1.3.2 Specific Questions

1. What were the patterns of maternal healthcare utilisation among adolescent mothers in Nigeria between 2003 and 2013?

2. What were the pregnancy, intrapartum and postpartum experiences of adolescent mothers in Nigeria?
3. What are the sociocultural barriers and enablers for maternal healthcare utilisation among adolescent mothers in Nigeria?
4. What proximate factors moderate the relationship between sociocultural factors and utilisation of maternal health care services by adolescent mothers in Nigeria?

1.4 Objectives

1.4.1 Main Objective

The main objective was to examine the patterns of maternal healthcare utilisation and the influence of sociocultural factors on pregnancy experiences and service use among adolescent mothers in Nigeria.

1.4.2 Specific Objectives

1. These included examining the patterns of maternal healthcare utilisation among adolescent mothers in Nigeria;
2. Investigating the pregnancy, intrapartum and postpartum experiences of adolescent mothers in Nigeria;
3. Identifying the sociocultural barriers and enablers of maternal healthcare utilisation among adolescent mothers in Nigeria; and
4. Examining the proximate factors that moderate the relationship between sociocultural factors and utilisation of maternal health services by adolescent mothers in Nigeria.

1.5 Definitions and Delimitations

1.5.1 Definitions

Adolescent girls: This refers to girls aged 10-19. This study will focus on those aged 15-19.

Adolescent pregnancy: This denotes all pregnancies where the mother was aged 19 or younger at the time of giving birth.

Maternal healthcare: This refers to all healthcare services offered during the prenatal, intrapartum and postpartum period for women. It consists of antenatal services, skilled delivery, emergency obstetric- and postnatal healthcare services.

Maternal mortality: This is the death of a woman while pregnant or within six weeks of the termination of a pregnancy either by birth, natural or induced abortion.

Perinatal mortality: This is the death of a foetus or newborn baby between 22 weeks of gestation and seven days after birth.

Sociocultural influences: These refer to the features of the sociocultural environment which influence behaviour. They include stigma and cultural perceptions about adolescent pregnancy, power relations in the family and community, health care preferences and family and communal social support.

Social support: This is emotional and instrumental support that adolescent mothers get from their partners, families and communities that facilitates maternal healthcare utilisation.

Stigma: This connotes discrimination and shame associated with a person or group of people which is as a result of their circumstances or health conditions.

1.5.2 Delimitations

This study will focus on adolescent mothers who are either pregnant or have given birth, whilst aged between 15 and 19. These adolescent mothers must be residing in Nigeria.

1.6 Significance of the Study

A study examining the sociocultural influences of maternal healthcare utilisation among adolescent mothers is useful for several reasons. First and foremost, the study examines the trends and patterns of maternal healthcare usage among adolescents in Nigeria; it reveals the health-seeking behaviour of adolescent mothers for themselves and their children. It also shows the patterns of utilisation of the different health services, namely, antenatal, delivery and postnatal care among these mothers. Secondly, the study identifies the sociocultural factors that influence adolescent mothers' maternal health-seeking behaviour; it highlights the enabling or barrier roles that these factors play in healthcare usage. Previous studies on adolescent maternal health utilisation in Nigeria have mainly focused on the sociodemographic factors influencing maternal health-seeking behaviour. An understanding of the sociocultural factors which influence such behaviour will provide additional insight into why low utilisation rates persist among adolescent mothers, and how these factors can be manipulated to increase service usage among them. By incorporating qualitative data, the study allows an understanding of the mechanisms through which sociocultural factors operate to influence use of maternal healthcare services by adolescent mothers, which is not possible with quantitative data. Findings from this study thus extend the existing literature on adolescent motherhood and maternal health-seeking

behaviour. These findings also provide new material for further research into adolescent reproductive health as well as maternal healthcare utilisation.

The first and second targets of the third Sustainable Development Goal focus on the reduction of maternal and child morbidity and mortality globally by 2030. Also, the Ten-Year Implementation plan of the African Union Vision 2063 emphasises the reduction of maternal-related morbidity and mortality by the year 2023. Furthermore, previous health policies in Nigeria have prioritised the reduction of maternal morbidity and mortality for mothers of all ages, as well as increasing child survival and encouraging healthy growth and development. However, these policies do not recognise that mothers at different ages have dissimilar challenges in accessing healthcare for themselves and their children. If these health goals are to be achieved, it is important to understand how the sociocultural environment of adolescent mothers influences their health-seeking behaviour; it would be helpful to identify what interventions can be undertaken to manipulate these factors to increase utilisation of maternal healthcare among these mothers. However, there is a scarcity of information on the sociocultural context of adolescent pregnancy as well as maternal health-seeking behaviour among adolescent mothers in Nigeria. Thus, this study provides information on the sociocultural factors which influence maternal healthcare usage among adolescent mothers in Nigeria. Also, findings from this study provide data on the barriers and enablers of adolescent maternal healthcare utilisation in Nigeria, which are necessary for policy makers to consider in the evaluation of existing health policies. Furthermore, an understanding of the sociocultural influences on adolescent mothers' health-seeking behaviour provides information for guiding the revision of existing policies to incorporate context-specific initiatives to improve adolescent mothers' access to maternal healthcare.

There have been several programmes carried out in the recent past in Nigeria which have aimed to reduce maternal and child morbidity and mortality through encouraging the use of health facilities for pregnancy, delivery, postnatal and child health care. However, they have not focused on increasing usage among adolescent mothers, and as such, maternal healthcare utilisation among this group of mothers is still quite low. Therefore, findings from this study provide information on the enabling and barrier factors for healthcare usage among adolescent mothers, and will assist in the design of programmes to better reach pregnant girls and their families. Also, an understanding of the sociocultural influences of healthcare usage will inform the development of context-specific interventions to tackle low usage of maternal healthcare among adolescent mothers. Furthermore, as Nigeria is a multi-ethnic country, with a diversity of cultures, an understanding of the different sociocultural contexts of adolescent motherhood and healthcare usage across the country will enable programme designers to create context-sensitive interventions for improving healthcare usage among adolescent mothers in different parts of the country.

1.7 Organisation of the Thesis

The thesis contains nine chapters. Chapter One is the introduction chapter, and presents the background to the study, statement of the problem, purpose of the study, research questions and objectives, the justification for the study, the delimitations of the study and the definition of terms.

Chapter Two presents the review of past and present literature globally, and in Sub-Saharan Africa and Nigeria on adolescent pregnancy, prevalence of maternal healthcare utilisation among

older women and adolescents, and the factors influencing healthcare utilisation among younger and older mothers. The literature review section is concluded by highlighting the gaps in current literature, and provides the knowledge gap which the study set out to fill. Chapter Two also presents the theoretical and conceptual frameworks of the study. The Andersen's Behavioural Model of Healthcare Utilisation was used as the theoretical background for the study; the conceptual framework showed the interrelationship between variables and how they were categorised under predisposing, enabling and need factors to influence maternal healthcare utilisation among adolescent mothers in Nigeria. The chapter concludes with the presentation of the study hypotheses.

Chapter Three presents the description of the methods, as well as methodology of the study. The chapter begins with a description of the study areas as well as the sampling procedures, study design, data sources, and study variables. This is followed by the explanation of the analysis techniques for both quantitative and qualitative data, as well as the analysis plan, and the study's ethics process.

Chapter Four presents the demographic and sociocultural characteristics of the study population, as well as the univariate and bivariate analyses showing the patterns of maternal healthcare utilisation among adolescent mothers. The information in this chapter addresses the first objective of the study.

Chapter Five presents the sociodemographic characteristics of adolescent mothers interviewed across Nigeria, followed by the results of the qualitative study showing the pregnancy experiences of adolescent mothers, to address the second objective of the study.

Chapter Six presents both the quantitative multivariate and qualitative findings of the study which showed the sociodemographic and sociocultural predictors of adolescent mothers' maternal healthcare utilisation, to answer the third and fourth objectives of the study.

Chapter Seven presents the results of the hypothesis testing conducted to determine the significant predictors of maternal healthcare utilisation among adolescent mothers in Nigeria.

Chapter Eight presents the discussion of findings. It discusses the findings of the study in relation to current literature in relation to each objective. This discussion is followed by the interpretation of findings and the study's contribution to theory.

Chapter Nine presents the conclusions drawn from the study based on the findings. It also makes recommendations for action by government and non-governmental agencies, policy makers and planners to ensure that maternal healthcare utilisation is increased among adolescent mothers in Nigeria. The chapter also presents the strengths and limitations of the study and proposes areas for further study.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.0 Introduction

This chapter presents the review of literature on pregnancy, motherhood and maternal healthcare utilisation around the world. It presents the different determinants of adolescent pregnancy and compares the different factors which influence maternal healthcare utilisation among adolescent and older mothers.

2.1 Adolescent Pregnancy Prevalence, Predictors and Risks

2.1.1 Correlates of Adolescent Pregnancy

Understanding the characteristics of pregnant adolescent girls provides insights into the sub-groups that are more susceptible to pregnancy, and whether use of maternal healthcare varies by these characteristics. Adolescent pregnancy arises from several factors which manifest at the individual, household and community levels.

Pregnancy in adolescent girls is often a consequence of sexual debut at an early age, early marriage, sexual coercion and/or violence (Amobi & Igwegbe, 2004; Kaphagawani & Kalipeni, 2017; Vundule, Maforah, Jewkes, & Jordaan, 2001). In these situations, girls lack agency, as well as experience and knowledge about how to prevent pregnancy (Maly et al., 2017). When they get married at young ages, they are also expected to become pregnant as soon as possible. Higher coital frequency within marital relationships also sharply increases the risk of becoming pregnant. A multi-country study in five countries in East Africa found higher likelihood of pregnancy among

married adolescent girls, compared to unmarried girls (Wado, Sully, & Mumah, 2019). Another multi-country study among 12 countries in sub-Saharan Africa found that married adolescents were five times more likely to become pregnant as unmarried ones (Maswikwa, Richter, Kaufman, & Nandi, 2015).

Adolescent girls who are in stable non-marital relationships have a higher risk of pregnancy than those who are not. Among unmarried adolescent girls, pregnancy is often a result of risk behaviours, such as when girls engage in intergenerational sexual relationships (Amobi & Igwegbe, 2004; Pradhan, Wynter, & Fisher, 2018; Vundule et al., 2001), transactional sex and multiple sexual partnerships (Amobi & Igwegbe, 2004; Santos, 2012). A study in Nepal, using DHS data from 2001 to 2011, found that girls who had their sexual debut at younger ages had a higher likelihood of getting pregnant, compared to those who were older at their first sexual encounter (Pradhan et al., 2018). Studies in the United States show that unwanted pregnancies were linked to alcohol use and abuse among adolescent girls (Corcoran, Franklin, & Bennett, 2000; Deardorff, Gonzales, Christopher, Roosa, & Millsap, 2005). These problem behaviours tend to increase the incidence of unprotected sexual intercourse, which directly increases the risk of unplanned pregnancy. However, having sex may be a means of coping with stress for teenage girls, as girls who reported high stress levels had a higher occurrence of pregnancy than those with lower reported stress (Corcoran et al., 2000). A longitudinal study in the Eastern Cape, South Africa, discovered that adolescent girls who are undergoing physical and sexual abuse are at higher risk of getting pregnant (Christofides et al., 2015).

Adolescence is a period in which peer influence is strongest, as adolescents tend to follow their friends' examples as standards of normative behaviour. Studies in the United Kingdom, South Africa and Nigeria show that having pregnant friends has been seen to increase the risk of pregnancy among adolescent girls (Arai, 2007; Ugoji, 2011; Vundule et al., 2001). A study in the United States found a higher occurrence of repeat pregnancies among adolescent girls whose friends were also pregnant (Raneri & Wiemann, 2007). Also, becoming pregnant is seen as a sign of achievement and fulfilment among poor adolescents who believe they have little prospect of a brighter future. Findings from a qualitative study among adolescent girls living in a Brazilian urban slum revealed that motherhood is seen as a sign of achievement and fulfilment (Santos, 2012). Similarly, a study in Indonesia, using 2011 DHS data, found that adolescent girls had the highest rates of intended pregnancy among all women of reproductive age (Saptarini & Setyonaluri, 2018). However, a study in Dakar, Senegal, found that incidence of unplanned pregnancies among adolescents was higher, as young women under 25 and unmarried women were more likely to have unintended pregnancies than older women (Faye, Speizer, Fotso, Corroon, & Koumtingue, 2013). Also, in South West Nigeria, unmarried adolescent mothers generally reported their pregnancies as being unwanted, and these pregnancies often resulted from sexual coercion by their partners (Agunbiade et al., 2009).

A higher socioeconomic status for adolescent girls often reduces the likelihood that they will get pregnant (Christofides et al., 2015; Wado et al., 2019). Adolescent pregnancies are usually a feature of low household socioeconomic status, and this holds true across several settings. Amoran (2016) found that adolescent girls, who came from low-income households and had below secondary school-level education, reported a higher pregnancy rate in a facility-based

primary study in rural South West Nigeria. Ibrahim and Owoeye (2012) made similar findings in a matched case-control study using hospital data from a tertiary hospital in the Niger Delta in Nigeria, as did Corcoran et al. (2000) in another facility-based study of adolescent mothers the United States. However, in a study in Nicaragua, El Salvador, Guatemala and Honduras, using DHS data from 1987 to 2007, low socioeconomic status predicted having had a child among adolescent girls in Nicaragua only (Samandari & Speizer, 2010).

Education and work give young women a sense of personal autonomy, which may make them realise they have greater control over how their lives should turn out in the future. Education has a protective effect against adolescent pregnancy, as studies in Nigeria and across sub-Saharan Africa show that the likelihood of adolescent pregnancy diminishes with secondary or higher levels of education (Amaran, 2012; Doyle et al., 2012; Egbe et al., 2015; Ibrahim & Owoeye, 2012; Olusanya & Ebuehi, 2012; Wado et al., 2019). It follows that education exposes girls to the potential of improved future opportunities and protects them from early marriage and childbearing. A study in South Africa, using longitudinal data from the Agincourt Health and Demographic Surveillance Site, reported that being in school had a protective effect against teenage pregnancy for girls (Rosenberg et al., 2015). However, girls who perform poorly in school may see pregnancy and motherhood as an alternative means of fulfilment and attaining adult status (Santos, 2012). Being economically active also reduced the risk of teenage pregnancy. Studies done in urban and rural South West Nigeria found that girls who were working were less likely to get pregnant than those who were unemployed (Olusanya & Ebuehi, 2012; Oyefara, 2011) while a study of pregnant women in Sagamu, in rural South West Nigeria, discovered that white collar workers made up the smallest proportion of adolescent mothers (Amaran, 2012).

Similarly, a study in Cameroon discovered that unemployed adolescent girls were more likely to get pregnant (Egbe et al., 2015). Additionally, a case-control study examining pregnancy risk among adolescent girls in rural Ghana found that the likelihood of pregnancy was higher among girls in rural areas, those who were undergoing apprenticeship in vocational training rather than being in school, those who were unemployed, and girls from low socioeconomic status households (Asare, Baafi, Dwumfour-Asare, & Adam, 2019).

There were mixed results on the influence of religion on adolescent pregnancy. Oyefara (2011) found in South West Nigeria that religion was not a significant predictor of adolescent pregnancy. Also, a nationally representative study in Ethiopia found that religion did not significantly influence the incidence of adolescent pregnancy (Gurmu & Dejene, 2012). However, Amoran (2016) and Olusanya and Ebuehi (2012) found that Muslim adolescent girls were more likely than girls of other religions to get pregnant in South West Nigeria. Conversely, Maswikwa and colleagues (2015) found a higher likelihood of adolescent pregnancy among Christians and those reporting no religion, and a lower likelihood among Muslim and traditional religion practitioners in their study of 12 countries in sub-Saharan Africa. Also, a study examining the sociocultural factors influencing adolescent pregnancy found that adolescent pregnancy was more common among Hindus than other religious groups in Nepal (Shrestha, 2002). A possible explanation for these mixed findings could be that there are a variety of cultural influences on religion in the different settings examined by these studies.

Household and family characteristics are important predictors of pregnancy risk. In urban South Africa, there was increased pregnancy risk among adolescent girls whose fathers were

absent from the household (Vundule et al., 2001). A similar study in South South Nigeria surveying 324 adolescent girls found that there was a higher risk of pregnancy among daughters of single mothers (Ugoji, 2011). Also, across sub-Saharan Africa, adolescent girls had a higher probability of pregnancy where there was family disruption through parental separation, and living in a large household with the extended family (Odimegwu & Mkwanaenzi, 2016; Oyefara, 2011; Vundule et al., 2001; Wado et al., 2019). In five countries in East Africa, it was found that girls who were living with relatives other than their parents had a higher pregnancy risk. This finding may be due to this living arrangement possibly being less emotionally satisfying for them, and may involve less supervision from their guardians (Wado et al., 2019). Parental communication should ideally serve as the primary source of sex education for adolescents. It was found that there is an increased pregnancy risk where adolescents have little to no communication with their parents and other family members (Corcoran et al., 2000; Vundule et al., 2001). As these were cross-sectional studies, it was difficult to know if poor communication was the cause or consequence of teenage pregnancy. However, in East Africa, no association was found between the sex of the household head and adolescent pregnancy (Wado et al., 2019).

Contextual factors are also important predictors of adolescent pregnancy in Africa. A comparative study, of 15 sub-Saharan Africa countries by Odimegwu and Mkwanaenzi (2016) which examined the community-level determinants of teen pregnancy, found that communities with high levels of socioeconomic disadvantage had an increased risk of teenage pregnancy. In West Africa, adolescent girls living in rural areas and in areas with high levels of community poverty were more likely to become pregnant than their urban peers. In Eastern and Southern Africa, adolescent pregnancy rates were higher in areas where female unemployment was high

(Odimegwu & Mkwanaenzi, 2016). Similarly, Wado and colleagues found that in Uganda, the risk of pregnancy was higher for adolescent girls who grew up in communities with high poverty compared to girls who lived in wealthier communities (Wado et al., 2019).

The place of residence also influenced the risk of adolescent pregnancy. A study, using DHS data from four South American countries (El Salvador, Guatemala, Honduras and Nicaragua) between 1987 and 2007, found that adolescent pregnancy was more common in rural than urban areas (Samandari & Speizer, 2010). Gurmu and Dejene (2012) had similar findings in Ethiopia in a study based on the 2005 DHS data. Adolescent girls living in rural areas with high socioeconomic disadvantage possibly considered pregnancy as a means of attaining status due to their belief that they had few future prospects. This perspective could become problematic because when they become pregnant, there are limited resources available to cater for their maternal healthcare needs. This results in a double disadvantage, both for adolescent mothers and their children.

Adolescent motherhood is also encouraged by cultural values and customs which perpetuate early marriage and childbearing. Adolescent girls of Hausa ethnicity were found to have a higher prevalence of adolescent pregnancy than other tribes in Nigeria (Amoran, 2012; Olusanya & Ebuehi, 2012). Among the Yao ethnic group in rural Malawi, for instance, adolescent girls are expected to have an early sexual debut and become mothers as a proof of attainment of womanhood (Kaphagawani & Kalipeni, 2017). In South Asian countries, early marriage and motherhood are the cultural expectations of adolescents: young girls are expected to get married

and begin childbearing as soon as they attain puberty to prevent them from becoming morally loose (Acharya, Bhattarai, Poobalan, van Teijlingen, & Chapman, 2010).

2.1.2 Health Risks of Adolescent Pregnancy

Pregnancy has a major effect on the health of adolescent girls, as they are at the age when they are still growing, and their nutritional status is adversely affected by the burden of early pregnancies (Bearinger et al., 2007). In poor settings where women have low status in society, girls are not given priority in nutritional allocation and may be already malnourished when they get pregnant (Ogu et al., 2016). Therefore, the physical burden of early pregnancy on girls' bodies is substantial.

Young girls often experience difficulty with the pregnancy and birth processes. Studies have found higher rates of anaemia, preeclampsia and postpartum haemorrhaging among adolescent mothers compared to older mothers in Nigeria (Ibrahim & Owoeye, 2012; Onoh et al., 2014) and in India ((Banerjee et al., 2009). Furthermore, a multi-country study in Latin America discovered higher risk of postpartum haemorrhage, puerperal endometritis, operative vaginal delivery, episiotomy, low birth weight, preterm delivery, and small-for-gestational-age infants among adolescent mothers compared with older mothers. They also reported the highest incidences of maternal and neonatal mortality and anaemia in girls under age 15 (Conde-Agudelo et al., 2005). A study conducted in 23 countries in Africa, Asia and Latin America had similar findings to this (Ganchimeg et al., 2013, 2014). There was a higher rate of Caesarean delivery among teenage mothers in a hospital-based study done in Bayelsa, Southern Nigeria (Ibrahim & Owoeye, 2012). Adolescent mothers also have a higher rate of mortality due to maternal causes, as found in rural

Kenya, in rural South West Nigeria, and in North East Nigeria (Adebawale & Akinyemi, 2016; Mairiga & Saleh, 2009; Osoro, Ng'ang'a, Mutugi, & Wanzala, 2013). These studies were location-specific, however, and findings may be related to the context studied, as none of these three studies used nationally-representative data. A study examining maternal outcomes among child brides in North East Nigeria discovered a higher prevalence of pregnancy complications among adolescents aged 15-19 (Mairiga & Saleh, 2009).

Adolescent girls with low levels of education, income and decision-making power, as well as higher parity are more likely to have pregnancy complications, which foregrounds the role of adolescent girls' status in adverse pregnancy outcomes (Adedokun, Adeyemi, & Dauda, 2016). Egbe and colleagues (2015), in a facility-based case-control study in Buea, Cameroon, found that adolescent mothers had a higher incidence of low birth weight, preterm births and lower Apgar scores at birth than older mothers; they were also more likely to have perineal tears. The study also found that marital status had an influence on pregnancy outcomes, as married adolescents had a lower incidence of adverse outcomes compared to unmarried ones (Egbe et al., 2015). This finding could mean that married adolescents had more access to improved nutrition and healthcare due to more financial resources being available to them. Similarly, in a randomised controlled trial carried out in Benin, Gabon, Mozambique and Tanzania, adolescent mothers had low birth weight and a higher incidence of preterm delivery, especially when they were younger than 16 years at delivery (Mombo-Ngoma et al., 2016). A case-control study in Ankara, Turkey, found that adolescent mothers had a higher incidence of preeclampsia and preterm delivery as well as anaemia than older mothers (Kirbas, Gulerman, & Daglar, 2016). Also, a multi-country study of pregnancy outcomes found a higher risk of premature births and low birth weight among

adolescent mothers compared to young mothers (Althabe et al., 2015). Similarly, a study based in multiple health facilities in the United States found that adolescent mothers under age 20 had higher likelihoods of anaemia, preterm delivery, postpartum haemorrhage and preeclampsia, compared to mothers over 20 (Kawakita et al., 2016).

A study in Malaysia found no difference in the occurrence of adverse outcomes between older and younger mothers (Sulaiman, Othman, Razali, & Hassan, 2013). Ibrahim and Owoeye (2012) found no significant difference in maternal mortality between adolescent and older women in the Niger Delta region of Nigeria. Althabe and colleagues (2015) found a lower risk of obstructed labour and pregnancy-induced hypertension among pregnant girls aged 15-19 compared to young women aged 20-24, and no significant difference in the risk of ante- and postpartum haemorrhage, sepsis, or stillbirths between adolescent and young mothers in their multi-country study using data from the Global Network's Maternal Newborn Health Registry. Also, Conde-Agudelo and colleagues (2005) found that adolescent mothers had a lower risk of Caesarean delivery, gestational diabetes and late pregnancy bleeding compared to older mothers. Similarly, Kawakita and colleagues (2016) found a lower incidence of Caesarean delivery among adolescent mothers under age 20, compared to mothers aged 20 and above. They also found that adolescent mothers had a shorter duration of second stage labour, and a lower likelihood of their babies requiring emergency medical care after delivery compared to older mothers.

Birth outcomes for children of teenage mothers are often worse than those of older mothers. Adolescent mothers have a higher prevalence of preterm births, low birth weight,

miscarriages and stillbirths compared to older mothers (Coovadia et al., 2016; Magadi, 2006; Olusanya & Ebuehi, 2012; Sulaiman et al., 2013; Woldemichael, 2006). Their children were found to have lower mean Apgar scores at birth compared to babies born to older mothers (Ibrahim & Owoeye, 2012). Children of adolescent mothers were found to have a higher likelihood of perinatal mortality than children of older mothers in a hospital-based study in Abakaliki, South East Nigeria (Onoh et al., 2014). Even after these children survive the birth and perinatal process, there are more challenges to be faced. The short and medium-term health outcomes of children of adolescent mothers are less than ideal. A multilevel study using the 2008 DHS in Nigeria found that children of mothers aged below 25 had a higher likelihood of dying before their fifth birthday (Adedini et al., 2015). Also, a multilevel study using the 2013 DHS in Nigeria found that, due to lower utilisation of maternal healthcare services among adolescent mothers compared to older mothers, their children are less likely to survive beyond their first year of life (Adebowale & Udjo, 2016). Woldemicael (2006) found, in a multilevel study of the 2002 DHS in Eritrea, that children born to mothers under 18 years of age have a lower probability of survival beyond the age of two compared to children of older mothers. However, a study using 2003 DHS data in Nigeria found a lower likelihood of under-five mortality among children of mothers aged 15 to 19 compared to children of older mothers (Antai, 2011).

A possible cause of higher mortality risk for the children of adolescent mothers could be their susceptibility to childhood killer diseases. A study examining the multilevel determinants of child immunisation in Nigeria, using the 2013 DHS, found that mother's age was a significant predictor of immunization of infants, as only 17% of children born to mothers aged 15-24 were fully immunised by age two, compared to 27% and 24% of children whose mothers were aged 25

to 34 and 35 and older, respectively (Adedokun, Uthman, Adekanmbi, & Wiysonge, 2017) . Also, Atuyambe et al. (2008) found in rural Uganda that adolescent mothers were less likely to have initiated immunisation schedules for their children, and where they had, the children were less likely to be completely immunised compared to infants of older mothers. Children of adolescent mothers are also more likely to suffer from malnutrition than children whose mothers were over 20 (Olusanya & Ebuehi, 2012). Without appropriate intervention, the long-term prognosis for these children is not favourable, as Coovadia et al. (2016) found from a longitudinal study in five countries that children born to adolescent mothers are more likely to have cognitive and physical development challenges up until adulthood. This is not surprising, as the first 1,000 days of life are considered to be crucial to brain development in children (United Nations Children Education Fund, n.d.). The nutritional disadvantage associated with adolescent pregnancies means that there is less allocation of the necessary nutrients for proper brain growth for children of adolescent mothers.

Adolescent pregnancy is also associated with mental and emotional health challenges. Pregnancy exerts an emotional and psychological burden on young girls and their families, especially when they do not receive adequate support from their partners (Agunbiade et al., 2009; Arai, 2007). They may also face rejection from their families and the babies' fathers (Agunbiade et al., 2009; Vundule et al., 2001). This is more pronounced when premarital pregnancy occurs. Unmarried pregnant girls often have to deal with discrimination and stigma in both African and Western settings. The stigma could be real or imagined, and girls reported that it increased the difficulty of the pregnancy experience for them (Agunbiade et al., 2009; Amobi & Igwegbe, 2004; Arai, 2007; Atuyambe et al., 2008; Gross, Alba, Glass, Schellenberg, & Obrist,

2012; Maly et al., 2017; Vundule et al., 2001; Yardley, 2008). The stigma is often higher where adolescent pregnancy is not culturally acceptable, as Yardley (2008) found in a qualitative study of adolescent mothers in England. Pregnancy may also separate girls from their usually supportive social networks and isolate them. In Uganda, a qualitative study found that unmarried pregnant adolescent girls often experienced physical and verbal abuse from their parents and other family members when they reported their pregnancies (Maly et al., 2017). A study in Brazil, which examined adolescent girls' quality of life as part of a WHO multi-country study, found that mothers had poorer social connectivity and physical health than non-mothers (Campos, Barbieri, Torloni, & Guazzelli, 2012). The presence of social support is a crucial need for pregnant girls who often rely on friends, family and their babies' fathers to make decisions concerning the pregnancy, as shown in qualitative studies in Brazil and Mexico (Santos, 2012; Tatum, Rueda, Bain, Clyde, & Carino, 2012). However, in a qualitative study in South West Nigeria, it was found that adolescent mothers' sources of social support were limited to their mothers, a few other well-meaning family members and non-family acquaintances (Agunbiade et al., 2009).

The literature thus shows that adolescent motherhood is plagued by poor pregnancy and obstetric outcomes, as well as social and psychological stressors. The children born to adolescent mothers are also more likely to have health challenges, both in-utero and from birth. Adolescent motherhood is also linked with high maternal and child mortality. These challenges highlight that quality healthcare is essential to ensure safe motherhood for adolescents, and to ensure that their children survive beyond early childhood. It is thus important to identify the health seeking behaviour of adolescent mothers, as well as the enablers and barriers to healthcare utilisation from their perspective.

2.2 Maternal Healthcare Utilisation among Women of Reproductive Age

2.2.1 Socioeconomic and Demographic Correlates of Maternal Healthcare Utilisation

Previous studies have identified that maternal healthcare use is influenced by myriad factors, which are either enablers of, or barriers to, usage. Maternal healthcare is important for pregnant women as it serves as a protection from adverse pregnancy and birth outcomes. A study in Ghana, using data from the 2007 Maternal Health Survey, found that when pregnant women access and use comprehensive antenatal care, their risk of having stillbirths is significantly reduced (Afulani, 2016).

When women are educated, they are encouraged to use maternal healthcare services, because education exposes them to Western ideals and makes them more accepting of modern medicine. Women with at least secondary or higher education were found to have a higher likelihood of using health facilities for antenatal care compared to those with primary or no education (Jat, Ng, & Sebastian, 2011; Manyeh et al., 2017; Mehari & Wencheke, 2013; Rutaremwa, Wandera, Jhamba, Akiror, & Kiconco, 2015; Saptarini & Setyonaluri, 2018; Tekelab & Berhanu, 2014). In Uganda, women with tertiary education reported a higher use of antenatal care compared with those with secondary or lower education (Atekyereza & Mubiru, 2014). Also, Rutaremwa and colleagues (2015) found that women who had secondary or higher education were more likely to make use of a complete package of maternal healthcare services, compared to women with primary or lower education, in a study using the Uganda 2011 DHS. Similarly, Oguntunde and colleagues found that women with secondary and higher education were more likely to book earlier for antenatal care and also use skilled delivery attendants, compared to

women with primary or lower education in North West Nigeria (Oguntunde, Aina, Ibrahim, Umar, & Passano, 2010). Saptarini and Setyonaluri's study in Indonesia found that educated women had higher utilisation rates of skilled birth attendance compared with women with no education, as did Manyeh and colleagues (2017) in Ghana. Women with at least primary education were more likely to use postnatal care than those with no education in Nigeria (Somefun & Ibisomi, 2016). However, educated women's use of the various health services may differ. A study in India among 953 women who had recently given birth, found that educated women were more likely to use antenatal care, but less likely to use delivery and postnatal care than uneducated women (Bhattacharjee, Datta, Saha, & Chakraborty, 2013). In Nigeria, Emelumadu et al. (2014) found that women with lower educational status were less likely to deliver in health facilities in South East Nigeria, compared with more educated women. Where women's husbands or partners are also well educated, it increases their use of maternal healthcare (Bhattacharjee et al., 2013; Jat et al., 2011; Mehari & Wencheke, 2013; Zepro & Ahmed, 2016).

Education also increases women's status, which is an important predictor of maternal healthcare use. Women's ability to make decisions concerning their health influences their use of maternal health services. Women who have to rely on their partners or relatives to make healthcare decisions for them have lower use of these services, while those who can make independent decisions have higher use (Bantebya-Kyomuhendo, 2004; Dairo & Owoyokun, 2010; Woldemicael & Tenkorang, 2010). Also, women who are economically active were found to have higher use of health services compared with those who are not economically active (Aremu et al., 2011; Ononokpono, Odimegwu, Imasiku, & Adedini, 2013). A study in India by Jat and colleagues, using data from the District Level Household and Facility Survey (2007-8), found that

women who worked in the agricultural sector and as unskilled workers were less likely to use maternal healthcare services. This finding is likely due to their lower educational status, compared to their white-collar and skilled counterparts (Jat et al., 2011).

Maternal parity also determines women's health seeking behaviour. The more the number of children women have, the less they use health care services. This could be due to the fact that they feel that they have gained experience regarding pregnancy, and therefore do not need health services as much as less experienced mothers. Studies have found that first time mothers and those with fewer children were more likely to use MHC services than multiparous women (Aremu et al., 2011; Emelumadu et al., 2014; Idowu et al., 2017; Jat et al., 2011; Manyeh et al., 2017; Saptarini & Setyonaluri, 2018; Singh, Kumar, Rai, & Singh, 2014; Tekelab & Berhanu, 2014). Postnatal care use is also lower among multiparous women in Nigeria (Somefun & Ibisomi, 2016). However, Bhattacharjee and colleagues found that although multiparous women had lower antenatal care use, they had higher delivery and postnatal care use than women with fewer children in India (Bhattacharjee et al., 2013).

Accessibility to health facilities increases usage of prenatal healthcare, as well as facility delivery among women. However, when the health facilities are too far away, and access is difficult due to high cost of transport, distance or bad roads, this discourages pregnant women, as they would rather deliver at home or with a traditional birth attendant. Studies have found this to be the norm in rural areas in Gambia, Uganda, India, Tanzania, Ethiopia, South Africa and Nigeria (Atekyereza & Mubiru, 2014; Bantebya-Kyomuhendo, 2004; Bhattacharjee et al., 2013; Idowu et al., 2017; Lerberg et al., 2014; Mrisho et al., 2007; Musoke et al., 2015; Rutaremwa et

al., 2015; Singh, Kumar, & Pranjali, 2014; Tsawe & Susuman, 2014; Zepro & Ahmed, 2016) . A qualitative study in rural Ghana found that when access to health facilities is impossible such as at nights and during weekends, traditional birth attendants become the healthcare providers of choice in rural areas (Adatara, Afaya, Baku, Salia, & Asempah, 2018). Difficulty in accessing the health facility also reduced postnatal care service use in Nigeria (Somefun & Ibisomi, 2016).

The cost of healthcare for pregnant women may hinder service access. Where women cannot afford the cost of maternal health services, it may push them to traditional birth attendants or home delivery with the assistance of relatives and friends (Bantebya-Kyomuhendo, 2004; Bhattacharjee et al., 2013; Mrisho et al., 2007; Musoke et al., 2015). The presence of health insurance programmes can lessen the cost of maternal care and make it more accessible to pregnant women. Women who are enrolled in health insurance schemes have increased use of MHC services in Nigeria and Indonesia compared to those who do not have any health insurance (Aremu et al., 2011; Saptarini & Setyonaluri, 2018). For this same reason, women from households with higher wealth status were more likely to use maternal healthcare services, compared to those from poorer households (Aremu et al., 2011; Ononokpono et al., 2013; Rutaremwa et al., 2015; Saptarini & Setyonaluri, 2018; Singh et al., 2014; Somefun & Ibisomi, 2016). However, Tekelab and Berhanu (2014) found that women with lower income in Ethiopia were more likely to book for antenatal care early compared to higher status women. This finding however is context-specific and is probably explained by other factors which are unique to that locality.

There are several community-level influences on maternal healthcare utilisation. A study in India found that poor infrastructure and access to health facilities and communication networks hindered use of maternal healthcare (Singh et al., 2014). At the district level, a low facility to population ratio, low proportion of primary health care centres with labour rooms, and low percentage of pregnant women using antenatal care reduced the use of maternal healthcare (Singh et al., 2014). In Nigeria, Ononokpono and colleagues (2013), using data from the 2008 NDHS, examined the community-level determinants of postnatal care use. They found that usage was highest among women in the South West region and lowest in the North West. They further found a positive association between community hospital delivery rate and community mass media exposure and postnatal care usage, while there was a negative association between community poverty and postnatal care use (Ononokpono et al., 2013). Another multilevel study using the same national dataset showed that ethnically heterogeneous communities had lower levels of antenatal care use compared to those living in ethnically homogenous communities (Ononokpono & Odimegwu, 2014). Urban women had higher maternal healthcare service use compared to rural women, and this could be as a result of their having higher socioeconomic status and closer proximity to health facilities (Dairo & Owoyokun, 2010; Jat et al., 2011; Rutaremwa et al., 2015; Singh et al., 2014; Tekelab & Berhanu, 2014; Woldemicael & Tenkorang, 2010). A qualitative study in rural Uganda found a high level of late booking for antenatal care, as well as preference for delivering with traditional birth attendants (Atekyereza & Mubiru, 2014).

Generally, the literature shows that women's personal and socioeconomic status influences their patronage of healthcare facilities for pregnancy, delivery and postnatal care. Women of

higher socioeconomic status are more likely to use maternal health services compared to those of lower status.

2.2.2 Sociocultural Correlates of Maternal Healthcare Utilisation

Having a wanted pregnancy influences how women take care of themselves during that period. Women, who planned for and wanted their pregnancies, were more likely to make use of maternal healthcare services than those whose pregnancies were unwanted (Biratu & Lindstrom, 2006; Saptarini & Setyonaluri, 2018). Women with unwanted pregnancies booked late for antenatal care in a study done in Ethiopia among 401 antenatal clients (Tekelab & Berhanu, 2014). Similarly, women in rural Uganda who had wanted pregnancies reported being eager to use antenatal care services to ensure optimum health for themselves and their babies compared to those with unwanted pregnancies (Atekyereza & Mubiru, 2014). However, a study by Somefun and Ibisomi (2016), using 2013 DHS data from Nigeria, found that women with mistimed pregnancies were more likely to make use of postnatal care compared to those with wanted pregnancies.

Health worker attitudes also have an important influence on pregnant women's use of health facilities. Where expectant mothers feel disrespected, intimidated or not well treated by health workers, this causes them to shy away from health facilities. The reverse is the case where health workers are friendly, caring and respectful, as found in studies in rural Gambia, Uganda, Tanzania, South Africa, Ethiopia and India (Bantebya-Kyomuhendo, 2004; Bhattacharjee et al., 2013; Lerberg et al., 2014; Mrisho et al., 2007; Tsawe & Susuman, 2014; Zepro & Ahmed, 2016). Health workers' negative attitudes tend to push women to traditional birth attendants, as they feel the

latter are more friendly and accommodating. Studies in Botswana and Ghana have found that traditional birth attendants tend to offer women more psychological support during labour and delivery, and this makes them the preferred delivery care provider for rural women (Adatara et al., 2018; Bantebya-Kyomuhendo, 2004). A study in rural Uganda found that pregnant women complained about long waiting times in the health facilities, as well as a poor package of maternal health services at the government clinics (Musoke et al., 2015). The study further found that government workers were not dedicated to providing good service at government clinics because they also ran their own private clinics (Musoke et al., 2015).

Studies have found that the sex of the household head is an important influence on maternal healthcare utilisation by women. A mixed methods study conducted in rural Tanzania among women aged 15-49 found that women who lived in female-headed households were more likely to use health facilities for delivery than their counterparts in male-headed households (Mrisho et al., 2007). It is possible that facility delivery within that particular environment is more related to the greater autonomy present for women in female-headed households than greater access to resources. Also, a mixed methods study in the Eastern Cape region of South Africa found that unmarried women were more likely than married women to use antenatal care while pregnant, compared to married women, and women who used antenatal care during pregnancy were more likely to also deliver their babies with the aid of a skilled birth attendant (Tsawe & Susuman, 2014). In Ethiopia, women's use of antenatal healthcare increased their likelihood of returning to the health facility to deliver their babies (Zepro & Ahmed, 2016). Similarly, in Ghana, Manyeh et al. (2017) found that women who did not use antenatal care were less likely to use skilled birth attendants for delivery compared to those with complete ANC use. Somefun and Ibisomi (2016)

found that in Nigeria, women who used antenatal care also made higher use of postnatal care services after delivery than those who did not use antenatal care services.

Women's maternal healthcare utilisation is influenced by cultural factors such as their marital status and religion. Rutaremwa et al. (2015) found that in Uganda, married women and Muslim women were less likely to use maternal healthcare services compared to unmarried women and non-Muslims. A mixed methods study in Ethiopia by Zepro and Ahmed (2016) found that household healthcare preferences influence women's likelihood of facility delivery. The study also found that religious tenets of not allowing women to be attended to by male health workers, as well as the cultural preference for home delivery prevented women from using health facilities for delivery (Zepro & Ahmed, 2016). A nationally representative study in Nigeria found that women who were adherents of traditional African and other religions had lower levels of utilisation of postnatal care after delivery (Somefun & Ibisomi, 2016). A qualitative study in rural Uganda found that cultural beliefs and taboos as well as a preference for traditional medicine influenced women's use of maternal healthcare and their preference for traditional birth attendants (Atekyereza & Mubiru, 2014). A study in rural Gambia found that women's healthcare preferences determine their choice of birthing attendants, as women who did not want to give birth in a health facility preferred to use alternative birth attendants for delivery (Lerberg et al., 2014).

It is evident from the literature that sociocultural factors such as marital status, religion, cultural beliefs and taboos, gender relations and autonomy are important influences on women's use of maternal healthcare across all ages. These studies, however, focused on all women of

reproductive age, without teasing out the peculiar experiences and utilisation patterns of adolescent mothers.

2.3 Adolescent Maternal Healthcare Utilisation

2.3.1 Socioeconomic and Demographic Correlates of Maternal Healthcare Utilisation

Studies have identified several factors influencing maternal healthcare utilisation by women. Adolescent mothers' health seeking behaviour is often influenced by factors beyond their personal control. Decisions around their healthcare are usually in the hands of others, such as their own and partners' relatives (Atuyambe et al., 2009, 2008).

Studies in sub-Saharan Africa have generally shown low maternal healthcare utilisation among adolescent mothers (Babalola & Fatusi, 2009b; Ibrahim & Owoeye, 2012; Magadi et al., 2007; Mehari & Wencheke, 2013; Mekonnen, Dune, & Perz, 2019). In Nigeria, less than half of adolescent mothers used antenatal care during pregnancy, and less than a third used delivery and postnatal care for their most recent pregnancies (Babalola & Fatusi, 2009). A study of 400 pregnant women in Ilorin, North Central Nigeria, showed that adolescents had the lowest use of skilled delivery assistance (Idowu et al., 2017). Similarly, a study in India found that only 23% of pregnant adolescents used antenatal care, while 71% and 65% used delivery and postnatal care respectively (Singh et al., 2014).

Studies in South Africa, Ghana, Nigeria, Malawi and Bangladesh found that late booking for antenatal care is common among pregnant adolescents (Baxter & Moodley, 2015; Chikalipo, Mipando, Ngalande, Muheriwa, & Kafulafula, 2018; Emelumadu et al., 2014; Shahabuddin,

Delvaux, Abouchadi, Sarker, & De Brouwere, 2015; Yeboah, 2012). Shahabuddin et al. (2015) discovered that adolescent girls booked late for antenatal care, preferred to deliver at home with the aid of a traditional birth attendant, and had low levels of use of postnatal care. Emelumadu and colleagues (2014) found that adolescent mothers were less likely to have complete antenatal visits in South East Nigeria compared with older mothers. A case-control study in Turkey found that adolescent girls had lower usage of antenatal care and folic acid intake in pregnancy compared to older women aged 20-34 (Kirbas et al., 2016). Additionally, a study using DHS data from 13 West African countries found that generally, adolescent mothers started antenatal care late, had fewer visits, and received fewer services than older mothers (Owolabi et al., 2017). A study, using data from the Dodowa Health and Demographic Surveillance Site in Ghana, found that adolescent mothers had lower utilisation of skilled delivery assistance compared to others aged 20 and over (Manyeh et al., 2017). The use of antenatal care also predicts facility delivery. A study in Bangladesh found that young women who use antenatal care services fully are also more likely to deliver in a health facility (Shahabuddin, De Brouwere, et al., 2017). Low utilisation of antenatal care among adolescent mothers may therefore also lead to low usage of other maternal healthcare components.

The socioeconomic status of adolescent mothers determines their patterns of usage. Adolescents with no education have lower usage of maternal healthcare services compared with those with some schooling (Kawakatsu et al., 2014; Magadi et al., 2007; Ochako, Fotso, Ikamari, & Khasakhala, 2011; Shahabuddin et al., 2015; Singh et al., 2014; Singh, Rai, Alagarajan, & Singh, 2012). Girls from households with higher wealth status were more likely to use maternal health services in low income countries, compared to those from poorer households (Banke-Thomas,

Banke-Thomas, & Ameh, 2017; Kawakatsu et al., 2014; Ochako et al., 2011; Rai et al., 2012; Singh et al., 2012). Studies have shown that adolescent girls with lower socioeconomic status have lower maternal healthcare utilisation compared with those from wealthier households, which is a result of fewer resources available for their pregnancy healthcare needs within the household (Kawakatsu et al., 2014; Rai et al., 2012; Singh et al., 2014, 2012). Health insurance can be a buffer against the costs of maternal care; however, Kirbas and colleagues (2016) found a low uptake of health insurance among pregnant adolescent girls in Turkey. Adolescent mothers are less likely to control economic resources of their own, and when they cannot afford the cost of health services, they find alternative means of addressing their health needs, such as the use of traditional birth attendants (Atuyambe et al., 2009; Baxter & Moodley, 2015; Chaibva et al., 2009). Low status adolescents have also been seen to be more likely to patronise traditional birth attendants for their healthcare needs, especially in resource poor settings in Uganda, Kenya and Bangladesh (Atuyambe et al., 2009; Ochako et al., 2011; Shahabuddin et al., 2015). A facility-based randomised control trial conducted by Flanagan et al. among adolescent mothers in New York City found that those who reported having food insecurity in their households had a lower likelihood of utilising complete perinatal care (Flanagan, Cunningham, Lewis, Tobin, & Ickovics, 2019). Atekyereza and Mubiru (2014) and Rukundo and colleagues (2015) discovered a low level of antenatal care among adolescent mothers aged 19 and below in rural Uganda, due to their lack of financial resources.

Urban residents are also likely to use MHC services more than rural residents (Banke-Thomas et al., 2017; Ochako et al., 2011; Rai et al., 2012; Sarker, Sheikh, Mahumud, & Sultana, 2018). This is probably for two reasons. First, it is likely that there is little difficulty in accessing health

facilities due to their proliferation as well as the availability of transportation to health facilities, if necessary. Secondly, the educational and socioeconomic status of inhabitants in urban areas is higher than those of most rural areas. In Uganda, far distance to health facilities lowered maternal healthcare service usage in rural areas (Atuyambe et al., 2009). Service utilisation is greater where the health facility is close to clients' homes; the reverse is the case when it is far (Atuyambe et al., 2009; Kawakatsu et al., 2014).

Studies in Zimbabwe, Uganda and India found that having adequate knowledge of the benefits of maternal healthcare will encourage adolescents to use the appropriate services (Chaibva et al., 2009; Naigaga et al., 2015; Rukundo et al., 2015; Singh et al., 2014). Sarker and colleagues (2018) in a study using data from the 2014 Bangladesh DHS, found that adolescent girls who had high knowledge about contraceptives were more likely to use maternal health services. A study in New York City found that younger pregnant adolescent girls aged 18 and below had a lower likelihood of HIV testing and contraceptive use, despite their higher knowledge of sexual health (Flanagan et al., 2019). Studies in rural Uganda found that adolescent mothers had a poor knowledge of the benefits of maternal healthcare and this translated to their low utilisation of antenatal care (Atekyereza & Mubiru, 2014; Maly et al., 2017; Rukundo et al., 2015). A study evaluating maternal health literacy among adolescent mothers in Uganda discovered that girls with at least primary education had higher health literacy compared to those with no education (Naigaga et al., 2015).

Where girls are well exposed to information sources, such as mass media channels, they can easily acquire knowledge of the benefits of maternal healthcare service usage, and are more

likely to use antenatal care when pregnant. A study in Nigeria, using the 2008 Nigeria Demographic and Health Survey data, found that adolescent girls who had high media exposure were more likely to use antenatal care services than those with lower exposure (Rai et al., 2012). Banke-Thomas et al. (2017) also found in a systematic review of literature from low and medium-income countries that adolescents' use of maternal healthcare was positively associated with their media exposure. Similarly, a study using DHS data from five East African countries showed that high media exposure led to use of maternal healthcare by pregnant adolescent girls (Wado et al., 2019).

There are other reasons for non-use of health services by adolescent mothers. Chaibva and colleagues (2009) found that the fear of HIV testing and administrative protocols made adolescent girls shy away from health facilities, as adolescent girls were required by law to produce national identity cards to receive services at health facilities in Zimbabwe. However, where girls were below the age of eligibility for an identity card or did not have one for other reasons, they were denied access to the services. Pregnant girls were also afraid to be tested for HIV - as part of the package of antenatal care services offered by the health facilities - as they were afraid of being found HIV positive (Chaibva et al., 2009). A study in rural Uganda found that teenage mothers had lower utilisation of maternal healthcare services as they felt uncomfortable using the services at the same time as older mothers. The study further found that adolescent girls found it difficult to use antenatal care services when they lacked social support (Rukundo et al., 2015).

Some studies found no significant difference or a higher likelihood of use of maternal healthcare services among adolescent compared to adult mothers. Gross et al. (2012) found no difference in timing of antenatal care booking between adolescent and adult women in Tanzania. A study of DHS data from 15 low and medium-income countries in Africa, Latin America and Asia found no significant difference in antenatal and delivery care use between adolescents and older women (Reynolds, Wong, & Tucker, 2006). Also, Atuyambe and colleagues (2008) found no significant difference in place of delivery and use of skilled assistance between adolescent and older mothers in rural Uganda. Mothers under 20 years of age had higher odds of delivering in a health facility than older mothers in Western Kenya, rural Tanzania and Bangladesh (Kawakatsu et al., 2014; Mrisho et al., 2007; Shahabuddin, De Brouwere, et al., 2017).

A study in rural India among 369 women of reproductive age found that those aged 25 and below had the highest levels of antenatal care usage (Srivastava, Mahmood, Mishra, & Shrotriya, 2014). Ochako et al. (2011) found that adolescent and young women were more likely to book early for antenatal care in a study in Kenya using the 2003 DHS. A study in Tanzania found a higher incidence of early antenatal care booking among mothers under 20 (Exavery et al., 2013). Dahiru and Oche (2015), using 2013 DHS data in Nigeria, found that young women aged 15-24 had higher complete antenatal care usage than older women; however, they had lower facility delivery and postnatal care usage. A multi-country study by Althabe and colleagues (2015) in six low-income countries in sub-Saharan Africa, Asia and Latin America found that adolescent mothers aged 15-19 had higher usage of skilled birth attendance than older mothers.

The literature reviewed above shows that adolescents' peculiar circumstances influence their maternal health seeking behaviour. They have similar barriers to using maternal healthcare as older women, such as distance, poor services, costs and low status. Additional age-related barriers to usage are the presence of stigma and the fear of harsh treatment by health workers, especially when they are unmarried. The lack of knowledge and experience also limits their usage of MHC services. Furthermore, the fact that the decisions for their healthcare needs are out of their hands as they are still minors makes it difficult for them to choose the most beneficial type of healthcare. Adolescent mothers can benefit greatly from the complete package of antenatal, delivery and postnatal care; however, some or all of these may be unavailable to them because they lack the means and the autonomy to access the services.

2.3.2 Sociocultural Correlates of Maternal Healthcare Utilisation among Adolescent Mothers

Maternal healthcare usage by adolescent mothers is also heavily influenced by the features of their social and cultural environment. The cultural beliefs and practices that guide pregnancy health-seeking behaviour for women in every locality also apply to pregnant adolescents. However, adolescent mothers may be victims of these perceptions and practices due to their lower personal agency, inability to make their own healthcare decisions and their higher risk of adverse pregnancy outcomes.

Pregnancy-related stigma is associated with late antenatal care initiation among adolescent mothers because of the initial denial of the pregnancy's existence (Agunbiade et al., 2009; Chikalipo et al., 2018). The effect of stigma is even more pronounced when it comes from the very people who are supposed to help them ensure safe motherhood. Studies across the

world have shown that negative attitudes of health workers made accessing antenatal care difficult for pregnant adolescents; their attitudes furthermore led to the use of traditional healers and birth attendants for delivery (Agunbiade et al., 2009; Atuyambe et al., 2009; Baxter & Moodley, 2015; Chaibva et al., 2009; Tatum et al., 2012; Yardley, 2008). A qualitative study in rural Ghana among antenatal clients found that pregnant adolescents found it difficult to obtain information from health workers because they were afraid of them (Owusu-Addo, Owusu-Addo, & Morhe, 2016). Also, adolescent girls shied away from facilities where health workers did not provide the necessary atmosphere of privacy and confidentiality when attending to them (Santos, 2012). A qualitative study in Malawi found that adolescent mothers expressed pleasure in the fact that a separate clinic day had been created for them, as this made them feel comfortable obtaining the healthcare and information they required (Chikalipo et al., 2018).

Marriage may have a protective effect on adolescent mothers. The marital status of adolescent girls increases social acceptability of their pregnancies, and this may influence their MHC use. In Kenya, Ochako et al. (2011) found that married young women were more likely to start antenatal care earlier than their single counterparts; however, they were less likely to use skilled delivery assistance than single women. Adolescent mothers who are unmarried and have unwanted pregnancies are especially less likely to use antenatal care, and if they do, have fewer than the recommended number of visits compared to those who are married (Guliani, Sepehri, & Serieux, 2014; Rai, Singh, Kumar, & Singh, 2013). A comparative multilevel study of adolescent maternal healthcare utilisation in sub-Saharan Africa by Magadi et al. (2007), which used DHS data from 21 countries, found that teenage mothers with premarital and unwanted pregnancies were less likely to use maternal healthcare than those who were married and had wanted

pregnancies. Also, a qualitative study of health workers, community leaders and welfare officers in rural Uganda revealed that adolescent mothers with unwanted pregnancies were less inclined to use antenatal care compared to older mothers and those with wanted pregnancies (Rukundo et al., 2015). Out of wedlock pregnancies are often associated with a reduction of social support, which may result in lower MHC usage. Yeboah (2012) found that girls lacking social support in Ghana started antenatal care late. Similarly, Chaibva et al. (2009) found in Zimbabwe that a lack of social support from girls' families and communities reduced their ability to use MHC services. However, a hospital-based study in Cameroon found that the majority of pregnant adolescents using the facility were unmarried (Egbe et al., 2015). Similarly, in a study in Turkey, the majority of pregnant adolescents presenting for delivery in a health facility were unmarried (Kirbas et al., 2016).

Girls' husbands and partners are important decision makers about the girls' maternal health seeking behaviour (Shahabuddin, Nostlinger, et al., 2017). Where adolescent girls have educated husbands or partners, they are more likely to use maternal healthcare services, probably due to the fact that their partners are enlightened about the benefits of proper pregnancy and delivery care (Banke-Thomas et al., 2017; Maly et al., 2017; Rai et al., 2013, 2012; Singh et al., 2014, 2012). However, marriage also means a shift in the girls' autonomy. A study in South West Ethiopia found that married adolescents could not make use of maternal healthcare services without their husbands' approval (Biratu & Lindstrom, 2006). A study in seven low income countries found that girls who were married below the age of 15 were less likely to make use of maternal healthcare services compared to those married at older ages (Godha, Gage, Hotchkiss, & Cappa, 2016). In a qualitative study in Uganda, Bantebya-Kyomuhendo (2004) found that the decision for

emergency obstetric care rested with either the husband or his relatives. As such, without their input, no help could be sought for women even in a delivery crisis (Bantebya-Kyomuhendo, 2004). A qualitative study in Bangladesh found that mothers-in-law were found to have the greatest influence on maternal healthcare usage among married adolescent mothers (Shahabuddin, Nostlinger, et al., 2017). Therefore, in order to avoid conflict, adolescent mothers may not be able to make use of the best healthcare providers during pregnancy, especially when the decision makers are ignorant of or choose to ignore the benefits of modern healthcare. Adolescent girls with limited personal autonomy had lower use of all three maternal health services in Bangladesh compared to those with higher autonomy (Shahabuddin et al., 2015). More autonomous adolescents had higher antenatal care and delivery assistance in Ethiopia (Woldemicael & Tenkorang, 2010), and low autonomy decreased antenatal care use in Zimbabwe and Nigeria (Chaibva et al., 2009; Dairo & Owoyokun, 2010).

Religious beliefs may influence the use of MHC services, as some religious tenets discourage pregnant women from being attended to by male health personnel or from the use of modern medicine thus tending to reduce healthcare usage among them. Studies in India and Nigeria found that Muslim adolescent mothers had lower maternal healthcare usage than others (Olusanya & Ebuehi, 2012; Singh et al., 2014). A nationally representative study in Nigeria, using the 2008 DHS data, found that adolescents' use of maternal healthcare services was lower in the predominantly Muslim North and higher in the largely Christian South (Rai et al., 2012).

A preference for traditional medicine and practices means that adolescent girls are more likely to use traditional birth attendants than go to health facilities for maternal healthcare. In

rural Uganda, Atuyambe et al. (2009) found that adolescent mothers were advised to use traditional rather than modern healthcare by elders in the community who saw using modern medicine as a departure from their traditional ways of doing things. In rural Bangladesh, Shahabuddin et al. (2017) found that there was a family and community preference for young mothers to give birth at home, rather than in the health facility, due to the presence of male health workers. Furthermore, home delivery was common among adolescent mothers who were Muslims.

2.4 Gaps in the Existing Literature

There have been a handful of studies which focused on the pattern of maternal healthcare usage among adolescent and young mothers in Nigeria. Most of them have examined adolescent usage patterns as a subset of all women of reproductive age. Three studies focused exclusively on maternal healthcare utilisation among adolescent mothers in Nigeria. Olusanya and Ebuehi (2012) found a low usage of delivery care among adolescent mothers in a facility-based study in Lagos, Nigeria. However, the study does not provide information on antenatal and postnatal care. Also, its scope is restricted to girls who visited that facility only. A nationally representative study using the 2008 NDHS by Rai et al. (2012) found that higher education and wealth status, urban residence and mass media exposure were associated with increased MHCU among married adolescents, while higher parity, short birth intervals and living in the Northern part of the country were associated with low usage of services. The study provides many useful insights into adolescent maternal healthcare usage in Nigeria. However, it does not provide information on social and cultural influences on the use of services among adolescent mothers in Nigeria. Also, the study's exclusion of unmarried adolescent girls leaves out valuable information on their

maternal healthcare usage and experiences. Kupoluyi and Oyinloye (2014) examined the socioeconomic and demographic determinants of maternal healthcare use among young women aged 15-24 using data from the 2013 Nigeria DHS data. Their study revealed that urban residence was associated with antenatal care usage, adolescent use of antenatal care was most likely in the South East, and health facility delivery was most likely in the South West and South East compared to the North Central region. They also found that husband's education predicted antenatal and delivery care, but not postnatal care. The age at first birth and birth interval predicted the use of postnatal care, as older mothers were nearly three times more likely to use postnatal care as younger mothers. Mothers with birth intervals of more than three years were also more likely to use postnatal care than those with shorter birth intervals (Kupoluyi & Oyinloye, 2014). However, the study did not examine the cultural norms and systems that influence adolescent mothers' use of health services in Nigeria.

In general, none of the previous studies conducted in Nigeria examined the sociocultural influences of adolescent maternal healthcare utilisation. This has resulted in an information gap about how the sociocultural environment of adolescent mothers in Nigeria influences their health seeking behaviour. Previous studies in Uganda and Bangladesh showed that examining the sociocultural context of adolescent mothers provides insight into how such contexts influenced their utilisation of maternal health services (Atuyambe et al., 2009; Shahabuddin, Nostlinger, et al., 2017). Therefore, it becomes necessary to examine how Nigeria's sociocultural environment has contributed to the persisting low utilisation of maternal healthcare services among adolescent mothers, and how interventions can be designed to increase usage with these factors in mind.

This study examined the sociocultural influences of maternal health seeking behaviour among adolescent mothers in Nigeria, using nationally-representative secondary data from the Demographic and Health Surveys conducted in Nigeria from 2003 to 2013, as well as qualitative data from focus group discussions, in-depth and key informant interviews. The study examined the prevalence, patterns and predictors of antenatal, delivery and postnatal care usage of adolescent mothers. It also explored the social and cultural context of adolescent mothers' health seeking behaviour, and provides information on the social and cultural factors that serve as enablers or barriers to maternal healthcare utilisation by adolescent mothers in Nigeria.

2.5 Theoretical and Conceptual Framework

2.5.1 Theoretical Framework

The study made use of the Andersen Behavioural Model of Healthcare Utilisation to explain maternal health-seeking behaviour among adolescent mothers in Nigeria.

Andersen Behavioural Model of Healthcare Utilisation

The Andersen Behavioural Model of Healthcare Utilisation was initially developed in the 1960s in the United States in order to examine the reasons for the use of health services (Andersen, 2008). The model has been widely used to study healthcare utilisation in both high and low-income settings. It examines the factors that act as either enablers of, or barriers to, an individual's usage of modern healthcare facilities. These factors are divided into three categories, which are predisposing, enabling and need factors. The predisposing factors are socioeconomic and cultural attributes which are unique to the individual and are intrinsic to them, such as their age, gender, the social class they belong to, their educational and occupational status, religious and cultural

beliefs and practices, and their perception of healthcare (Andersen, 2008). The enabling factors are those factors which make possible the use of healthcare facilities, such as the ability to afford healthcare costs or the presence of health financing, and the presence of accessible healthcare facilities. The need factors are those which cause the individual to make use of healthcare. These are subdivided into two, perceived need and evaluated need. Perceived need refers to how the individual views their own health status and the necessity of accessing healthcare, while evaluated need refers to the individual's need for healthcare which is as a result of a disease condition which has been diagnosed by a recognised authority, such as a health practitioner (Andersen, 2008). Previous versions of the model have been tested in studying healthcare utilisation and various health outcomes such as mental-health seeking behaviour (Chen, Kazanjian, & Wong, 2008; Hochhausen, Le, & Perry, 2011), the healthcare cost of intimate partner violence (Bonomi et al., 2009), the influence of culture of health-seeking behaviour of older immigrants (Surood & Lai, 2010), patient-physician interaction (Petrovic & Blank, 2015), access to preventive healthcare (Jahangir, Irazola, & Rubinstein, 2012), general health services utilisation (Kim & Lee, 2016) and maternal healthcare utilisation (Aremu et al., 2011; Rai et al., 2012; Rutaremwa et al., 2015).

The fifth revision of the model was published in 2008, and it recognises that healthcare utilisation is dependent not just on individual characteristics, but also on those factors which are external to the individual in their physical, health system, social- and cultural environment (Andersen, 2008). Andersen (2008) identified the same three groups of determinants for healthcare usage, and as an addition to previous versions of the model, grouped them into individual and contextual categories. The individual factors are those which are personal, while

the contextual factors are those which are present in the environment external to the individual, and influence individual behaviour. The individual and contextual predisposing factors are based on the demographic and social characteristics as well as prevailing belief systems that encourage (or discourage) the use of healthcare services. The individual and contextual enabling factors are the financing and organisational features which make the use of healthcare possible, and in addition at the contextual level, the health policy environment. The need factors determine the rationale for the use of health services. At the individual level, these are perceived and evaluated need, while at the contextual level, they include environmental and population health measures (Andersen, 2008).

A major limitation of the Andersen model is that it focuses mainly on the sociodemographic characteristics of individuals and a limited range of their environmental characteristics which may influence their use of healthcare. Also, the model focuses only on the usage of modern healthcare. It does not factor in the usage of traditional medicine or the use of complementary healthcare which is acceptable in low-income countries, and this limitation is most likely a result of the theory being developed in the United States. Additionally, the Andersen model of healthcare utilisation focuses on general healthcare use broadly, without taking into account the peculiarities involved in maternal healthcare utilisation.

In adapting the Andersen Behavioural model to this study on maternal healthcare utilisation among adolescent mothers in Nigeria, the predisposing, enabling and need factors influencing utilisation are defined based on individual and contextual classifications. The individual predisposing factors were healthcare preferences, marital status, sex of household head, and

pregnancy intention. Additional sociodemographic individual predisposing factors were age of respondent, age at birth, educational level, partner educational level, ethnicity, and religion. Contextual predisposing factors include cultural attitudes and norms towards adolescent pregnancy, and prevailing healthcare preferences in the communities where adolescent mothers reside, and additional sociodemographic predisposing factors were place and region of residence. The individual enabling factors were autonomy for the adolescent mother, while additional sociodemographic enabling factors were wealth status, and ability to afford healthcare. Contextual enabling factors include presence of social support for adolescent mothers, positive health worker attitudes, and the contextual sociodemographic enabling factor was health facility accessibility. The study focused on perceived need only. The individual need factor is the recognition for the necessity of healthcare during pregnancy, and the contextual need factor is the prevailing belief system concerning pregnancy among adolescent girls.

2.5.2 Conceptual Framework

The conceptual framework shows the direction of interaction between the sociocultural influences and maternal healthcare utilisation among adolescent mothers in Nigeria. Usage of maternal health services is a product of their individual characteristics as well as environmental factors. Individual and family characteristics are acted upon by the prevailing environmental characteristics which then determine whether adolescent mothers are able to use maternal healthcare services or not.

Contextual Factors

Cultural beliefs which are accepting of adolescent pregnancy would make it normal, therefore adolescent mothers would have no problem moving freely and accessing healthcare services.

This would also mean that stigma would be much less or nonexistent. The reverse would be the case where adolescent pregnancy is regarded as a deviation from the norm. Also, the preferred type of healthcare in the community is important. In contemporary communities where there is a preference for modern healthcare, this would encourage adolescent mothers to seek healthcare services. In more traditional societies however, they may be encouraged to patronise traditional birth attendants and deliver their babies without the help of a trained birth attendant. In addition, a supportive attitude from the community during pregnancy through advice and instrumental and financial support could encourage healthcare utilisation by adolescent mothers. Furthermore, where there is generally a recognition of the necessity of healthcare for pregnant adolescents, they could be encouraged to access maternal healthcare.

Additionally, it is expected that adolescent mothers who live in urban areas could have better access to health facilities compared to those who live in rural areas. Also, the modernity in urban areas is more likely to encourage modern, rather than traditional healthcare preferences. Furthermore, the presence of easily accessible health facilities in the community could serve as an enabler for adolescent mothers to use maternal healthcare services. The different regions in Nigeria have different healthcare utilisation patterns because of their people's cultural diversity. Adolescent mothers who live in the Southern part of the country are more likely to use maternal healthcare services than those in the North.

Individual Factors

Marital status may have a protective effect on adolescent mothers, as their pregnancies could be seen as socially acceptable, and this would enable them to obtain healthcare with little trouble.

Also, married adolescent mothers could have instrumental and financial support from their partners and families throughout their pregnancies. Pregnancy intention is also an important influence of healthcare utilisation, as mothers are more likely to begin antenatal care early when the pregnancy is planned for and wanted. Also, adolescent mothers living in female-headed households in a patriarchal society, such as Nigeria is, may mean that they have more autonomy to access maternal healthcare, while in male-headed households, the reverse may be the case. In addition, positive health worker attitudes could encourage adolescent mothers to make use of health facilities. They, however, could shy away if they feel intimidated or belittled by health personnel at the facilities.

The personal healthcare preferences of adolescent mothers play a major role in their decision to access healthcare services. Where they have a preference for traditional medicine, self-medication or are simply wary of modern healthcare, they are less likely to make use of health facilities for their maternal healthcare needs. Also, having personal autonomy or agency enables their use of maternal healthcare services, as they could find it easier to access healthcare when their movement is not restricted by their families or partners.

Additionally, the younger the adolescent mothers are, the less experience they are likely to have about pregnancy and the necessity for maternal healthcare services. Also, when pregnant adolescents have low levels of education, they may not understand the importance of using healthcare services during their pregnancy. This is also true when their partners have little or no education, as partner support is an important influence of maternal healthcare utilisation. A higher wealth status means that adolescent mothers and their families can afford to pay for

healthcare services, and the reverse could be the case when they have a lower wealth status. Furthermore, adolescent mothers who recognise the necessity of using maternal healthcare services for safe pregnancy outcomes, as well as those who have been diagnosed with a pregnancy-related complication are more likely to appreciate the need for using healthcare services than those who do not.

In general, adolescent mothers who are in circumstances which predispose them to modern healthcare use are more likely to use services during pregnancy. Also, when their familial and environmental characteristics support and encourage the use of modern healthcare services during their pregnancy, delivery and postpartum period, they are more likely to make use of the services for their pregnancy care needs. The individual factors moderate the relationship between contextual factors and maternal healthcare utilisation by adolescent mothers, as the individual factors are influenced by the prevailing contextual factors in determining healthcare usage. Also, the individual and contextual predisposing factors influence the corresponding enabling and need factors to determine adolescent mothers' healthcare usage.

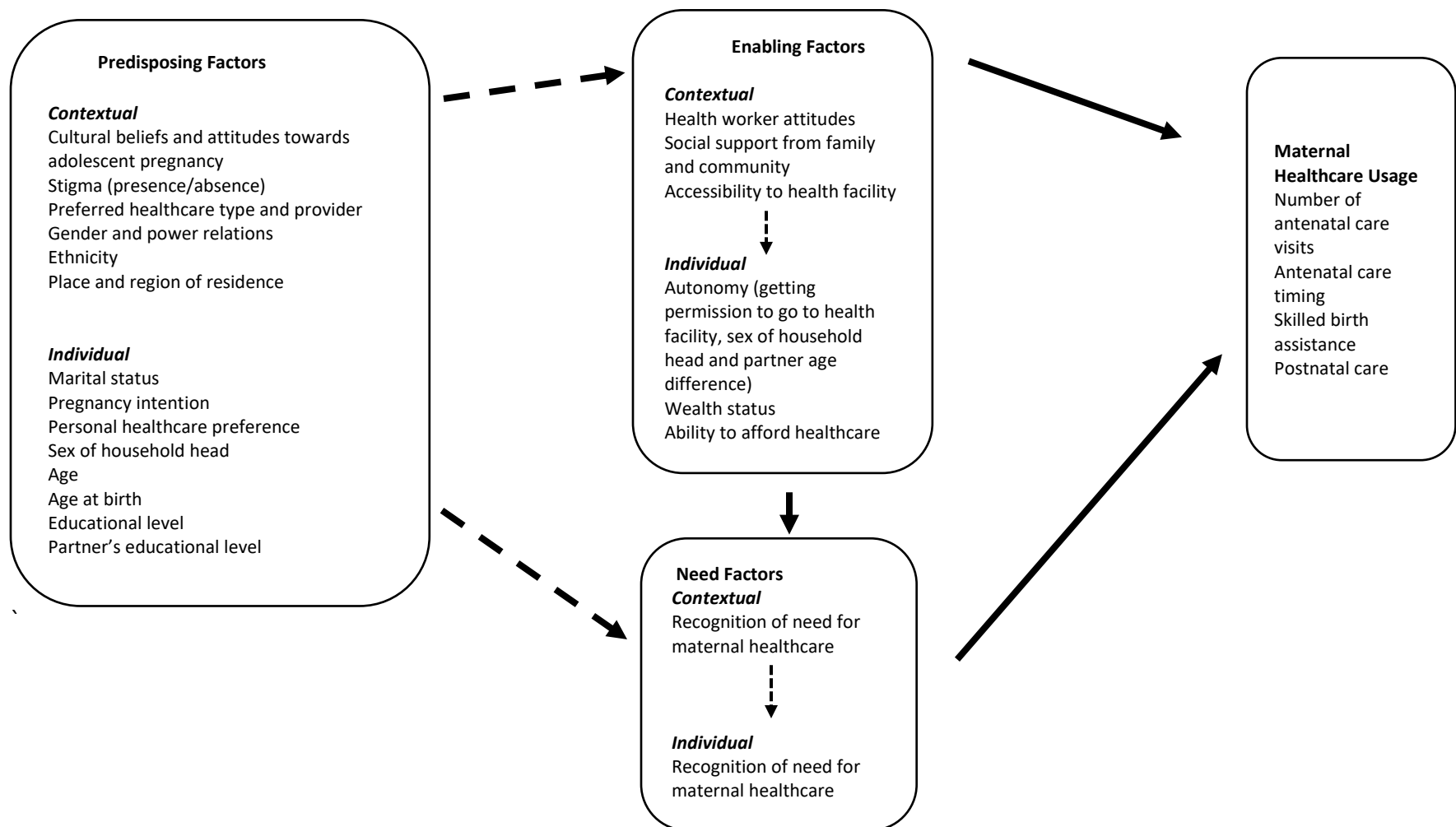


Figure 2.5: Conceptual Framework (adapted from Andersen's Behavioural Model of Healthcare Utilisation (2008))

2.6 Research Hypotheses

Taking into consideration the theoretical and conceptual framework, as well as literature reviewed, the following are the hypotheses which will be tested in this study.

1. H_0 : Sociocultural factors have no influence on the number of antenatal care visits among adolescent mothers in Nigeria.

H_1 : Sociocultural factors (gender and power relations, marital status and pregnancy intention) influence the number of antenatal care visits among adolescent mothers in Nigeria.

Significance level: $\alpha = 0.05$

2. H_0 : Sociocultural factors have no influence on the timing of antenatal healthcare initiation among adolescent mothers in Nigeria.

H_1 : Sociocultural factors (gender and power relations, marital status and pregnancy intention) influence the timing of antenatal healthcare initiation among adolescent mothers in Nigeria.

Significance level: $\alpha = 0.05$

3. H_0 : There is no association between sociocultural factors and the use of skilled delivery assistance among adolescent mothers in Nigeria.

H_1 : Sociocultural factors such as gender and power relations, marital status and pregnancy intention influence adolescent mothers' use of skilled delivery assistance in Nigeria.

Significance level: $\alpha = 0.05$

4. H_0 : Sociocultural factors do not influence adolescent mothers' use of postnatal care services in Nigeria.

H_1 : Adolescent mothers' use of postnatal care services in Nigeria is dependent on sociocultural factors such as gender and power relations, marital status and pregnancy intention.

Significance level: $\alpha = 0.05$

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter provides the methods used in conducting the study on the sociocultural influences on maternal healthcare utilisation among adolescent mothers in Nigeria. It presents the various study settings, population of interest, study and sampling designs, study areas and methods of data collection used in the study.

3.1 Study Setting

Nigeria has six geopolitical zones, namely, North West, North East, North Central, South West, South East and South South. It is a multi-ethnic country with over 300 distinct ethnic groups. The largest by population of these are the Yoruba, located mainly in the South West, the Igbo in the South East and the Hausa in the North. Nigeria is divided into thirty-six states and the Federal Capital Territory is Abuja, located in the North Central geopolitical zone. The two major religions practiced in the country are Christianity and Islam (NPC and ICF International, 2014) .

Data were collected in three states across Nigeria, which are Katsina in the North West, Ondo in the South West and Imo in the South East geopolitical zone. The states were selected as they had the highest prevalence of adolescent pregnancy in the respective geopolitical zones (South West, North West and South East). Also, the states are largely populated by the three major ethnic groups in Nigeria, namely, Yoruba, Igbo and Hausa, as well as by minority ethnic groups (NPC & ICF International, 2014).

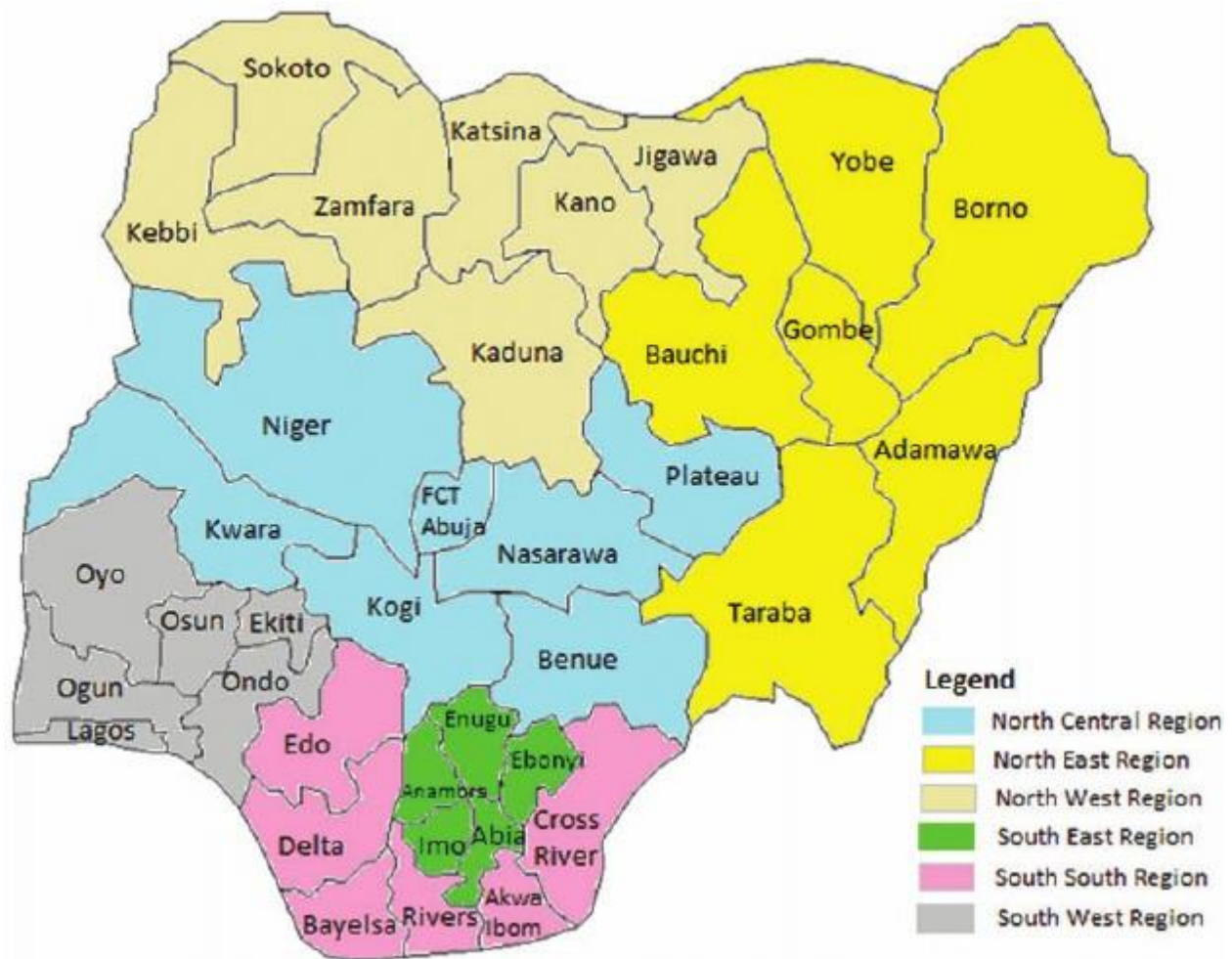


Figure 3.1 Map of Nigeria Showing the Thirty-Six States and Geopolitical Zones

3.2 Study Design

The study adopted an explanatory sequential mixed methods research design in order to examine the sociocultural influences of adolescent maternal healthcare utilisation in Nigeria. The mixed methods approach involves the collection, analysis and interpretation of both quantitative and qualitative data in order to answer a particular research question. This research design was better

suited to provide more robust answers to the research question compared to either a quantitative or qualitative-only design (Creswell, 2014; Johnson, Onwuegbuzie, & Turner, 2007). The qualitative component of the study provided a more holistic picture of the sociocultural environment of adolescent mothers in Nigeria, and enabled the exploration of the factors which could not be examined using the available quantitative secondary data (Obermeyer, 1997).

In line with the chosen research design, both quantitative and qualitative data were analysed to answer the research question. In the explanatory sequential mixed methods' design, the quantitative phase of the study preceded the qualitative phase, and used secondary data from the Demographic and Health Surveys (DHS) conducted in Nigeria from 2003 to 2013. Using DHS data provided a nationally representative sample which allowed for generalisability of results and conclusions. Also, pooling data from multiple waves of the DHS provided a larger sample for more robust statistical inference. In this phase, data analysis was carried out to examine associations between sociocultural and demographic variables and adolescent maternal healthcare utilisation. Findings from the quantitative analysis guided the qualitative data collection phase.

The second phase of the study was qualitative, and its purpose was to explore the pregnancy experiences of adolescent mothers in Nigeria, as well as the features of their sociocultural environment that act as either enablers or barriers to their usage of maternal healthcare services. This phase involved the use of in-depth interviews to obtain information from adolescent mothers. It also included in-depth interviews with mothers and female guardians of adolescent mothers, and key informant interviews with senior health workers and

community leaders who were knowledgeable about social and cultural perceptions of adolescent pregnancy and maternal healthcare utilisation in Nigeria.

3.3 The Population and Sample

The population of interest was married and unmarried adolescent mothers aged between 15 and 19 years who were pregnant at the time of the survey, or had at least one child, resident in Nigeria. The sample was pooled from three waves of the Nigeria Demographic and Health Surveys conducted in 2003, 2008 and 2013 respectively. The total sample was selected from all geopolitical zones in Nigeria, and the sample size comprised 3,260 adolescent mothers. The study focused on the most recent pregnancy reported by adolescent mothers in instances where there were multiple pregnancies reported over the inter-survey period.

3.3.1 Quantitative Data Sources

The quantitative data for the study were obtained from Demographic and Health Surveys conducted in Nigeria between 2003 and 2013. The data are from the third, fourth and fifth rounds of the survey conducted in the country. The Demographic and Health Surveys are nationally representative and use the cross-sectional study design. They are conducted every five years to provide information in the areas of population, sexual and reproductive health, nutrition and socioeconomic well-being. The first DHS conducted in Nigeria was in 1990, and the most recent complete data available as at the time of the qualitative data collection were from the 2013 survey.

3.3.2 Sample design and size

All three surveys were nationally representative and were based on a multistage cluster sampling design. The sampling frame for these surveys was based on the census enumeration areas (EAs) demarcated for the 1991 and 2006 National Population and Housing Censuses conducted in Nigeria. The 2003 survey made use of sampling frames and enumeration areas from the 1991 census, while the 2008 and 2013 surveys used EAs from the 2006 census.

In the 2003 NDHS, 365 clusters were selected from the list of enumeration areas, and households were listed within these clusters. From the designated clusters, 7,864 households were selected for inclusion in the survey. All women aged 15-49 present in the households at the time of the survey were eligible to be interviewed. Of the 7,985 women who were eligible for inclusion, 7,620 women eventually participated in the survey, giving a response rate of 95.4%. In this sample of women, 358 adolescent girls aged 15-19 were currently pregnant or had at least one child.

The 2008 NDHS made use of a two-stage stratified sampling design, comprising 888 clusters or primary sampling units of which 286 were urban, and 602 were rural. A representative sample of 36,800 households were selected after household listing was conducted in the clusters. All women aged 15-49 who were present in the households at the time of the survey were eligible to be interviewed. Also, one woman in each household was asked questions about domestic violence. Across Nigeria, 34,596 women were eligible for inclusion, of which 33,385 participated in the study, giving a response rate of 96.5%. From this sample of women, 1,401 adolescent girls aged 15-19 were either currently pregnant or had given birth to at least a child.

The 2013 NDHS sample was designed to be nationally representative and made use of a sampling frame derived from the enumeration areas for the 2006 census. A three-stage stratified sampling design was used. A primary sampling unit, derived from an EA was defined as a cluster for the purpose of the survey. In this round of the NDHS, 904 clusters were selected of which 372 were rural and 532 were urban. A sample of 40,680 households were selected, and all women aged 15-49 present in the households at the time of the survey were eligible to participate. Out of 39,902 eligible women respondents, 38,948 participated in the study, giving a response rate of 97.6%. In this sample of women, 1,501 were adolescent girls aged 15-19 who were either pregnant or had given birth to at least one child.

3.3.3 Qualitative Data Sources

Qualitative data were collected from adolescent mothers who had given birth between ages 15-19, using in-depth interviews to obtain firsthand information about their pregnancy experiences and the sociocultural influences on their maternal health-seeking behaviour. The respondents ranged in age from 15 to 22 years. Also, key informant interviews were conducted with senior health personnel and influential female community leaders. In addition, in-depth interviews were conducted among older women, who were themselves mothers or guardians of adolescent girls, so as to obtain information about cultural and social perspectives towards adolescent pregnancy.

The study made use of the same sampling frame used in the 2013 Nigerian Demographic and Health Survey in order to have a standard sampling frame for selecting respondents. Purposive sampling was used to identify and select eligible adolescent mothers who were invited to participate in the study. Adolescent mothers living in both rural and urban communities were

recruited as respondents, and data were collected from one rural and one urban community in each of the respective states. In Ondo State, the urban community chosen was the Odige/Otutubiosun community in urban Akure South Local Government Area, while the rural area chosen was Aponmu, also in the Akure South Local Government Area. In Katsina, Kofar Sauri community in Katsina Local Government Area was chosen as the urban study site, while Majigiri community in Mashi Local Government Area was chosen as the rural study site. In Imo State, Holy Ghost College/World Bank communities in Owerri Municipal Local Government Area were chosen as the urban study sites, and Assa community in Ohaji/Egbema Local Government Area was chosen as the rural study site. There were varying numbers of respondents in each of the different study sites. In total, across the six study sites, fifty-five in-depth interviews were conducted with adolescent mothers, twenty in-depth interviews were conducted with mothers and guardians of adolescent mothers, five key informant interviews were conducted with community leaders, and six key informant interviews were conducted with senior health workers. All interviews were conducted by female interviewers to put the participants at ease, so that they were able to give as much information as they were inclined to do.

3.4 Study Instruments

The instruments for the quantitative phase of the study were the Demographic and Health Survey questionnaires for 2003, 2008 and 2013. The Demographic and Health Survey uses standardised questionnaires designed by the MEASURE DHS programme. These questionnaires follow a standard pattern globally, but are adapted to each country's context. Three questionnaires are designed to collect data from men, women and the households, which capture information on

respondents' sexual and reproductive health, fertility intentions and behaviour, nutrition, health-seeking behaviour, and economic and social wellbeing. The instrument used to collect the secondary data used in this study was the Women's Questionnaire, which obtained information from all women aged 15-49 concerning their demographic characteristics, socioeconomic status, sexual and reproductive history, health-seeking behaviour for themselves and their children, domestic violence, fertility preferences and autonomy (NPC & ICF International, 2014). A pilot study was carried out, pretesting the DHS questionnaires among 120 households with respondents drawn from the major tribes in Nigeria.

For the qualitative study, the instruments were the in-depth and key informant interview guides. These guides were designed in the English language, and the questions were translated into the applicable local languages (Pidgin English, Yoruba and Hausa) in locations where respondents did not understand English. The guides were pretested among adolescent mothers in Ado-Ekiti and Omuoke-Ekiti (urban and rural sites), and questions which were identified as being ambiguous and difficult to answer were modified accordingly, before the main qualitative data collection began.

3.5 Variable Identification

3.5.1 Dependent Variables

The study examined the influence of sociocultural and demographic factors on four dependent variables, which were antenatal care use, timing of first antenatal care visit, type of birth attendant used, and postnatal care use.

Antenatal care use: This was coded into three categories, none, less than four visits, and four or more visits. Previous studies have usually combined non-use and partial use into one category, versus full ANC use. This study however decided to examine each category separately, as it is assumed that outcomes for adolescent mothers who have partial usage would be marginally better than those who did not use ANC at all.

Timing of first antenatal visit: The recommended timing for the first ANC visit is within the first trimester of pregnancy. For this study, timing of the first ANC visit was categorised as early if it was within the first trimester of pregnancy, and late if ANC was commenced at any time after the first trimester.

Type of birth attendant: This variable was categorised into three, with unassisted deliveries or unskilled birth attendants, traditional birth attendants, and skilled birth attendants. Skilled birth attendants were either doctors, nurses, midwives, auxiliary nurses and midwives, and community health extension workers.

Postnatal care: This refers to maternal healthcare sought between one day and six weeks after delivery. This variable was categorised into two, “non-use” and “use”.

3.5.2 Independent Variables

Stigma and cultural attitudes towards adolescent pregnancy: Literature has shown that adolescent mothers often experience stigma (Agunbiade et al., 2009; Amobi & Igwegbe, 2004; Atuyambe et al., 2008; Chikalipo et al., 2018; Yardley, 2008). This study examines whether stigma

has any influence on their use of maternal healthcare in Nigeria. The presence of stigma in the lives of adolescent mothers was explored using qualitative data in the study.

Gender and power relations: Adolescent mothers are often under the authority and supervision of older adults, such as their parents, older family members, partners and their partners' family members. Previous studies have shown that they usually require permission from these persons to be able to access maternal healthcare, and this has been found to influence their health-seeking behaviour (Atuyambe et al., 2009; Shahabuddin, Nostlinger, et al., 2017). Adolescent mothers' ability to contribute to decision-making concerning their healthcare has also been found to influence their service use (Acharya et al., 2010; Shahabuddin, De Brouwere, et al., 2017; Shahabuddin, Nostlinger, et al., 2017). Also, studies have shown that mothers in female-headed households have higher usage than those in male-headed households (Mrisho et al., 2007). Additionally, adolescent pregnancy is associated with a large partner age difference (Amobi & Igwegbe, 2004; Pradhan et al., 2018; Raneri & Wiemann, 2007; Vundule et al., 2001). The gender and power relations variable was measured both quantitatively and qualitatively. Questions on healthcare decision-making, the need for permission to make use of healthcare, the age difference between the adolescent mother and her partner, and the sex of the head of the household in which the adolescent mother lived from the DHS were used to measure this variable, in additions to questions in the qualitative instrument. Healthcare decision-making was coded as "respondent has no say" and "respondent has a say". Ability to obtain permission to go to the health facility was coded as "not a big problem" and "big problem". The age difference between the respondent and her partner was coded as "same age/small difference" and "large difference", while the sex of household head was coded as "female" and "male".

Social support: Adolescent mothers are often in a vulnerable position due to their young age and lack of experience. The presence of social support, especially emotional and financial support, is necessary for them to cope during their pregnancies as well as to have access to the required maternal healthcare (Agunbiade et al., 2009; Atuyambe et al., 2009; Chaibva et al., 2009; Gross et al., 2012; Rukundo et al., 2015; Santos, 2012; Yeboah, 2012). Social support was explored in the study using qualitative data, and questions examined whether adolescent mothers were able to access financial and emotional support as well as advice from their families and community members.

Healthcare preferences: The type of healthcare that adolescent mothers prefer often influences their choice of healthcare provider, or if they prefer not to use any healthcare at all. For instance, previous studies have shown that mothers who prefer to use traditional birth attendants do not make use of modern healthcare facilities for maternal healthcare during pregnancy (Bantebya-Kyomuhendo, 2004; Lubbock & Stephenson, 2008; Osoro et al., 2013; Zepro & Ahmed, 2016). In this study, the healthcare preferences of adolescent mothers were captured using qualitative data.

Marital status: Previous literature has shown that adolescent mothers who are married or in stable unions may have greater support of their desire to make use of modern maternal healthcare than unmarried mothers (Emelumadu et al., 2014; Magadi et al., 2007). The marital status variable in the study was categorised into two, “married” and “not married”.

Pregnancy intention: Whether a pregnancy is wanted or unwanted may influence the mother’s decision to seek healthcare, the type of care sought, or how she uses care (Dahiru & Oche, 2015;

Saptarini & Setyonaluri, 2018). For this study, pregnancy intention was recategorised into two, “wanted” and “unwanted”.

Health worker attitudes: Studies show that health worker attitudes influence mothers’ usage of healthcare and the type of healthcare they prefer (Agunbiade et al., 2009; Atuyambe et al., 2009; Bhattacharjee et al., 2013; Chaibva et al., 2009; Owusu-Addo et al., 2016). Adolescent mothers tend to make more use of health facilities where health workers are professional and well-behaved towards them, compared to when health workers are rude and stigmatise them. Health worker attitudes towards adolescent mothers, and how these influenced the mothers’ maternal healthcare utilisation, were examined in this study using qualitative data.

3.5.3 Covariates

Age of respondent: Different studies have found varying results regarding the association between age of the mother and use of maternal healthcare services. Some found that younger adolescent mothers had a lower likelihood of using maternal healthcare (Aremu et al., 2011; Guliani et al., 2014; Manyeh et al., 2017; Mehari & Wencheko, 2013; Rai et al., 2013; Yeboah, 2012); others found that younger mothers were more likely to use MHC (Srivastava et al., 2014; Tekelab & Berhanu, 2014); while some found that age had no significant influence on maternal healthcare usage (Adebowale & Akinyemi, 2016; Reynolds et al., 2006). For this study, age was coded “0” for adolescent mothers aged 15-17 years, and “1” for mothers aged 18-19.

Age at first birth: Studies show that adolescent mothers who married at younger ages, and those who had their first birth before the age of 15 have adverse pregnancy outcomes such as preterm

delivery and low birth weight babies (Ganchimeg et al., 2013; Godha et al., 2016). This study examined whether the age at first birth influenced maternal healthcare seeking behaviour among adolescent mothers. The age at first birth was coded as “below age 15”, and “15 and above”.

Educational level: Mothers who are educated have a higher likelihood of making use of maternal healthcare compared to those who have no formal education (Emelumadu et al., 2014; Magadi et al., 2007; Mehari & Wencheke, 2013; Shahabuddin et al., 2015). In this study, education was coded into three categories, “no formal education”, “primary education”, and “secondary and higher education”.

Wealth status: Women’s personal and household wealth have been linked to increased maternal healthcare utilisation for mothers across different contexts (Aremu et al., 2011; Banke-Thomas, Banke-Thomas, & Ameh, 2017; Mehari & Wencheke, 2013; Ochako, Fotso, Ikamari, & Khasakhala, 2011; Singh, Rai, Alagarajan, & Singh, 2012; Woldemicael & Tenkorang, 2010). For this study, the household wealth status of adolescent mothers was coded into three categories, “poor”, “middle”, and “rich”, based on an index generated from household assets and amenities using principal component analysis.

Ethnicity: Mothers from different ethnic groups in Nigeria have different maternal healthcare utilisation patterns. Previous studies in Nigeria have shown higher maternal healthcare utilisation in Southern tribes compared to Northern tribes (Babalola & Fatusi, 2009; Olusanya & Ebuehi, 2012; Rai et al., 2012). This study examined the influence of ethnic origin as a covariate of maternal healthcare utilisation among adolescent mothers. Ethnicity was categorised into “Yoruba”, “Igbo”, “Hausa/Fulani”, “Northern minorities”, “Southern minorities” and “Others”.

Husband/partner's educational level: Adolescent mothers are often dependent on others to make their healthcare decisions for them. Those who are married or in a stable union may rely on their partners to provide such guidance, and their subsequent use or non-use of healthcare may rely on their partners' exposure due to education. Previous studies have shown that adolescent mothers who have educated husbands or partners are more likely to use maternal healthcare than those whose partners are uneducated (Banke-Thomas et al., 2017; Kupoluyi & Oyinloye, 2014; Mehari & Wencheko, 2013; Rai et al., 2012; Singh et al., 2012). Partner education was categorised into four, "none", "primary", and "secondary" or "higher".

Place of residence: Adolescent mothers who live in urban areas may likely have greater access to health facilities than those who live in rural areas, and this could influence their health-seeking behaviour. While several studies have found higher use of MHC in urban areas (Dairo & Owoyokun, 2010; Magadi et al., 2007; Rai et al., 2012; Rutaremwa et al., 2015; Sarker et al., 2018), one study found higher usage in rural areas (Okigbo & Eke, 2015). Place of residence in this study was categorised into two, "rural" and "urban".

Region of residence: In Nigeria, previous studies have shown that there are significant variations in the use of maternal healthcare services by region of residence. While some studies have found higher utilisation in the Southern geopolitical zones (Dahiru & Oche, 2015; Okigbo & Eke, 2015; Ononokpono et al., 2013; Rai et al., 2012), others have found higher usage in the Northern zones (Ovikuomagbe, 2017), as well as mixed results (Kupoluyi & Oyinloye, 2014). The region of residence was coded into six categories, "North Central", "North West", "North East", "South West", "South East" and "South South".

Ability to afford healthcare: Healthcare costs may be prohibitive for adolescent mothers, especially as the majority of them are economically dependent on their partners and family members (Atuyambe et al., 2009; Conde-Agudelo et al., 2005; Crissman et al., 2013; Lubbock & Stephenson, 2008; Mrisho et al., 2007). This variable was coded into two categories, “not a big problem” and “big problem”.

Distance to health facility: Where health facilities are far from clients’ homes , this may make access to services difficult and thus reduce utilisation (Atuyambe et al., 2009; Bhattacharjee et al., 2013; Kawakatsu et al., 2014; Musoke et al., 2015; Rutaremwa et al., 2015; Shahabuddin, Nostlinger, et al., 2017; Woldemicael & Tenkorang, 2010). Distance was categorised into two in this study, “not a big problem” and “big problem”.

3.6 Steps in Data Analysis

3.6.1 Quantitative Data Analysis

The study made use of secondary data pooled from the three most recent waves of the Nigeria Demographic and Health Surveys. In consideration of the fact that pooling data from several waves invalidated the sampling weights for each round, a denormalised sampling weight was calculated after the data were pooled, and applied to all analyses to ensure appropriate representativeness of the sample.

The denormalised sampling weight was derived by dividing the pooled sample weight by the sampling fraction, which was the product of the sample weight and the total population of adolescent mothers in Nigeria, divided by the sample size of adolescent mothers in the DHS.

Also, because utilising a subsample of adolescent mothers aged 15-19 from the data could provide biased sampling errors and estimates, the subpopulation option was used in lieu of the subsample option, where the data were restricted only to adolescent mothers aged 15-19, who were either currently pregnant or had at least one child. Also, while there were missing data observed across the variables of interest in the study, the issue was addressed by listwise deletion of incomplete observations as these were not a significantly large proportion of the sample, thus retaining only cases with complete information for all statistical analyses conducted.

Data analysis was conducted at the univariate, bivariate and multivariate levels. At the univariate level, descriptive statistics were used to examine the patterns and trends of maternal healthcare utilisation, as well as the socioeconomic, demographic and cultural characteristics of respondents. At the bivariate level, chi square tests and bivariate logistic regression were used to identify and select the variables which were significantly associated with maternal healthcare utilisation. Only variables which had a p-value of less than 0.05 using the chi square test were selected for inclusion in the multivariate analysis.

At the multivariate level, binary and multinomial logistic regression analyses were carried out to determine the predictors of antenatal, skilled delivery assistance and postnatal care usage among married and unmarried adolescent mothers in Nigeria, as all the outcome variables are categorical in nature. Variables which were originally continuous were recoded into categories. Binary logistic regression was used to examine the extent of influence of predictors of antenatal care timing and use of postnatal care as these variables have two response categories. Multinomial logistic regression was used for number of antenatal care visits and skilled birth

attendance, as these outcome variables had more than two response categories. For all quantitative analysis, Stata software version 15 (StataCorp, College Station, Texas) was used.

Logistic regression is used instead of linear regression to examine associations where the outcome variable is categorical. Binary logistic regression is used to predict the variance in the outcome variable where there are only two categories in the outcome variable. Where there are more than two response categories in the outcome variable, multinomial logistic regression is used to compare the odds of three or more outcomes (El-Habil, 2012).

Where an outcome variable (Y) has two categories, the general function for the binary logistic regression is defined as:

$$Y = \log\left(\frac{\pi(x)}{1-\pi(x)}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \dots \dots \dots (i)$$

$\frac{\pi(x)}{1-\pi(x)}$ is the odds of the occurrence of the outcome of interest; $\pi(x)$ is the probability of the occurrence of the outcome; and $1-\pi(x)$ is the probability that the outcome does not occur. α is the intercept on the y-axis, which is the estimated value of Y when $X=0$.

When $\pi(x)$ is directly specified, the equation expands into:

$$\pi(x) = \frac{\exp(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)}{1 + \exp(\alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k)} \dots \dots \dots (ii)$$

$\beta_1, \beta_2 \dots \beta_k$ are the regression coefficients, and $X_1, X_2 \dots X_k$ are the various predictor variables.

If the dependent variable has more than three or more categories, one of the logits is labelled as the base category, and all other logits are compared to it. If there are n observations, with p explanatory variables, and the dependent variable has k categories, the multinomial logistic regression equation becomes:

$$Y = \log\left(\frac{\pi_j(x_i)}{\pi_k(x_i)}\right) = \alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + \dots + \beta_{pj} x_{pi} \dots\dots\dots(iii)$$

Where the sum of all π is equal to 1, the equation expands to:

$$\text{Log}(\pi_j(x_i)) = \frac{\exp(\alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + \dots + \beta_{pj} x_{pi})}{1 + \sum_{j=1}^{k-1} \exp(\alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + \dots + \beta_{pj} x_{pi})} \dots\dots\dots(iv)$$

Where π_j represents the multinomial probability of an observation falling in the j^{th} category; $x_1, x_2, \dots, x_p$ are the predictor variables; $j=1,2,\dots,(k-1)$; and $k=1,2,\dots, n$.

Each of the logistic regressions examining the predictors of the dependent variables had four models (with the exception of timing of first antenatal care visit). The first model, Model 0 contained the unadjusted logistic regression analysis; Model 1 contained the results of the adjusted logistic regression with the sociodemographic variables; Model 2 contained the results of the adjusted logistic regression with the sociocultural variables; and Model 3 contained the results of the adjusted logistic regression analysis with all the sociodemographic and sociocultural variables. Timing of first antenatal care visit had only two models, Model 0 which was the unadjusted model, and Model 1, the adjusted model.

3.6.2 Qualitative Data Analysis

Qualitative data were analysed using the thematic analysis approach. Thematic analysis involves identifying patterns or themes within qualitative data, and organising the data around those themes to enable interpretation of findings (Braun & Clarke, 2006). The analysis for this study resulted in the identification of a total of 21 themes, according to which the data were organised. The qualitative analysis in this study was conducted using NVivo software version 12 (QSR International). NVivo is a qualitative data analysis software package which is designed primarily for text-based and multimedia data. The software assists with data management, visualisation, identification of themes and drawing conclusions from text-based data (QSR International).

3.7 Analysis Plan

The study made use of the explanatory sequential mixed methods' research design, which involved initially analysing the existing quantitative data, followed up with the analysis of the qualitative data to explain the results from the quantitative analysis (Creswell, 2014).

The study had four research objectives. The first research objective was to examine the patterns of maternal health utilisation among adolescent mothers in Nigeria. This objective was addressed using quantitative data from the NDHS. Frequency distributions were used to examine the patterns of maternal healthcare use, while crosstabulations were used to examine the proportions of adolescent mothers using maternal healthcare based on their sociodemographic and sociocultural characteristics. Chi-square tests were conducted to determine the significance of associations between outcome and independent variables.

The second objective was to investigate the pregnancy, intrapartum and postpartum experiences of adolescent mothers in Nigeria. Qualitative data were gathered from in-depth and key informant interviews with adolescent mothers, some of their mothers, and senior health workers. Thematic analysis was used to categorise verbatim quotes from respondents into relevant themes, which were then explored to examine adolescent mothers' pregnancy experiences.

The third objective was to identify the sociocultural enablers and barriers of maternal healthcare utilisation among adolescent mothers in Nigeria. For this objective, both quantitative and qualitative data were used to examine the enablers and barriers of MHCU for adolescent mothers. Quantitative data were analysed using binary and multinomial logistic regression. The results from the quantitative analysis were further explained by qualitative data, which were analysed using thematic analysis, to examine the recurring factors which influenced adolescent mothers' choice of maternal healthcare providers and their utilisation patterns.

The fourth objective was to examine the proximate factors that moderate the relationship between sociocultural factors and adolescent maternal healthcare utilisation in Nigeria. To address this objective, hierarchical binary and multinomial logistic regression was used to examine the factors which moderated the relationship between the quantitative independent variables and the outcome variables.

3.8 Ethical Issues

Ethical clearance for the quantitative portion using DHS data of the study has been previously obtained by ICF International in conjunction with the National Population Commission of Nigeria to conduct the Demographic and Health Surveys in Nigeria. Permission was obtained from Measure DHS to make use of the datasets for the study. Ethical clearance for the qualitative portion of the study was obtained from the Ethics Committee (non-medical) of the University of the Witwatersrand, Johannesburg (Protocol Number H18/06/03). In Nigeria, written permission to use the Demographic and Health Survey enumeration area frames was provided by the National Population Commission offices in Ondo, Katsina and Imo States. Community entry was done by obtaining approval and support for the study from local community leaders. Moreover, written informed consent was obtained from respondents over age 16. Where respondents were below age 16, their parents or legal guardians were required to provide informed consent in addition to the respondent's agreement to participate in the study. Confidentiality and privacy were a priority during interviews due to the sensitive nature of information required for the study. The interviews were conducted in private areas within the respondent's households, and interviewers ensured that no one was within earshot of the conversations. Also, respondents were kept anonymous, as no forms of identifiers were used that could link them with their responses.

CHAPTER FOUR

SOCIODEMOGRAPHIC AND SOCIOCULTURAL CHARACTERISTICS OF THE STUDY POPULATION AND PATTERNS OF MATERNAL HEALTHCARE UTILISATION AMONG ADOLESCENT MOTHERS

4.0 Introduction

The aim of this chapter is to address the first research objective, which is to examine the patterns of maternal healthcare utilisation among adolescent mothers in Nigeria. It is important to understand the demographic and sociocultural characteristics of the study population, as well as maternal healthcare utilisation based on these characteristics, as these provide background information which enables a better understanding of findings from further inferential analysis. This chapter presents the results from the univariate and bivariate analyses of the attributes of the study population, which comprised married and unmarried adolescent mothers aged 15-19 from all regions of Nigeria. The univariate analysis involved the use of frequency tabulations of the study population. The bivariate analyses conducted were crosstabulations and chi square tests to examine the patterns of maternal healthcare use among adolescent mothers by their sociodemographic and sociocultural characteristics.

4.1 Characteristics of Adolescent Mothers in Nigeria (2003-2013)

4.1.1 Sociodemographic Characteristics of Adolescent Mothers

Table 4.1.1

Sociodemographic Characteristics of Adolescent Mothers in Nigeria (2003-2013)

Variable	NDHS 2003		NDHS 2008		NDHS 2013	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age						
15-17	140	38.6	510	36.1	505	34.5
18-19	218	61.4	891	63.9	996	65.5
Total	358	100.0	1401	100.0	1501	100.0
Age at birth						
<15	20	6.0	70	6.8	77	6.6
15+	268	94.0	1027	93.2	1072	93.4
Total	288	100.0	1097	100.0	1149	100.0
Educational level						
No education	218	61.6	840	57.7	811	58.4
Primary	69	19.6	229	17.5	278	17.5
Secondary and higher	71	18.8	332	24.8	412	24.1
Total	358	100.0	1401	100.0	1501	100.0
Wealth status						
Poor	156	43.7	908	61.5	894	62.6
Middle	88	24.1	248	18.7	335	20.6
Rich	114	32.2	245	19.9	272	16.8
Total	358	100.0	1401	100.0	1501	100.0
Religion						
Christian	87	23.9	404	29.0	430	24.2
Muslim/ Others	271	76.1	997	71.0	1071	75.8
Total	358	100.0	1401	100.0	1501	100.0
Ethnicity						
Yoruba	10	2.4	76	7.3	55	3.0
Igbo	21	4.7	63	5.2	71	4.8
Hausa/Fulani	208	58.5	704	52.8	844	59.6
Northern minority	81	21.3	383	22.3	350	24.1
Southern minority	17	7.5	137	9.8	171	8.0
Others	21	5.7	38	2.6	10	0.6
Total	358	100.0	1401	100.0	1586	100.0

Partner's educational level						
No education	153	49.3	671	51.0	693	55.8
Primary						
Secondary or higher	71	20.8	225	20.0	206	15.4
	87	29.9	345	29.0	418	28.8
Total	311	100.0	1241	100.0	1317	100.0
Getting money for treatment						
Not a big problem	263	75.2	531	37.5	737	49.4
Big problem	95	24.8	870	62.5	764	50.6
Total	358	100.0	1401	100.0	1501	100.0
Distance to health facility						
Not a big problem	256	72.9	757	55.7	923	61.3
Big problem	102	27.1	644	44.3	578	38.7
Total	358	100.0	1401	100.0	1501	100.0
Place of residence						
Urban	107	23.1	249	19.3	259	18.4
Rural	251	76.9	1152	80.7	1242	81.6
Total	358	100.0	1401	100.0	1501	100.0
Region of residence						
North	43	9.8	231	14.1	180	12.8
Central						
North East	109	29.0	433	23.6	368	21.4
North West	153	44.4	470	39.5	641	49.0
South East	13	2.7	60	4.9	64	4.2
South South	29	11.5	122	9.0	164	7.2
South West	11	2.6	85	8.9	84	5.4
Total	358	100.0	1401	100.0	1501	100.0

Source: NDHS 2003-2013

Table 4.1.1 shows the sociodemographic characteristics of adolescent mothers interviewed in the 2003, 2008 and 2013 Nigeria Demographic and Health Surveys. In 2003, 38.6% of adolescent mothers were aged 15-17, and 61.4% were 18-19 years; in 2008, 36.1% were 15-17 years old, 63.9% were aged 18-19; and in 2013, 34.5% were aged 15-17, while 65.5% were aged 18-19 years

old. It was also seen that births at below the age of 15 years were consistently low. In 2003, 6.0% of adolescent mothers gave birth before the age of 15, while 94.0% had their babies at the age of 15 or older. In 2008, 6.8% of adolescent mothers gave birth before the age of 15, while 93.2% gave birth at the age of 15 and above; and in 2013, 6.6% gave birth before the age of 15, while 93.4% gave birth at the age of 15 or older.

In 2003, 61.6% of respondents had no education, 19.6% had primary education only, and 18.8% had secondary or higher education. In 2008, 57.7% of adolescent mothers had no formal education, 17.5% had primary education, and 24.8% had secondary or higher education. In 2013, 58.4% of adolescent mothers had no education, 17.5% had only primary education, and 24.1% had secondary or higher education. Also, in 2003, 43.7% of adolescent mothers were from poor households, 24.1% were from middle tertile households, and 32.2% were from rich households. In 2008, the majority of adolescent mothers (61.5%) were from poor households, 18.7% were from middle tertile households, and 19.9% were from rich households, while in 2013, the majority (58.4%) were from poor households, 17.5% were from middle tertile households, and 24.1% were from rich households.

In 2003, the majority of respondents were either Muslims or adherents of other faiths (76.1%), while 23.9% were Christians. Similarly, in 2008 and 2013, Muslims and adherents of other religions made up the majority of respondents (71.0% and 75.8% respectively), while Christians made up the minority of adolescent mothers (29.0% and 24.2% respectively). Additionally, in 2003, Hausa/Fulani made up the majority of adolescent mothers (58.5%), followed by girls from the Northern minority tribes (21.3%), Southern minority tribes (7.53%),

others, mainly foreigners (5.7%), Igbos (4.7%) and Yorubas (2.4%). In 2008, Hausa/Fulani adolescent mothers were in the majority (52.8%), followed by Northern minority tribes (22.3%), Southern minority tribes (9.8%), Yorubas (7.3%), Igbos (5.2%), and girls from other tribes (2.6%). In 2013, the majority of respondents (59.6%) were Hausa/Fulanis, followed by girls from Northern minority tribes (24.1%), girls from Southern minority tribes (8.0%), Igbos (4.8%), Yorubas (3.0%), and the lowest proportion of respondents was from other tribes (0.6%).

Consistently across the three surveys, the majority of adolescent mothers had partners who had no formal education. In 2003, 49.3% of adolescent mothers had partners who had no formal education, 20.8% had partners with primary education, and 29.9% had partners who had secondary or higher education. In 2008, 51.0% of adolescent mothers' partners had no education, 20.0% had partners with only primary education, and 29.0% of partners had secondary and higher education. In 2013, 55.8% of adolescent mothers' partners had no education, 15.4% had partners who had primary education, and 28.8% had partners who had secondary or higher education.

In 2003, the majority of adolescent mothers (75.2%) reported that they did not experience problems getting money to pay for their healthcare, while 24.8% reported having a big problem. However, in 2008, the majority of adolescent mothers had a big problem getting money for treatment (62.5%), while 37.5% had no problem getting money for healthcare. In 2013, about half of the adolescent mothers (50.6%) had a big problem getting money for healthcare, while 49.4% reported that they had little problem getting money for treatment. Additionally, in 2003, the majority of adolescent mothers (72.9%) reported that they did not have a big problem with

the distance to the health facility, while 27.1% reported that the distance was a big problem for them. In 2008, a little over half (55.7%) of the respondents had little difficulty with the distance to the health facility, while 44.3% had a big problem with the distance. Again in 2013, the majority of respondents (61.8%) had little problem with the distance to the health facility, while 38.7% reported that the distance to the health facility was a big problem for them.

Consistently, the greater proportion of adolescent mothers were resident in rural areas. In 2003, 76.9% of respondents lived in rural areas and 23.1% lived in urban areas; in 2008, 80.7% lived in rural areas and 19.3% lived in urban areas; and in 2013, 81.6% of adolescent mothers lived in rural areas and 18.4% lived in urban areas. Also, across the three surveys, the highest proportion of adolescent mothers lived in the North East and North West regions. In 2003, 44.4% of adolescent mothers lived in the North West, 29.0% were from the North East zone, 9.8% lived in the North Central region, 11.5% lived in the South South, 2.7% from the South East, and 2.6% from the South West zone. In 2008, 39.5% of adolescent mothers lived in the North West region, 23.6% lived in the North East, 14.1% came from the North Central zone, 9.0% came from the South South, 8.9% came from the South West, and 4.9% came from the South East. In 2013, 49.0% of adolescent mothers surveyed lived in the North West region, 21.4% lived in the North East, 12.8% lived in the North Central zone, 7.2% lived in the South South, 5.4% lived in the South West, and 4.2% lived in the South East zone.

4.1.2 Sociocultural Characteristics of Adolescent Mothers in Nigeria

Table 4.1.2

Sociocultural Characteristics of Adolescent Mothers in Nigeria (2003-2013)

Variable	NDHS 2003		NDHS 2008		NDHS 2013	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Marital status						
Not married	54	15.6	189	13.3	215	11.3
Married	304	84.4	1212	86.7	1286	88.7
Total	358	100.0	1401	100.0	1501	100.0
Sex of household head						
Male	333	93.2	1263	89.5	1337	90.6
Female	25	6.8	138	10.5	164	9.4
Total	358	100.0	1401	100.0	1501	100.0
Healthcare decision-making						
Respondent has no say	326	90.6	878	72.5	1016	79.5
Respondent has a say	31	9.4	334	27.5	270	20.5
Total	357	100.0	1212	100.0	1286	100.0
Partner age difference						
Same age/Small	58	19.8	299	24.2	317	24.8
Large	242	80.2	913	75.8	969	75.2
Total	300	100.0	1212	100.0	1286	100.0
Pregnancy intention						
Wanted then	91	79.6	376	85.2	439	90.3
Mistimed/Unwanted	23	20.4	58	14.8	62	9.7
Total	114	100.0	434	100.0	501	100.0
Getting permission to go to health facility						
Not a big problem	312	86.3	1102	77.3	1237	82.5
Big problem	46	13.7	299	22.7	264	17.5
Total	358	100.0	1401	100.0	1501	100.0

Source: NDHS 2003-2013

Table 4.1.2 presents information on the sociocultural characteristics of adolescent mothers from 2003, 2008 and 2013 Nigeria Demographic and Health Surveys. Across the three surveys, it was observed that the majority of the adolescent mothers were married or in union. In 2003, 84.4% of adolescent mothers were married or in union, while 15.6% were either never married or formerly married. In 2008, 86.7% of respondents were married or in union, while 13.3% were either never or formerly married, and in 2013, 88.7% were married or in union, and 11.3% of respondents were either never or formerly married. Similarly, the majority of adolescent mothers lived in male-headed households across the three waves. In 2003, 93.2% of respondents lived in male-headed households; in 2008, 89.5% lived in male-headed households, and in 2013, 90.6% lived in male-headed households.

Additionally, the majority of adolescent mothers did not contribute to decision-making concerning their healthcare. In 2003, only 9.4% of adolescent mothers had a say in making decisions concerning their own healthcare, while 90.6% had no say. There was an increase in the proportion of those who had a say in their healthcare decision-making in 2008 and 2013. In 2008, 27.5% of adolescent mothers could contribute to their healthcare decision-making, while 72.5% could not, while in 2013, 20.5% could contribute to healthcare decision-making, and 79.5% could not.

The majority of adolescent mothers had partners who were consistently much older than them across the three surveys. In 2003, 80.72% of adolescent mothers were in union with partners with an age difference of 10 years or more, while 19.8% had an age gap of less than 10

years with their partner. In 2008, 75.8% of respondents' partners had an age gap of 10 or more years, while a little under a quarter (24.2%) had an age gap of less than 10 years. In 2013, three-quarters of adolescent mothers (75.2%) were 10 or more years younger than their partners, while a quarter (24.8%) were less than 10 years younger than their partners.

The majority of adolescent mothers in Nigeria had wanted pregnancies across the three surveys. In 2003, 79.6% of respondents wanted their pregnancies, while 20.4% reported their pregnancies were mistimed or unwanted. In 2008, 85.2% of respondents wanted their pregnancies, while 14.8% reported that their pregnancies were either mistimed or unwanted. In 2013, 90.3% of adolescent mothers surveyed reported that they wanted the pregnancy, and 9.7% reported the pregnancy was mistimed or unwanted.

The majority of adolescent mothers did not find it difficult to obtain permission to go to the health facility. In 2003, 86.3% of adolescent mothers reported that getting permission to go to the health facility was not a problem, while 13.7% reported that it was a big problem. In 2008, 77.3% of respondents surveyed did not have a big problem obtaining permission to go to the health facility, while 22.7% reported that obtaining permission was a big problem. In 2013, 82.5% of respondents said that they did not have a big problem obtaining permission to use the health facility, while 17.5% reported that it was a big problem for them to obtain permission whenever they needed to use the health facility.

4.1.3 Patterns of Healthcare Usage among Adolescent Mothers in Nigeria

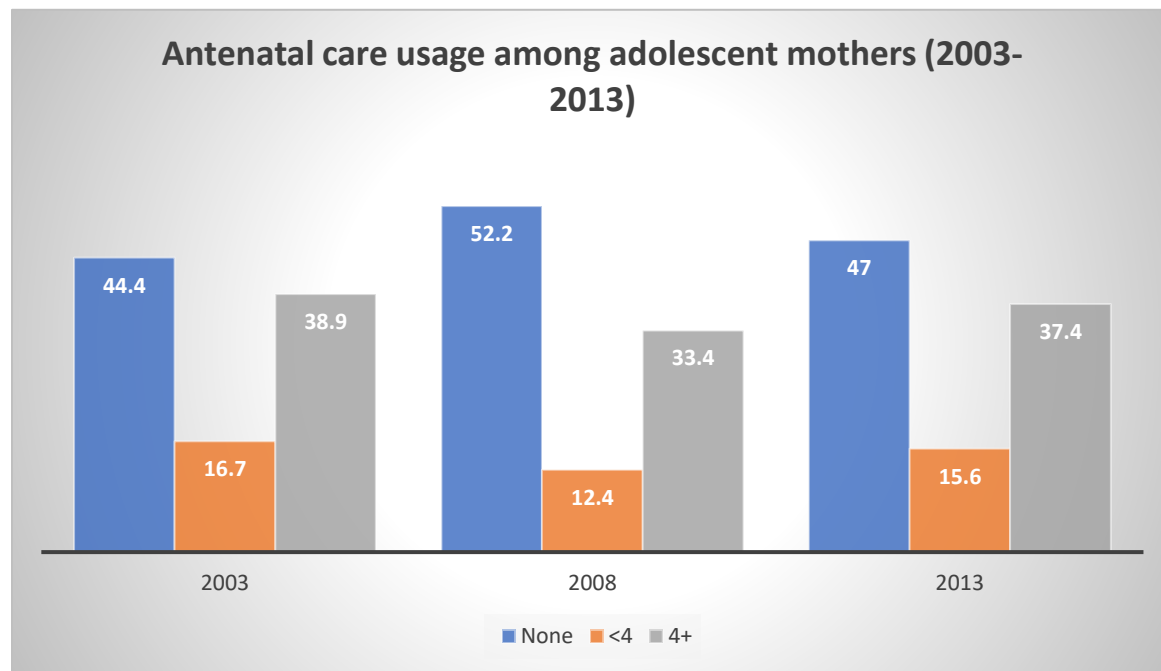


Figure 4.1.3.1 Number of Antenatal Care Visits among Adolescent Mothers in Nigeria: 2003-2013

Figure 4.1.3.1 shows the patterns of antenatal care usage among adolescent mothers in Nigeria. In 2003, 44.4% of adolescent mothers did not make use of antenatal care at all, 16.7% made less than the recommended four visits, and 38.9% made four or more visits. In 2008, more than half (52.2%) of respondents had no antenatal care visits, 12.4% made less than four visits, and 33.4% made four or more visits. In 2013, 47.0% of adolescent mothers had no ANC visits, 15.6% made less than four visits, and 37.4% made four or more visits.

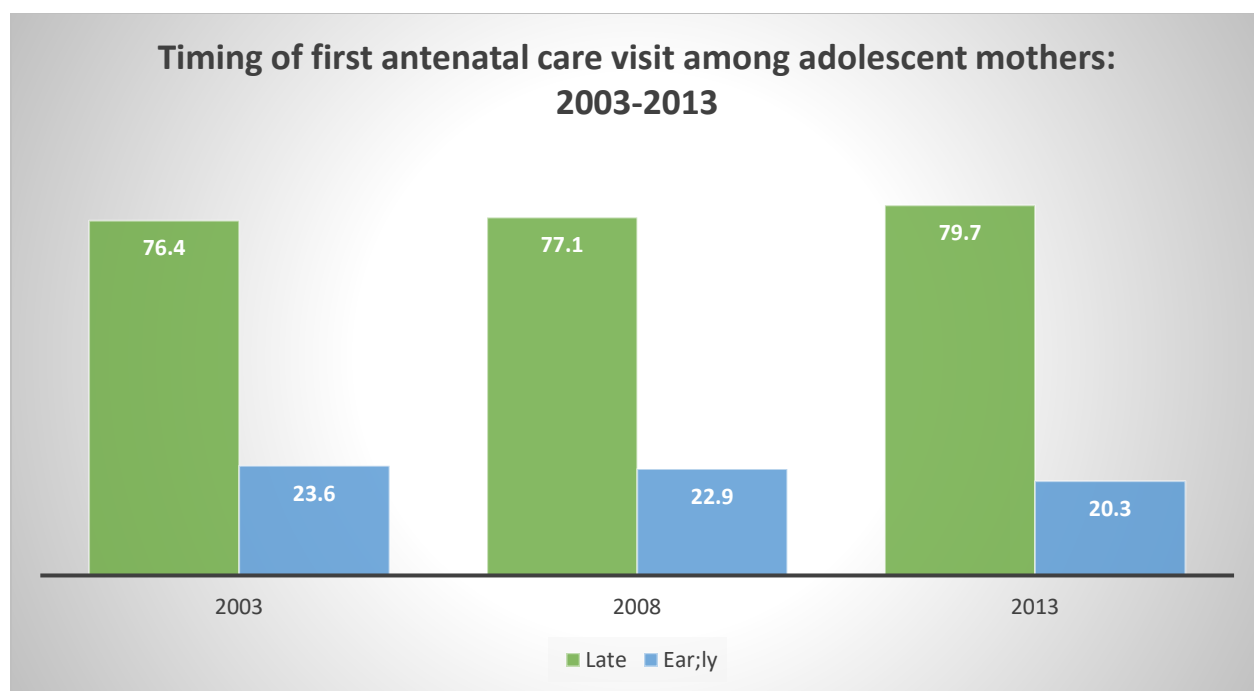


Figure 4.1.3.2: Timing of First Antenatal Care Visit among Adolescent Mothers in Nigeria: 2003-2013

Figure 4.1.3.2 shows the timing of the first antenatal care visit among adolescent mothers in Nigeria. The majority of adolescent mothers started antenatal care consistently late across the three surveys. In 2003, 76.4% of respondents started their antenatal care in the fourth month or later; in 2008, 77.1% started antenatal care late; and in 2013, 79.7% of adolescent mothers started antenatal care late.

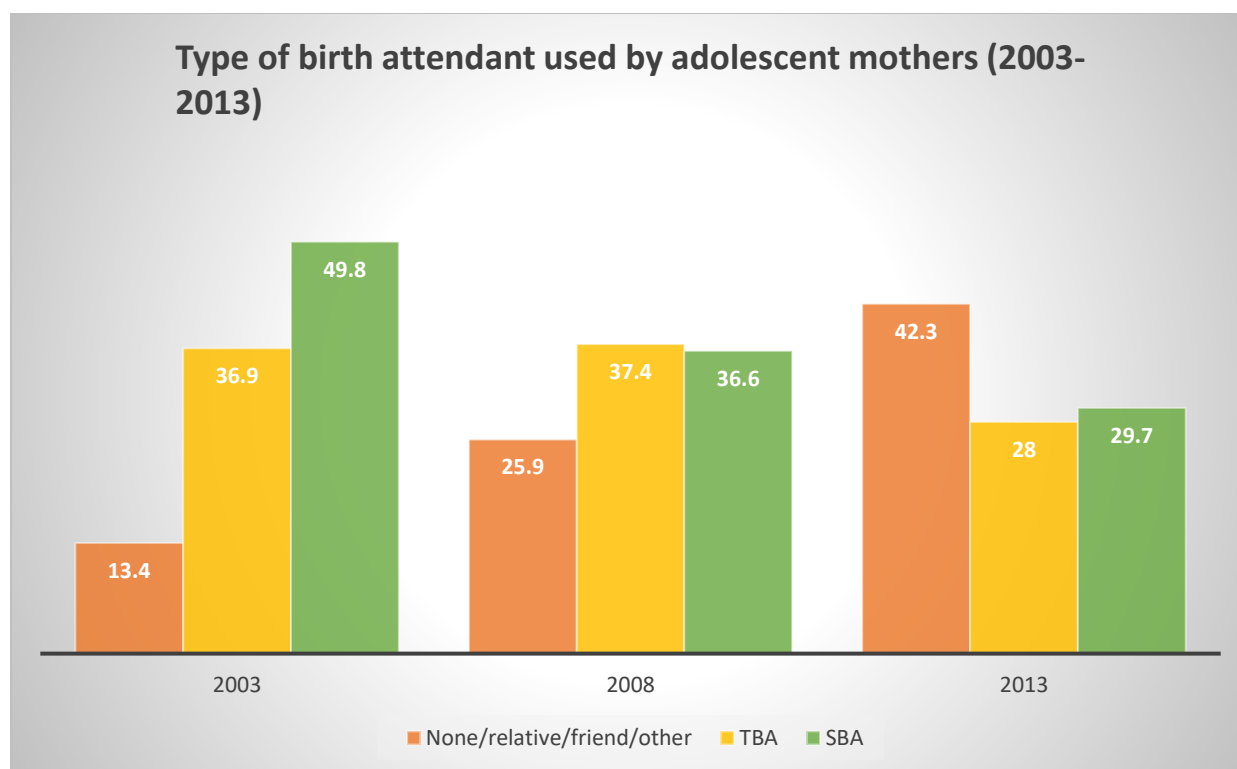


Figure 4.1.3.3: Type of Birth Attendant Used by Adolescent Mothers in Nigeria: 2003-2013

Figure 4.1.3.3 shows the type of birth attendant used by adolescent mothers in Nigeria between 2003 and 2013. In 2003, 13.4% of adolescent mothers surveyed either had unassisted births or used an unskilled attendant such as a relative or friend, 36.9% used a traditional birth attendant, and about half (49.8%) used a skilled birth attendant such as a doctor, nurse, midwife or community health extension worker during delivery. In 2008, 25.9% of respondents had unassisted births or unskilled attendants, 37.4% used a traditional birth attendant, and only 36.6% used a skilled birth attendant. In 2013, 42.3% of respondents either had an unassisted birth or unskilled attendant, 28.0% used the services of a traditional birth attendant, and only 29.7% made use of a skilled birth attendant.

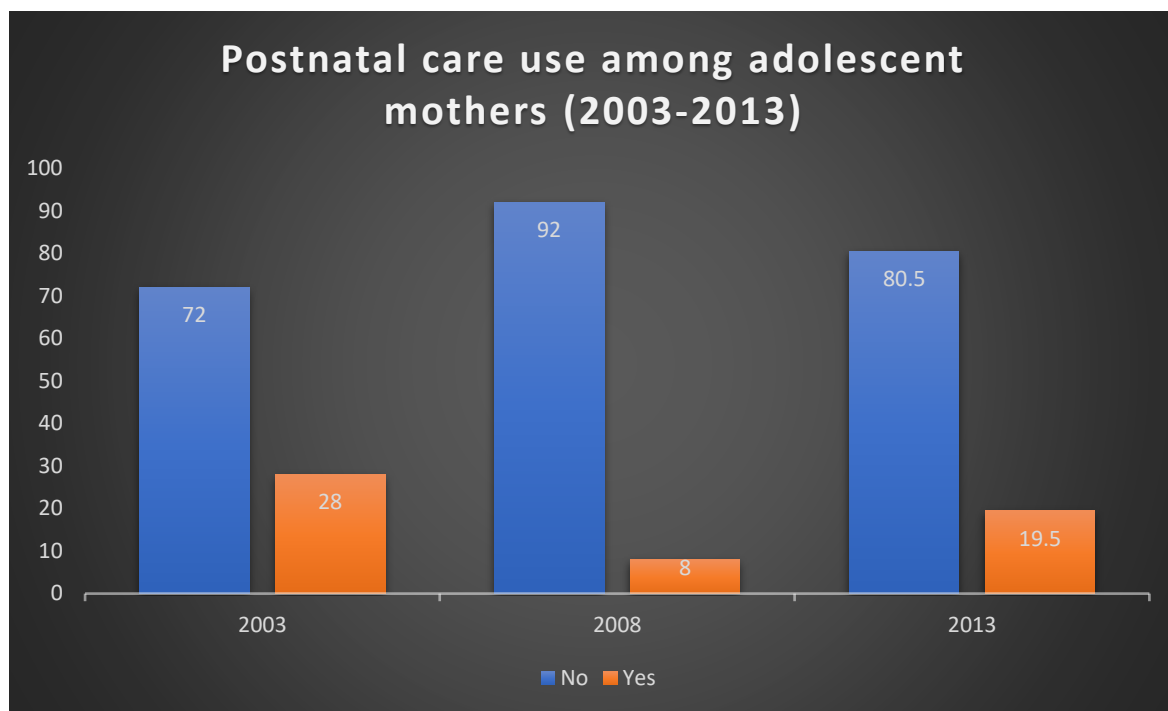


Figure 4.1.3.4: Postnatal Care Use among Adolescent Mothers in Nigeria: 2003-2013

Figure 4.1.3.4 shows that postnatal care use was consistently low among adolescent mothers, and was lowest in 2008. In 2003, 28.0% of adolescent mothers sought postnatal care; in 2008, only 8.0% of adolescent mothers sought postnatal care; and in 2013, 21.1% of adolescent mothers sought postnatal care, following the delivery of their babies.

4.2 Variations in Maternal Healthcare Utilisation among Adolescent Mothers by Sociodemographic and Sociocultural Characteristics.

This section shows the results of the chi square tests of association between the independent variables, covariates and dependent variables.

4.2.1 Antenatal Care Utilisation by Adolescent Mothers in Nigeria

Table 4.2.1.1

Percentage Distribution of Number of Antenatal Care Visits among Adolescent Mothers in Nigeria by their Sociodemographic Characteristics (2003-2013)

	Number of ANC visits			
Variable	None	<4	>=4	P-value
Age				
15-17	56.9	13.6	29.5	0.000
18-19	45.7	14.8	39.5	
Age at birth				
<15	61.0	9.3	29.7	0.023
15+	48.4	14.8	36.9	
Educational level				
None	66.9	11.2	21.9	0.000
Primary	30.5	22.3	47.2	
Secondary and higher	15.6	17.2	67.2	
Wealth status				
Poor	65.5	13.7	20.8	0.000
Middle	32.2	14.8	53.0	
Rich	15.7	16.2	68.1	
Religion				
Christian	22.5	18.8	58.7	0.000
Muslim	58.0	12.9	29.1	
Ethnicity				
Yoruba	9.2	10.6	80.2	0.000
Igbo	9.7	9.6	80.8	
Hausa/Fulani	61.4	12.7	25.9	
Northern minorities	43.1	19.3	37.6	
Southern minorities	28.2	18.4	53.4	
Others	38.5	12.9	48.6	
Partner's educational level				
None	70.7	10.5	18.8	0.000
Primary	42.2	18.8	39.0	
Secondary and higher	23.8	17.1	59.1	
Getting money for treatment				
Not a big problem	44.1	14.2	41.7	0.000
Big problem	53.6	14.6	31.7	
Distance to health facility				
Not a big problem	40.2	15.5	44.2	0.000
Big problem	62.3	12.8	24.9	
Place of residence				
Urban	20.3	16.2	63.5	0.000

Rural	55.8	14.0	30.2	
Region of residence				
North Central	33.9	22.4	43.7	0.000
North East	52.8	19.3	27.9	
North West	64.7	9.9	25.4	
South East	9.0	9.8	81.1	
South South	25.2	20.3	54.5	
South West	17.2	8.7	74.1	

Source: NDHS 2003-2013

Table 4.2.1.1 shows the crosstabulations of sociodemographic characteristics with the number of antenatal care visits by adolescent mothers. The proportion of adolescent mothers making four or more antenatal care visits was lower among those aged below 18 years than among those aged 18-19 years (29.5% compared to 39.5%). Also, the proportion of adolescent mothers who had no antenatal care was higher among those below 18 than among those 18-19 years old (56.9% compared to 45.7%), while 13.6% of adolescent mothers aged below 18 made less than 4 visits, compared to 14.8% of those aged 18-19 years. Similarly, respondents who gave birth at age 15 and above recorded higher usage of ANC than those who gave birth before age 15. About two-thirds (61.0%) of mothers who gave birth before age 15 did not use antenatal care, 9.3% had less than 4 visits, and 29.7% had 4 or more ANC visits. Among mothers who gave birth at age 15 and above, 48.4% did not use any ANC, 14.8% had less than 4 visits, and 36.9% had 4 or more visits.

Respondents with secondary and higher education had the highest usage of complete ANC, and respondents with no education had the lowest usage proportions. The highest proportion of ANC non-use was among respondents with no education, as 66.9% did not use ANC; 11.2% of mothers with no education had less than 4 visits, and 21.9% had 4 or more ANC visits. Among mothers with primary education, 30.5% had no ANC use, 22.3% had partial ANC use (less than 4

visits) and 47.2% had 4 or more ANC visits. Among mothers with secondary and higher education, 15.6% had no ANC use, 17.2% had less than 4 visits, and 67.2% had 4 or more visits.

As expected, there was a higher proportion of ANC use among respondents who were from households in the middle and rich tertiles than those who were from poor households. The majority (65.5%) of poor respondents did not use ANC at all, 13.7% had less than 4 visits, and only 20.8% had 4 or more visits. Among respondents from middle income households, 32.2% did not use ANC at all, 14.8% had less than 4 visits, and 53.0% had 4 or more visits. Among respondents from households in the rich tertiles, 15.7% had no antenatal care, 16.2% had less than 4 visits, and 68.1% had complete antenatal care (4 or more visits).

Results showed that 22.5% of Christian respondents did not use any antenatal care, compared with 58.0% of Muslim respondents and adherents of other religions. Also, 18.8% of Christian adolescent mothers had partial antenatal care, compared to 12.9% of mothers who were Muslims or adherents of other religions, while 58.7% of Christian adolescent mothers had full antenatal care use, compared to only 29.1% of adolescent mothers who were Muslims or adherents of other religions.

Results showed that Igbo respondents had the highest proportion of complete antenatal care use, followed by Yorubas, respondents from Southern minority tribes, other tribes, Northern minority tribes, and the lowest usage was among the Hausa/Fulani adolescent mothers. The majority of Igbo mothers (80.8%) had complete antenatal care use, 9.7% had no antenatal care, and 9.6% had less than four visits. Also, the majority of Yoruba mothers had 4 or more visits (80.2%), while 9.2% had no ANC visits and 10.6% had less than 4 visits. The results showed that

61.4% of Hausa/Fulani mothers did not use antenatal care at all, 12.7% of them had less than 4 visits, and only a quarter (25.9%) had 4 or more ANC visits. Among mothers from Northern minority tribes, 43.1% did not use ANC at all, 19.3% had partial ANC use, and 37.6% had 4 or more ANC visits. A little above half of respondents from Southern minority tribes had full ANC use (53.4%), while 28.2% had no ANC use whatsoever, and 18.4% had partial ANC use. Among mothers from other tribes, 38.5% had no ANC use, 12.9% had partial use, and less than half (48.6%) had full ANC use.

As expected, the proportion of adolescent mothers making four or more antenatal care visits was highest among those whose partners had secondary and higher education. The majority (70.7%) of respondents whose partners had no education did not use ANC, 10.5% had partial ANC usage, and 18.8% had 4 or more ANC visits. Among respondents whose partners had only primary education, 42.2% had no ANC use, 18.8% had less than four visits, and 39.0% had 4 or more visits. Among adolescent mothers with partners who had secondary or higher education, 23.8% did not use ANC at all, 17.1% had less than 4 visits, and more than half (59.1%) had 4 or more antenatal visits.

Among adolescent mothers who reported that getting money for healthcare costs was not a big problem, 44.1% did not use ANC, 14.2% had partial usage and 41.7% had 4 or more visits, while among those who found it challenging to obtain money for healthcare costs, more than half (53.6%) did not use ANC, 14.6% had partial usage and 31.7% had 4 or more visits. Among mothers who reported that distance to the health facility was not a big problem, 40.2% did not use ANC, 15.5% had less than 4 visits, and 44.2% had 4 or more visits. Only a quarter (24.9%) of

mothers who reported that distance was a big problem had 4 or more antenatal care visits; the majority (62.3%) did not use ANC at all, and 12.8% had less than 4 ANC visits.

The results further showed that the proportion of adolescent mothers making four or more antenatal care visits was higher among urban than rural residents. One-fifth (20.3%) of urban adolescent mothers did not use ANC, 16.2% had partial usage, and 63.5% of them had 4 or more ANC visits. More than half (55.8%) of rural mothers had no ANC visits, 14.0% had less than 4 visits, and 30.2% had 4 or more antenatal care visits. The highest proportions of complete ANC usage were found in the South East, followed by the South West and the South South. The lowest proportions of usage were found in the North West, followed by the North East and North Central regions. Among adolescent mothers in the North Central region, 33.9% did not use ANC at all, 22.4% had less than 4 visits, and 43.7% had 4 or more visits. Among mothers in the North East, more than half (52.8%) did not use ANC, 19.3% had less than 4 visits, and 27.9% had 4 or more ANC visits. Results also showed that 64.7% of mothers in the North West did not use ANC, 9.9% had less than 4 visits, and only a quarter (25.4%) used complete ANC. In the South East, ANC non-use was low, as only 9.0% of mothers did not use ANC at all, 9.8% had partial usage, and 81.1% had 4 or more ANC visits. A quarter (25.2%) of mothers in the South South did not use ANC, 20.3% had partial use, and 54.5% had 4 or more ANC visits. In the South West, 17.2% of mothers had no ANC use, 8.7% had partial use, and 74.1% had 4 or more ANC visits.

Table 4.2.1.2

Percentage Distribution of Number of Antenatal Care Visits among Adolescent Mothers in Nigeria by their Sociocultural Characteristics (2003-2013)

Variable	Number of ANC visits			P-value
	None	<4	>=4	
Marital status				
Not married	24.4	19.3	56.3	0.000
Married	52.7	13.7	33.6	
Sex of household head				
Male	51.4	14.5	34.1	0.000
Female	28.5	13.7	57.7	
Healthcare decision-making				
Respondent has no say	55.8	14.5	29.7	0.000
Respondent has a say	37.1	12.4	50.5	
Partner age difference				
Same age/Small	51.4	18.2	30.4	0.022
Large	53.0	12.5	34.6	
Pregnancy intention				
Wanted then	58.4	13.8	27.8	0.344
Mistimed/Unwanted	59.7	5.7	34.6	
Getting permission to go to health facility				
Not a big problem	44.6	15.7	39.6	0.000
Big problem	68.0	9.0	23.0	

Source: NDHS 2003-2013

Table 4.2.1.2 shows the crosstabulations and chi square tests of association between the sociocultural variables and antenatal care utilisation among adolescent mothers in Nigeria. Marital status was associated with ANC usage, as respondents who were not married had the highest usage of ANC. Nearly a quarter (24.4%) of unmarried mothers did not use ANC, 19.3% had partial ANC usage, and more than half (56.3%) had 4 or more visits. However, more than half (52.7%) of married adolescent mothers did not use ANC at all, 13.7% had partial usage, and about a third (33.6%) had 4 or more ANC visits. A larger proportion of respondents who lived in a female-headed household had four or more ANC visits, compared to those who lived in a male-

headed household. About half (51.4%) of adolescent mothers who lived in male-headed households did not use ANC, 14.5% of them had less than four ANC visits, and 34.1% had full ANC usage. However, more than half (57.7%) of mothers who lived in female-headed households used full ANC, while 28.5% had no ANC use, and 13.7% had partial use.

The highest proportion of ANC usage was found among respondents who had a say in their healthcare decision-making. More than half (55.8%) of respondents who did not contribute to their healthcare decision-making did not use antenatal care at all, 14.5% had partial ANC, and 29.7% had 4 or more ANC visits. Among respondents who had a say in their healthcare decision-making, 37.1% had no ANC use, 12.4% had partial use, and about half (50.5%) had 4 or more visits.

A larger proportion of respondents whose partners were much older than them had four or more ANC visits, compared to those adolescent mothers whose partners were closer in age to them. Among respondents who were in the same age bracket with their partners, 51.4% did not use ANC at all, 18.2% had partial ANC usage, and 30.4% had 4 or more visits. Among those respondents who had a large age gap between them and their partners, 53.0% did not use ANC, 12.5% had partial ANC use, and 34.6% had four or more ANC visits. The highest proportion of respondents who had four or more ANC visits were those who said they did not have a big problem getting permission to go to the health facility, compared to mothers who reported having big problems with getting permission. Among mothers who reported that getting permission to go to the health facility was not a big problem, 44.6% did not use antenatal care, 15.7% made less than 4 visits, and 39.6% made four or more ANC visits. The majority of mothers

who reported that getting permission was a big problem did not use antenatal care (68.0%), while 9.0% had less than 4 visits, and 23.0% had 4 or more visits. However, the results showed that there were no statistically significant variations in the use of antenatal care by religious affiliation or pregnancy intention.

4.2.2 Timing of first antenatal care

Table 4.2.2.1

Percentage Distribution of Timing of First Antenatal Care Visit among Adolescent Mothers in Nigeria by their Sociodemographic Characteristics (2003-2013)

Variable	Timing of first ANC visit		
	Late	Early	p-value
Age			
15-17	80.0	20.0	0.427
18-19	77.7	22.3	
Age at birth			
<15	75.0	25.0	0.585
15+	78.5	21.5	
Educational level			
None	81.5	18.5	0.090
Primary	77.9	22.1	
Secondary and higher	75.2	24.8	
Wealth status			
Poor	78.9	21.1	0.617
Middle	76.2	23.8	
Rich	79.3	20.7	
Religion			
Christian	74.8	25.2	0.026
Muslim/Other	80.7	19.3	
Ethnicity			
Yoruba	72.3	27.7	0.032
Igbo	74.3	25.7	
Hausa/Fulani	84.1	15.9	
Northern minorities	72.2	27.8	
Southern minorities	79.0	21.0	
Others	71.1	28.9	
Partner's education level			
None	82.3	17.7	0.079
Primary	75.2	24.8	
Secondary and higher	76.4	23.6	

Getting money for treatment			
Not a big problem	80.2	19.8	0.149
Big problem	76.3	23.7	
Distance to health facility			
Not a big problem	78.8	21.2	0.551
Big problem	77.1	22.9	
Place of residence			
Urban	80.6	19.4	0.292
Rural	77.4	22.6	
Region of residence			
North Central	65.2	34.8	0.0005
North East	79.8	20.2	
North West	84.3	15.7	
South East	74.8	25.2	
South South	80.7	19.3	
South West	76.3	23.7	

Source: NDHS 2003-2013

Table 4.2.2.1 shows the results of the bivariate analysis of associations between the sociodemographic variables and the timing of antenatal care among adolescent mothers in Nigeria. The results showed that 74.7% of Christian respondents started antenatal care late, while a quarter (25.3%) started early. Also, the majority of respondents (80.6%) who were Muslims and adherents of other religions started ANC late, and less than one-fifth (19.4%) started ANC early.

Results showed that the highest proportion of adolescent mothers who started antenatal care in their first trimester were respondents from other tribes (28.9% started ANC early and 71.1% started late). Also, 27.7% of Yoruba respondents started ANC early and 72.3% started late; 27.6% of Northern minority respondents started early, and 72.4% started late; 26.1 of Igbo respondents started early, and 73.9% started late; 2.0% of Southern minority respondents started ANC early and 79.0% started late; and 16.1% of Hausa/Fulani respondents started ANC early, and 83.9% started late.

The highest proportion of mothers who started ANC late came from the North West region, while the lowest proportion came from the North Central region. Results showed that 65.2% of mothers in the North Central region started ANC late, while 34.8% started early; 79.8% of mothers from the North East started ANC late and 20.2% started early, while 84.3% of mothers from the North West started ANC late and 15.7% started early. Also, 74.8% of mothers from the South East started ANC late and a quarter (25.2%) started early; 80.7% of mothers from the South South started ANC late and 19.3% started early, while 76.3% of mothers from the South West started ANC late while 23.7% started early.

Table 4.2.2.2

Percentage Distribution of Timing of First Antenatal Care among Adolescent Mothers in Nigeria by their Sociocultural Characteristics (2003-2013)

Variable	Timing of first ANC visit		p-value
	Late	Early	
Marital status			
Not married	79.4	20.6	0.703
Married	78.1	21.9	
Sex of household head			
Male	78.0	22.0	0.470
Female	80.6	19.4	
Healthcare decision-making			
Respondent has no say	80.0	20.0	0.013
Respondent has a say	71.3	28.7	
Partner age difference			
Same age/Small	79.7	20.3	0.535
Large	77.6	22.4	
Pregnancy intention			
Wanted then	81.2	18.8	0.437
Mistimed/Unwanted	72.7	27.3	
Getting permission to go to health facility			
Not a big problem	78.1	21.9	0.598
Big problem	80.1	19.9	

Source: NDHS 2003-2013

Table 4.2.2.2 shows the results of the bivariate analysis of associations between sociocultural and gender power relations variables and timing of first antenatal care visit among adolescent mothers in Nigeria. A higher proportion of mothers who could contribute to their healthcare decision-making started ANC early, compared to mothers who could not contribute to decision-making (28.7% compared with 20.0%). Among mothers who could not contribute to decision-making, 80.0% started ANC late, while among mothers who could contribute to their healthcare decision-making, 71.3% started ANC after the first trimester.

Results however showed that there were no statistically significant variations in timing of first antenatal care visit by respondent's age, age at first birth, educational level, wealth status, religion, marital status, sex of household head, partner age difference, partner's education level, pregnancy intention, getting permission to go to health facility, getting money for treatment, distance to the health facility, and place of residence among adolescent mothers in Nigeria.

4.2.3 Type of Birth Attendance Used by Adolescent Mothers in Nigeria

Table 4.2.3.1

Percentage Distribution of Type of Birth Attendant among Adolescent Mothers in Nigeria by their Sociodemographic Characteristics (2003-2013)

Variable	Type of birth attendant			P-value
	None/Relative/Friend/Other	TBA	SBA	
Age				
15-17	31.4	37.8	30.8	0.011
18-19	35.1	30.0	34.9	
Age at birth				
<15	40.5	32.1	27.4	0.313
15+	33.6	32.3	34.1	
Educational level				
None				0.000
Primary	45.1	37.5	17.4	
Secondary and higher	26.9	28.3	44.8	
	12.9	22.6	64.5	
Wealth status				
Poor	44.3	36.0	19.7	0.000
Middle	25.7	34.2	40.1	
Rich	13.0	20.0	67.0	
Religion				
Christian	13.4	25.9	60.8	0.000
Muslim	41.3	35.4	23.2	
Ethnicity				
Yoruba	7.1	12.2	80.8	0.000
Igbo	7.0	9.1	83.9	
Hausa/Fulani	45.8	35.4	18.8	
Northern minorities	28.5	29.3	42.2	
Southern minorities	6.1	52.4	41.4	
Others	42.1	16.4	41.5	
Partner's education level				
None	47.9	37.3	14.8	0.000
Primary	29.7	34.2	36.1	
Secondary and higher	21.1	24.8	54.1	
Getting money for treatment				
Not a big problem	33.9	30.1	36.0	0.143
Big problem	34.2	34.2	31.6	
Distance to health facility				

Not a big problem	30.8	29.1	40.1	0.000
Big problem	39.0	37.1	23.9	
Place of residence				
Urban	16.8	20.5	62.6	0.000
Rural	38.3	35.2	26.5	
Region of residence				
North Central	31.6	8.2	60.2	0.000
North East	38.2	37.6	24.3	
North West	45.1	38.0	16.9	
South East	7.0	9.6	83.4	
South South	6.7	49.2	44.1	
South West	13.2	12.8	73.9	
Number of ANC visits				
None	47.5	43.4	9.1	0.000
<4	29.4	25.9	44.7	
>=4	19.5	21.1	59.4	
Timing of first ANC visit				
Late	23.3	22.7	54.0	0.212
Early	18.0	21.5	60.4	

Source: NDHS 2003-2013

Table 4.2.3.1 shows the results of the bivariate analysis of associations between sociodemographic variables and the type of birth attendants used among adolescent mothers in Nigeria. The proportion having unassisted delivery or using unskilled attendants was higher among older than younger adolescent mothers. Among mothers aged 15-17, 31.4% either had unassisted births or had an unskilled attendant such as a relative, friend or other person; 37.8% used traditional birth attendants (TBAs), and 30.8% used a skilled birth attendant. Among mothers aged 18-19, 31.4% had either unassisted births or unskilled attendants, 37.8% used TBAs, and 30.8% used skilled birth attendants.

Higher proportions of women with secondary and higher education used SBAs, and lower proportions used TBAs or had unassisted births or unskilled attendants compared to women with

primary or no education. Results from the crosstabulations showed that 45.1% of mothers with no education either had unassisted births or unskilled attendants, 37.5% used TBAs, and 17.4% had SBAs at their delivery. Among mothers with primary education, 26.9% had either unassisted births or unskilled attendants, 28.3% used TBAs, and 44.8% had SBAs at delivery. Only 12.9% of mothers with secondary and higher education had unassisted births or unskilled birth attendants; 22.6% used TBAs, and 64.5% of them used SBAs.

As expected, higher proportions of adolescent mothers from wealthier households used SBAs, while lower proportions used TBAs or had unskilled attendants or unassisted births. Among mothers from poor households, 44.3% had either unassisted births or unskilled births, 36.0% used TBAs, and only 19.7% used SBAs at delivery. A quarter of mothers from middle tertile households (25.7%) either had unassisted births or unskilled attendants; 34.2% used TBAs, and 40.1% had SBAs at delivery. About two-thirds of adolescent mothers from rich households (67.0%) used SBAs, 13.0% had unassisted deliveries or unskilled attendants, and 20.0% used TBAs.

The results show that there was significant variation in the type of birth attendants used by the religious affiliation of adolescent mothers in Nigeria. A small proportion (13.6%) of Christian respondents had either unassisted births or unskilled attendants; about a quarter (24.8%) used TBAs, and the majority (61.6%) made use of SBAs. Among Muslim respondents and those who were adherents of other religions, 41.4% had unassisted births or unskilled attendants, 35.1% made use of TBAs, and less than a quarter (23.5%) made use of SBAs.

There were statistically significant ethnic variations in the type of birth attendant used with Igbo mothers having the highest proportion who used SBAs, as well as the lowest proportion who used TBAs. Hausa/Fulani mothers had the highest proportion of unassisted births or unskilled attendants, and mothers from Southern minority tribes had the highest prevalence of TBA use. Among Yoruba mothers, 7.1% had unassisted births or unskilled attendants, 12.2% used TBAs, and 80.7% used SBAs, while 6.6% of Igbo mothers either had unassisted births or unskilled delivery attendants, 9.2% used TBAs, and 84.1% used SBAs. Nearly half of Hausa/Fulani mothers (46.0%) had either unassisted births or unskilled attendants, 34.9% used TBAs, and only 19.1% used SBAs at delivery. Also, 28.5% of mothers from Northern minority tribes had unassisted births or unskilled attendants, 29.1% used TBAs, and 42.4% used SBAs; 6.4% of mothers from Southern minorities had unassisted births or unskilled attendants, half of them (50.7%) used SBAs, and 42.8% used SBAs. Among women from other ethnicities, 42.1% had either unassisted births or unskilled attendants, 16.4% used TBAs, and 41.5% used SBAs.

There were also statistically significant variations in the type of birth attendant used according to the level of partner education. A higher proportion of adolescent mothers with more educated partners used SBAs than those whose partners were less educated, while lower proportions had unassisted births and unskilled attendance and TBA usage. Nearly half (47.9%) of mothers whose partners had no education either had unassisted births or unskilled attendants; 37.3% used TBAs, and only 14.8% used SBAs. Among mothers whose partners had only primary education, 29.7% had either unassisted deliveries or used unskilled attendants, 34.2% used TBAs, and 36.1% used SBAs, while among mothers whose partners had secondary or

higher education, 21.1% had either unassisted births or unskilled attendants, 24.8% used TBAs, and 54.1% used SBAs.

Additionally, mothers who reported that the distance to the health facility was a big problem had lower SBA use and higher prevalence of unassisted deliveries, unskilled attendant and TBA usage, compared to those who did not find the distance to the health facility a big problem. Less than a quarter (23.9%) of mothers who reported that the distance to the health facility was a big problem used SBAs, 39.0% had unassisted deliveries or unskilled attendants, and 37.1% used TBAs. Among mothers who reported that the distance was not a big problem, 30.8% had unassisted deliveries or used unskilled birth attendants, 29.1% used TBAs and 40.1% used SBAs at delivery. Urban mothers had a higher prevalence of SBAs and a lower prevalence of unassisted deliveries and unskilled and traditional birth attendant usage than rural mothers. Among urban mothers, 16.8% had either unassisted deliveries or unskilled attendants, 20.5% used TBAs, and 62.6% used SBAs at delivery; among rural mothers, 38.3% had unassisted deliveries or used unskilled attendants, 35.2% used TBAs, and 26.5% used SBAs.

The type of birth attendant used by adolescent mothers differed across the regions. The North West region had the highest proportion of unassisted births and unskilled attendants, whereas the highest proportion of TBA use was in the South South region, and the highest SBA usage was found in the South East zone. Among mothers living in the North Central zone, 31.6% had either unassisted births or unskilled attendants, 8.2% used TBAs, and 60.2% used SBAs. In the North East region, 38.2% of adolescent mothers had either unassisted births or unskilled attendants, 37.6% used TBAs and nearly a quarter (24.3%) used SBAs at delivery. In the North

West region, 45.1% had unassisted deliveries or used unskilled attendants, 38.0% used TBAs, and only 16.9% used SBAs at delivery. Among mothers in the South East, only 7.0% had either unassisted births or unskilled attendants, 9.6% used TBAs, and 83.4% used SBAs. In the South South, 6.7% of adolescent mothers had an unassisted birth or used an unskilled attendant, nearly half (49.2%) used a TBA, and 44.1% used SBAs at delivery, and in the South West, 13.2% of mothers had unassisted deliveries or used unskilled attendants, 12.8% used TBAs, and 73.9% used SBAs.

Antenatal care usage was also significantly associated with the type of birth attendant used. The proportion using SBAs was higher among adolescent mothers who received antenatal care than among those who did not. Among adolescent mothers who did not use any ANC, 47.5% had unassisted deliveries or unskilled birthing assistants, 43.4% used TBAs, and only 9.1% used SBAs. Among adolescent mothers who used partial ANC, 29.4% had unassisted births or unskilled attendants, 25.9% used TBAs, and 44.7% used SBAs. Among mothers who had 4 or more antenatal visits, 19.5% had unassisted deliveries or unskilled birth attendants, 21.1% used TBAs and 59.4% used the services of SBAs at delivery.

The bivariate analysis, however, showed that age at birth, religion, partner age difference, pregnancy intention, cost of healthcare and the timing of first antenatal care visit were not significantly associated with the type of birth attendant used by adolescent mothers in Nigeria.

Table 4.2.3.2

Percentage Distribution of Type of Birth Attendant among Adolescent Mothers in Nigeria by their Sociocultural Characteristics (2003-2013)

Variable	Type of birth attendant			P-value
	None/Relative/Friend /Other	TBA	SBA	
Marital status				
Not married	13.1	26.6	60.3	0.000
Married	37.2	33.1	29.7	
Sex of household head				
Male	35.5	32.5	32.0	0.000
Female	21.3	30.4	48.3	
Healthcare decision-making				
Respondent has no say	39.2	33.6	27.2	0.000
Respondent has a say	26.6	29.4	44.0	
Partner age difference				
Same age/Small	34.4	33.6	32.1	0.479
Large	37.9	33.0	29.1	
Pregnancy intention				
Wanted then	37.3	34.1	28.5	0.212
Mistimed/Unwanted	29.2	25.2	45.6	
Getting permission to go to health facility				
Not a big problem	32.2	32.4	35.4	0.002
Big problem	42.6	31.6	25.8	

Source: NDHS 2003-2013

Table 4.2.3.2 shows the results of the bivariate analysis of associations between sociocultural and gender power relations variables and type of birth attendant used among adolescent mothers in Nigeria. Marital status was significantly associated with type of birth attendant used, as a lower proportion of married mothers used SBAs compared to unmarried mothers. Married adolescent mothers also had a higher prevalence of unassisted births/unskilled attendants and TBA use compared to unmarried mothers. The results showed that 13.1% of unmarried mothers either had no birth assistant or used an unskilled attendant, 26.6% used TBAs and 60.3% used SBAs, while 37.2% of married mothers had either unassisted births or unskilled attendants, 33.1% used

TBAs, and only 29.7% used SBAs. Mothers in male-headed households had a higher prevalence of unassisted births, unskilled and traditional birth attendant use and lower SBA use than mothers living in female-headed households. Among mothers in male-headed households, 35.5% had unassisted births or unskilled attendants, 32.5% used TBAs and 32.0% used SBAs, while 21.3% of mothers in female-headed households had either unassisted births or unskilled attendants, 30.4% used TBAs and 48.3% used SBAs.

As expected, participation in their own healthcare decision-making was associated with a lower prevalence of unassisted births and unskilled and traditional birth attendant usage and higher incidence of SBA use. Among mothers who did not contribute to healthcare decision-making, 39.2% had either unassisted births or unskilled attendants, 33.6% used TBAs, and 27.2% used SBAs, while 26.6% of mothers who contributed to decision-making concerning their health had either unassisted delivery or unskilled attendants; 29.4% used TBAs, and 48.3% used SBAs. Getting permission to go the health facility was also significantly associated with type of birth attendant used. Among mothers who reported that they did not have a big problem getting permission to go to the health facility, 32.2% had unassisted deliveries or unskilled attendants, 32.4% used TBAs, and 35.4% used SBAs; among mothers who reported that getting permission was a big problem, 42.6% either had unassisted deliveries or used unskilled attendants, 31.6% used traditional birth attendants and 25.8% used skilled birth attendants.

4.2.4 Postnatal Care Use among Adolescent Mothers in Nigeria

Table 4.2.4.1

Percentage Distribution of Postnatal Care Use among Adolescent Mothers in Nigeria by their Sociodemographic Characteristics (2003-2013)

Postnatal care use			
Variable	No	Yes	P-value
Age			
15-17	86.8	13.2	0.018
18-19	82.1	17.9	
Age at birth			
<15	85.3	14.7	0.627
15+	83.4	16.6	
Educational level			
None	90.3	9.7	0.000
Primary	77.0	23.0	
Secondary and higher	66.9	33.1	
Wealth status			
Poor	89.8	10.2	0.000
Middle	76.5	23.5	
Rich	66.3	33.7	
Religion			
Christian	71.4	28.6	0.000
Muslim	87.0	13.0	
Ethnicity			
Yoruba	49.2	50.8	0.000
Igbo	77.7	22.3	
Hausa/Fulani	88.6	11.4	
Northern minorities	78.3	21.7	
Southern minorities	73.1	26.9	
Others	89.9	10.1	
Partner's education level			
None	90.2	9.8	0.000
Primary	86.7	13.3	
Secondary and higher	71.2	28.8	
Getting money for treatment			
Not a big problem	81.4	18.6	0.0498
Big problem	85.4	14.6	
Distance to health facility			
Not a big problem	80.2	19.8	0.000
Big problem	88.1	11.9	
Place of residence			
Urban	70.3	29.7	0.000
Rural	86.1	13.9	
Region of residence			

North Central	84.0	16.0	0.000
North East	82.5	17.5	
North West	88.4	11.6	
South East	78.5	21.5	
South South	72.1	27.9	
South West	63.4	36.6	
Number of ANC visits			0.000
None	93.9	6.1	
<4	82.3	17.7	
>=4	66.3	33.7	
Timing of first ANC visit			0.081
Late	72.5	27.5	
Early	65.9	34.1	
Type of birth attendant			0.000
None/Relative/Other	89.0	11.0	
TBA	86.4	13.6	
SBA	64.3	35.7	

Source: NDHS 2003-2013

Table 4.2.4.1 shows the results of the bivariate analysis of associations between sociodemographic and healthcare use variables and postnatal care usage among adolescent mothers in Nigeria. Maternal age was significantly associated with postnatal care use, as older mothers had higher incidence of postnatal care use than younger mothers. Among mothers aged 15-17, 86.8% did not use postnatal care, and 13.2% used PNC, while among mothers aged 18 and above, 17.9% used postnatal care while 82.1% did not.

As expected, the higher the educational level of mothers, the higher their PNC usage. Only 9.7% of mothers with no education used PNC, and 90.3% did not use postnatal care. Among mothers with only primary education, 23.0% used postnatal care, and 77.0% did not make use of it, while 33.1% of mothers with secondary and higher education made use of PNC, while 66.9% did not.

There were also statistically significant variations in the use of postnatal care according to wealth status. Among adolescent mothers from poor households, only 10.2% used PNC, and 89.8% did not. Among respondents from middle income households, nearly a quarter (23.5%) made use of PNC after delivery, and 76.5% did not; while among respondents from rich households, about a third (33.7%) of them made use of PNC, while 66.3% did not.

As expected, as the level of partner education rises, so also did the proportion of mothers using PNC. Among respondents whose partners had no education, 9.8% made use of postnatal care, and 90.2% of them did not; for respondents whose partners had primary education, 13.3% made use of postnatal care and 86.7% did not. Among respondents whose partners had secondary or higher education, 28.8% made use of PNC while 71.2% did not.

Religion was significantly associated with postnatal care use among adolescent mothers in Nigeria. A higher proportion of Christian respondents used postnatal care, compared to Muslims and adherents of other religions. The results showed that 28.6% of Christian respondents made use of postnatal care and 71.4% did not, while 13.0% of Muslims and adherents of other religions made use of postnatal care, and 87.0% did not.

Ethnicity was also significantly associated with postnatal care use, as the highest proportion of PNC usage was among Yoruba adolescent mothers and the lowest was among respondents from other tribes. Among Yoruba mothers, about half (50.8%) used PNC, and 49.2% did not. This was followed by respondents from Southern minority tribes, among whom 27.2% sought PNC, and 72.8% who did not; 22.3% of Igbo respondents who used PNC and 77.7% who did not; 21.5% of respondents from Northern minority tribes who used PNC and 78.5% who did not; 11.2% of

Hausa/Fulani respondents who used PNC, and 88.8% who did not; and 10.1% of respondents from other tribes who used PNC and 89.9% who did not use postnatal care at all.

Region of residence was significantly associated with postnatal care use, and the highest proportion of PNC usage was in the South West and the lowest proportion in the North West region. The results showed that 16.4% of mothers in the North Central region used PNC, compared to 12.6% of mothers in the North East, 9.8% of mothers in the North West, 21.7% in the South East, 28.6% in the South South, and 36.1% in the South West.

Being able to get money for treatment influenced the use of postnatal care among adolescent mothers in Nigeria. Among mothers who did not have a big problem getting money for treatment, 18.6% made use of postnatal care, and 81.4% did not, while among mothers who had a big problem getting money for treatment, 14.6% used PNC and 85.4% did not use it at all.

A higher proportion of adolescent mothers who did not have a big problem with distance to the health facility used postnatal care, compared to those who had a big problem with distance. Nearly one-fifth of respondents (19.8%) who did not have a big problem with distance to the health facility made use of postnatal care after delivery, and 80.2% did not. Among respondents who had a big problem with distance to the health facility, 11.9% made use of postnatal care, and 88.1% did not.

Adolescent mothers living in urban areas had a higher prevalence of postnatal care use, as 29.7% of urban respondents used PNC and 70.3% did not, compared with 13.9% of rural respondents who used PNC, and 86.1% who did not. Also, the South West zone had the highest

prevalence of PNC use among adolescent mothers in Nigeria. The results showed that 36.6% of respondents in the South West made use of PNC, and 63.4% did not; followed by 27.9% of respondents who used PNC in the South South, and 72.1% who did not; and 21.5% of respondents used PNC in the South East, while 78.5% did not. The proportion using PNC was lower in the Northern compared to the Southern zones. In the North East, 17.5% of adolescent mothers used PNC, while 82.5% did not; in the North Central zone, 16.0% of respondents used PNC, while 84.0% did not; and in the North West zone, which had the lowest prevalence of PNC usage, 11.6% of respondents used PNC, while 88.4% did not.

The proportion of adolescent mothers using PNC was higher among those who had sought antenatal care than among those who had not. Only 6.1% of respondents who did not use ANC at all used PNC, while 93.9% did not; 17.7% of respondents with less than four ANC visits used PNC, and 82.3% did not; and a third (33.7%) of respondents with four or more ANC visits made use of PNC, while 66.3% did not make use of it. Similarly, higher proportions of respondents who used skilled birth attendants also used PNC compared to those who had unassisted births or unskilled and traditional birth attendants. Among respondents who either had unassisted births or unskilled attendants, 11.0% used PNC, and 89.0% did not; among respondents who used TBAs for delivery, 13.6% used PNC, and 86.4% did not; and among respondents who used SBAs, 35.7% made use of PNC, and 64.3% did not.

Table 4.2.4.2

Percentage Distribution of Postnatal Care Use among Adolescent Mothers in Nigeria by their Sociocultural Characteristics (2003-2013)

Variable	Postnatal care use		
	No	Yes	P-value
Marital status			
Not married	73.7	26.3	0.0002
Married	84.7	15.3	
Sex of household head			
Male	84.1	15.9	0.035
Female	77.1	22.9	
Healthcare decision-making			
Respondent has no say	86.5	13.5	0.0003
Respondent has a say	78.4	21.6	
Partner age difference			
Same age/Small	84.2	15.8	0.783
Large	84.8	15.2	
Pregnancy intention			
Wanted then	90.9	9.1	0.134
Wanted later	90.7	9.3	
Not wanted	46.3	53.7	
Getting permission to go to health facility			
Not a big problem	82.4	17.6	0.018
Big problem	88.1	11.9	

Source: NDHS 2003-2013

Table 4.2.4.2 shows the results of the bivariate analysis of association between sociocultural variables and postnatal care usage among adolescent mothers in Nigeria. Adolescent mothers who were never or formerly married had higher PNC usage than married respondents, as 26.5% of unmarried respondents having used PNC, compared to 15.2% of their married counterparts. Similarly, a higher proportion of respondents from female-headed households used PNC than those from male-headed households (23.5% compared with 15.7%).

As expected, mothers who could contribute to decision-making concerning their healthcare had higher PNC use compared to mothers who did not. Results showed that 23.1% of mothers who

contributed to healthcare decision-making used postnatal care, and 76.9% did not make use of it, while among respondents who did not have a say in their healthcare decision-making 13.3% used PNC and 86.7% did not.

Getting permission to go to the health facility was significantly associated with PNC use, as mothers who found it a big problem had lower PNC usage than those who did not find it a big problem. Among mothers who did not find getting permission a big problem, 17.6% used PNC within six weeks after delivery, and 82.4% did not, while 11.9% of mothers who had difficulty in obtaining permission to go the health facility sought postnatal care, while 88.1% did not.

4.3 Summary

This chapter examined the patterns of maternal healthcare utilisation among adolescent mothers in Nigeria. Frequency distributions, crosstabulations and chi square tests of association were used to examine the patterns of antenatal, delivery and postnatal care utilisation among adolescent mothers.

Findings showed that the majority of mothers were aged 15 and above at birth. Also, nearly half of adolescent mothers did not use antenatal care at all, and among those who used antenatal care, the majority started late. Additionally, only about a third of adolescent mothers used skilled birth attendants, a little under a third used traditional birth attendants, and the rest either had unattended births or had untrained birth attendants such as their friends or relatives to assist them during delivery. Also, postnatal care use was low as the majority of adolescent mothers did not use acknowledge visiting the clinics after delivery.

In the chi square test of association, adolescent mothers' age and age at birth of first child, educational level, wealth status, religion, ethnicity, partner educational level, getting money for healthcare costs, the distance to the health facility, place and region of residence, marital status, sex of household head, healthcare decision-making ability, partner age difference and getting permission to use health services were significantly associated with antenatal care utilisation, while pregnancy intention was not. However, only four variables were significantly associated with the timing of the first antenatal visit by adolescent mothers: religion, ethnicity, healthcare decision-making ability and region of residence.

The adolescent mother's age, educational level, wealth status, religion, ethnicity, partner educational level, distance to health facility, place and region of residence, number of antenatal care visits, marital status, sex of household head, healthcare decision-making ability, and getting permission to go to the health facility were significantly associated with the type of birth attendance used by adolescent mothers, while maternal age at birth, timing of first ANC visit, partner age difference, getting money for healthcare costs, and pregnancy intention were not. Additionally, age, educational level, wealth status, religion, ethnicity, partner's educational level, distance to the health facility, place and region of residence, antenatal care use, type of birth attendant, marital status, sex of household head, healthcare decision-making, getting money for healthcare costs, and getting permission to go to the health facility were significantly associated with postnatal care use by adolescent mothers, while age at birth, timing of first ANC visit, partner age difference and pregnancy intention were not.

CHAPTER FIVE

PREGNANCY EXPERIENCES OF ADOLESCENT MOTHERS IN NIGERIA

5.0 Introduction

This chapter presents qualitative data that address the second objective, which is to investigate the pregnancy, intrapartum and postpartum experiences of adolescent mothers across the different parts of Nigeria. The data examine issues concerning pregnancy intention, attitudes of adolescent mothers' partners and families towards their pregnancies, stigma from community members, presence of social support from family and community, and gender and power relations.

5.1 Data Collection

Qualitative data were captured through interviews in this study. Table 5.1 shows a breakdown of the different interviews that were conducted across the country.

Table 5.1

Breakdown of Interviews Conducted across Different Study Sites

Type of Interview	Name of study site	State/Region	Type of study site	Number of interviews	Total
In-depth interviews with adolescent mothers	Odige/Otutubiosun	Ondo/South West	Urban	9	55
	Aponmu-Akure	Ondo/South West	Rural	7	
	Kofar Sauri	Katsina/North West	Urban	12	
	Majigiri	Katsina/North West	Rural	12	

	Holy Ghost College area/World Bank	Imo/South East	Urban	3	
	Assa	Imo/South East	Rural	12	
In-depth interviews with Mothers/Guardians of Adolescent Mothers	Odige/Otutubiosun	Ondo/South West	Urban	4	20
	Aponmu- Akure	Ondo/South West	Rural	4	
	Kofar Sauri	Katsina/North West	Urban	4	
	Majigiri	Katsina/North West	Rural	4	
	Holy Ghost College area/World Bank	Imo/South East	Urban	1	
	Assa	Imo/South East	Rural	3	
Key informant interviews with Community Leaders	Odige/Otutubiosun	Ondo/South West	Urban	1	5
	Aponmu- Akure	Ondo/South West	Rural	1	
	Kofar Sauri	Katsina/North West	Urban	1	
	Majigiri	Katsina/North West	Rural	1	
	Holy Ghost College area/World Bank	Imo/South East	Urban	--	
	Assa	Imo/South East	Rural	1	
Key informant interviews with Senior Health Workers	Odige/Otutubiosun	Ondo/South West	Urban	1	6
	Aponmu-Akure	Ondo/South West	Rural	1	
	Kofar Sauri	Katsina/North West	Urban	1	
	Majigiri	Katsina/North West	Rural	1	
	Holy Ghost College area/World Bank	Imo/South East	Urban	1	
	Assa	Imo/South East	Rural	1	

Source: Field Study 2018-2019

5.2 Respondents' Sociodemographic Characteristics

Information about the respondents in the qualitative phase of the study gives insight into how their personal characteristics influenced their experience of pregnancy, as well as their healthcare usage. A total of fifty-five in-depth interviews were conducted with adolescent mothers across the six rural and urban study sites across Nigeria. Table 5.2 shows the sociodemographic characteristics of all adolescent mothers interviewed during the qualitative data collection process. The table presents the respondents' region and place of residence, community, enumeration area code, age, ethnicity, marital status, and educational level.

Table 5.2

Respondents' Sociodemographic Characteristics

Sociodemographic characteristics		Frequency	Percentage (%)
Age	15-17	13	23.6
	18 and above	42	76.4
Educational status	None	17	30.9
	Primary	28	50.9
	Secondary	10	18.2
Religion	Christian	31	56.4
	Muslim	24	43.6
Marital status	Never married	15	27.3
	Married/cohabiting	36	65.4
	Formerly married/cohabiting	4	7.3
Ethnicity	Yoruba	14	25.4
	Igbo	15	27.3
	Hausa	21	38.2
	Fulani	3	5.4
	Minority tribes	2	3.6
Place of residence	Rural	31	56.4
	Urban	24	43.6
Region of residence	South West	16	29.1
	South East	15	27.3
	North West	24	43.6

Source: Field Study 2018-2019

Table 5.2 presents the sociodemographic characteristics of participants in the qualitative study. The majority of adolescent mothers were above age 18 (76.4%). About half of participants had primary education (50.9%), while 30.9% had no formal education, and 18.2% had secondary education. More than half of adolescent mothers were Christians (56.4%). The majority of participants were married or cohabiting with their partners (65.4%), while 27.3% of adolescent mothers had never been in union, and 7.3% were formerly married or cohabiting with their partners. The highest proportion of adolescent mothers were Hausa (38.2%), followed by Igbo (27.3%), Yoruba (25.4%), Fulani (5.4%) and minority tribes (3.6%). More than half of the respondents lived in rural areas (56.4%). The highest proportion of respondents came from the North West zone (43.6%), followed by the South West (29.1%) and South East (27.3%).

5.3 Themes Arising from the Qualitative Analysis

The main themes derived from the study on adolescent mothers' pregnancy experiences were:

- Experience of stigma (present/none)
- Social and emotional support (present/absent); presence of financial support (present/absent); community support (present/absent)
- Prevalence of adolescent pregnancy (common/not common)
- Perception of adolescent pregnancy (positive/negative); cultural beliefs and practices associated with adolescent pregnancy (present/absent)
- Pregnancy intention (unplanned/planned)
- Gender and power relations (favourable/not favourable); healthcare decision-making (able to participate/unable to participate)

- Programmes of action for adolescent mothers' maternal healthcare needs (present/absent)
- Suggested healthcare for adolescent mothers (modern/traditional/complementary)
- Suggested family support (necessary/unnecessary); suggested community support (necessary/unnecessary)
- Patterns of maternal healthcare utilisation among adolescent mothers: antenatal care use (non-use/incomplete use and late ANC initiation/full use); type of birth attendant (none or unskilled/traditional birth attendant or mission house/skilled birth attendant); postnatal care use (none/immunisation only/full use for both mother and baby).
- Factors influencing maternal healthcare utilisation among adolescent mothers: cost of healthcare services (affordable/unaffordable); health worker attitudes (positive/negative)

5.4 Adolescent Mothers' Pregnancy Experiences in Nigeria

5.4.1 Pregnancy Intention

5.4.1.1 Unplanned pregnancies

There were several accounts of unwanted pregnancies among respondents, especially among unmarried mothers. They referred to the pregnancies as “mistakes”, saying that they had no plans to get pregnant, but found themselves in that situation; their responses show that the pregnancies interrupted their plans for their lives. Also, they showed a lack of awareness of the

risk of becoming pregnant, due to the surprise they expressed when they found out they were pregnant, despite engaging in unprotected sexual activity.

When my partner and I started dating, we didn't plan to have children. Our plan was for me to be apprenticed to learn a trade. I had just finished my Secondary school education and my partner had finished his training as an apprentice, so the plan was for me to do the same. He was the one that was responsible for my training before I got pregnant (AK03, 19, single, SW, Ebira, urban, Christian, secondary).

It was not intentional, and I couldn't abort it because I was afraid of dying. When it happened, I approached his mother, and she said I should abort the baby, but I told her I couldn't do so. I was ready to bear the suffering that could come along with the pregnancy, so I left our town and came here to hustle (AK05, 19, single, SW, Yoruba, urban, Christian, primary).

The response below shows how a family disruption can increase the risk of pregnancy among adolescent girls. The additional stress of going to live with her grandmother in a new location could have made her more vulnerable to becoming pregnant.

No, it (the pregnancy) was not planned, it just happened. I had just lost my father then...I was staying with my grandmother (AP03, 18, single, SW, Yoruba, rural, Christian, primary).

However, there was a married adolescent mother who showed surprise at her pregnancy as she was not expecting to be pregnant so soon after her marriage, also showing a lack of understanding of how pregnancy is the natural outcome of unprotected sexual activity.

I never expected to be pregnant when I got married and it was just sudden (KT06, 19, married, NW, Hausa, urban, Muslim, basic).

5.4.1.2 Planned pregnancies

The majority of married adolescent mothers were more accepting of their pregnancies, compared to their unmarried counterparts, as they likely wanted to prove their fertility as quickly as possible within marriage. There was only one unmarried adolescent mother who reported a wanted pregnancy, as she said that she used her pregnancy as a means to escape an arranged marriage that her parents were trying to force her into accepting.

I planned to get pregnant for my boyfriend because my parents were trying to force me to marry someone else...so I thought if I get pregnant, they would not be able to force me to marry the man of their choice (AP02, 22, single, SW, Igbo, rural, Christian, secondary).

Among most married respondents however, there was the expectation of being pregnant, and looking forward to the pregnancies.

Yes, it (the pregnancy) was (planned) as I am in my husband's house...we decided it was time to have a child (AS05, 17, married, SE, Igbo, rural, Christian, secondary).

I got pregnant immediately after marriage, and yes, I wanted to be pregnant immediately (KT09, 22, married, NW, Hausa, urban, Muslim, basic).

Whoever gets married must expect pregnancy, so I expected it (MJ03, 18, married, NW, Hausa, rural, Muslim, no education).

5.4.2 Experiences of Stigma

5.4.2.1 Reported cases of stigma

Some adolescent mothers in the study reported experiencing stigma from community members, which was mainly in the form of verbal abuse. Stigma was more common among unmarried adolescent mothers, who were ridiculed for becoming pregnant while still living with their parents. The cases for most concern included the mother who reported that her classmates came to her home to verbally abuse her because of she had fallen pregnant, as well as the mother who was advised to go and abort her pregnancy by a total stranger in the street, despite being married. These responses show that adolescent pregnancy is highly stigmatised, which places an increased burden on young mothers who are already going through a psychologically difficult time.

Somebody came to tell me that some people had said I had nothing to eat...that I was impregnated and the person responsible weren't taking care of me. That I was sent to school but became pregnant. I have also fought with someone in this area when she asked me why I was pregnant, when I should be in school, so I fought with her over why she would say such a thing to me (AK04, 19, single, SW, Yoruba, urban, Christian, basic).

Though I just finished my basic exams to go to senior secondary school, when the incident happened my classmates came to my house and were verbally abusing me (AP07, 17, cohabiting, SW, Yoruba, rural, Christian, basic).

Someone met me on the road and told me to go and abort my pregnancy, that I was too young to be pregnant...he didn't know I'm married (AS12, 19, married, SE, Igbo, rural, Christian, basic).

5.4.2.2 No experience of stigma

Responses showed that adolescent mothers who were married or cohabiting with their partners did not experience stigma. Also, being able to hide a pregnancy prevented stigma for one respondent, as she reported that she was able to escape stigma as no one knew she was pregnant because she started showing quite late.

The pregnancy did not even begin to show until the sixth month so people did not know I was pregnant, so I did not really experience stigma. But I know adolescent pregnancy is seen as a shameful thing here. People (verbally) abuse teenage mothers (AK06, 19, cohabiting, SW, Yoruba, urban, Christian, basic).

The community members are treating me well, they are supportive...nobody is saying bad things to me or (verbally) abusing me (AP05, 17, cohabiting, SW, Igbo, rural, Christian, basic).

5.4.3 Prevalence of Adolescent Pregnancy

Generally, adolescent pregnancy was considered common by community leaders, older mothers and health workers from most regions, except in the rural South West region where it was seen as being not very common. It could be that where adolescent pregnancy is less common, stigma arises due to the fact that pregnancy among young girls is against the norm, especially from those who serve as gatekeepers in the community.

It is very common. There are some girls who are still in the junior secondary school who get

pregnant in this community (AK Community Leader, SW, urban).

It is very common here... I don't really think anything about it (AS Mother 03, SE, rural).

Adolescent pregnancy is very common here (KT Senior Health Worker, NW, urban).

It is very common, they come for antenatal care. In fact, just yesterday two of them came to deliver their babies here (MJ Senior Health Worker, NW, rural).

Well, well, a lot of them! Some of them are "social mothers", some are married. We have many of them here, most of the time 20,21,19,18. Those ones are mostly "social mothers" (unmarried girls) (OW, Senior Health Worker, SE, urban).

It is not so common, because these young girls are still in school or unemployed (AP Community Leader, SW, rural).

5.4.4 Perceptions about Adolescent Pregnancy

The study revealed different opinions of adolescent pregnancy, from mothers, community leaders and health workers. Perceptions ranged from negative to positive, as well as cases of indifference. Health workers' perceptions of adolescent pregnancy arose mainly from the physiological point of view, as these more experienced others were concerned about adolescent mothers' biological immaturity and not being ready for labour.

5.4.4.1 Negative perceptions

These older women saw adolescent pregnancy as a problem, because they felt that girls are too young to have to deal with pregnancy. Some saw it as an interruption to the trajectory of girls' lives. Also, they considered the pregnancy of unmarried girls to be against the norm, and shameful; one mother suggested an acceptable age from which girls could begin to get pregnant without complications.

No, the people in this area do not see it as a normal thing. You know with some people; it is the life their child wants. I have an experience. It depends on the type of life a child wants and they cannot force the child. There are some children who, after several warnings, do not answer and there's nothing anybody can do, but look. But it's not something the community accepts or is happy about (AK Community Leader, SW, urban).

It is a very shameful thing here for one's daughter to get pregnant without marriage.... although it is very rare in our community and God forbid, we don't wish it (MJ Community Leader, NW, rural).

Well...in my own thinking I can say...if I'm to talk...hmmm...pregnancy and marriage supposed (sic) to be for matured people.....like though that 19 years is good...from that 19 years down...like 18 is good...but from 16...it's not good. There are some people they usually take pregnancy like that...but for me...it is good to take in from 18 or 19 years up (AS Mother 01, SE, rural).

Yes, they have higher risks because those older pregnant mothers, their systems are more well developed. These teenagers to me, it's not advisable, even for somebody to be mature enough as

a woman to be pregnant one should be between 22 to 25. But these kinds of people, their system is not developed, it's not well developed so they are at risk and even they will not cooperate. They cannot bear it because all the pain, labour, even during pregnancy as well (AP Senior Health Worker, SW, rural).

5.4.4.2 Positive perceptions

Some of the older women interviewed said that adolescent pregnancy could be desirable as girls give birth at a younger age and move on with their lives. There was also an indifferent response from a community leader, as she shrugged off adolescent pregnancy as something that was a normal occurrence in her community. Overall, these older mothers reported that adolescent pregnancy was even desirable; however, the caveat was that it was only acceptable for married adolescent girls.

I don't think anything when I see a pregnant girl.... here it is normal...I don't have any problem with it (AS Community Leader, SE, rural).

You know that those children, when they get pregnant, someone older will have problems in pregnancy but children of nowadays when they will give birth one won't even know. There is no problem as long as they go to the hospital regularly and they do check-up (AP Mother 02, SW, rural).

I think it is better for a young girl to be married early than for her to be without a husband at a later age. If a girl becomes pregnant, and the father of the baby accepts it, that is fine. The

problem only arises when the father denies paternity, and the girl has to remain with her parents
(AP Community Leader, SW, rural).

There is nothing wrong about it, even our parents some of them they married early and they gained so many things from there. You will see them and see their children and you will not even see the difference. They will be young and their children will grow up together. When you see them in future, they will be able to gain so many things before they age... For unmarried girls it is not good now, the person should finish school before marriage...but if she is in her husband's house, then better, it is good, there is nothing wrong in that one **(OW Mother 01, SE, urban).**

5.4.5 Gender and Power Relations

5.4.5.1 Decision-making

Due to their young age, it is expected that adolescent mothers are dependent on others to make decisions for them concerning their daily lives. Responses here show that some adolescent mothers are able to participate in daily decision-making, while others rely on their partners or other family members to make decisions for them.

Participating in decision-making

Some of the respondents reported being able to make decisions concerning their daily lives in conjunction with their partners.

We usually make decisions together...but if I disagree with him, he will say that I should do what he wants **(AK01, 20, cohabiting, SW, Idoma, urban, Christian, secondary).**

I do what I want. He allows me to do what I want and I also follow his instructions too (AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).

If I want to do anything, I tell him and he tells me if it's good or not and if he also wants to do something, he tells me. We both discuss about it (AP07, 17, cohabiting, SW, Yoruba, rural, Christian, basic).

Both of us used to discuss before we make any decision...He used to allow me to go out as I liked...but he did not allow me to spend money freely (AS08, 20, single, SE, rural, Igbo, Christian, basic).

Non-participation in decision-making

These respondents reported that within the household, they relied on their partners or family members to make decisions for them, even concerning their healthcare use.

My husband takes major decisions. I only give my advice and make suggestions to him, but he makes the final decision. Decision concerning my daily life is made by him. He provides everything I need (KT12, 18, married, NW, urban, Fulani, Muslim, no education).

No...he tells me what to do and I do it...even when I was pregnant, he told me how to use healthcare...if I want to go out, I take permission from him (AK09, 21, cohabiting, SW, urban, Yoruba, Christian, secondary).

Only my partner makes the decisions in the house (AS01, 19, cohabiting, SE, rural, Igbo, Christian, basic).

In this house, my husband and my mother-in-law make all the decisions...they tell me what to do
(OW01, 18, married, SE, Igbo, urban, Christian, secondary).

5.4.5.2 Emotional and physical abuse

There were a few accounts of emotional and physical abuse that adolescent mothers suffered at the hands of members of their partners' families during the course of their pregnancies. One of the adolescent mothers could trace the reason for the abuse as she reported that her partner's mother did not accept the fact that her son was responsible for the pregnancy.

My partner's family don't behave well to me...If I feel too weak to carry out certain tasks, my mother-in-law shouts at me **(AS12, 19, cohabiting, SE, Igbo, rural, Christian, basic).**

My partner's mother said over her dead body would she accept the child because my child was a bastard.... she used to insult me and she slapped me once **(AS07, 17, single, SE, Igbo, rural, Christian, basic).**

Yes... his sisters used to insult me...one of them beat me up once **(AS03, 17, formerly cohabiting, SE, Igbo, rural, Christian, basic).**

5.4.6 Social and Emotional Support

5.4.6.1 Presence of support

Although a few adolescent mothers reported emotional and physical abuse, there were those who reported receiving social and emotional support from their close family, friends and neighbours. Having emotional support was extremely helpful for adolescent mothers, and most

of those who reported emotional support, also made use of maternal healthcare during their pregnancies. Some participants got emotional support in the form of care, concern and advice from their families, and this family support provided a cushion for them through their pregnancies. One respondent who was divorced reported that, although she was abandoned by her partner and his family during her pregnancy, she was able to cope because her parents took her in and cared for her. Some also reported financial support from their families, through which they were able to take care of their needs and pay for healthcare costs.

Support from own family

Some adolescent mothers reported that their families had provided a safe haven for them during their pregnancies by caring for them, and meeting all the financial costs incurred during the period, including paying for healthcare.

My brothers gave me money, also my baby's father gave me money. My family treated me well, they did not maltreat me because of the pregnancy.....Also, my aunties were there for me, they gave me advice and moral support as well as money (AS02, 19, single, SE, Igbo, rural, Christian, primary).

My parents helped me during and after pregnancy. My husband and his people did not care at all (KT05, 19, divorced, NW, Hausa, urban, Muslim, basic).

My husband, parents and my in-laws helped me during my pregnancy (KT10, 19, married, NW, urban, Hausa, Muslim, basic).

Partner support

Financial and emotional support from their partners was an important enabler of maternal health access and utilisation for adolescent mothers who were either married or living with their partners. Those who had partners who financially supported them were able to pay for the cost of healthcare. Also, being able to rely on their partner's care and concern during their pregnancies helped them cope better.

Yes, there are times he's concerned about my health and he comforts me (AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).

It was my husband that was taking care of me...He abandons his work and take care of me sometimes (KT08, 18, married, NW, Hausa, urban, Muslim, basic).

It was my partner that was taking care of me since no one in my family knows that I'm pregnant...he took care of me until I moved here in the 5th month (OW03, 19, cohabiting, SE, Igbo, urban, Christian, secondary).

Some adolescent mothers reported that their partners provided financial support for their needs as most young mothers were not engaged in economic activities. This support enabled them to take care of their person and healthcare needs during pregnancy as well as afford healthcare costs.

My baby's father was the one giving me money as I was staying with him (AK06, 19, cohabiting, SW, Yoruba, urban, Christian, basic).

He provides for me, my food, shelter and even transportation to the hospital. In fact, everything concerning me, he always provides (KT09, 22, married, NW, Hausa, urban, Muslim, basic).

During my pregnancy my husband took care of me, provided for my needs very well together with his parents (MJ05, 15, married, NW, Hausa, rural, Muslim, none).

My husband and my mother-in-law are the ones who give me money for my needs, including hospital (OW01, 18, married, SE, Igbo, urban, Christian, secondary).

Support from friends

The study also found that friends were a valuable source of additional social support for young adolescent mothers, as a few mothers reported that their friends kept them company and gave them advice during their pregnancies.

My friends provided emotional support for me, they were giving me advice and keeping me company (AS02, 19, single, SE, Igbo, rural, Christian, primary).

My friends that I met here have been counselling me, talking to me and giving me advice (OW03, 19, cohabiting, SE, Igbo, urban, Christian, secondary).

Partner's family

Some adolescent mothers reported that they obtained support from their partners' families. However, these were mainly those whose in-laws had accepted their pregnancies.

My in-laws have been relating with me very well. They advise me and they have not been fighting with me (AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).

My husband and my mother-in-law are the ones who give me money for my needs, including hospital... My mother-in-law has been taking care of me in my pregnancy...she tells me what to eat and she gives me advice (OW01, 18, married, SE, Igbo, urban, Christian, secondary).

Yes, they did...they treated me well...they gave me things for myself and the baby (AS03, 17, formerly cohabiting, SE, Igbo, rural, Christian, basic).

Yes, I was taken care of very well, especially when the pregnancy was early. I was assisted with house work, as the pregnancy advanced, I was encouraged to do more exercise...my husband's sister and nieces have been helping me with house chores (KT02, 19, married, NW, Hausa, urban, Muslim, no education).

Maternal support

For adolescent mothers who were unmarried, the role of maternal support was considered an important one, as emotional support from their mothers made their pregnancy easier, and maternal financial support was often cited as an enabler for using healthcare. One respondent reported that her mother had been responsible for her welfare since her child's father left her to fend for herself and the baby.

When my mother eventually accepted that I was pregnant, she took care of me and she was not harsh with me (AK08, 19, single, SW, urban, Yoruba, Christian, basic).

I was living with my mum...she was the only one taking care of me (AS10, 18, single, SE, Igbo, rural, Christian, basic).

My baby's father does not give me money. It's my mother that takes care of me because we did not plan to marry each other. The whole thing was a mistake. Our plan was to hand over the child to the father when he is old enough but we cannot marry (AK04, 19, single, SW, Yoruba, urban, Christian, basic).

Community support

Some adolescent mothers reported that they got emotional support mainly from older women who were their neighbours. This support was generally in the form of advice, such as how to take care of themselves during their pregnancy, and how to restructure their lives following the birth of their babies. Respondents who reported receiving community support were generally unmarried adolescent mothers who were living with their partners.

There were a few neighbours as well my boyfriend's family members that were giving me advice on how to cope with the pregnancy (AK09, 21, cohabiting, SW, urban, Yoruba, Christian, secondary).

I had many people who advised me. A woman told me that since this mistake had happened, because I was an apprentice when it happened and I couldn't go to work again...she advised me that I shouldn't repeat such a mistake again, but face my work squarely (AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).

There was one woman who was living near my partner's house...she used to counsel me...telling me that my pregnancy was not the end of the world (AS03, 17, formerly cohabiting, SE, Igbo, rural, Christian, basic).

5.4.6.2 Lack of support

On the other hand, there were respondents who had stories of abandonment and a lack of support from their families, friends and the wider community. They were generally left to their own devices to a large extent, for various reasons, which were obtained in the course of the interviews.

The adolescent mothers below reported receiving little to no support from their partners during their pregnancies. These adolescent mothers reported no support from their partners, either due to abandonment or inability to provide; for example, the respondent whose father asked her partner to stay away from her and the baby. In cases like these, the adolescent mothers had to rely on their families and other sources for support.

If I'm weak or have personal complaints, he does not care. He is only concerned about the child (AK03, 19, single, SW, Ebira, urban, Christian, secondary).

He has abandoned me, saying that it was my parents that didn't agree to accept him, and since then he has not been calling or taking care of me or the baby (AP04, 21, single, SW, Yoruba, rural, Christian, secondary).

He has not been catering for the child since pregnancy because he was still an apprentice and I

didn't disturb him (AK05, 19, single, SW, Yoruba, urban, Christian, primary).

The respondent below reported that she was abandoned by her partner and his family after his mother died. According to the respondent, her partner's mother had been the only person who had shown an interest in her and the pregnancy.

His people didn't ask for the child after I gave birth. His mother died about four months ago and since then, nobody has asked after me. His mother usually asked after me when she was alive, but since then none of his older siblings have called. They don't ask after the baby nor talk to me (AK08, 19, single, SW, urban, Yoruba, Christian, basic).

While other respondents said that their friends offered them moral support during their pregnancy, the respondent below rather had her ex-classmates come to her house to verbally abuse her when they learnt of her pregnancy.

Though I had just finished my basic exams to go to senior secondary school, when the incident happened my classmates came to my house and were verbally abusing me (AP07, 17, cohabiting, SW, Yoruba, rural, Christian, basic).

Also, despite several participants reporting that their mothers were sources of support during their pregnancies, some respondents reported that their mothers kicked them out during their pregnancies and they were left to fend for themselves.

My mother said I should pack and go to the person responsible for my pregnancy and I went to live with him (AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).

My mother did not treat me well during my pregnancy...she kept me at arms' length (AK06, 19, cohabiting, SW, Yoruba, urban, Christian, basic).

5.4.7 Cultural Beliefs and Practices Associated with Adolescent Pregnancy

Generally, the study found that there were no cultural practices associated with adolescent pregnancy in the South West and urban South East. In the rural South East, the fattening room practice was mentioned, though it appears to be dwindling in modern times. A respondent described the fattening room as a place where adolescent mothers would be taken care of and fed a special diet which is meant to ensure the baby is healthy at birth. In the North West, the use of special herbs at certain times in the pregnancy to ensure safe delivery was mentioned in both urban and rural areas. Also, a health worker reported the role of traditional beliefs and superstitions about food choices for pregnant mothers and how this could result in anaemia especially for pregnant adolescents, if they are forced to adhere to these dietary restrictions.

Traditionally, teenage girls are taken to a fattening room when they are 8 months pregnant. It is a holy place where the girl is taken good care of so that the baby looks good when she gives birth. However, this is done for only the married teens and not the unmarried ones (AS Mother 03, SE, rural).

We gave her some traditional herbs like "yadiya" to aid the flow of what we call "zaki" (amniotic fluid) - during labour in pregnancy. When the pregnancy reaches 7 months, we give them these herbs which help bring out what we called "zaki" during pregnancy to help during labour and delivery (KT Mother 04, NW, urban).

I know that culturally there are what we call old wives' tales, what their grandmothers tell them. So many of them will be told, "Do not eat this, do not eat this, do not eat this". We try to debunk that information, some of them don't even... their mothers or their mother in-laws or their care takers will tell them, "You don't eat fresh fish, you don't take Bournvita, you don't take Ovaltine, you don't take groundnuts, you don't take bush meat". So, all these things are things that will beef up their health status, so when we find out, we try to tell them the right thing to do, but culturally in Igbo land, that is what their mothers tell them... Like, when they say you should not eat Bournvita, they say when you take Bournvita or Ovaltine during pregnancy you will have bleeding, so they will not eat it, some of them will say, if you eat bush meat like the one we call Nchi, you know it's a slow-moving something. When you take it, the baby will be delayed, when you take fresh fish, because it is frozen, it may delay the delivery of the baby; when you take something like groundnuts your baby will be vomiting excessively after delivery. So many of them, some of them will even say they should not eat eggs so that their children will not steal. So that is the kind of information... and it's wrong, very wrong. With that kind of people abstaining from such essential foods, you know the implications. That's why when they register lately, you find out most of them come here with anaemia, because of the abstinence of all those beneficial foods, so it's a very ugly practice (OW Senior Health Worker, SE, urban).

5.4.8 Suggested Types of Healthcare for Adolescent Mothers

Mothers and community leaders alike recognised the importance of maternal healthcare for adolescent mothers, though their opinions concerning the acceptable type of healthcare were mixed, and were heavily influenced by the healthcare preferences in their communities.

5.4.8.1 Modern healthcare

These older mothers were of the opinion that modern healthcare was best for pregnant adolescent girls. The community leader from the urban North West, while considering the role of traditional birth attendants, suggested a linkage between them and the health facilities in referring problematic labour cases to the health facility.

She needs to be taken care of because a young child cannot be compared to someone who has given birth before or who is mature before giving birth. There is an age to give birth and those do not need special care like the young girls who don't even know about pregnancy. Some children's wombs are still small and it is not convenient for them to carry the baby and for babies to come out of their vagina is difficult, so they need special care. They need to go to the hospital, care for the food they will eat so that they will not be injured or die in the course of giving birth (AK Community Leader, SW, urban).

We don't give them traditional herbs because the hospital has emphasised the dangers of using them. Even those that initially use the traditional practice now adopt the modern care practices. Now even when they see signs of labour, they go to the hospital at the right time to avoid giving birth at home. Now the "ingozoma" (local birth attendants) have our numbers to call in cases of complication when giving birth at home. We are called and we respond immediately with our car to take them to the hospital (KT Community Leader, NW, urban).

They need special care ... even any pregnant woman, whether adult or old or young, needs special attention under pregnancy because you know a lot is involved. Carrying somebody within you,

you must get special treatment or attention in order that you will deliver safely and not die along the line. When people that are teenagers are involved, you are supposed to take good care of the person, are supposed get a good gynaecologist, a good doctor.... They cannot use traditional medicine anyhow, because it is dangerous unless a person that is a specialist. They can now take good care of them, together with the nurses. Not that you can go to any native doctor (sic) and say 'give my child or my daughter in-law medicine, she's pregnant', no it's not advisable... it is not good. Except if it's a specialist (OW Mother 01, SE, urban).

5.4.8.2 Traditional medicine

Some older mothers suggested using traditional medicine for pregnant adolescents, with the health facility serving as a back-up plan, only when absolutely necessary. The mother from the North West region suggested home delivery which, from other interviews carried out in the region, was a common alternative to facility delivery. The other mother suggested the use of the “mission house” as she believed that using the hospital was too expensive, and as she was fearful of the possibility of a Caesarean section for her daughter. This was her preference, as her previous responses suggested that in her own time, she also made use of the “mission house” for all her maternal healthcare needs. Her responses show that she did not know the reason behind the Caesarean section carried out on her other daughter.

We get them from the ancient trees we know (leaves and roots and stems) and give her. But if she didn't get well, we take her to hospital...Everything belongs to God, but I prefer home delivery, but if she also delivers at hospital it is ok too, we will be glad. Everywhere its God's doing and He is the one assisting us (MJ Mother 02, NW, rural).

What happened is this, when her sister was pregnant, she delivered through CS so my father said I should take this one to the church so that her case does not become like her sister's. So, I thought that if I take her to the hospital, they will want to do CS for her and in the former governor's time, they don't collect money from us, but now if she delivers in the hospital, there is an amount of money that they will collect. When I asked they said it's #30,000 and I determined in me that there's nothing God cannot do and I believed that she will deliver safely and I told her to be going to the church and we both prayed together day and night and God took control.....If the child has some illnesses, after the baby is a week or two old, by three weeks they take the child to herb sellers to give the child the herb mixture to make the child okay, so everything that needs to come out will come out through the faeces (AK Mother 01, SW, urban).

5.4.9 Suggested Community Support for Adolescent Mothers

Some older female respondents suggested that both emotional and financial support should be given to adolescent mothers by their communities to help them through the pregnancy period. Emotional support as suggested by respondents is in form of concern and advice for young girls, especially for the unmarried ones. For these mothers, their responses show that they believe adolescent pregnancy is of concern to the whole community; hence, community members need to step up and support young mothers.

People did not really support adolescent mothers in the past, but now if one can help them financially, or give them advice and moral support when they need it, that is fine...we should draw them closer and not avoid them (AP Community Leader, SW, rural).

If I have the means, I will assist and I will encourage people to assist such women. I know destiny and every good Muslim knows it. It can happen to anyone, either good or bad. Whatever happens to a person, he or she must accept it (MJ Community Leader, NW, rural).

Just give them advice and tell them if they have made that mistake, they should not try it again, because it is not advisable: if they are not yet married and go and get pregnant it is not good.... you have done this one, don't try it again, either you go back to school or you find something to do until you are aged, get something to support yourself..... You can give them financial support, give them good food (OW Mother 01, SE, urban).

However, community support was non-existent for adolescent mothers in the rural South East, with suggestions that their families alone should take care of them. These responses show the belief that adolescent pregnancy is not a community concern, and it is believed that families should take care of their pregnant daughters.

I can't suggest any form of support for adolescent mothers...because I don't know them (AS Community Leader, SE, rural).

This community has no concern for pregnant girls...their parents bear full responsibility for the care of their pregnant daughters (AS Mother 03, SE, rural).

5.4.10 Suggested Family Support

Mothers and community leaders alike suggested that adolescent mothers need to be supported by their families, given adequate healthcare and enabled to go back to school or learn a vocation

so that they can still have a good quality of life. Suggested support includes providing advice and care for adolescent mothers, and encouraging them to learn skills that will make them economically productive in the future. Responses also show that such support is expected from the parents of pregnant adolescents, especially the mothers.

What happened is that, if everybody will be like me, I will tell the mother to help her child and pray for her because everything is destined. One can join others to abort and it turns to something else. Such a mother will be blamed (sic) that why didn't she leave her and how long will it take a baby to grow up? So, I can tell them not to abort, but help the child with prayers. After the delivery, if the girl wants to go back to school or learn a skill, they should give her the grace of up to six months after delivery..... Parents need to embrace their children if they make mistakes because a girl might think of poisoning herself and die (AK Mother 01, SW, urban).

If she is unmarried...the parents will look after the person ...that's how we are doing it (AS Mother 02, SE, rural).

Initially if it is a first pregnancy, a girl can be shy, but we can explain to her husband that she needs to go for ANC. And now it is a Western education era, most of the girls (sic) went to school, so they may not feel shy to ask the husbands to allow them to go for ANC. And we as elders advise them, "Whenever you feel sick, just look for assistance" (MJ Community Leader, NW, rural).

5.4.11 Programmes of Action for Adolescent Mothers' Healthcare

Information was gathered on the presence of any programmes of action designed for adolescent mothers in the health sector. From the responses of the health workers, it was deduced that

there are no official programmes designed for attending to adolescent mothers. Individual health workers used their own initiative and discretion to decide on how to attend to adolescent mothers when they came for healthcare in their facilities, and they come up with solutions to whatever challenges are associated with their clients' healthcare requirements. The health workers also narrated that they try to educate pregnant adolescents about the necessity of antenatal care and how to prevent pregnancy-related conditions like anaemia and various infections, plus HIV as well the importance of family planning.

Not as such, but the only thing we target is that anytime we find pregnant women, the basic health centre, it's generally for every individual and for as many that come in, we don't have anything special. Our own motto is if we see them, we embrace them, we counsel them, we support them morally, physically and everything. We guide towards the prevention of anaemia, infection, and everything. Then we accommodate them so that they will not feel shy to ask any questions about anything they are passing through and we encourage them to deliver in the hospital. We must make sure that episiotomy scissors, everything that they need during delivery, anytime they come, is always ready so that we can give them a safe delivery (AP Senior Health Worker, SW, rural).

No, we do not have that...however primagravidae are given special care and encouragement as well as support. We educate them on labour and delivery, as we know they are new to these things. We also monitor them closely because of the risk of eclampsia. We give them special education and explain pregnancy challenges as well as labour and the postnatal period. We also do a general examination to ensure that there are no abnormalities because these young girls

know less about their bodies (sic) than older girls do. Sometimes they may have STDs or congenital defects. Antenatal care involves a comprehensive health check and also involves treating opportunistic infections...We have public health workers who go out on outreach to the community to educate them on the importance of ANC and such. We also give health talks to adolescent mothers and try and recruit them as peer health educators to their neighbours and family members (KT Senior Health Worker, NW, urban).

We educate them to avoid habits like drug abuse. We also advise them on the importance of antenatal care when they come, and also HIV. Also, we have volunteer staff who go into the community to educate women on the necessity of antenatal care and delivering in the health facility. They also tell them to come for programmes like family planning (MJ Senior Health Worker, NW, rural).

5.5 Maternal Healthcare Utilisation

Information gathered from the study highlighted how adolescent mothers make use of antenatal care, the type of birth attendant that they chose, and postnatal care use, as well as the reasons behind their choices. Adolescent mothers chose different types of healthcare providers. Some reported using the services of traditional healthcare providers; others used modern healthcare solely, and the rest combined both methods to different degrees.

5.5.1 Antenatal care use

Non-use

Two of the respondents below reported that they were unable to use the health facility because they could not pay for maternal healthcare costs due to a lack of financial support. Two of the respondents used traditional practitioners rather than going to the health facility. One of the respondents narrated that she only went to do an ultrasound scan to ensure all was well with the baby, and she only went back to the health facility for delivery.

I didn't go to the hospital, I went to the 'mission'...because I was told that hospitals are expensive, and I could not afford the cost (AK02, 16, single, SW, Yoruba, urban, Christian, basic).

I am not going (sic) anywhere, because that time (sic) no help, nobody is helping me (sic) (AS09, 19, widowed, SE, Ibo, rural, Christian, basic).

I never went to hospital till the pregnancy was 9 months old. I went for scanning only I used the herbs that they said would make me have an easy delivery (KT03, 18, married, NW, Fulani, urban, Muslim, no education).

Incomplete use and late ANC initiation

There were several reasons given for either incomplete ANC use or late initiation by the respondents. One of the adolescent mothers reported that she had made only two ANC visits as she had an aversion to using modern healthcare due to her dislike of medicines and injections. Another respondent reported that she was unaware of her pregnancy until the first trimester was over, which suggests a poor knowledge of sexual health as she could not detect pregnancy symptoms. Also, her desire to hide the pregnancy for as long as possible suggests the presence

of stigma in her community against adolescent pregnancy. The third respondent exposed some corruption among the health workers. The health worker in this case collected money from her supposedly for her antenatal care treatment, and disappeared. She had to make alternative arrangements with private clinics, and this delayed her start of antenatal care until the sixth month.

I only went for booking and two visits after. The third visit I went was to deliver...because I don't like medicines or injections (AK09, 21, cohabiting, SW, urban, Yoruba, Christian, secondary).

It was up to five months before I started antenatal.... It was because I didn't know on time that I was pregnant. It was up to 3-4 months before I knew and I also didn't want people to quickly know I was pregnant. That's why I didn't go quickly (AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).

The first clinic I went to...the lady took my money and disappeared...she never treated me. That was the government clinic...every time I went there, she was not around and whenever I tried to phone her, I wouldn't get through. Because of this, I had to go a second clinic, but I didn't like the way they were treating me there, so I left. I eventually used a private clinic....so because of the issues, I started in the sixth month...though after I started, I was going regularly for check-ups (AS03, 17, formerly cohabiting, SE, Ibo, rural, Christian, basic).

Full antenatal care use

There were some accounts of full antenatal care use among adolescent mothers. One of the respondents' narrative shows that using modern healthcare was linked to the fact that she preferred to use it, because traditional healthcare was generally used in her community.

Yes....I went for antenatal care. Malaria drugs, folic acid, etc. was given me in the hospital during antenatal. We were told what to eat and not to eat (KT12, 18, married, NW, urban, Fulani, Muslim, no education).

I was not given any traditional herbs except that of the hospital. There your blood pressure is checked and you are given the right drugs which is much preferred. The drugs given to me are the normal routine drugs for pregnant women (MJ01, 15, married, NW, Hausa, rural, Muslim, primary).

5.5.2 Type of Birth Attendant

In this study, adolescent mothers reported on the different types of birth attendants whose services they had made use of during delivery, and these differed based on the region of residence. In the South West, the use of hospitals and “mission” houses were reported. The “mission house” is a type of traditional birth attendant place attached to a church, hence the term “mission house”. The birth attendants there are not necessarily trained nurses; some may be auxiliary nurses or women who have learnt how to manage pregnancy and childbirth by apprenticeship and experience. In the urban South West region, the “mission house” was a popular choice among the adolescent mothers. In the South East, the majority of respondents gave birth in health facilities, either government or privately-owned. In the rural South East, private clinics were preferred for delivery over the government health centres. In the North West region, both health facility delivery and home delivery with the help of traditional birth attendants, family members or unassisted deliveries were common.

Unassisted births and unskilled attendants

The respondent from the South West who had reported unassisted delivery had also previously reported that she had no money to go the hospital and she had no support from her mother. Neither of the two respondents from the North West reported having no money to go to the hospital, so this is more likely a preference than a lack of finance.

I gave birth to the baby in the room and God knows that I don't have money for a clinic. God's miracle happened and I am grateful that I have my baby here. I thank God...I didn't attend the clinic.... My mother assisted me on the day of delivery.... In fact, I had given birth already before I called her.... I gave birth by myself...I only called my mother to help me carry the baby (AK05, 19, single, SW, Yoruba, urban, Christian, primary).

I gave birth at home. I was not given anything to take. The baby and I were taken to the hospital and we were declared healthy (MJ06, 17, married, NW, Hausa, rural, Muslim, no education).

I delivered in my room...no one attended to me, only my husband was around (MJ11, 19, married, NW, Hausa, rural, Muslim, no education).

Mission house and traditional birth attendant

There were several adolescent mothers who reported using traditional healthcare for delivery. In the urban South West zone, an adolescent mother reported delivering in the “mission house” as she said she could not afford to go to the hospital for maternal care services. Also, her narrative showed the importance of religious beliefs in determining the choice of birth attendants which adolescent mothers use, as she used the mission house mainly because she was advised to do so by a midwife who saw a vision about her. The respondent in the South East reported that she was advised to use a TBA by a community member, but she refused to give reasons why when

prompted. The respondent from the North West seemed to indicate that it was a normal practice to deliver with the aid of a TBA and then go to the hospital after delivery for a postnatal check.

I didn't go for any health care because my mother is not financially buoyant so I did not register in any hospital, mission or do any scan. There was a day I visited a friend who had just given birth and the midwife who took her delivery saw a vision about my friend and I, that we should do a special bath for spiritual cleansing. So, when I was in labour, I told my people to take me to the woman. So, it was that woman who helped me on that day when I delivered my baby (AK04, 19, single, SW, Yoruba, urban, Christian, basic).

Throughout my pregnancy I never went to go to the hospital, I used traditional medicine and gave birth with the help of a TBA...it was a woman in my partner's village who advised me to use a TBA (AS01, 19, cohabiting, SE, rural, Ibo, Christian, basic).

I gave birth to a baby girl and I delivered at home and a woman, an "ingozoma" (local birth attendant) in the neighbourhood assisted me at the birth of my baby. After birth, we went to the hospital and we were checked and I was told we were okay and was given drugs for us both (KT10, 19, married, NW, urban, Hausa, Muslim, basic).

Skilled birth attendants

Some adolescent mothers gave birth in health facilities. One participant reported that she was advised to use the hospital by her mother, showing the importance of maternal influence on adolescent mothers' choice of healthcare provider. Another participant chose to deliver her baby at a private clinic because she liked the way the health workers had been treating her during her antenatal care visits, which brings to light how positive health worker attitudes can encourage

adolescent mothers' use of services. However, one respondent was sent back home during labour, and barely made it back to the health facility in time to give birth to her baby. Her response shows a rather nonchalant attitude from the health workers in this particular facility.

I gave birth through CS in the Hospital called Turai Hospital. I was advised by my mother to go to the hospital anytime I don't feel alright to avoid complications **(KT12, 18, married, NW, urban, Fulani, Muslim, no education).**

On my day of delivery, I took a motorcycle there. I had gone there around 1.00 am and they said there's nothing wrong with me, and that the baby was just disturbing me. I returned home, but by 8.00 am, I saw a "show" and I took a motorcycle back to the clinic and gave birth by 8:24am **(AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).**

I put to bed in the private clinic because I liked the way they were treating me there. The staff were nice to me...they were not rude **(AS03, 17, formerly cohabiting, SE, Ibo, rural, Christian, basic).**

It was noticed, however, that the incidence of Caesarean delivery was fairly common in the North West, as one-third of adolescent mothers in Katsina town who made use of skilled birth attendants reported having CS deliveries. This finding was perhaps explained by the senior health worker in that locality who reported that adolescent mothers often came late to the health centre during labour, after having tried to deliver at home either by themselves or with the help of a traditional birth attendant.

I delivered at General Hospital Katsina, but I underwent surgery (KT02, 19, married, NW, Hausa, urban, Muslim, no education).

I gave birth through CS...I gave birth in the hospital, Turai Yar'adua Hospital in Katsina (KT05, 19, divorced, NW, urban, Hausa, Muslim, basic).

I gave birth at the hospital...I underwent surgery (KT08, 18, married, NW, Hausa, urban, Muslim, basic).

I gave birth through CS in the Hospital called Turai Hospital. I was advised by my mother to go to the hospital anytime I don't feel alright to avoid complications (KT12, 18, married, NW, urban, Fulani, Muslim, no education).

First time mothers are not necessarily high risk, but they may be uncooperative during delivery. Sometimes we call in their relatives so that she can have a sense of safety during labour. They are susceptible to high blood pressure which can lead to Caesarean birth. Often times if they don't attend ANC, they are at high risk of obstructed labour, since we don't know the state of things during the pregnancy. Some of them try to deliver at home, but due to bad presentation of the baby, they have obstructed labour and are brought to the hospital after trying to deliver by themselves (KT Senior Health Worker, NW, urban).

5.5.3 Postnatal Care

The study showed limited use of postnatal care among adolescent mothers in South West and South East, as most of these mothers mainly reported going to the health facility to receive

immunisation for their babies only. In the North West however, postnatal care use was high, as adolescent mothers who gave birth at home would go to the hospital to get medical checkups for themselves and their babies.

Non-use and no immunisation for baby

Some participants reported that they did not use postnatal care, and earlier responses showed that none of them used antenatal care or delivered in a health facility. The respondent from the North West's narrative shows the influence of partners in healthcare decision-making, as her husband did not allow her take the baby to the clinic for immunisation.

I've never taken her to the clinic...even after giving birth to her, she didn't receive any immunisation...it is only when she falls ill that I take her to get injections and I buy drugs for her
(AK05, 19, single, SW, Yoruba, urban, Christian, primary).

After giving birth to him, I didn't take him to any hospital for any check-up or immunisation...I only gave him herbs **(AS01, 19, cohabiting, SE, rural, Ibo, Christian, basic).**

I didn't take him for immunisation because my husband didn't allow that...I only took him to hospital because he had an ear infection **(KT03, 18, married, NW, Fulani, urban, Muslim, no education).**

Immunisation only

Some adolescent mothers reported that they only went to the health facility after delivery to receive immunisation for their babies, and no postnatal checks were done on them. The importance of postnatal care is emphasised with the account of the respondent whose baby had

jaundice and was put on treatment a week after delivery.

I did not go for any check-up after delivery in the hospital, it was only immunisation for the baby
(AS09, 19, widowed, SE, Ibo, rural, Christian, basic).

Yes...sixteen days after delivery I took him to the hospital...he got BCG vaccine and OPV **(KT04, 18, married, NW, Hausa, urban, Muslim, no education).**

Yes, he was given immunisation...They gave my baby different checkups because after delivery, before seven days, my baby had the sickness they call jaundice and it was really serious...but they did not do any examination of me **(AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).**

I delivered my baby at home...The baby was in good health and we went to the hospital to receive all the immunization for the baby **(MJ07, 16, married, NW, rural, Hausa, Muslim, no education).**

Use of PNC for both mother and child

The adolescent mothers from the urban and rural North West reported that they gave birth at home, and then went to the hospital for postnatal care, which was a fairly common occurrence in the region. The adolescent mother from the rural South East was the only one who reported previously that she gave birth in a health facility and after birth returned for postnatal care for herself and her baby.

I gave birth at home. A woman in the community assists me during the child birth. After I gave birth, she advised that we go to the hospital for proper check up to ascertain my health and that of the baby. We were all ok and drugs was given for me and the baby **(MJ05, 15, married, NW, Hausa, rural, Muslim, none).**

I gave birth to a baby girl and I delivered at home and a woman, “ingozoma” (local birth attendant) in the neighbourhood assisted me at the birth of my birth. After birth, we went to the hospital and we were checked and I was told we were okay and was given drugs for us both
(KT10, 19, married, NW, urban, Hausa, Muslim, basic).

I and the baby went back to the clinic for check-up after delivery...like a week and some days after
(AS02, 19, single, SE, Ibo, rural, Christian, primary).

5.6 Factors influencing maternal healthcare utilisation

The results showed that there were a number of factors which influenced maternal healthcare utilisation among adolescent mothers, either by enabling usage or standing as barriers to usage.

5.6.1 Cost of Healthcare Services

Some adolescent mothers cited the cost associated with healthcare as a barrier to accessing services for them. Also evident in some responses, some of the participants lacked information about the actual cost of healthcare services. One respondent was misinformed that the cost of maternal healthcare at a hospital or clinic was beyond her reach, therefore she decided to go to the mission house, despite the fact that mission houses still charge a fee. The community leader in the urban South West corroborates the account of the previous respondent from the urban South West who complained about the cost of healthcare and how accessing it was a problem for her. The accounts of the older mothers show that they know more about the costs of

healthcare, and as such are better able to support their daughters to access healthcare if they have the financial means to do so.

You know, those that use hospitals are those that can afford them, to know their condition...I was told that the hospital was expensive then, so I chose to use the 'mission'...I couldn't afford the cost of the hospital. That was why I decided to go to the 'mission' (AK 02, 16, single, SW, Yoruba, urban, Christian, basic).

I didn't go for any health care because my mother is not financially buoyant so I did not register in any hospital, mission or do any scan (AK04, 19, single, SW, Yoruba, urban, Christian, basic).

I didn't attend the clinic because there was no money (AS10, 18, single, SE, Ibo, rural, Christian, basic).

Those who say they can't go to hospital because of cost are not lying because like Mother and Child, when the former governor was there, it was free and they gave pregnant women free things, but since the new Governor got there, there is nothing. I have a new baby that we took there one day because the baby had a temperature. We needed to buy everything and I spent nothing less than 15,000 Nairas there. So, what of an impregnated girl who has nothing? Where will she get the money? But at the maternity, there are free things and they have time for people from my little experience and if one goes to deliver there, their bill ..., I can't really say, is free but for Mother and Child and State Hospital, their money is not small. People pay like 20,000/ 30,000 Nairas before they give birth so that is why people go to Maternity or the homes of herbal doctors or Missions (AK Community Leader, SW, urban).

Some older mothers reported that the government health facilities did not charge as much in fees as the private hospitals, and so their daughters were able to make use of these facilities for their healthcare needs at a cheaper cost compared to private facilities. These mothers explained their reasons for preferring the government facilities to private hospitals as being based on cost. However, in the rural South East, there was a preference for the private hospitals due to the poor standard of care at the available government health centre in the community.

The money they collect is not much. When my child gave birth, they collected 2,000 Nairas (less than US\$5) from me because the items we were told to bring along on the delivery day were not complete. Their fee is usually 1,000 Nairas (about US\$2) but we didn't take sanitary pads along, that's why we paid 2,000 Nairas (less than US\$5). So, their fees are not expensive (AP Mother 01, SW, rural).

It is not as if the private is not good. It's good but it's likely the money is much and one might not have the money but going to the General Hospital is better and cheaper than private. That is the reason why I said I prefer the General Hospital (AK Mother 04, SW, urban).

If you go to the private hospital and you've been 'customers' with them they don't take much from you.... people around here don't go to the health centre, they use local (private) hospitals (AS Mother 01, SE, rural).

5.6.2 Health Worker Attitudes

The attitude of health workers towards their clients is important in ensuring that adolescent mothers make adequate use of maternal healthcare. Where they were friendly and professional,

mothers found it easy to use healthcare. Some mothers reported having bad experiences with health workers, ranging from being duped to being verbally abused.

Positive attitudes

Some adolescent mothers reported that they had a positive encounter with health workers while they were making use of services. These respondents reported that they had no trouble at all with the health workers who they said gave them good attention and care.

The nurses are friendly and before we start our check-up, they sing with us, do exercises with us. The nurses are good...they don't shout at us (AK03, 19, single, SW, Ebira, urban, Christian, secondary).

The nurses don't shout at me...whatever they want me to do, they simply tell me (OW01, 18, married, SE, Igbo, urban, Christian, secondary).

When I got there to deliver...they did not shout at me that I did not come for antenatal...they just attended to me (AS10, 18, single, SE, Ibo, rural, Christian, basic).

The health workers treat us very well at the hospital (KT11, 19, married, NW, urban, Hausa, no education).

The nurses I know there are friendly, we take each other as family members so it's not like they differentiate one from the other. They accept people with love. They check pregnant women, if it's time for delivery they tell the person to bring her bag and if not, they tell the person to go home and do exercises till it's time. They don't make things hard there (AP Mother 03, SW, rural).

Negative attitudes

However, some respondents had different types of complaints about health workers. These respondents had a variety of complaints about health workers, from absenteeism to corruption and verbal abuse. The community leader reported harsh treatment at the State Hospital, and reports that the health workers in the primary health centres are more accommodating, which makes adolescent mothers go to them, rather than go to the secondary health facility which has more highly skilled health workers. One adolescent mother reported that a health worker collected money from her, supposedly for her antenatal care treatment, and disappeared. She had to make alternative arrangements with private clinics, and this delayed her initiation of antenatal care until the sixth month of her pregnancy. Another respondent reported that a nurse's carelessness made her lose her previous baby at the government health centre.

We have a health centre here...but that health centre is not functioning well...because the nurses there...I can say...because since I stopped giving birth now...many people used to go to local hospitals because of what they see there...some may go there and not see the nurses...the nurse may be on duty but she won't be there...like there was one of my relatives...she was pregnant and she registered at the health centre...but on the day of delivery she went there more than 3 times, she didn't see the midwife and she had to go somewhere else (AS Mother 01, SE, rural).

Their attitude is not good at the state hospital even to adults. It's only the maternity that I can say for sure that they are good there. The doctor helps them even if they bring nothing for delivery, but at the general hospital, the reverse is the case so people don't like going there. If those children go there, they abuse them and may not attend to them when they should. So people

don't go to the general hospital, but rather the maternity as it costs them little or nothing (AK Community Leader, SW, urban).

The first clinic I went to...the lady took my money and disappeared...she never treated me. That was the government clinic...every time I went there, she was not around and whenever I tried to phone her, I wouldn't get through. Because of this, I had to go a second clinic, but I didn't like the way they were treating me there so I left. I eventually used a private clinic (AS03, 17, formerly cohabiting, SE, Igbo, rural, Christian, basic).

They are quite expressive and sharp-tongued. They abuse us a lot. If we don't do our exercises on time, they ask if they are the ones responsible for our pregnancy. They abuse us like that (AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).

I don't like the way they behave in that government clinic; they are careless people. I lost my first baby there because the nurse was careless (AS12, 19, cohabiting, SE, Igbo, rural, Christian, basic).

Health worker's opinions of adolescent mothers

Health workers, on the other hand, gave their own experiences of interacting with adolescent mothers. Some of them expressed the sentiment that adolescent mothers were difficult antenatal clients due to their lack of maturity and experience concerning pregnancy. These health workers reported some of the challenges they face in dealing with adolescent others, such as a lack of cooperation, ignorance and fear, as well as shyness. They all reported that dealing with adolescent mothers is more challenging than with older mothers due to their inexperience and

immaturity. However, despite their challenges, they were able to a large extent to offer antenatal care services to the adolescent mothers using their facilities in a professional manner.

My experience so far (sic) so good with them is that they are not cooperative as such. They are not like adults who, when you instruct them, will easily comply. The adolescents are not cooperative. When you tell them to do something, they will do another thing. So even to attend clinic sessions, take care of themselves, all those things, they will not abide. Maybe it's because of their age, I don't know. That is the experience I have with them.... Yes, they are stubborn. You know the age affects them. Even when they come to the clinic, they will be late. When the older mothers are already there, they will be late. Even when you are asking them to do this, to do that, they will not cooperate, they will not do it, so all those things. I don't know if it's the age that is affecting them, even to take care of the baby. What they should do, they will not do unless we educate them more and more before they can change (AK Senior Health Worker, SW, urban).

Those adolescent mothers are not mature enough and naturally if you observe them very well, you will see that all these pregnant adolescent mothers are not fully prepared for all these kinds of things. Even if you search very well, you will discover that adolescent pregnancy takes the grace of God because they face some things because their system is not mature enough for this thing and we need to counsel them because all those older mothers are more mature (AP Senior Health Worker, SW, rural).

Yes, we do have challenges with adolescent mothers because they often have close birth spacing and they don't use family planning...they also feel shy usually to come to the health centre.... they tend to hide their pregnancies (MJ Senior Health Worker, NW, rural).

5.7 Summary

This chapter presented the results of the qualitative study on the pregnancy, intrapartum and postpartum experiences, as well as the coping strategies of adolescent mothers across Nigeria.

The results showed that adolescent pregnancy was common to all the study sites, except in the urban South East. In addition, while pregnancy among married adolescents was acceptable, unmarried adolescent pregnancy was generally frowned upon by community members. A large number of unmarried adolescent mothers reported that they did not intend to have their pregnancies, with a large number reporting them as mistakes. More married adolescents however had planned pregnancies, as most of them reported that they wanted to be pregnant.

When unmarried adolescent mothers discovered their pregnancies, there were different reactions from their partners and families. Some adolescent mothers also reported being abandoned by their partners during their pregnancies, and either having to fend for themselves or needing to rely on their own family members for emotional and financial support during the duration of their pregnancies. On the other hand, some adolescent mothers were kicked out by their parents and asked to go and live with their partners.

Some adolescent mothers, especially those who were unmarried, reported experiencing stigma from community members, especially in the form of verbal abuse and harassment. Unmarried adolescent mothers mainly reported being ridiculed for being pregnant in their parents' homes. Views from some older women such as mothers of adolescent mothers and community leaders showed that adolescent pregnancy was considered as something which was

common. However, it was largely viewed as being outside the norm, except when the adolescent girl was already married and living with her husband. Views from health workers were generally against adolescent pregnancy, as they viewed adolescent mothers as difficult clients who were too immature to properly handle the rigours of pregnancy and childbearing. Some older mothers also expressed the opinion that adolescent pregnancy and motherhood could be a problem, especially when the girl was not married, while others viewed it as a normal occurrence.

Generally, adolescent mothers reported that their parents, family members and partners made decisions for them guiding their daily lives and healthcare usage. Some adolescent mothers reported incidences of verbal, physical and emotional abuse from their partners and partners' family members. Unmarried adolescent mothers who stayed with their own families however reported no abuse, while all the mothers who reported emotional or physical abuse tended to experience such from their partners and partners' families, especially when their pregnancies were not accepted by their partners' families.

Social support in the form of emotional and financial support was important to adolescent mothers, and they reported on the various people who provided such support to them. Married and cohabiting adolescent mothers mainly reported that their partners and partners' families provided emotional and financial support for them, while for unmarried mothers, their own families and friends were their main sources of support. The role of maternal support was especially important for unmarried adolescent mothers, as mothers were the ones who took care of their pregnant daughters to ensure that they had positive outcomes. Where the mothers were absent or deceased, other female relatives such as elder sisters and aunts also filled this role. A

few adolescent mothers also reported getting emotional support and advice from older women who lived in their communities. Older women also suggested different kinds of support that could be given to adolescent mothers to help them during their pregnancy, especially advice and emotional support.

The results showed that there were few cultural practices associated with adolescent pregnancy. An older woman in the rural South East reported a cultural practice referred to as the fattening room, but that the cultural practice was dwindling. In the North West, the use of herbs at specific times during pregnancy enabled adolescent mothers to have an easy pregnancy and delivery. Also, in the urban South East, there were cultural food taboos that were associated with adolescent pregnancy.

Older women suggested different types of healthcare for adolescent mothers during pregnancy. They unanimously agreed that adolescent mothers required care during their pregnancies; however, they differed in the types of healthcare that they suggested. While some older women suggested that adolescent mothers make use of modern healthcare exclusively, others suggested traditional healthcare, while others suggested a complementary model of healthcare where both traditional and modern healthcare were combined.

It was generally agreed among older mothers that adolescent mothers should be supported during their pregnancies by the communities in which they reside. However, older mothers in the rural South East believed that, rather than rely on the community for support, adolescent mothers should be taken care of by their own families, or by their partners' families, if they were married or cohabiting. Also, the older mothers believed that families of adolescent mothers

should provide unmarried adolescent mothers with maximum emotional support during their pregnancies so as to prevent them from emotional breakdowns, and to enable them to move on with their lives after delivering their babies, as well as get adequate healthcare.

Adolescent mothers' usage of maternal healthcare showed different patterns based on their circumstances. Respondents who made use of maternal healthcare were generally those who had adequate financial support. Also, healthcare preferences, cultural and religious practices were responsible for the type of maternal healthcare that adolescent mothers chose to use. In the North West, adolescent mothers used both modern and traditional healthcare. It was a fairly common practice in this region for mothers to make use of antenatal care, give birth at home with the help of a traditional birth attendant, and go to the hospital for postnatal care. In the South West, there was also a mix of modern and traditional healthcare use, and the use of "mission houses" for maternal healthcare was fairly common in the urban South West. In the South East, there was greater use of modern healthcare, with a few accounts of complementary healthcare and the use of traditional birth attendants. In the urban North West, it was discovered that a disproportionately high number of adolescent mothers were delivered of their babies through Caesarean sections. A senior health worker in this region suggested that adolescent mothers tended to report late at the health facility having tried unsuccessfully to deliver at home; their physiological condition of obstructed labour had forced them to report to a health facility for assistance.

The cost of healthcare services was a major barrier to use for many adolescent mothers who had no financial support from their families or partners. There was also some evidence of

misinformation among some adolescent mothers, who believed that the cost of healthcare was priced beyond their reach. However, some older mothers were more knowledgeable about the cost of healthcare and reported that they had encouraged their daughters to use it for their maternal healthcare needs.

Also, adolescent mothers had different experiences in relation to health workers. While the majority of respondents reported having good experiences with health workers, a few adolescent and older mothers reported instances of verbal abuse, corruption among health workers, and absenteeism. In an extreme case of irresponsibility by a health worker, an adolescent mother reported a case in which a nurse's mishandling led to the death of the baby she had given birth to prior to her current pregnancy. Also, there were no dedicated programmes for maternal healthcare for adolescent girls, so the health workers relied on their own initiative and treated every case as it was presented to them.

CHAPTER SIX

PREDICTORS OF MATERNAL HEALTHCARE UTILISATION AMONG ADOLESCENT MOTHERS IN NIGERIA

6.0 Introduction

This chapter presents the results of the quantitative and qualitative analyses of predictors of maternal healthcare utilisation indicators, namely, antenatal care utilisation, timing of first antenatal care visit, type of birth attendant used, and postnatal care utilisation. For the quantitative analysis, manual hierarchical logistic regression analysis was conducted to examine the influences of the sociodemographic and sociocultural variables on the outcome variables. Binary logistic regression analysis was conducted to identify the predictors of timing of antenatal care visits and postnatal care use, as these outcome variables were dichotomous in nature, while multinomial logistic regression analysis was carried out to identify the predictors of antenatal care visits and type of birth attendant used, as these variables were polytomous.

For the logistic regression analyses, selection into the models was based on significance in the chi square tests of association at the bivariate level. Four regression models were run for each maternal healthcare usage indicator, with the exception of timing of first antenatal care visit where only two models, the unadjusted and adjusted models (Models 0 and 1) were run. The first model, Model 0, was for unadjusted odds; Model 1 contained sociodemographic variables only, Model 2 contained only sociocultural variables, and Model 3 contained all variables.

The qualitative analysis was conducted using thematic analysis, whereby themes were derived from the transcribed data, and the data were interpreted along these themes from the quotes selected. As the study made use of the explanatory sequential design, the qualitative analysis findings were incorporated to explain the results of the quantitative findings to ensure a better understanding of the predictors of maternal healthcare use among adolescent mothers in Nigeria. `

6.1 Antenatal care use

The outcome variable was measured by recoding the original variable into three categories: “none”, which reflects no use of antenatal care whatsoever; “<4”, which represents adolescent mothers who used at least some antenatal care, and “4+” which reflects four or more ANC visits, which is the WHO recommended standard for antenatal care. A distinction was made between no visits and less than four visits as it is expected that the pregnancy outcomes of adolescent mothers with less than four ANC visits would be marginally better than those who did not use any antenatal care at all.

Table 6.1

Multinomial Logistic Regression between Independent Variables, Covariates and Antenatal Care Use among Adolescent Mothers in Nigeria

Number of ANC visits								
	Unadjusted RRR (Model 0)		Adjusted RRR (Model 1)		Adjusted RRR (Model 2)		Adjusted RRR (Model 3)	
Variable	<4	>=4	<4	>=4	<4	>=4	<4	>=4
Age								
15-17	RC	RC	RC	RC			RC	RC
18-19	1.35* (1.01-1.81)	1.66**(1.32-2.09)	1.09 (0.77-1.55)	1.19 (0.86-1.63)			1.09 (0.77-1.55)	1.19 (0.87-1.64)
Age at birth								
<15	RC	RC	RC	RC			RC	RC
15+	2.01*(1.08-3.72)	1.57*(1.01-2.42)	1.80(0.88-3.71)	1.41 (0.74-2.68)			1.75 (0.84-3.61)	1.32 (0.70-2.50)
Educational level								
None	RC	RC	RC	RC			RC	RC
Primary	4.39**(3.02-6.39)	4.72**(3.43-6.30)	2.35** (1.48-3.73)	2.04** (1.35-3.08)			2.33*(1.48-3.69)	2.03**(1.35-3.05)
Secondary and higher	6.63**(4.52-9.72)	13.18**(9.56-18.17)	2.58**(1.32-5.03)	2.33** (1.38-3.93)			2.58** (1.31-5.06)	2.27**(1.34-3.83)
Wealth status								
Poor	RC	RC	RC	RC			RC	RC
Middle	2.20**(1.49-3.24)	5.18**(3.82-7.02)	1.30 (0.83-2.03)	2.86** (2.00-4.09)			1.33 (0.85-2.09)	2.87**(1.99-4.12)
Rich	4.92**(3.15-7.69)	13.62**(9.60-19.33)	1.87 (1.00-3.51)	3.54** (2.14-5.86)			1.89 (0.99-3.58)	3.63**(2.18-6.04)
Religion								
Christian	RC	RC	RC	RC			RC	RC
Muslim/Other	0.27**(0.20-0.36)	0.19**(0.15-0.25)	0.53 (0.28-1.01)	0.92 (0.50-1.68)			0.54 (0.28-1.05)	0.93 (0.50-1.72)
Ethnicity								

Yoruba	RC 0.87 (0.22-3.37)	RC 0.96 (0.40-2.35)	RC 0.19 (0.11-3.04)	RC 0.32 (0.02-6.20)			RC 0.18 (0.01-3.36)	RC 0.35 (0.02-7.67)
Igbo								
Hausa/Fulani	0.18** (0.06-0.51)	0.05** (0.03-0.09)	0.50 (0.10-2.55)	0.39 (0.09-1.69)			0.48 (0.10-2.40)	0.41 (0.09-1.72)
Northern minorities	0.39 (0.14-1.12)	0.10** (0.05-0.19)	0.26 (0.50-1.37)	0.28 (0.06-1.26)			0.25 (0.05-1.27)	0.29 (0.07-1.25)
Southern minorities	0.57 (0.19-1.67)	0.22** (0.11-0.43)	0.38 (0.06-2.33)	0.84 (0.15-4.71)			0.38 (0.06-2.21)	0.89 (0.16-4.84)
Others	0.29 (0.08-1.14)	0.15** (0.06-0.37)	0.26 (0.03-1.96)	0.55 (0.10-2.91)			0.25 (0.03-1.93)	0.59 (0.12-3.01)
Marital status								
Not married	RC 0.33** (0.22-0.48)	RC 0.28** (0.20-0.39)			RC 0.25** (0.12-0.50)	RC 0.36 (0.12-1.02)	RC 1.31 (0.53-3.21)	RC 1.90 (0.99-3.88)
Married								
Sex of household head								
Male	RC 1.70* (1.04-2.81)	RC 3.05** (2.15-4.34)			RC 0.69 (0.33-1.47)	RC 1.92** (1.21-3.04)	RC 0.57 (0.27-1.20)	RC 1.17 (0.67-2.06)
Female								
Healthcare decision-making								
Respondent has no say	RC	RC			RC	RC		
Respondent has a say	1.29 (0.86-1.91)	2.56** (1.97-3.31)			1.24 (0.83-1.84)	2.39** (1.84-3.09)		
Partner age difference								
Same age/Small	RC 0.66* (0.47-0.94)	RC 1.10 (0.83-1.46)						
Large								
Partner's education level								
None	RC	RC	RC	RC			RC	RC

Primary	3.02** (2.07-4.41)	3.48**(2.52-4.81)	2.38**(1.54-3.67)	2.07**(1.42-3.01)			2.36**(1.53-3.64)	2.03**(1.39-2.95)
Secondary and higher	4.86**(3.39-6.97)	9.35**(6.90-12.65)	2.12** (1.28-3.52)	2.63**(1.77-3.91)			2.10**(1.24-3.54)	2.63** (1.76-3.93)
Getting permission to go to health facility								
Not a big problem	RC	RC			RC	RC	RC	RC
Big problem	0.38**(0.26-0.55)	0.38**(0.29-0.50)			0.33**(0.22-0.51)	0.42**(0.31-0.56)	0.48**(0.31-0.74)	0.65* (0.45-0.93)
Getting money for treatment								
Not a big problem	RC	RC	RC	RC			RC	RC
Big problem	0.85 (0.65-1.12)	0.63**(0.51-0.77)	0.92 (0.66-1.29)	0.78 (0.59-1.03)			1.09 (0.77-1.54)	0.89 (0.66-1.18)
Distance to health facility								
Not a big problem	RC	RC	RC	RC			RC	RC
Big problem	0.53**(0.39-0.72)	0.36**(0.29-0.46)	0.63* (0.43-0.92)	0.49**(0.37-0.66)			0.65 (0.44-0.95)	0.50**(0.37-0.67)
Place of residence								
Urban	RC	RC	RC	RC			RC	RC
Rural	0.32** (0.20-0.49)	0.17** (0.12-0.25)	0.66 (0.36-1.21)	0.74 (0.46-1.18)			0.65 (0.35-1.21)	0.74 (0.46-1.18)
Region of residence								
North Central	RC	RC	RC	RC			RC	RC
North East	0.55** (0.35-0.86)	0.41** (0.26-0.64)	1.10 (0.58-2.10)	0.83 (0.51-1.35)			1.20 (0.64-2.23)	0.89 (0.55-1.44)
North West	0.23**(0.15-0.37)	0.30** (0.20-0.47)	0.31** (0.16-0.63)	0.44**(0.26-0.73)			0.34**(0.17-0.66)	0.46**(0.28-0.76)

South East	1.64 (0.60-4.49)	6.96** (3.21-15.09)	0.56 (0.04-7.25)	2.39 (0.15-38.96)			0.63 (0.04-8.83)	2.34 (0.13-42.86)
South South	1.22 (0.71-2.08)	1.68 (1.00-2.82)	0.19* (0.05-0.69)	0.19** (0.06-0.65)			0.20* (0.05-0.71)	0.19** (0.06-0.65)
South West	0.77 (0.28-2.10)	3.35** (1.69-6.66)	0.37 (0.12-1.21)	1.76 (0.63-4.88)			0.41 (0.13-1.29)	1.86* (0.68-5.09)

Source: NDHS 2003-2013 *significant at $p<0.05$ **significant at $p<0.01$ RC: reference category; ANC: antenatal care

Table 6.1 shows the results of the multinomial logistic regression analysis examining variations in antenatal care utilisation by independent variables and covariates. In the unadjusted model, adolescent mothers aged 18 and above had a higher likelihood of making less than four, and four or more antenatal care visits than those aged between 15 and 17. Also, adolescent mothers who were 15 and older at first birth had a higher likelihood of using both partial and full ANC compared to those aged younger than 15 at the birth of their baby. Additionally, adolescent mothers with primary and secondary or higher education had a higher likelihood of making less than four and four or more antenatal care visits. Respondents with only primary education were more than four times more likely than adolescent mothers with no education to make less than four ANC visits, while those with secondary and higher education were more than six times more likely to use partial antenatal care. Adolescent mothers with only primary education were nearly five times more likely to have four or more ANC visits, while those with at least secondary education were more than thirteen times more likely to have four or more ANC visits. Adolescent mothers from middle income households were more than twice more likely to have less than four ANC visits than those from poor households, and those from rich households were nearly five times more likely to have less than four ANC visits. Respondents from middle income households were more than five times more likely to have four or more ANC visits than those from poor households, while those from rich households were more than thirteen times more likely to make four or more ANC visits compared to those from poor households.

Adolescent mothers who were either Muslims or adherents of other religions had a lower likelihood of making either less than four or four or more antenatal care visits, compared to those who were Christians. Also, adolescent mothers who were Hausa or Fulani were less likely to make

less than four antenatal care visits than Yoruba respondents, and respondents from the Hausa/Fulani, Northern and Southern minority and other tribes were far less likely to make four or more antenatal care visits than Yoruba adolescent mothers.

Married adolescent mothers were 67 per cent less likely to make less than four ANC visits, and 72 per cent less likely to make four or more ANC visits than unmarried mothers. Similarly, adolescent mothers in female-headed households were nearly two times more likely to make less than four ANC visits, and three times more likely to make four or more ANC visits compared to those living in male-headed households. Also, adolescent mothers who were able to participate in decision-making concerning their healthcare were two and a half times more likely to make four or more ANC visits than those who could not contribute to decision-making. Adolescent mothers with large age differences between them and their partners were less likely to have less than four ANC visits, compared to those who with smaller age gaps between them and their partners.

Partner education was associated with antenatal care use, as adolescent mothers whose partners had only primary education were three times more likely to make less than four ANC visits, and those whose partners had secondary or higher education were nearly five times more likely to make less than four ANC visits compared to mothers whose partners had no education. Also, adolescent mothers whose partners had primary education were three and a half times more likely to make four or more ANC visits than others whose partners had no education. Adolescent mothers whose partners had at least secondary education were more than nine times more likely to make four or more ANC visits than those whose partners had no education.

Getting permission to go to the health facility was also associated with antenatal care usage, as adolescent mothers who had a big problem with getting permission were less likely to have either less than four or four or more antenatal care visits than those who did not have a big problem with getting permission. Similarly, adolescent mothers who had a big problem obtaining money to pay for the cost of healthcare had a lower likelihood of making four or more ANC visits than those who did not have a big problem, and those who reported that they had a big problem with the distance to the health facility had a lower likelihood of making either less than four, or four or more ANC visits.

Place of residence was associated with antenatal care usage among adolescent mothers. Adolescent mothers living in rural areas had a 68 per cent lower likelihood of making less than four ANC visits, and an 83 per cent lower likelihood of making four or more ANC visits compared to mothers living in urban areas. Also, adolescent mothers living in the North East and North West had a lower likelihood of less than four, as well as four or more ANC visits. Adolescent mothers in the South East were about seven times more likely to make four or more ANC visits compared to those in the North Central zone, and adolescent mothers in the South West were more than three times more likely to make four or more ANC visits.

Model 1 shows the interaction between sociodemographic variables and antenatal care utilisation among adolescent mothers in Nigeria. Adolescent mothers with primary and secondary education had a higher likelihood of making less than four, as well as four or more antenatal care visits, compared to mothers who had no education. Similarly, adolescent mothers from middle class households were nearly three times more likely to make four or more ANC

visits than mothers from poor households, while those from rich households were three and a half times more likely to make four or more ANC visits. Also, partner education retained its significant association with antenatal care use. Adolescent mothers whose partners had primary and secondary or higher education had a higher likelihood of both making less than four visits, as well as a higher likelihood of making four or more ANC visits.

The distance to the health facility was associated with antenatal care usage, as adolescent mothers who reported that they had a big problem with the distance to the health facility had a lower likelihood of both less than four, and four or more antenatal care visits. Adolescent mothers from Southern minority tribes were less likely to make four or more ANC visits compared with Yoruba mothers. Region of residence also influenced ANC usage, as adolescent mothers from the North West and South South had a lower likelihood of both less than four, and four or more ANC visits.

Model 2 shows the results of the logistic regression analysis of associations between adolescent mothers' usage of antenatal care in Nigeria and sociocultural variables only. Married adolescent mothers were less likely to make less than four antenatal care visits, compared to those who were unmarried. Also, adolescent mothers living in female-headed households were nearly twice more likely to make four or more ANC visits compared to those living in male-headed households. Similarly, respondents who could contribute to decision-making concerning their healthcare were more than twice more likely to make four or more ANC visits than those who could not. Also, adolescent mothers who reported that getting permission to go to the health

facility was a big problem were less likely to have less than four, and four or more ANC visits compared to those who reported that getting permission was not a big problem.

Model 3 contained all sociodemographic and sociocultural predictor variables. After controlling for sociodemographic variables, the influence of marital status and sex of household head lost significance. However, the influence of getting permission to go to the health facility retained significance, as adolescent mothers who reported that getting permission to use the health facility was a big problem had a lower likelihood of making less than four, as well as four or more ANC visits, compared to those who did not have a big problem getting permission to go. Healthcare decision-making had to be dropped from the final model, due to its interaction with marital status.

Education retained its significant association with ANC use, as adolescent mothers with primary and secondary or higher education had a higher likelihood of both making less than four, as well as four or more ANC visits. Similarly, wealth status retained its significance, as adolescent mothers from middle income- and rich households had a higher likelihood of making four or more ANC visits than those from poor households. Partner education also retained significance, as adolescent mothers whose partners had primary and secondary or higher education also had a higher likelihood of making less than four, as well as four or more ANC visits. Adolescent mothers who reported a big problem with the distance to the health facility had a lower likelihood of making four or more ANC visits compared to those who reported that the distance was not a big problem. Adolescent mothers who lived in the North West and South South had a lower likelihood of making less than four ANC visits, compared to respondents from the North Central

zone. Also, adolescent mothers who lived in the North West and South South had a lower likelihood of making four or more ANC visits, and those living in the South West had nearly twice the likelihood of making four or more ANC visits compared to mothers in the North Central zone.

The qualitative findings corroborate the importance of obtaining permission to go to the health facility for antenatal care use. Adolescent mothers who did not face any challenge with obtaining permission to go to the health facility were able to make use of antenatal care during their pregnancy. Some respondents narrated that their husbands advised them to go to the hospital whenever they had any health complaints, implying that they had permission to make use of the hospital for antenatal care services.

My husband doesn't play with health matters, whenever I am sick, he asks me to go to hospital
(KT06, 19, married, NW, Hausa, urban, Muslim, basic).

I do what I want. He allows me to do what I want and I also follow his instructions too...he allows me to go to the hospital **(AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).**

While education was associated with antenatal care use in the regression analysis, responses from both educated and uneducated adolescent mothers showed that both sets of participants reported use and non-use of antenatal care services. The reasons behind their usage patterns, irrespective of their educational status, were mainly based on their healthcare preferences.

I never went to hospital till the pregnancy was 9 months old, I went for scanning only I used the herbs that they said would make me have an easy delivery (KT03, 18, married, NW, Fulani, urban, Muslim, no education).

Throughout my pregnancy I never went to the hospital, I used traditional medicine....it was a woman in my partner's village where I live who advised me to use a TBA (AS01, 19, cohabiting, SE, rural, Igbo, Christian, basic).

Yes.... I went for antenatal care. Malaria drugs, folic acid, etc. were given to me in the hospital during antenatal. We were told what to eat and not to eat (KT12, 18, married, NW, urban, Fulani, Muslim, no education).

I was not given any traditional herbs except that of the hospital. There your blood pressure is checked and you are given the right drugs which is much preferred. The drugs given to me are the normal routine drugs for pregnant women (MJ01, 15, married, NW, Hausa, rural, Muslim, primary).

Also, similar to findings on the association between wealth status and antenatal care service use, most adolescent mothers who were able to use antenatal care services reported receiving financial support from either their partners or families to pay for healthcare costs. The reverse was the case however with adolescent mothers who reported they did not receive financial support from their families.

I am not going (sic) anywhere, because that time (sic) no help, nobody is helping me (sic) (AS09, 19, widowed, SE, Igbo, rural, Christian, basic).

God knows that I didn't have money for clinic because my mother kicked me out... I am grateful that I have my baby here. I thank God.... No, I didn't attend the clinic at all throughout my pregnancy (AK05, 19, single, SW, Yoruba, urban, Christian, primary).

I didn't go for any health care because my mother is not financially buoyant so I did not register in any hospital, mission or do any scan (AK04, 19, single, SW, Yoruba, urban, Christian, basic).

While some adolescent mothers reported that the health facility was distant from their houses, this did not stop them from making use of antenatal care services as they simply chose to make their own transport arrangements to go to the facility.

The clinic is a bit far from here...so my husband takes me on his motorcycle... every Tuesday (AK01, 20, cohabiting, SW, Idoma, urban, Christian, secondary).

I used to take a motorbike...even with the pregnancy...Yes...that's the only way to go there (AS08, 20, single, SE, Igbo, rural, Christian, basic).

I normally walk to the clinic because it serves as exercise for me (KT11, 19, married, NW, urban, Hausa, no education).

While there was a lower likelihood of antenatal care use in the North West region, qualitative findings showed no difference in antenatal care use across the different regions. Rather, healthcare preference was an additional factor that influenced adolescent mothers' use of antenatal care services. Some respondents reported their preference for using only modern maternal healthcare during their pregnancies, due to their belief that it was adequate for their

healthcare needs. For instance, there was a respondent who despite being encouraged to go to the health facility by her partner while she was pregnant, made only two antenatal care visits, because she said she did not like medicines and injections. In the same manner, another respondent who was pregnant at the time of the study narrated that despite the fact that she was allowed to use healthcare services by her partner and his mother, she had a preference for traditional medicine, was making use of both modern and traditional healthcare providers for antenatal care, and intended to deliver her baby with the help of the traditional birth attendant.

I only went for booking and two visits after. The third visit I went was to deliver...because I don't like medicines or injections (AK09, 21, cohabiting, SW, urban, Yoruba, Christian, secondary).

Yes, when I was pregnant, I took herbs...they said they aid easy delivery and widening of the (vagina) during labour (KT03, 18, married, NW, Fulani, urban, Muslim, no education).

In addition, some of the adolescent mothers reported that they made use of traditional medicine in addition to using modern antenatal care services. The reason given for this was that they preferred using the two as they believed it would give them more favourable pregnancy outcomes than using only modern antenatal care. It was believed that there are local herbs that assist women during pregnancy and labour and make the baby strong at birth.

I used both modern and traditional...because I like the two...I was going to the health centre and using herbs also...they made me and the baby strong (AS02, 19, single, SE, Igbo, rural, Christian, primary).

I used to go to the traditional healer on Mondays and the clinic on Thursdays...I combine the two (OW01, 18, married, SE, Igbo, urban, Christian, secondary).

Well...mixing of the two is normal here (both traditional and modern) ...and going to the hospital to check how the baby is...taking the treatment they are supposed to take ...and to do some exercises...they will be directing her on what to do (AS Mother 01, SE, rural).

6.2 Timing of first antenatal care visit

Table 6.2.1

Binary Logistic Regression between Selected Covariates and Timing of First Antenatal Care Visit among Adolescent Mothers in Nigeria

Timing of first ANC visit		
Variable	Unadjusted OR (Model 0)	Adjusted OR (Model 1)
Religion		
Christian	RC	RC
Muslim/Other	0.71* (0.53-0.97)	0.76 (0.46-1.26)
Ethnicity		
Yoruba	RC	RC
Igbo	0.92 (0.44-1.93)	2.43 (0.25-23.87)
Hausa/Fulani	0.50* (0.29-0.85)	0.27** (0.10-0.70)
Northern minorities	0.99 (0.58-1.69)	0.37* (0.14-0.94)
Southern minorities	0.69 (0.38-1.27)	0.89 (0.23-3.39)
Others	1.06 (0.43-2.59)	0.53 (0.16-1.77)
Healthcare decision-making		
Respondent has no say	RC	RC
Respondent has a say	1.61* (1.10-2.35)	1.29 (0.88-1.88)
Region of residence		
North Central	RC	RC
North East	0.47** (0.32-0.71)	0.67 (0.41-1.09)
North West	0.35** (0.22-0.55)	0.55 (0.29-1.03)
South East	0.63 (0.32-1.24)	0.11 (0.01-1.10)
South South	0.45** (0.27-0.74)	0.20* (0.06-0.68)
South West	0.58* (0.34-0.99)	0.26** (0.11-0.60)

Source: NDHS 2003-2013 *significant at $p < 0.05$ **significant at $p < 0.01$

RC: reference category; ANC: antenatal care

Table 6.2.1 presents the results of the binary logistic regression analysis of associations between selected predictor variables and the timing of the first antenatal care visit by adolescent mothers in Nigeria. The variable was recoded into two categories, “late” for all adolescent mothers who started antenatal care in the second trimester or later, and “early” for all adolescent mothers who started ANC in the first trimester, based on WHO recommendations. At the bivariate level of analysis, only four variables were significantly associated with the timing of first antenatal care visit by adolescent mothers. These were religion, ethnicity, healthcare decision-making and region of residence. The binary logistic regression analysis was thus run with only two models; Model 0, showing the unadjusted odds ratios, and Model 1, showing the adjusted odds ratios.

In Model 0, adolescent mothers who were either Muslims or adherents of other religions were significantly less likely to start ANC early compared to those who were Christians. Also, Hausa/Fulani adolescent mothers were significantly less likely to start antenatal care early compared to Yoruba mothers. Also, adolescent mothers who contributed in healthcare decision-making were significantly more likely to start antenatal care early, compared to those who did not have a say in making healthcare decisions. Furthermore, mothers living in the North East, North West, South South and South West zones were significantly less likely to start ANC in the first trimester compared to adolescent mothers in the North Central zone.

In Model 1, healthcare decision-making lost significance, and only ethnicity and region of residence retained statistical significance. Adolescent mothers from the Hausa, Fulani and Northern minority groups were significantly less likely to start antenatal care early compared to

Yoruba adolescent mothers. Also, adolescent mothers living in the South South and South West zones were significantly less likely to start using antenatal care early than adolescent mothers who lived in the North Central zone.

Findings from the qualitative study showed the different patterns of timing of first antenatal care visit by adolescent mothers across Nigeria. In agreement with quantitative findings, some adolescent mothers living in the South East and South West reported starting antenatal care late for a number of reasons. One participant reported that she was unaware of her pregnancy until the first trimester was over, which suggests a poor knowledge of sexual health as she could not decipher her pregnancy symptoms. Also, her desire to hide the pregnancy for as long as possible suggests the presence of stigma against adolescent pregnancy in her community. Another respondent was unable to start her antenatal care until she started living with her husband's family, meaning that her own family was either unable or unwilling to pay for her healthcare. Also, a Hausa respondent from the North West reported starting ANC after the fourth month because she was unaware of her pregnancy symptoms. She also displayed a poor knowledge of pregnancy symptoms, as she did not realise the cessation of her menstrual cycle meant that she was pregnant. From these responses, adolescent mothers showed low reproductive health knowledge as being unaware that they were pregnant led to late ANC initiation. Also, the issue of family support for healthcare access comes up again, as the adolescent mother from the South East had to wait until she moved in with her partner's family to begin antenatal care, as her own family could not support her to access healthcare.

It was up to five months before I started antenatal....It was because I didn't know on time that I was pregnant. It was up to 3-4 months before I knew and I also didn't want people to know that I was pregnant. That's why I didn't go quickly (AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).

I started antenatal care in the sixth month...that was when I came to live with my husband's family (OW01, 18, married, SE, Igbo, urban, Christian, secondary).

I did not tell anyone. I did not know that I was pregnant myself. I realised that my menses has stopped coming for 4 months. Then I told my husband who told me to go to Mallama. She carried out a pregnancy test on me and advised that I continue to come for antenatal every four weeks (MJ06, 17, married, NW, Hausa, rural, Muslim, none).

Additional findings from the qualitative study showed that some adolescent mothers had unpleasant experiences with health workers resulting in and from their late booking for antenatal care. One respondent reported a corrupt health worker who collected money from her, supposedly for her antenatal care treatment, and then absconded. She had to make alternative arrangements with private clinics, and this delayed her initiation of antenatal care until the sixth month of her pregnancy. The other respondent narrated experiencing harsh treatment from the health workers in the facility she went to for antenatal care because she registered quite late.

The first clinic I went to...the lady took my money and disappeared...she never treated me. That was the government clinic...every time I went there, she was not around and whenever I tried to phone her, I wouldn't get through. Because of this, I had to go a second clinic but I didn't like the

way they were treating me there, so I left. I eventually used a private clinic....so because of these issues, I started antenatal in the sixth month...though after I started, I was going regularly for check-ups (AS03, 17, formerly cohabiting, SE, Igbo, rural, Christian, basic).

They were harsh to me because I went to register there too late...I registered in the eighth month (AK08, 19, single, SW, urban, Yoruba, Christian, basic).

Table 6.2.2

Goodness of Fit Test

	Coefficient	Std. Error	t	P> t 	95% CI
_hat	0.95	0.47	2.00	0.05	0.02-1.88
_hatsq	-0.02	0.22	-0.11	0.91	-0.46-0.41
_cons	-0.02	0.26	-0.08	0.93	-0.54-0.50

Source: NDHS 2003-2013

The results of the goodness of fit test show that the p-value for the t test of the *hatsq* show a lack of significance. This indicates that the logistic regression model for the dependent variable, timing of first antenatal care visit, was a good fit.

6.3 Type of Birth Attendant Used

Table 6.3 shows the results of the multinomial logistic regression analysis conducted to identify the sociodemographic and sociocultural predictors of type of birth attendant used among adolescent mothers in Nigeria. The outcome variable, type of birth attendant, was coded into three categories, which were unassisted births and unskilled attendants, traditional birth attendants, and skilled birth attendants. There were four models, 0, 1, 2 and 3. Model 0 was the unadjusted model; Model 1 included only the sociodemographic variables as covariates; Model

2 included only sociocultural variables; and Model 3 contained all sociodemographic and sociocultural variables.

Table 6.3

Multinomial Logistic Regression Showing the Relationship between Independent Variables, Covariates and Type of Birth Attendant Used among Adolescent Mothers in Nigeria

Variable	Type of birth attendant used							
	Unadjusted RRR (Model 0)		Adjusted RRR (Model 1)		Adjusted RRR (Model 2)		Adjusted RRR (Model 3)	
	TBA	SBA	TBA	SBA	TBA	SBA	TBA	SBA
Age								
15-17	RC	RC	RC	RC			RC	RC
18-19	0.71*(0.54-0.93)	1.01 (0.76-1.34)	0.64**(0.48-0.85)	0.58**(0.41-0.83)			0.65** (0.49-0.87)	0.59**(0.41-0.83)
Educational level								
None								
Primary	RC	RC	RC	RC			RC	RC
	1.26 (0.87-1.83)	4.30**(2.97-6.23)	0.79 (0.51-1.22)	0.95 (0.59-1.54)			0.78 (0.51-1.20)	0.96 (0.59-1.55)
Secondary and higher	2.10**(1.43-3.10)	12.91**(8.86-18.80)	0.74 (0.40-1.36)	1.13 (0.63-2.01)			0.76 (0.41-1.38)	1.19 (0.66-2.13)
Wealth status								
Poor	RC	RC	RC	RC			RC	RC
Middle	1.64** (1.16-2.32)	3.51**(2.48-4.97)	1.44 (0.98-2.11)	1.18 (0.76-1.82)			1.45 (0.98-2.13)	1.18 (0.76-1.84)
Rich	1.89**(1.20-2.99)	11.59**(7.71-17.43)	1.29 (0.71-2.36)	2.49**(1.45-4.27)			1.28 (0.70-2.35)	2.44** (1.41-4.23)
Religion								
Christian	RC	RC	RC	RC			RC	RC
Muslim/Other	0.46**(0.32-0.66)	0.13**(0.09-0.18)	1.71 (0.82-3.56)	0.79 (0.42-1.49)			1.74 (0.83-3.63)	0.79 (0.42-1.49)
Ethnicity								
Yoruba	RC	RC	RC	RC			RC	RC
Igbo	0.81 (0.19-3.46)	1.12 (0.33-3.80)	0.40 (0.05-3.02)	2.64 (0.27-25.87)			0.39 (0.05-2.91)	2.68 (0.26-27.10)
Hausa/Fulani	0.44 (0.16-1.26)	0.04**(0.02-0.09)	0.19* (0.04-0.85)	0.55 (0.15-1.99)			0.18* (0.41-0.82)	0.49 (0.13-1.79)
Northern minorities	4.60* (1.44-14.72)	0.13**(0.05-0.32)	0.48 (0.11-2.12)	0.93 (0.26-3.33)			0.46 (0.10-2.06)	0.80 (0.22-2.94)

Southern minorities Others	0.23* (0.05-0.97)	0.59 (0.21-1.65) 0.09**(0.03-0.30)	1.77 (0.27-11.66) 0.16* (0.03-0.89)	0.98 (0.20-4.70) 0.42 (0.10-1.75)			1.91 (0.29-12.46) 0.15* (0.03-0.85)	0.87 (0.17-4.30) 0.35 (0.08-1.49)
Marital status Not married Married	RC 0.44**(0.30-0.66)	RC 0.17**(0.12-0.26)			RC 0.48**(0.32-0.74)	RC 0.20**(0.13-0.31)	RC 0.79 (0.34-1.85)	RC 0.56 (0.21-1.44)
Sex of household head Male Female	RC 1.56*(1.00-2.43)	RC 2.52**(1.65-3.85)			RC 1.25 (0.80-1.95)	RC 1.38 (0.87-2.17)	RC 0.63 (0.34-1.20)	RC 0.42**(0.21-0.82)
Healthcare decision-making Respondent has no say Respondent has a say	RC 1.29 (0.94-1.79)	RC 2.39**(1.75-3.25)						
Partner's education level None Primary Secondary and higher	RC 1.48*(1.03-2.12) 1.51*(1.06-2.16)	RC 3.92**(2.64-5.83) 8.29**(5.89-11.66)	RC 1.51* (1.02-2.24) 1.24 (0.82-1.89)	RC 1.71* (1.10-2.70) 1.60* (1.04-2.46)			RC 1.53*(1.03-2.27) 1.27 (0.83-1.93)	RC 1.77* (1.13-2.78) 1.60* (1.03-2.49)
Getting permission to go to health facility Not a big problem Big problem	RC 0.74 (0.54-1.02)	RC 0.55**(0.39-0.77)			RC 0.76 (0.55-1.05)	RC 0.61**(0.87-2.18)	RC 0.74 (0.51-1.06)	RC 1.31 (0.78-2.19)
Getting money for treatment Not a big problem Big problem	RC 1.13 (0.86-1.48)	RC 0.87 (0.68-1.11)	RC 1.08 (0.79-1.48)	RC 0.92 (0.65-1.29)			RC 1.17 (0.84-1.63)	RC 0.85 (0.60-1.21)

Distance to health facility Not a big problem Big problem	RC 1.00 (0.76-1.33)	RC 0.47** (0.35-0.62)	RC 1.05 (0.74-1.49)	RC 0.75 (0.52-1.09)			RC 1.07 (0.75-1.52)	RC 0.75 (0.51-1.09)
Place of residence Urban Rural	RC 0.75 (0.48-1.17)	RC 0.19** (0.12-0.28)	RC 0.85 (0.52-1.39)	RC 0.70 (0.41-1.19)			RC 0.84 (0.51-1.37)	RC 0.68 (0.40-1.17)
Region of residence North Central North East North West South East South South South West	RC 3.80** (1.93-7.48) 3.25** (1.70-6.19) 5.26** (1.55-17.86) 28.15** (12.23-64.78) 3.73* (1.31-10.61)	RC 0.33** (0.20-0.57) 0.20** (0.12-0.32) 6.23** (2.34-16.54) 3.44** (1.61-7.33) 2.94* (1.29-6.70)	RC 4.44** (2.21-8.93) 5.53** (2.68-11.39) 16.94** (3.09-92.93) 12.26** (1.88-79.89) 1.87 (0.53-6.65)	RC 0.50** (0.31-0.84) 0.43** (0.25-0.74) 1.87 (0.23-15.35) 1.78 (0.35-8.97) 1.66 (0.57-4.85)			RC 4.66** (2.29-9.46) 5.86** (2.81-12.22) 19.75** (3.50-111.50) 12.19* (1.83-81.05) 1.95 (0.54-6.98)	RC 0.52* (0.30-0.88) 0.43** (0.25-0.75) 2.00 (0.23-17.15) 1.74 (0.35-8.78) 1.60 (0.54-4.76)
Number of ANC visits None <4 ≥4	RC 0.96 (0.66-1.39) 1.18 (0.88-1.59)	RC 7.95** (5.33-11.84) 15.95** (11.33-22.45)	RC 0.88 (0.59-1.32) 0.97 (0.69-1.36)	RC 5.30** (3.32-8.47) 6.49** (4.31-9.77)			RC 0.84 (0.56-1.27) 0.96 (0.68-1.35)	RC 5.35** (3.30-8.67) 6.81** (4.51-10.29)

Source: NDHS 2003-2013 *significant at $p<0.05$ **significant at $p<0.01$

RC: reference category

TBA: traditional birth attendant

SBA: skilled birth attendant

Results from the unadjusted model showed that there were statistically significant variations in the type of birth attendant used by adolescent mothers' dependent on their age. Respondents aged 18 and above were less likely to use traditional birth attendants compared to adolescent mothers aged 15-17. There were also statistically significant variations in type of birth attendants used by adolescent mothers by their educational levels. Adolescent mothers with secondary and higher education were twice more likely to use traditional birth attendants; those with primary education were more than four times more likely to use skilled birth attendants, and adolescent mothers with secondary and higher education were nearly thirteen times more likely to use skilled birth attendants, compared to respondents with no education. Adolescent mothers from middle income- and rich households were nearly twice as likely to use TBAs as mothers from poor households. Adolescent mothers from middle income households were three and a half times more likely to use skilled birth attendants than mothers from poor households, while adolescent mothers from rich households were eleven and a half times more likely to use SBAs than those from poor households.

Muslim adolescent mothers and those who were adherents of other religions were significantly less likely to use both traditional and skilled birth attendants compared to adolescent mothers who were Christians. There were statistically significant variations, dependent on ethnicity, in type of birth attendants used by adolescent mothers: adolescent mothers from Southern minorities were more than four times more likely to use traditional birth attendants than Yoruba adolescent mothers. Hausa/Fulani adolescent mothers, and those from Northern minority and other tribes had a lower likelihood of using skilled birth attendants than Yoruba adolescent mothers.

There were statistically significant variations in type of birth attendant used by adolescent mothers according to their marital status. Married adolescent mothers were 56 per cent less likely to use TBAs, and 83 per cent less likely to use skilled birth attendants than unmarried mothers. Also, adolescent mothers living in female-headed households were significantly more likely to use TBAs, and two and a half times more likely to use SBAs than mothers living in male headed-households. There were statistically significant variations in type of birth attendants used by adolescent mothers, dependent on their ability to participate in healthcare decision-making. Adolescent mothers who could participate in decision-making were more than twice more likely to use skilled birth attendants than mothers who did not. Additionally, adolescent mothers whose partners had primary and secondary and higher education were significantly more likely to use TBAs than those whose partners had no education. Those whose partners had primary education only were nearly four times more likely to use SBAs, and adolescent mothers whose partners had secondary and higher education were more than eight times more likely to use SBAs than mothers whose partners had no education. Also, adolescent mothers who had a big problem getting permission to go to the health facility were less likely to use SBAs than mothers who did not have a big problem with getting permission.

Adolescent mothers who reported that they had a big problem with the distance to the health facility had a lower likelihood of using SBAs at delivery. Also, adolescent mothers living in rural areas had a significantly lower likelihood of using SBAs at delivery. Region of residence also influenced type of birth attendants used. Adolescent mothers in the North East, North West, South East, South South and South West had a higher likelihood of using TBAs than those living in the North Central region. Adolescent mothers in the North East and North West had a

significantly lower likelihood of using SBAs than adolescent mothers in the North Central, while mothers in the South East, South South and South West had a significantly higher likelihood of using SBAs than those in the North Central zone. There were statistically significant variations in the type of birth attendants used by adolescent mothers according to their antenatal care use. Adolescent mothers who had made less than four ANC visits were nearly eight times more likely to use skilled birth attendance than those who did not use any ANC at all; adolescent mothers who had made four or more ANC visits were nearly sixteen times more likely to use SBAs for delivery than those who did not use ANC at all.

In Model 1, adolescent mothers aged 18-19 were significantly less likely to use both TBAs and SBAs than those aged 15-17. There were statistically significant variations in type of birth attendant used dependent on the adolescent mother's wealth status: adolescent mothers from rich households were about two and half times more likely to use SBAs compared to those from poor households. Hausa and Fulani adolescent mothers and those from other tribes were significantly less likely to use TBAs than Yoruba mothers. Partner education retained its significance in the model, as adolescent mothers whose partners had primary education were more likely to use TBAs, and those whose partners had primary or secondary and higher education were more likely to use SBAs than mothers whose partners had no education. Adolescent mothers in the North East, North West, South East and South South regions had a significantly higher likelihood of using TBAs than those in the North Central zone, while adolescent mothers in the North East and North West had a significantly lower likelihood of using SBAs than those in the North Central zone. Also, respondents who made less than four ANC visits were more than five times more likely to use SBAs, and those who made four or more ANC visits

were about six and a half times more likely to deliver with the aid of a skilled birth attendant than mothers who did not use ANC at all.

Model 2 shows the results of the multinomial logistic regression analysis between sociocultural variables and type of birth attendant used by adolescent mothers in Nigeria. Married adolescent mothers were 52 per cent less likely to use TBAs than unmarried mothers, and were 80 per cent less likely to use SBAs at delivery than unmarried mothers. Getting permission to go to the health facility retained its significance, as adolescent mothers who reported a big problem with obtaining permission had a lower likelihood of SBA usage compared with those who reported that getting permission was not a big problem.

Model 3 included all sociodemographic and sociocultural variables. In the presence of sociodemographic variables, influence of sex of household head remained significant on the type of birth attendant used. However, the direction of the relationship was reversed compared to Models 0 and 2, as mothers who lived in female-headed households were found to be significantly less likely to use SBAs than mothers in male-headed households. The influence of marital status and getting permission to go to the health facility lost significance, and healthcare decision-making had to be dropped from the final model due to its interaction with marital status.

There were statistically significant variations in type of birth attendant used; these variations reflected the impact of the respondents' ages, as adolescent mothers aged 18 and above had a lower likelihood of using both TBAs and SBAs than mothers aged 15-17. Adolescent mothers from rich households were nearly two and a half times more likely to use SBAs at delivery than those from poor households. Also, adolescent mothers from the Hausa/Fulani and

other tribes were far less likely to use TBAs than Yoruba respondents. Partner education retained its significance in this model, as adolescent mothers whose partners had primary education were more likely to use traditional birth attendants than those who had no education, with a slightly higher likelihood of their using skilled birth attendants at last birth. Adolescent mothers whose partners had secondary or higher education were more likely to use skilled birth attendants compared to those whose partners had no education.

There were statistically significant variations in type of birth attendant used, influenced by region of residence. Respondents in the North East, North West, South East and South South were more likely to use traditional birth attendants than mothers in the North Central zone. However, adolescent mothers in the North East and North West had less likelihood of using skilled birth attendants than adolescent mothers in the North Central region. Also, adolescent mothers who had less than 4 antenatal care visits were in excess of five times more likely to use SBAs, and mothers who had 4 or more ANC visits were nearly seven times more likely to use SBAs than women who did not use antenatal care at all.

While findings from the quantitative study showed that adolescent mothers living in female headed households had a lower likelihood of skilled birth attendant use, the reverse was the case in the qualitative study. Adolescent mothers, especially the unmarried ones, generally reported that their mothers were their sources of financial support for facility delivery, regardless of the sex of household head. Also, while wealth status was significantly associated with the use of skilled birth attendants, findings from the qualitative study showed that adolescent mothers

made use of skilled birth attendants as long as they had the financial support to pay for healthcare costs.

I gave birth at the 'mission' because I didn't use the hospital at all, I was told that it was expensive and my mother could not afford it (AK02, 16, single, SW, Yoruba, urban, Christian, basic).

I gave birth to the baby in the room and God knows that I don't have money for a clinic and God's miracle happened and I am grateful that I have my baby here. I thank God...I didn't attend the clinic.... My mother assisted me on the day of delivery.... In fact, I had given birth already before I called her.... I gave birth by myself...I only called my mother to help me carry the baby (AK05, 19, single, SW, Yoruba, urban, Christian, primary).

I gave birth through CS in the Hospital called Turai Hospital. I was advised by my mother to go to the hospital anytime I don't (sic) feel alright to avoid complications (KT12, 18, married, NW, urban, Fulani, Muslim, no education).

The adolescent girls' mothers were observed to have a strong influence on the healthcare choices of their daughters. They were often the healthcare decision makers for their unmarried daughters; therefore, their own preferences carried weight in deciding what type of healthcare their daughters eventually used. Some older mothers reported their healthcare preferences and how they influenced their adolescent daughters to also choose the same healthcare providers for their prenatal care as well as delivery.

When I was still giving birth, I didn't go to the hospital. I went to the church till I gave birth to my four children. What took me to the hospital is the immunization; I took them to the hospital for that (AK Mother 01, SW, urban).

See, uhm, myself I may like to go to maternity, health centre, from government. Another person may not want...may want all these 'Eliza nurse'...they can create clinics anywhere...that's what we call them...they may not want to go to government clinics... I had all of them at the health centre...this one that is carrying baby (sic) I had her at Assa health centre...the second one at Emekuku....in fact all of them...that time it was cheap...about 200 nairas (about US\$0.50) (AS Mother 03, SE, rural).

While Hausa/Fulani adolescent mothers were significantly less likely to make use of traditional birth attendants in the quantitative study, findings from the qualitative study showed a high usage of traditional birth attendants by both Hausa/Fulani and Yoruba adolescent mothers. For instance, a good number of adolescent mothers from the South West chose to deliver their babies at the “mission house” rather than the hospital. The “mission house” is a maternity care facility attached to a church, hence the term “mission house”. The birth attendants there are not necessarily trained nurses; some may be auxiliary nurses or women who have learnt how to manage pregnancy and childbirth by apprenticeship and experience. Two respondents said they were instructed to deliver their babies in the mission house by religious leaders. This is a mix of religious and cultural beliefs which encourages young mothers to give birth in mission houses, which may put them and their babies at risk.

There was a day I visited a friend who just (sic) gave birth and the midwife who took her delivery saw a vision about my friend and I that we should do a special bath for spiritual cleansing. So, when I was in labour, I told my people to take me to the woman. So, it was the woman who helped me on that day when I delivered my baby (AK04, 19, single, SW, Yoruba, urban, Christian, basic).

No, I can't go to the hospital.... I will go to the mission.....The advice is that I give birth at the mission. God is powerful and everywhere, but I will give birth in the mission. I was told to give birth in the mission (AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).

Some adolescent mothers from the North West region also reported unassisted delivery and the use of unskilled attendants.

I gave birth at home. I was not given anything to take. The baby and I were taken to the hospital and we were declared healthy (MJ06, 17, married, NW, Hausa, rural, Muslim, no education).

I delivered in my room...no one attended to me, only my husband was around (MJ11, 19, married, NW, Hausa, rural, Muslim, no education).

Findings from the quantitative study showed that the use of antenatal care was significantly associated with the use of skilled birth attendants. While some adolescent mothers who were currently pregnant expressed the desire to give birth in health facilities, one adolescent mother, due to her healthcare preference, said she gave birth with the help of a traditional birth attendant.

I prefer to deliver at the General Hospital because they have more doctors (KT01, 18, married,

SW, Hausa, urban, Muslim, no education).

I will go to the clinic, to the same clinic where I have been doing my antenatal, I to give birth

(AK01, 20, cohabiting, SW, Idoma, urban, Christian, secondary).

I will give birth here, at the health centre **(AP05, 17, cohabiting, SW, Ibo, rural, Christian, basic).**

Throughout my pregnancy I never went to the hospital, I used traditional medicine and gave birth with the help of a traditional birth attendant...it was a woman in my partner's village who advised me to use a traditional birth attendant **(AS01, 19, cohabiting, SE, rural, Igbo, Christian, basic).**

Two pregnant respondents, despite using antenatal care, said they would prefer to have a TBA handle their deliveries. One of them complained about the quality of service in the health facility as she wrongly assumed her test results were being withheld from her, while the other said she had been advised to deliver in the mission house by a prophet.

I want to deliver in that woman's (TBA's) place, because this FMC I don't like how they are doing...they are too dull...since I did my tests, they have not given me my results...so I prefer to go and deliver in that woman's place **(OW01, 18, married, SE, Ibo, urban, Christian, secondary).**

No, I can't go to the hospital.... I will go to the mission...The advice is that I give birth at the mission. God is powerful and everywhere, but I will give birth in the mission. I was told to give birth in the mission **(AK07, 20, cohabiting, SW, Yoruba, urban, Christian, secondary).**

There was a trend that was common in the North West region where young mothers went to the hospital for all necessary antenatal care, but opted to deliver at their homes with the aid of traditional birth attendants. It was a common and culturally accepted practice observed in both urban and rural parts of the region.

I gave birth to a baby girl...I delivered at home and a woman, an “ingozoma” (local birth attendant) in the neighbourhood assisted me at the birth of my baby. After birth, we went to the hospital and we were checked and I was told we were okay, and I was given drugs for us both **(KT10, 19, married, NW, urban, Hausa, Muslim, basic).**

I went to the hospital in Mashi. I was given drugs to take and I delivered safely at home. **(MJ07, 16, married, NW, Hausa, rural, Muslim, none).**

Results also showed that adolescent mothers’ maternal healthcare utilisation was guided by the type of healthcare that they, their families, and their wider community preferred. Where modern healthcare was the preferred choice, adolescent mothers tended to use maternal healthcare. However, where traditional or complementary medicine was the preferred choice, this influenced the pattern of healthcare usage for these mothers.

I think people use more of hospital here...No, people don’t use traditional medicine again **(AK Community Leader, SW, urban).**

It’s the Western health care. People don’t patronise native medicine again, but if they give birth and there are complications with the baby, they can make herbs for the baby, but after that they will be getting the baby immunised, that’s all **(AP Mother 02, SW, rural).**

They use the hospital in the community and they use mostly the big hospital (KT Community Leader, NW, urban).

6.4 Postnatal care use

Table 6.4.1

Binary Logistic Regression between Independent Variables, Covariates and Postnatal Care Use among Adolescent Mothers in Nigeria

Variable	Postnatal care use			
	Unadjusted OR (Model 0)	Adjusted OR (Model 1)	Adjusted OR (Model 2)	Adjusted OR (Model 3)
Age				
15-17	RC	RC		RC
18-19	1.44*(1.06-1.95)	1.14 (0.76-1.70)		1.16 (0.77-1.74)
Educational level				
None	RC	RC		RC
Primary	2.80**(1.93-4.07)	1.30 (0.78-2.16)		1.37 (0.81-2.33)
Secondary and higher	4.63**(3.25-6.59)	1.69 (0.96-2.97)		1.81* (1.02-3.21)
Wealth status				
Poor	RC	RC		RC
Middle	2.70**(1.91-3.82)	1.64* (1.03-2.63)		1.56 (0.95-2.55)
Rich	4.47**(3.10-6.45)	1.86 (0.94-3.69)		1.89 (0.93-3.83)
Religion				
Christian	RC	RC		RC
Muslim/Other	0.37**(0.28-0.50)	0.59 (0.32-1.11)		0.58 (0.31-1.11)
Ethnicity				
Yoruba	RC	RC		RC
Igbo	0.28**(0.11-0.69)	0.26 (0.02-3.12)		0.29 (0.02-3.85)
Hausa/Fulani	0.12**(0.07-0.23)	0.26* (0.07-0.95)		0.30 (0.07-1.21)
Northern minorities	0.27**(0.14-0.50)	0.34 (0.10-1.19)		0.39 (0.10-1.55)
Southern minorities	0.36**(0.19-0.70)	0.31 (0.07-1.41)		0.39 (0.08-1.88)
Others	0.11**(0.03-0.43)	0.52 (0.06-4.74)		0.62 (0.06-6.17)
Marital status				
Not married	RC		RC	RC
Married	0.50**(0.325-0.71)		0.76 (0.21-2.72)	0.67 (0.06-7.83)
Sex of household head				
Male	RC		RC	RC
Female	1.65*(1.08-2.53)		1.53 (0.82-2.86)	1.06 (0.57-1.96)
Healthcare decision-making				
Respondent has no say	RC		RC	RC
Respondent has a say	1.95**(1.37-2.78)		1.86**(1.30-2.65)	0.97 (0.62-1.52)
Partner's education level				
None	RC	RC		RC
Primary	1.42(0.88-2.30)	0.67 (0.35-1.27)		0.60 (0.30-1.17)
Secondary and higher	3.74**(2.60-5.40)	0.88 (0.51-1.54)		0.81 (0.46-1.45)

Getting permission to go to health facility Not a big problem Big problem	RC 0.63* (0.43-0.93)		RC 0.70 (0.47-1.06)	RC 0.91 (0.56-1.49)
Distance to health facility Not a big problem Big problem	RC 0.55** (0.41-0.73)	RC 0.83 (0.58-1.20)		RC 0.84 (0.58-1.22)
Place of residence Urban Rural	RC 0.38** (0.27-0.54)	RC 0.99 (0.61-1.62)		RC 0.94 (0.58-1.57)
Region of residence North Central North East North West South East South South South West	RC 1.20 (0.71-1.77) 0.69 (0.44-1.09) 1.44 (0.63-3.30) 2.03** (1.23-3.35) 3.03** (1.61-5.71)	RC 3.47** (1.91-6.33) 2.34* (1.18-4.63) 0.54 (0.04-7.81) 1.60 (0.27-9.49) 1.26 (0.42-3.77)		RC 3.51** (1.89-6.50) 2.39* (1.18-4.83) 0.51 (0.03-8.96) 1.52 (0.21-10.92) 1.44 (0.43-4.80)
Number of ANC visits None <4 ≥4	RC 3.33** (2.08-5.33) 7.85** (5.54-11.13)	RC 1.92* (1.08-3.39) 5.05** (3.26-7.82)		RC 1.73 (0.95-3.16) 5.05** (3.20-7.97)
Type of birth attendant None/Relative/Other TBA SBA	RC 1.28 (0.99-1.85) 4.50** (3.11-6.51)	RC 1.11 (0.72-1.71) 1.66* (1.04-2.65)		RC 1.11 (0.71-1.72) 1.68* (1.04-2.72)

Source: NDHS 2003-2013 *significant at $p < 0.05$ **significant at $p < 0.01$ RC: reference category

Table 6.4.1 shows the results of the binary logistic regression analysis of associations between the independent variables, covariates and postnatal care usage among adolescent mothers in Nigeria. In the unadjusted model, adolescent mothers who were 18-19 were more likely to use postnatal care than mothers aged 15-17. There were significant variations in postnatal care use, influenced by the educational status of adolescent mothers. Adolescent mothers with primary education were nearly three times more likely to use PNC than those with no education, and those with secondary or higher education were more than four times more likely to use PNC than those with no education. Adolescent mothers' wealth status was significantly associated with PNC use, as respondents from middle income households were

nearly three times more likely to use PNC, and mothers from rich households were more than four times more likely to use PNC than mothers from poor households.

Adolescent mothers who were Muslims and adherents of other religions were significantly less likely to use PNC than Christian adolescent mothers. Adolescent mothers who were from the Igbo, Hausa/Fulani, Northern and Southern minority and other tribes were significantly less likely to use PNC compared to Yoruba adolescent mothers. Also, married adolescent mothers were significantly less likely to use PNC than unmarried adolescent mothers, while adolescent mothers living in female-headed households were more likely to use PNC than those living in male-headed households.

Adolescent mothers who could contribute to decision-making on their healthcare were nearly two times more likely to use postnatal care than those who could not contribute to decision-making. Partner education was also significantly associated with PNC use, as mothers whose partners had secondary or higher education were nearly four times more likely to use PNC than mothers whose partners had no education. Adolescent mothers who had a big problem with getting permission to go to the health facility as well as the distance to the health facility were less likely to use PNC compared to those who reported that these were not big problems.

There were significant variations in postnatal care use by adolescent mothers' place and region of residence. Adolescent mothers who lived in rural areas were less likely to use PNC compared with urban residents; respondents in the North West were less likely to use PNC, and mothers in the South South and South West were more likely to use PNC than mothers in the North Central zone. Additionally, adolescent mothers who had less than four ANC visits were

nearly three and a half times more likely to use PNC, while those with four or more ANC visits were nearly ten times more likely to use PNC than adolescent mothers with no antenatal care usage whatsoever. Similarly, adolescent mothers who had skilled birth attendance were four and a half times more likely to use PNC than mothers with unskilled or unassisted births.

Model 1 included the sociodemographic variables only. Adolescent mothers from middle income households were more likely to use postnatal care than those from poor households. Also, ethnicity was significantly associated with postnatal care use, as adolescent mothers from the Hausa/Fulani tribes had a lower likelihood of PNC use than Yoruba adolescent mothers. Region of residence was also significantly associated with PNC use. Adolescent mothers from the North East and North West were more likely to use PNC than mothers from the North Central region. Additionally, antenatal care use was associated with PNC use, as adolescent mothers who made less than four ANC visits and four or more ANC visits were more likely to use PNC than mothers who did not use any ANC. Also, adolescent mothers who used skilled birth attendants were significantly more likely to use postnatal care than those who had either unassisted births or unskilled attendants.

Model 2 included only the sociocultural variables. It was discovered that healthcare decision-making was the only variable associated with postnatal care use in this model, as adolescent mothers who had a say in decisions concerning their healthcare were nearly twice more likely to make use of postnatal care, compared to adolescent mothers who had no say in healthcare decision-making.

In Model 3, which included all the sociodemographic and sociocultural variables, healthcare decision-making lost significance. Also, other sociocultural variables such as the sex of the household head and getting permission to use the health facility were not significantly associated with postnatal care use. However, education retained its significance, as adolescent mothers who had secondary and higher education were nearly twice more likely to use postnatal care than adolescent mothers with no education. Additionally, adolescent mothers from the North East and North West zones were more likely to use postnatal care than mothers from the North Central zone. Antenatal care usage also retained its significance, as adolescent mothers who made four or more antenatal care visits were more than five times more likely to use PNC than mothers who did not use antenatal care at all. Also, adolescent mothers who had skilled birth attendants at delivery were more likely to use postnatal care after delivery.

Findings from the qualitative data showed that adolescent mothers' usage patterns of postnatal care were irrespective of their achieved educational status. Rather, the data showed that postnatal care use was decided more by the adolescent mothers' healthcare preferences. Similar to findings from the quantitative study, there was a lower usage of postnatal care among adolescent mothers in South West and South East, compared to adolescent mothers in the North West region. Most adolescent mothers in the South West and South East reported going to the health facility to receive immunisation for their babies only. In the North West however, postnatal care use was higher, among Hausa and Fulani adolescent mothers, as the adolescent mothers would give birth to their babies at home either unassisted, or with the help of an unskilled or traditional birth attendant. After delivery, they would go to the hospital after delivery

to get check-ups for themselves and their babies as well as to receive immunisation for their babies.

I delivered my baby at home...The baby was in good health and we went to the hospital to receive all the immunisation for the baby (MJ07, 16, married, NW, rural, Hausa, Muslim, no education).

I gave birth to a baby girl and I delivered at home. A woman, “ingozoma” (local birth attendant) in the neighbourhood assisted me at the birth of my birth. After birth, we went to the hospital and we were checked and I was told we were okay and was given drugs for us both (KT10, 19, married, NW, urban, Hausa, Muslim, basic).

After delivery I went for the treatment of the stitches and to check how healthy he was and for prescription of pills...also as the pregnancy duration was only 7 months, they had to check him (KT08, 18, married, NW, Hausa, urban, Muslim, basic).

However, unavailability of health workers at the time she needed service provision delayed this adolescent mother’s ability to use postnatal care after delivery. She was unable to access the hospital immediately after delivery, despite having delivered her baby at home, because the clinic staff were not around at the health facility in that locality.

I didn’t go to the clinic until after 40 days...because the clinic staff were not around (MJ11, 19, married, NW, Hausa, rural, Muslim, no education).

Findings showed that unlike their counterparts in the North West region, adolescent mothers in the Southern regions who did not receive antenatal care from a health facility or use a skilled birth attendant during delivery also did not use postnatal care.

I've never taken her to the clinic...even after giving birth to her, she didn't receive any immunisation...it is only when she has malaria, I take her to get injections and I buy drugs for her **(AK05, 19, single, SW, Yoruba, urban, Christian, primary).**

After giving birth to him, I didn't take him to any hospital for any check-up or immunisation...I only gave him herbs **(AS01, 19, cohabiting, SE, rural, Igbo, Christian, basic).**

I did not have any check-up after delivery, I only took the baby for immunisation **(AK02, 16, single, SW, Yoruba, urban, Christian, basic).**

There were some adolescent mothers from the South West and South East zones who only took their babies to the health facility for immunisation despite the fact that they used antenatal care and were delivered of their babies with the help of a skilled birth attendant.

I did not go for any check-up after delivery in the hospital, it was only immunisation for the baby that I went for **(AS09, 19, widowed, SE, Igbo, rural, Christian, basic).**

Yes, I took him to the clinic four days after delivery for immunisation, and his weight was checked.... but no check was done for me as the mother **(AK03, 19, single, SW, Ebira, urban, Christian, secondary).**

Yes, he was given immunisation...They gave my baby different checkups because after delivery, before seven days, my baby had jaundice and it was really serious...but they did not do any examination of me **(AP06, 19, cohabiting, SW, Yoruba, rural, Christian, basic).**

Further findings showed that only a few adolescent mothers in the South East who used antenatal care and gave birth at a health facility reported that both they and their babies had received postnatal care a few days after delivery.

I and the baby went back to the clinic for check-up after delivery...like a week and some days after **(AS02, 19, single, SE, Igbo, rural, Christian, primary).**

Four days after delivery I went back to the hospital and they treated me... they gave me an injection **(AS10, 18, single, SE, Igbo, rural, Christian, basic).**

Additionally, partner permission was an important decider of postnatal care use. A respondent from the urban North West reported that her husband did not allow her to take the baby for immunisation, showing that partner permission is important in ensuring healthcare access for some adolescent mothers. Also, her husband was uneducated and may not have known the value of postnatal care.

I didn't take him for immunisation because my husband didn't allow that...I only took him to hospital because he had an ear infection **(KT03, 18, married, NW, Fulani, urban, Muslim, no education).**

Table 6.4.2***Goodness of Fit Test***

Model 1					
	Coefficient	Std. error	t	P> t 	95% CI
_hat	0.98	0.18	5.57	0.00	0.63-1.32
_hatsq	-0.008	0.06	-0.14	0.89	-0.12-0.11
_cons	-0.005	0.13	-0.04	0.97	-0.27-0.26
Model 2					
_hat	1.83	1.77	1.04	0.30	-1.64-5.30
_hatsq	0.27	0.56	0.48	0.63	-0.83-1.39
_cons	0.61	1.35	0.45	0.45	-2.04-3.25
Model 3					
_hat	1.02	0.17	5.82	0.00	-0.67-1.36
_hatsq	0.006	0.06	0.10	0.92	-0.11-0.12
_cons	0.003	0.13	0.02	0.98	-0.26-0.27

Source: NDHS 2003-2013

Table 6.4.2 shows the results of the goodness of fit tests conducted to determine whether the models are adequate for predicting the factors which influence postnatal care use among adolescent mothers in Nigeria. For all models, the p-values of the t tests of the *hatsq* are insignificant, showing that the models were well fitted for prediction of the factors influencing postnatal care use among adolescent mothers in Nigeria.

6.5 Summary

This chapter examined the sociodemographic and sociocultural factors which influenced the number of antenatal care visits, timing of first antenatal care visit, type of birth attendance and postnatal care use among adolescent mothers in Nigeria.

Antenatal care utilisation was categorised into none, less than four, and four or more visits. In the unadjusted model, adolescent mothers aged 18 and above, those who were above 15 at birth, mothers with at least primary education, from middle income- and rich households, those

from female-headed households and those whose partners had at least primary education had a significantly higher likelihood of making less than four ANC visits, compared to the respective reference groups. On the other hand, married adolescent mothers, those who were Muslims or adherents of other religions, those who were from the Hausa and Fulani tribes, those who had large age difference with their partners, those who reported getting permission to go to the health facility as well as the distance to the health facility was a big problem, rural residents and mothers living in the North East and North West had a significantly lower likelihood of making less than four ANC visits, compared to the respective reference groups. Adolescent mothers who were over 18, 15 and older at birth, had at least primary education, were from middle income- and rich households, were from female-headed households, those who could contribute to healthcare decision-making, whose partners had at least primary education, and who were from the South East and South West were significantly more likely to make four or more ANC visits, compared to the respective reference groups. However, adolescent mothers who were Muslims or adherents of other religions, Hausa/Fulani, from Northern and Southern minority and other tribes, married, who had a big problem with getting permission to go to the health facility, cost of healthcare and distance to the health facility, who lived in rural areas, and were from the North East and North West regions were significantly less likely to make four or more ANC visits, compared to the respective reference groups.

Model 1 included the sociodemographic variables only. Adolescent mothers with primary and secondary or higher education, and those whose partners had at least primary education were significantly more likely to make less than four ANC visits, compared to those with no education. Adolescent mothers who had at least primary education, who were from middle

income- and rich households, and whose partners had at least primary education were significantly more likely to make four or more ANC visits, compared to the respective reference groups. However, adolescent mothers who had a big problem with the distance to the health facility and those living in the North West and South South were significantly less likely to make less than four, and four or more ANC visits, compared to the respective reference groups.

The interaction between sociocultural variables and antenatal care utilisation in Model 2 showed that married adolescent mothers had a lower likelihood of making less than four antenatal care visits than unmarried respondents, and adolescent mothers living in female-headed households were more likely to make four or more ANC visits, compared to the respective reference groups. Also, adolescent mothers who had a big problem with getting permission to go to the health facility had a lower risk of making less than four, and four or more ANC visits than mothers who did not have problem with obtaining permission, compared to those who did not have a big problem obtaining permission.

In the full regression model (Model 3), the only sociocultural variable that retained its association with ANC usage was getting permission to go to the health facility, as adolescent mothers who reported that getting permission was a big problem were less likely to make less than four, and four or more antenatal care visits. Adolescent mothers with primary and secondary or higher education and those whose partners also had primary and secondary or higher education had a significantly higher likelihood of making less than four ANC visits, compared to those with no education, while adolescent mothers from the North West and South South regions had a lower likelihood of making less than four ANC visits, compared to those living

in the North Central zone. Adolescent mothers who had primary and secondary or higher education, those who were from middle income- and rich households, those whose partners had primary and secondary or higher education, and those who lived in the South West were significantly more likely to make four or more ANC visits, compared to the respective reference groups. However, adolescent mothers who had a big problem with the distance to the health facility, and those living in the North West and South South regions, were significantly less likely to make four or more ANC visits, compared to the respective reference groups.

Qualitative findings on antenatal care use among adolescent mothers in Nigeria agreed with quantitative findings that ease of obtaining permission to go to the health facility was important for facilitating their use of antenatal care. Where adolescent mothers did not struggle to obtain permission to use health facilities from their families and partners, they were able to make use of antenatal care, though to different extents, as there were other factors also involved in antenatal care usage. In contrast with the quantitative findings, educational status and region of residence did not show much difference in influence on patterns of antenatal care use, as there were little to no variations in use across the various categories observed from the qualitative data. Qualitative data also showed little variation in use according to families' differing wealth status, as what mattered most for adolescent mothers' use of antenatal care services was the presence of financial support to pay for healthcare costs, regardless of the household income. Also, in contrast to quantitative findings, the distance to the health facility did not make much difference in adolescent mothers' antenatal care usage, as even those who reported using health facilities that were far from their houses said that they made transport arrangements on their clinic days. An important additional factor that influenced antenatal care use was adolescent

mothers' healthcare preferences, as their usage patterns and choice of healthcare provider was usually based on their preferences.

Only four variables were significantly associated with the timing of the first ANC visit at the bivariate level: these variables were religion, ethnicity, respondent decision-making ability and region of residence. The unadjusted model showed that adolescent mothers who were Muslims and adherents of other religions, Hausa and Fulani, and living in the North East, North West, South South and South West regions were significantly less likely to start ANC early, while adolescent mothers who had a say in their healthcare decision-making were significantly more likely to start ANC early, compared to the respective reference groups. The adjusted model showed that healthcare decision-making ability lost significance. Adolescent mothers who were from the Hausa, Fulani and Northern minority tribes were significantly less likely to start antenatal care early compared to Yoruba respondents. Also, adolescent mothers living in the South South and South West were significantly less likely to start antenatal care early compared to respondents living in the North Central zone.

Findings from the qualitative study showed that in contrast to the quantitative findings, more adolescent mothers from the Southern zones reported starting antenatal care late, compared with fewer from the North West. Additional findings from the qualitative data showed that adolescent mothers' reasons for starting antenatal care late were avoidance of stigma, poor knowledge of reproductive health, and poor health worker attitudes. Some adolescent mothers started antenatal care late because they were not aware that they were pregnant, suggesting that they were ignorant of reproductive health processes and the bodily changes associated with

pregnancy. Also, the issue of stigma against adolescent pregnancy made one adolescent mother hide her pregnancy so that the people around her would not know that she was pregnant.

The type of birth attendant used was categorised into none or unskilled attendant, traditional birth attendant and skilled birth attendant. In the unadjusted model, it was discovered that adolescent mothers who had secondary and higher education, were from middle income- and rich households, were from Southern minority tribes, living in female-headed households, and were adolescent mothers who had partners with primary and secondary or higher education; mothers living in the North West, North East, South East, South South and South West were significantly more likely to use traditional birth attendants than have unassisted births or unskilled attendants, compared to the respective reference groups. However, adolescent mothers who were aged 18 and older, who were Muslims or adherents of other religions, and those who were married were significantly less likely to use traditional birth attendants, compared to the respective reference groups. Adolescent mothers who had primary and secondary or higher education, who were from middle income- and rich households, those living in female-headed households, those who could participate in their healthcare decision-making, those whose partners had at least primary education, those who lived in the Southern zones, and those who made less than four, and four or more ANC visits had significantly higher likelihood of using skilled birth attendants. However, adolescent mothers who were Muslims and adherents of other religions, those from the Hausa, Fulani, and other tribes, those who were married, those who reported having a big problem getting permission to go the health facility and with the distance to the health facility, and those living in the rural areas and in the North

East, North West were significantly less likely to use skilled birth attendants, compared to the respective reference groups.

In Model 1, adolescent mothers whose partners had primary education. and those living in the North East, North West, South East and South South were significantly more likely to use traditional birth attendants, while adolescent mothers who were 18 and above, and were Hausa, Fulani and from other tribes, were significantly less likely to use TBAs, compared to their respective reference groups. Adolescent mothers who were from rich households, whose partners had primary and secondary or higher education, who were living in the South East and who made either less than four, or four or more antenatal care visits were significantly more likely to use skilled birth attendants, while mothers who were 18 and above, and lived in the North East and North West regions were significantly less likely to use SBAs at last delivery, compared to the respective reference groups.

In Model 2 which included the sociocultural variables only, married adolescent mothers were significantly less likely to use traditional birth attendants. Also, married adolescent mothers and those who had a big problem with getting permission to use the health facility were significantly less likely to use skilled birth attendants, compared to unmarried adolescent mothers and those who did not find it a big problem to obtain permission.

In the full regression model (Model 3), it was discovered that adolescent mothers who lived in female-headed households were significantly less likely to use skilled birth attendants, compared with those living in male-headed households. Adolescent mothers who lived in the North East, North West, South East and South South were significantly more likely to use

traditional birth attendants, while those aged 18 and above and from the Hausa, Fulani and other tribes were less likely to use TBAs, compared to the respective reference groups. It was also discovered that mothers from rich households, those whose partners had at least primary education, and those who made less than four, as well as four or more antenatal care visits, were significantly more likely to use skilled birth attendance, while those aged 18 and above, and those who were living in the North East and North West zones were significantly less likely to use SBAs at delivery.

The findings of the qualitative study showed that, in contrast with quantitative findings, the sex of the household head did not make a difference in the type of birth attendant used. Adolescent mothers were reliant on their mothers for financial support to use skilled birth attendants for delivery if they were unmarried, and on their husbands and partners if they were married or cohabiting with their partners. Also, in contrast to the quantitative findings, adolescent mothers with different wealth status did not have widely different choices of birth attendants. Those who were able to obtain financial support from their families to pay the cost of healthcare made use of skilled birth attendants if they wanted to. Also, findings from the qualitative study showed that, in contrast with the results of the quantitative study which found lower likelihood of TBA use in the North West, the use of traditional birth attendants was common in the North West. Qualitative findings largely agreed with quantitative findings that showed higher skilled birth attendants' usage when adolescent mothers made use of antenatal care. Exceptions to this were however found in the North West, where some adolescent mothers, despite having used antenatal care opted to deliver their babies at home, as it was the traditional practice to do so. Also, isolated reports from the South East and South West showed two

respondents who, despite presently using antenatal care, wanted to deliver their babies with the help of traditional birth attendants. Additional qualitative findings showed that personal, family and community healthcare preferences, religious and cultural beliefs, health worker attitudes and perceived quality of care from chosen provider were factors which contributed to the type of birth attendant adolescent mothers chose to use for delivery. Also, findings showed that mothers exerted a great influence on their daughters' healthcare preferences, as they were often the ones who guided their adolescent daughters' choice of birth attendant.

Postnatal care use was coded into two categories, "no" and "yes". In the unadjusted model, mothers aged 18 and above, those with at least primary education, those from middle class and rich households, those living in female-headed households, those who could make decisions concerning their healthcare, those whose partners had at least primary education, mothers from the South South, those who made less than four, or four or more ANC visits, and those who used SBAs were significantly more likely to use postnatal care, compared to the respective reference groups. However, adolescent mothers who were Christians, those from the Igbo, Hausa/Fulani, Northern and Southern minority and other tribes, those who were married, those who had big problems with getting permission to the health facility and the distance to the health facility, and those living in rural areas and the North West zone were significantly less likely to use postnatal care, compared to the respective reference groups.

In Model 1, adolescent mothers from middle class households, those who lived in the North East and North West, those who made four or more antenatal care visits, and those who used a skilled birth attendant were significantly more likely to use postnatal care, while adolescent

mothers from the Hausa/Fulani, Northern minority and other tribes, and those living in the South East were significantly less likely to use PNC, compared to the respective reference groups. In Model 2, it was discovered that respondents who could make healthcare decisions were significantly more likely to use PNC, compared to those who could not contribute to their healthcare decision-making.

In Model 3, in the presence of sociodemographic variables, there were no sociocultural variables associated with postnatal care use. However, adolescent mothers who had secondary and higher education, who lived in the North East and North West, who made four or more antenatal care visits, and used a skilled birth attendant were significantly more likely to use postnatal care.

Findings from the qualitative study revealed that the use of postnatal care was not very common among adolescent mothers. Only a few mothers reported having complete postnatal care for themselves and their babies; most only went to the health facility post-delivery to get their babies immunised. Similar to findings from the quantitative study, postnatal care use was more common among Hausa and Fulani adolescent mothers in the North West region, and less common among respondents from the Southern zones. Adolescent mothers in the Southern zones generally reported taking their babies to get checked and immunised after delivery, but with little to no checks done on them. In contrast to findings from the quantitative study that adolescent mothers who used antenatal care were significantly more likely to use postnatal care, this did not hold true for most adolescent mothers in the South West and South East. Only mothers in the North West reported using antenatal care, delivering their babies at home, and

then going for postnatal care. Also, in contrast to quantitative findings about adolescent mothers who used skilled birth attendants being significantly more likely to use postnatal care, this was not found to always be the case across the zones, as respondents in the South West and South East mainly only took their babies for immunisation and not full postnatal checks, while the majority of adolescent mothers in the North West who made use of postnatal care had delivered their babies at home. The role of partner exposure and permission was also evident in the response from one adolescent mother in the North West who said she was unable to take her child for immunisation because her husband did not allow her to do so.

CHAPTER SEVEN

HYPOTHESIS TESTING

7.0 Introduction

This chapter presents the results of the study's hypotheses' testing. Each of the hypotheses is examined in line with the results from the binary and multinomial logistic regression analyses of associations between the sociocultural variables, covariates and dependent variables. All hypotheses were tested at a significance level (α) set at 0.05.

7.1 Hypothesis 1

7.1.1 Null and Alternative Hypotheses

H_0 : Sociocultural factors have no influence on the number of antenatal care visits among adolescent mothers in Nigeria.

H_1 : Sociocultural factors (gender and power relations, marital status and pregnancy intention) influence the number of antenatal care visits among adolescent mothers in Nigeria.

Significance level: $\alpha = 0.05$

7.1.2 Results

The study results showed that after controlling for sociodemographic variables, adolescent mothers who had a big problem with obtaining permission to use the health facility were significantly less likely to use any antenatal care (either less than four visits or four or more visits),

compared to respondents who did not consider obtaining permission to be a big problem. Other sociocultural variables such as marital status, pregnancy intention, and sex of household head were not significantly associated with the number of antenatal care visits attended by adolescent mothers in Nigeria ($p \geq 0.05$).

7.1.3 Decision

There is not enough evidence to reject the null hypothesis, as most of the sociocultural variables were not significantly associated with antenatal care utilisation among adolescent mothers in Nigeria. Therefore, the researcher fails to reject the null hypothesis.

7.2 Hypotheses 2

7.2.1 Null and Alternative Hypotheses

H_0 : Sociocultural factors have no influence on timing of antenatal healthcare initiation among adolescent mothers in Nigeria.

H_1 : Sociocultural factors (gender and power relations, marital status and pregnancy intention) influence the timing of antenatal healthcare initiation among adolescent mothers in Nigeria.

Significance level: $\alpha = 0.05$

7.2.2 Results

In this study, after controlling for religion, ethnicity and region of residence, healthcare decision-making did not influence the timing of the first antenatal care visit ($p \geq 0.05$).

7.2.3 Decision

The researcher fails to reject the null hypothesis, as none of the sociocultural variables were significantly associated with the timing of the first antenatal care visit by adolescent mothers in Nigeria.

7.3 Hypotheses 3

7.3.1 Null and Alternative Hypotheses

H_0 : There is no association between sociocultural factors and use of skilled delivery assistance among adolescent mothers in Nigeria.

H_1 : Sociocultural factors such as gender and power relations, marital status and pregnancy intention influence adolescent mothers' use of skilled delivery assistance in Nigeria.

Significance level: $\alpha = 0.05$

7.3.2 Results

After controlling for sociodemographic variables, only the sex of the household head was significantly associated with the type of birth attendant used, as adolescent mothers in female-headed households were less likely to make use of skilled birth attendants ($p < 0.05$).

7.3.3 Decision

There is not enough evidence to reject the null hypothesis, as most of the sociocultural variables were not significantly associated with the type of birth attendants used by the adolescent mothers in Nigeria. Therefore, the researcher fails to reject the null hypothesis.

7.4 Hypotheses 4

7.4.1 Null and alternative hypotheses

H₀: There is no association between sociocultural factors and adolescent mothers' use of postnatal care services in Nigeria.

H₁: Adolescent mothers' use of postnatal care services in Nigeria is dependent on sociocultural factors such as gender and power relations, marital status and pregnancy intention.

Significance: $\alpha = 0.05$

7.4.2 Results

The study found that none of the sociocultural variables were significantly associated with postnatal care use among adolescent mothers.

7.4.3 Decision

The researcher fails to reject the null hypothesis, as sociocultural variables were not significantly associated with postnatal care use among adolescent mothers in Nigeria.

7.5 Summary

The chapter presented the results of the hypothesis testing between sociocultural variables and the number of antenatal care visits, the timing of the first antenatal care visit, the type of birth attendant used, and postnatal care use among adolescent mothers in Nigeria. Results from the hypothesis testing showed that most sociocultural variables were not associated with the number of antenatal care visits made by adolescent mothers, therefore there was insufficient evidence to reject the null hypothesis. Also, no sociocultural variables were associated with the timing of the first antenatal care visit, hence, there was no evidence to reject the null hypothesis. Similarly, most of the sociocultural variables were not associated with the type of birth attendant used by adolescent mothers in Nigeria, and so there was insufficient evidence to reject the null hypothesis. There were also no sociocultural variables associated with postnatal care use among adolescent mothers in Nigeria, therefore, the researcher failed to reject the null hypothesis.

CHAPTER EIGHT

DISCUSSION OF FINDINGS

8.0 Introduction

This chapter presents the discussion of findings from the study. The overall goal of the study was to examine the influence of sociocultural factors on maternal healthcare utilisation among adolescent mothers in Nigeria. The study findings are discussed according to the objectives set.

8.1 Objective 1: Patterns of Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria

The first objective of the study was to examine the patterns of healthcare utilisation, namely, the number of antenatal care visits, the timing of first antenatal care visit, the type of birth attendant and postnatal care use among adolescent mothers in Nigeria. Previous studies conducted in several countries have found that adolescent mothers generally have low rates of maternal healthcare utilisation (Babalola & Fatusi, 2009; Ibrahim & Owoeye, 2012; Magadi et al., 2007; Mehari & Wencheko, 2013; Mekonnen et al., 2019; Singh et al., 2014; Wado et al., 2019). The findings of this study were consistent with those of previous studies, as nearly half of adolescent mothers had no antenatal care use whatsoever, and about a third made four or more antenatal care visits during their pregnancies, which is similar to findings by Owolabi and colleagues in 2017. Among those who used antenatal care, the majority started late, that is, in the second trimester or later, which is consistent with previous findings (Baxter & Moodley, 2015; Chikalipo et al., 2018; Emelumadu et al., 2014; Owolabi et al., 2017; Shahabuddin et al., 2015; Yeboah,

2012). Also, the use of skilled birth attendants was low, with an appreciable proportion of adolescent mothers either having unassisted births, or using unskilled or traditional birth attendants, which is consistent with previous findings (Babalola & Fatusi, 2009; Shahabuddin et al., 2015). Additionally, postnatal care use was quite low among adolescent mothers, as only the minority of adolescent mothers reported using postnatal care after delivery (Babalola & Fatusi, 2009; Shahabuddin et al., 2015).

Results of the chi square test of significance of association between sociodemographic variables and number of antenatal care visits showed that mothers' age, age at baby's birth, educational level, wealth status, religion, ethnicity, partner's education, getting money to pay for treatment, distance to the health facility, place and region of residence were significantly associated with the number of antenatal care visits. The analysis revealed that the highest proportion of adolescent mothers who made four or more antenatal care visits were aged 18 and above, aged 15 years and older at the baby's birth, had secondary education, were from rich households, were Christians, were from the Igbo and Yoruba tribes, and were those whose partners had secondary or higher education. In addition, a higher proportion of adolescent mothers who reported that they did not have a big problem with getting money for treatment and with the distance to the health facility, made four or more ANC visits than those who reported a big problem with getting money and the distance to the health facility. Additionally, the highest proportion of adolescent mothers who made four or more antenatal care visits were those living in urban areas and the South East region.

In the bivariate analysis of associations between sociocultural variables and antenatal care use, adolescent mothers' marital status, sex of the head of the household in which they lived, healthcare decision-making participation, partner age difference and getting permission to go to the health facility were significantly associated with the number of antenatal care visits made by adolescent mothers in Nigeria. A higher proportion of unmarried adolescent mothers, those living in female-headed households, those who had a say in their healthcare decision-making, those whose partners were much older than them, and those who did not have a big problem getting permission to go to the health facility made four or more antenatal care visits, compared to the respective reference categories. However, pregnancy intention had no statistically significant association with the number of antenatal care visits, as there was no significant difference in antenatal care usage between adolescent mothers who wanted or did not want their pregnancies. This finding is inconsistent with those of previous studies which found a statistically significant association between pregnancy intention and antenatal care use by adolescent mothers, where lower use of antenatal care was often associated with unintended pregnancies (Guliani et al., 2014; Magadi et al., 2007; Rai et al., 2013; Rukundo et al., 2015).

In the chi square test of significance of association between the timing of the first antenatal care visit and the sociodemographic variables, religion, ethnicity and region of residence were significantly associated with timing of the first ANC visit. The highest proportion of adolescent mothers who started antenatal care early were those who were Christians, those who came from other ethnic groups, and those who lived in the North Central region. However, adolescent mother's age, age at baby's birth, educational level, wealth status, partner's education, getting money for treatment, distance to health facility and place of residence were not significantly

associated with the timing of first antenatal visit among adolescent mothers. In the bivariate analysis of associations between sociocultural variables and timing of first antenatal care visit, the ability to make decisions concerning their healthcare was significantly associated with the timing of the first antenatal visit, as a higher proportion of adolescent mothers who could participate in their healthcare decision-making started antenatal care early. However, marital status, sex of the household head, partner age difference, pregnancy intention and getting permission to go to the health facility were not significantly associated with the timing of the first ANC visit among adolescent mothers.

In the bivariate analysis of associations between sociodemographic variables and the type of birth attendant used by adolescent mothers in Nigeria, age, educational level, wealth status, religion, ethnicity, partner educational level, distance to health facility, place of residence, region of residence and number of ANC visits were significantly associated with type of birth attendant selected. Significantly higher proportions of adolescent mothers aged 18 and above, who had secondary or higher education, who were from rich households, who were Christians, and who were of Igbo ethnicity made use of skilled birth attendants, compared to the respective reference sub-groups. Also, significantly higher proportions of mothers whose partners had secondary or higher education, who did not have a big problem with the distance to the health facility, who lived in urban areas, those who lived in the South East zone, and those who made four or more antenatal care visits made use of skilled birth attendants, compared to the respective reference categories.

In the bivariate analysis of associations between sociocultural variables and type of birth attendants used, marital status, sex of household head, ability to participate in healthcare decision-making and getting permission to go to the health facility were significantly associated with the type of birth attendants selected. Significantly higher proportions of adolescent mothers who were not married, who lived in female-headed households, who could participate in decision-making, and did not have a big problem with getting permission to go to the health facility, made use of skilled birth attendants, compared to the respective reference sub-groups.

Age at baby's birth, religion, getting money for treatment, and timing of the first ANC visit were significantly not associated with the type of birth attendants used by adolescent mothers. In contrast to findings of the study done by Baxter and Moodley (2015) where adolescent mothers had lower maternal healthcare usage when they could not get money to pay for healthcare, in this study, being able to obtain money for healthcare was not significantly associated with the type of birth attendant used. Also, partner age difference and pregnancy intention were not significantly associated with type of birth attendant used by adolescent mothers. The finding on pregnancy intention is in contrast to the finding by Magadi and colleagues (2007) who found that adolescent mothers with unintended pregnancies had lower usage of skilled delivery attendants, compared to those who had wanted pregnancies.

The chi square test of significance of association between sociodemographic variables and postnatal care use showed that age, educational level, wealth status, religion, ethnicity, partner educational level, distance to health facility, place and region of residence, number of ANC visits and type of birth attendant selected were significantly associated with postnatal care use. The

study found that significantly higher proportions of adolescent mothers who were 18 and above, those who had secondary or higher education, those from rich households, adolescent mothers who were Christians, those from the Yoruba tribe, and those whose partners had secondary or higher education made use of postnatal care, compared to the respective reference sub-groups. Additionally, significantly higher proportions of adolescent mothers who did not have a big problem with the distance to the health facility, who lived in the urban areas, who lived in the South West zone, who had complete ANC, and who made use of skilled birth attendants made use of postnatal care, compared to the respective reference sub-groups.

In the bivariate analysis of associations between sociocultural variables and postnatal care use among adolescent mothers, marital status, sex of household head, healthcare decision-making, and getting permission to go to the health facility were significantly associated with postnatal care use. Significantly higher proportions of unmarried adolescent mothers, those who lived in female-headed households, adolescent mothers who could participate in healthcare decision-making, and who did not have a big problem with getting permission to go to the health facility were able to make use of postnatal care, compared to the respective reference sub-groups. However, age at baby's birth, getting money for treatment and the timing of the first visit were not significantly associated with postnatal care use. The finding that being able to get money for healthcare costs was not significantly associated with postnatal care use is inconsistent with findings by Baxter and Moodley (2015) who found that maternal healthcare utilisation was lower among adolescent mothers who could not afford the cost of healthcare. Also, the finding that pregnancy intention was not significantly associated with PNC use is in contrast with the study by Somefun and Ibisomi (2016), which showed that women with

mistimed pregnancies had a higher likelihood of PNC use in Nigeria compared to those with wanted pregnancies. Their study, however, was conducted among all women of reproductive ages, so this may partly explain the disparity in findings.

8.2 Objective 2: Pregnancy Experiences of Adolescent Mothers in Nigeria

The second objective of the study was to investigate the pregnancy, intrapartum and postpartum experiences of adolescent mothers in Nigeria. It examined the challenges adolescent mothers faced regarding their pregnancies and the coping mechanisms they employed to navigate these challenges. The results showed that pregnancy experiences differed according to the mother's marital status, as married and unmarried adolescent mothers had experiences unique to them.

The marital status of adolescent mothers influenced their acceptance or non-acceptance of their pregnancies. Unmarried adolescent mothers generally expressed the sentiment that their pregnancies took them by surprise and were unplanned, as several of them referred to their pregnancies as “mistakes”, consistent with previous studies (Agunbiade et al., 2009; Faye et al., 2013). Adolescent mothers who were married or cohabiting with their partners when they got pregnant were more accepting of their pregnancies, though some in the North West region reported being unaware of the fact that they had conceived, displaying poor reproductive health knowledge, similar to findings by Faye and colleagues (2013). In the North West region, early marriage was tied to pregnancy among adolescent girls, as the cultural expectation is that girls get married early to prevent them from becoming promiscuous, and they become pregnant as soon as possible after their wedding ceremonies, consistent with studies in other countries (Acharya et al., 2010; Maswikwa et al., 2015). In summary, pregnancy was generally wanted

among married and cohabiting adolescent mothers, but not among unmarried adolescent mothers. This finding is consistent with the study by Sedgh and colleagues (2006) who found that unmarried adolescent mothers reported the highest rate of unwanted pregnancies among all mothers. However, the finding was in contrast to the study by Santos (2012) in Brazil which found high wanted pregnancy rates among unmarried adolescent mothers.

There were varied responses to adolescent mothers' pregnancies. For unmarried mothers, their families often expressed disappointment with their pregnancies, and there were reported cases of conflicts with the partners and partners' families over their pregnancies. While some unmarried mothers' partners accepted their pregnancies, others were abandoned by their partners and forced to rely on their own families for support during their pregnancies. However, some unmarried mothers were sent away from their family homes to go and live with their babies' fathers. Married adolescent mothers, on the other hand, generally regarded their pregnancies as welcome, with the exception of a few who reported being surprised at discovering that they were pregnant. These mothers generally reported that their own families, partners, and partner's families responded positively to the news of their pregnancies.

A few unmarried adolescents had lost their fathers shortly before they got pregnant, and this points to the fact that the emotional trauma of losing their fathers may have made them vulnerable to the risk of pregnancy. Also, some girls reported living with their mothers only as their parents were separated around the time at which they got pregnant, while others reported that they were living separately from their families. Again, this familial separation may have made the young girls emotionally vulnerable to engage in sexual relationships as a means of seeking

comfort that was unavailable to them from their families, which was consistent with findings from previous studies (Odimegwu & Mkwanaenzi, 2016; Oyefara, 2011; Ugoji, 2011; Vundule et al., 2001).

Several unmarried adolescent mothers reported experiencing some form of stigma in their communities, especially in the form of verbal abuse even from complete strangers, which was consistent with previous studies (Agunbiade et al., 2009; Amobi & Igwegbe, 2004; Arai, 2007; Atuyambe et al., 2008; Gross et al., 2012; Vundule et al., 2001; Yardley, 2008). Marriage and cohabitation were protective against stigma among adolescent mothers. Generally, across the three geopolitical zones, adolescent pregnancy was deemed acceptable only when the young girl was married, while unmarried pregnancies were frowned upon. For instance, the few adolescent mothers who reported receiving some support mainly in the form of advice from older women in their communities were either married or cohabiting with their partners, which perhaps gave legitimacy to their pregnancies and thus attracted such support.

Married and cohabiting adolescent mothers reported different decision-making patterns in their households. While some reported participatory decision-making, others reported that their partners and partners' families made all the decisions concerning their daily lives and healthcare. However, when these decision makers were aware of the benefits of healthcare, they ensured that adolescent mothers sought care. Generally, adolescent mothers did not report experiencing abuse from their own families during the course of their pregnancies. A small number of adolescent mothers reported some form of abuse from their partners or their partners' families,

and there was a possibility that this abuse resulted from the fact that their pregnancies were not accepted by the families.

Unmarried adolescent mothers relied on emotional and financial support from their own family members, primarily from their mothers, and older female relatives, where the mother was dead or either unwilling or unable to provide support for any reason, consistent with the findings from the study by Agunbiade and colleagues (2009). As most of the adolescent mothers interviewed were not economically active, they reported that they relied on their families for financial provisioning during their pregnancies. A few of them reported that their friends provided emotional support for them. Married adolescent mothers reported obtaining support primarily from their partners and partners' families, and to a lesser degree, their own families, consistent with previous findings (Santos, 2012; Tatum et al., 2012).

There were few cultural practices directly associated with pregnancy among adolescent girls. In the rural South East, the practice of the fattening room was mentioned, where pregnant adolescents were taken care of in the final stages of their pregnancy. This practice was more common for married adolescents, as they were sponsored by their husbands. However, study participants acknowledged that the practice was dying out. In the urban South East, there were certain foods that pregnant adolescents were forbidden from eating, such as eggs, nutritional beverages, peanuts, fish and certain types of wild game, as they were often misinformed that eating such foods would either make their babies too big, or would delay the process of labour. Restricting them from these nutrient-rich foods however predisposed adolescent mothers to anaemia, as a senior health worker reported that these young mothers often presented at the

health facility with anaemia. In the North West, the use of herbs at specific times in the pregnancy was common practice, as the herbs were administered in order to aid easy delivery. In the South West, however, there were no reported cultural practices associated with adolescent pregnancy and motherhood.

Interviews with senior health workers revealed that adolescent mothers were often more difficult clients to deal with during the perinatal and intrapartum periods than older mothers due to their lack of experience. Also, there were reports of unmarried adolescent mothers who commenced antenatal care whilst suffering from anaemia, pre-eclampsia and depression, which was consistent with previous studies (Egbe et al., 2015; Kawakita et al., 2016; Kirbas et al., 2016). Health workers also reported that they had to carefully manage adolescent mothers during labour as they were more susceptible to obstructed labour as well as perineal tears due to their smaller pelvic size, which was consistent with findings by Egbe and colleagues (2015).

In contrast to findings from previous studies (Agunbiade et al., 2009; Baxter & Moodley, 2015), a small number of adolescent mothers reported experiencing negative health worker attitudes. The few adolescent mothers who reported negative health worker attitudes had experiences such as being verbally abused, losing a baby due to a health worker's carelessness, and being duped by a health worker. However, despite their negative experiences, they still reported using maternal healthcare, which suggests that negative health worker attitudes do not necessarily prevent adolescent mothers from using maternal healthcare, as those who experienced it simply accepted it as part of the healthcare service delivery process.

The role of distance to health facilities has been well documented as an influencing factor for maternal healthcare utilisation (Atuyambe et al., 2009; Bhattacharjee et al., 2013; Kawakatsu et al., 2014; Musoke et al., 2015; Osoro et al., 2013; Oviukomagbe, 2017; Rutaremwa et al., 2015; Shahabuddin et al., 2017; Singh, Singh, Kumar, & Rai, 2013; Somefun & Ibisomi, 2016; Tsawe & Susuman, 2014; Woldemicael & Tenkorang, 2010). In this study, adolescent mothers, older mothers and community leaders generally reported that there was easy access to health facilities in both urban and rural areas. However, for some adolescent mothers, whenever they had to take transportation to the health facility, even during labour, they usually went by motorcycle taxis. Despite this, none of the adolescent mothers in this situation cited access as a challenge that prevented them from using maternal healthcare.

Adolescent mothers reported using maternal healthcare from different types of providers. In the urban South West, adolescent mothers reported using modern health facilities as well as “mission houses” for prenatal care and delivery. The use of “mission houses” was quite common in this area, with reasons for their use ranging from low cost of services to being instructed by religious leaders to use them for delivery. In the rural South West however, all the adolescent mothers reported visiting a health facility for antenatal care and delivery, and the use of traditional birth attendants was not common in the setting. In the South East, adolescent mothers reported the use of both traditional- and modern healthcare for prenatal care and delivery. Also, the use of private health facilities was quite common in the rural South East; however, clients’ descriptions of these health facilities suggested that they are run by nurses and auxiliary nurses. In the North West, adolescent mothers reported using both modern and traditional medicine during their pregnancies and for delivery care. A good number of

respondents from this zone used antenatal care to ensure that all was well with the pregnancy, delivered their babies with the help of a traditional birth attendant, and took the baby afterwards to the health facility for postnatal care, for check-ups for both mother and child as well as immunisations. Also, in the urban North West, a substantial number of adolescent mothers delivered their babies through Caesarean sections, which is similar to previous findings by Ibrahim and Owoeye (2012). A senior health worker in the community reported that adolescent mothers often presented late at the health facility, having unsuccessfully tried to give birth at home, which could partly explain the high number of Caesarean section deliveries among such mothers.

8.3 Objective 3: Factors Associated with Maternal Healthcare Utilisation

The third objective of the study was to identify the sociocultural barriers and enablers of maternal healthcare utilisation among adolescent mothers in Nigeria. Both quantitative and qualitative data and analyses were used to address the third study objective.

Findings from logistic regression analysis examining which sociocultural factors were associated with antenatal care use showed that mothers who had difficulties obtaining permission to go to the health facility were significantly less likely to use antenatal care, compared to those who did not have such difficulties, which is similar to previous findings in studies carried out in Zimbabwe, Nigeria, Bangladesh, and Ethiopia (Chaibva et al., 2009; Dairo & Owoyokun, 2010; Shahabuddin et al., 2015; Woldemicael & Tenkorang, 2010). Findings from the qualitative study also confirmed that when adolescent mothers had little trouble getting permission to go out and visit a health facility, they were likely to use antenatal care. However,

marital status was not significantly associated with antenatal care use, contrary to findings by Guliani et al. (2014), Rai et al. (2013), Magadi et al. (2007), Rukundo et al. (2015) and Egbe et al. (2015). Additionally, the sex of the household head was not significantly associated with antenatal care use in this study, similar to findings by Mehari and Wencheko in their 2013 study in Ethiopia. Similarly, findings from the qualitative study showed no difference in antenatal care usage among adolescent mothers by their marital status or the sex of their household heads. Rather, what informed their use of antenatal care was the presence of financial support. Adolescent mothers who obtained financial support from their mothers, if they were unmarried, and partners, if married or cohabiting, used antenatal care, which is consistent with studies by Agunbiade et al. (2009), Santos (2012) and Tatum et al. (2012).

Education, wealth status, ethnicity, partner's education, distance to the health facility, and region of residence were significantly associated with antenatal care utilisation among adolescent mothers. Adolescent mothers who had at least completed primary education had a higher likelihood of antenatal care usage, compared with mothers with no education, which is consistent with findings from previous studies (Kawakatsu et al., 2014; Magadi et al., 2007; Ochako, Fotso, Ikamari, & Khasakhala, 2011; Shahabuddin et al., 2015; Singh et al., 2014; Singh, Rai, Alagarajan, & Singh, 2012). Also, consistent with findings from previous studies, adolescent mothers from middle income- and rich households were more likely to make four or more antenatal care visits than mothers from poor households (Banke-Thomas, Banke-Thomas, & Ameh, 2017; Kawakatsu et al., 2014; Ochako et al., 2011; Rai et al., 2012; Singh et al., 2012). Adolescent mothers with educated partners had a significantly higher likelihood of using antenatal care, compared with those whose partners had no education. Qualitative findings also

highlighted the role of male partners in supporting their female adolescent partners to make use of antenatal care when pregnant, especially when they themselves are aware of the benefits of maternal healthcare, which is consistent with previous studies (Banke-Thomas et al., 2017; Rai et al., 2013, 2012; Singh et al., 2014, 2012). Additional findings from the qualitative study showed that adolescent mothers' healthcare preferences influenced the type of healthcare provider they chose for antenatal care, and how they used it. Respondents mainly reported that they chose to use modern or traditional healthcare providers, or a mixture of both, based on the type of healthcare they preferred, which is consistent with previous studies (Lubbock & Stephenson, 2008; Magadi, Madise, & Rodrigues, 2000).

The study also found that where the health facility was distant, adolescent mothers were significantly less likely to make use of antenatal care, compared to when facilities were near, which was consistent with the study by Atuyambe and colleagues (2009) in Uganda. Findings from the qualitative study, however, were not consistent with this, as adolescent mothers still visited health facilities for antenatal care even if they were distant, as they made their own transport arrangements, in contrast to findings from the previous study by Atuyambe and colleagues (2009). Also, findings showed that adolescent mothers living in the North West and South South were less likely to make less than four ANC visits, those living in the North West were significantly less likely to make four or more antenatal care visits, while those living in the South West were significantly more likely to make four or more antenatal care visits, compared with adolescent mothers living in the North Central zone. This finding was consistent with the earlier study by Rai and colleagues (2012). However, findings from the qualitative study did not show

higher use of antenatal care in the South West compared to the North West region, in contrast to Rai et al. (2012).

Results from logistic regression analysis examining variations in timing of antenatal care showed that there was no statistically significant association between healthcare decision-making and the timing of the first antenatal care visit after controlling for religion, ethnicity and region of residence. Findings from the qualitative study also supported this finding, as there was no observed difference in the timing of the first antenatal care visit between adolescent mothers who could participate or not participate in healthcare decision-making from the data. Also, adolescent mothers who were from the Hausa, Fulani and Northern minority tribes were significantly less likely to start antenatal care early compared to Yoruba respondents. Additionally, adolescent mothers living in the South South and South West were significantly less likely to start antenatal care early compared to respondents living in the North Central zone. In the qualitative study also, adolescent mothers from the South East and South West generally started antenatal care later than their counterparts in the North West. Additional reasons given for late initiation of antenatal care by adolescent mothers were avoidance of stigma, consistent with findings from previous studies (Agunbiade et al., 2009; Chikalipo et al., 2018); poor reproductive health knowledge, consistent with previous studies (Atekyereza & Mubiru, 2014; Chikalipo et al., 2018; Owusu-Addo et al., 2016); and poor health worker attitudes, consistent with findings from previous studies (Agunbiade et al., 2009; Atuyambe et al., 2009; Bhattacharjee et al., 2013; Chaibva et al., 2009; Tsawe & Susuman, 2014).

The sex of the household head was significantly associated with the use of skilled birth attendants, as adolescent mothers in female-headed households were significantly less likely to use skilled birth attendants, compared to those living in male-headed households. This finding is in contrast with that by Mrisho et al. (2007) in Tanzania, who found higher use of skilled birth attendants among mothers living in female-headed households, compared to those living in male-headed households. However, their study was conducted among mothers of all reproductive ages, and not just adolescent mothers. Findings from the qualitative study were in contrast to the quantitative findings, and showed that regardless of the sex of household head, what determined adolescent mothers' choice of birth attendant was the presence of emotional and financial support, consistent with previous findings (Lubbock & Stephenson, 2008), as well as their healthcare preferences (Atuyambe et al., 2009; Shahabuddin et al., 2017), religious and cultural beliefs (Atuyambe et al., 2009; Shahabuddin et al., 2017) and health worker attitudes (Crissman et al., 2013).

Results showed that the type of birth attendant used by adolescent mothers significantly varied by their age, wealth status, ethnicity, partner's education, region of residence and antenatal care use. Generally, adolescent mothers of higher socioeconomic status made use of skilled birth attendants, compared with their counterparts of lower socioeconomic status. Older adolescent mothers aged 18 and above were significantly less likely to use both traditional birth attendants and skilled birth attendants for delivery than younger mothers, suggesting that the likelihood of either unassisted births or unskilled attendants was higher among adolescent mothers aged 18 and above. Also, adolescent mothers who were from rich households were significantly more likely to use skilled birth attendants, compared with those from poor

households, which was consistent with findings from previous studies (Banke-Thomas, Banke-Thomas, & Ameh, 2017; Kawakatsu et al., 2014; Ochako et al., 2011; Rai et al., 2012; Singh et al., 2012). Adolescent mothers with partners who had at least primary education were significantly more likely to use skilled birth attendants, compared to those with uneducated partners, consistent with findings from previous studies (Banke-Thomas et al., 2017; Rai et al., 2013, 2012; Singh et al., 2014, 2012). However, findings from the qualitative study did not show variations in the type of birth attendants used by adolescent mothers by age, wealth status or educational level.

The study also found that the use of traditional birth attendants was still common in some parts of the country, as adolescent mothers from the North East, North West, South East and South South were more likely to use TBAs compared to mothers from the North Central region. Use of skilled birth attendants was most common in the South East zone, as adolescent mothers residing in that zone were significantly more likely to use SBAs at delivery, compared to respondents from the North Central zone. Adolescent mothers from Hausa, Fulani and other tribes had a significantly lower likelihood of using traditional birth attendants, compared to Yoruba respondents. However, findings from the qualitative study showed that Hausa and Fulani adolescent mothers commonly used traditional birth attendants during delivery as it was the norm in their communities. This finding was consistent with Shahabuddin and colleagues' 2017 findings in Bangladesh, where community norms determined individual delivery preferences among adolescent mothers. Also, adolescent mothers from the North East and North West zones had the lowest likelihoods of using SBAs at delivery, consistent with findings by Rai and colleagues (2012). Additionally, antenatal care use was significantly associated with using skilled birth

attendants, as findings showed that adolescent mothers who made less than four, and four or more antenatal care visits were more likely to use SBAs than those who had no ANC at all, which was consistent with previous studies (Manyeh et al., 2017; Zepro & Ahmed, 2016).

Adolescent mothers with secondary or higher education were significantly more likely to use postnatal care, compared to those with primary or no education, consistent with previous studies (Kawakatsu et al., 2014; Magadi et al., 2007; Ochako, Fotso, Ikamari, & Khasakhala, 2011; Shahabuddin et al., 2015; Singh et al., 2014; Singh, Rai, Alagarajan, & Singh, 2012; Somefun & Ibisomi, 2016). Also, the likelihood of postnatal care was highest among those living in the North East and North West, which is inconsistent with findings by Ononokpono et al. (2013) that showed higher postnatal care use in the Southern regions of Nigeria; however, this finding may be because the referenced study covered all women of reproductive age and not just adolescent mothers. The finding was consistent with insights from qualitative data which showed that adolescent mothers in the North West zone reported higher use of postnatal care than those from the South West and South East. Additionally, mothers who made four or more ANC visits and gave birth with the help of a skilled delivery attendant were significantly more likely to use PNC, which was also consistent with previous findings (Dahiru & Oche, 2015; Rai et al., 2012; Singh et al., 2013). However, qualitative findings were in contrast to the quantitative results. Findings showed that it was common among adolescent mothers in the North West zone to use antenatal care, to deliver at home either unassisted, with an unskilled or traditional birth attendant, and then go to the health facility for postnatal care along with their babies. The qualitative findings, however, were consistent with findings from Somefun and Ibisomi's 2016

study, where they found that women who did not use skilled birth attendants had a higher likelihood of using postnatal care, compared with those who used skilled birth attendants.

8.4 Objective 4: Proximate Factors Associated with Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria

The fourth objective of this study was to examine the proximate factors that moderate the relationship between sociocultural factors and utilisation of maternal health services by adolescent mothers in Nigeria. Maternal healthcare service use was measured by the number of antenatal care visits, the timing of the first antenatal care visit, the type of birth attendant chosen and postnatal care use.

In the presence of only sociocultural variables, marital status was associated with less than four antenatal care visits, as married adolescent mothers had significantly lower likelihood of any antenatal care compared with unmarried mothers. However, the relationship ceased to be statistically significant after controlling for sociodemographic variables. This finding was inconsistent with previous studies which found that marital status was significantly associated with antenatal care use among adolescent mothers (Egbe et al., 2015; Guliani et al., 2014; Kirbas et al., 2016; Magadi et al., 2007; Rai et al., 2013; Rukundo et al., 2015).

Adolescent mothers who reported being able to participate in healthcare decision-making, who lived in female-headed households and who could easily obtain permission to use the health facility were significantly more likely to make four or more antenatal care visits, compared with respondents who could not participate in healthcare decision-making, who lived in male-headed

households, and who could not easily obtain permission to seek healthcare. However, after adjusting for sociodemographic variables, getting permission to go to the health facility remained significantly associated with antenatal care use, as mothers who had little problem with getting permission were significantly more likely to have less than four, or four or more antenatal care visits, compared to those who were unable to obtain permission. The findings were consistent with previous studies which found that more autonomous mothers were able to make use of antenatal care (Chaibva et al., 2009; Shahabuddin et al., 2015; Woldemicael & Tenkorang, 2010). The association between healthcare decision-making and antenatal care use could not be determined after controlling for sociodemographic variables, as it had to be dropped from the model due to its interaction with marital status.

Only four variables were significantly associated with the timing of the first antenatal care visit by adolescent mothers at the bivariate level. These included religion, ethnicity, healthcare decision-making, and region of residence. In the unadjusted model, respondents who could participate in decision-making concerning their healthcare were significantly more likely to start ANC early than those who could not. In the presence of religion, ethnicity and region of residence, however, the relationship between healthcare decision-making and the timing of the first ANC visit ceased to be statistically significant.

Married adolescent mothers were significantly less likely to use both traditional and skilled birth attendants than their unmarried counterparts, after controlling for other sociocultural variables. Also, adolescent mothers who could not easily obtain permission to visit a health facility were significantly less likely to use skilled birth attendants, compared with those who

could obtain permission to visit a health facility. These associations, however, ceased to be statistically significant after controlling for sociodemographic variables. After controlling for sociodemographic variables, adolescent mothers who lived in female-headed households were significantly less likely to use skilled birth attendants, compared to those living in male-headed households, which is inconsistent with findings by Mrisho and colleagues (2007) in Tanzania, who found a significantly higher likelihood of skilled birth attendant use among women in female-headed households. However, the study by Mrisho and colleagues focused on women of all reproductive ages, and this may account for the difference in findings.

In the unadjusted model, sex of household head and healthcare decision-making ability were significantly associated with postnatal care use. Healthcare decision-making was significantly associated with postnatal care use in situations where only sociocultural attributes were included in the analysis, but the association ceased to be statistically significant after controlling for sociodemographic variables. This finding is inconsistent with a study by Dahiru and Oche (2015) which showed that mothers who were able to participate in making decisions concerning their healthcare were significantly more likely to use postnatal care. However, Dahiru and Oche's study focused on women aged 15-49 so this may explain the difference in findings.

8.5 Interpretation of Findings

Study findings showed high levels of antenatal care non-use and incomplete use, late timing of first antenatal care visits, unassisted births, unskilled and traditional birth attendants, and non-use of postnatal care among adolescent mothers in Nigeria. Also, multivariate results showed that only two of the sociocultural factors were significantly associated with maternal healthcare

usage; the ability to obtain permission for healthcare use was associated with higher antenatal care use, and having a female household head was associated with lower use of skilled birth attendants among adolescent mothers. However, other sociocultural factors such as pregnancy intention, marital status, and gender and power relations in the household, were not associated with maternal healthcare usage among adolescent mothers. Rather, sociodemographic variables such as education and wealth status were significantly associated with maternal healthcare utilisation among adolescent mothers. Adolescent mothers who were educated and had educated partners and who were from middle income- and rich households had significantly higher maternal healthcare utilisation. This implies that adolescent mothers from higher socioeconomic status households and those who are educated have more advantage in maternal healthcare service use than those from lower socioeconomic status backgrounds; therefore, attention needs to be focused on the healthcare needs of the latter group of mothers.

Findings from the qualitative study supported the quantitative finding that adolescent mothers who could obtain permission to go to the health facility had a significantly higher likelihood of antenatal care use. However, adolescent mothers' use of skilled birth attendants as well as other maternal health services did not show much variation by the sex of the household head, but rather by whether adolescent mothers could obtain financial support to pay for health service costs, as well as emotional support in form of care and concern for their wellbeing from their families. Additionally, findings from the qualitative data showed that the strongest deciders of maternal healthcare use of adolescent mothers were made according to their personal, family and community healthcare preferences, and religious and cultural traditions. Therefore, the importance of providing emotional and financial support for their adolescent daughters who get

pregnant must be emphasised in health education messages to the wider public. Also, adolescent mothers, their families and communities require public enlightenment and education about the importance of modern maternal healthcare for ensuring healthy pregnancy outcomes for pregnant adolescent girls and their children.

8.6 Contribution to Theory

The study adapted the Andersen Behavioural Model of Healthcare Utilisation (2008) as its theoretical framework. The model examined the predisposing, enabling and need factors which influence healthcare utilisation (Andersen, 2008). The hypothesised individual and contextual predisposing, enabling and need factors influencing maternal healthcare utilisation among adolescent mothers in Nigeria were selected based on the theoretical model and empirical findings from previous literature. The main individual predisposing factors selected for the study were marital status, pregnancy intention, and personal healthcare preference, and additional sociodemographic predisposing factors were the mother's age, age at baby's birth, educational level, partner educational level, ethnicity and religion. The contextual predisposing factors were stigma and cultural perceptions towards adolescent pregnancy, community healthcare preference, and additional contextual predisposing factors were place and region of residence. Enabling factors were also divided into individual and contextual factors. Individual enabling factors were adolescent mothers' autonomy, proxied by getting permission to go to health facility, sex of household head and partner's level of education, and additional sociodemographic enabling factors were wealth status and ability to obtain money to pay for healthcare costs. Contextual enabling factors were health worker attitudes, and social support from the family and

community, as well as health facility accessibility. The study focused only on perceived need, and the individual and contextual need factors identified in this study were the recognition of need for maternal care by adolescent mothers, their families and communities.

Hypothesis testing from the quantitative study found that after controlling for sociodemographic variables, being able to get permission to use the health facility influenced antenatal care usage, as adolescent mothers who could obtain permission easily were significantly more likely to make four or more antenatal visits, compared to those who found it difficult to obtain permission. Also, adolescent mothers living in female-headed households had lower usage of skilled birth attendants during delivery, compared to those living in male-headed households. From the quantitative study, however, there was not enough evidence to fail to reject the null hypotheses that there were no statistically significant associations between sociocultural factors and antenatal care use, the timing of the first antenatal care visit, the type of birth attendant used, and postnatal care among adolescent mothers in Nigeria.

Qualitative findings showed that marital status, pregnancy intention, gender and power relations, cultural perception of adolescent pregnancy and stigma did not have much influence on adolescent mothers' maternal healthcare utilisation. Rather, the major influences on maternal healthcare utilisation were the presence of social (emotional and financial) support from close family members, the religious and cultural beliefs and traditions of adolescent mothers, their close relatives and communities, and individual and community healthcare preferences. Also, the majority of adolescent mothers themselves recognised the need for maternal healthcare; however, their use of services was determined by their ability to pay for healthcare costs and

their healthcare preferences. Similarly, the family and community members of adolescent mothers recognised the need for maternal healthcare for pregnant adolescents, but their support for them was based on the prevailing cultural traditions and healthcare preferences.

In summary, individual healthcare preferences and religious and cultural beliefs, as well as maternal age, education, ethnicity, and partner education level were the individual predisposing factors for maternal healthcare use among adolescent mothers in Nigeria. Community healthcare preferences, cultural practices and the region of residence served as contextual predisposing factors for maternal healthcare use. Also, personal autonomy and the wealth status of adolescent mothers were the individual enabling factors of maternal healthcare, while the presence of social support in the form of emotional and financial support was the contextual enabling factor for maternal healthcare use among adolescent mothers in Nigeria. The individual and contextual need factors were perception of need for maternal healthcare by adolescent mothers, their families and the wider community.

The study found that consistent with the theory, individual and contextual predisposing, enabling and need factors were associated with maternal healthcare utilisation among adolescent mothers in Nigeria. Also, findings from the qualitative data showed that sociocultural factors such as social support, personal autonomy, religious and cultural beliefs, and individual, family and community healthcare preferences were deciding factors for choice of healthcare providers and patterns of service use among adolescent mothers in Nigeria. Future quantitative studies may therefore examine the significance of associations between these sociocultural factors and maternal and general healthcare utilisation.

CHAPTER NINE

CONCLUSIONS AND RECOMMENDATIONS

9.0 Introduction

The main aim of this study was to examine and explore the patterns of maternal healthcare utilisation, and the sociocultural influences on maternal healthcare utilisation among adolescent mothers in Nigeria, using a mixed methods approach. The specific objectives of the study were to examine the patterns of maternal healthcare utilisation among adolescent mothers in the country; to investigate the pregnancy, intrapartum and postpartum experiences of adolescent mothers; to identify the sociocultural barriers and enablers of maternal healthcare utilisation among adolescent mothers; and to examine the proximate factors that moderate the relationship between sociocultural factors and utilisation of maternal health services by adolescent mothers aged 15-19 in Nigeria.

The outcome variables in the study were the number of antenatal care visits, the timing of the first antenatal care visit, the type of birth attendant used, and postnatal care use. The sociocultural influences considered in the study were marital status, pregnancy intention, cultural perception of adolescent pregnancy and stigma, health worker attitudes, social support, gender and power relations, and healthcare preferences, while the covariates in the study were the sociodemographic characteristics of adolescent mothers.

9.1 Conclusions

Results from the study showed that the use of antenatal, delivery and postnatal care is quite low in Nigeria. There was limited evidence from the quantitative study to suggest that sociocultural factors such as pregnancy intention, marital status, and gender and power relations in the household were associated with maternal healthcare usage among adolescent mothers. Rather, quantitative findings showed that sociodemographic variables such as education levels and wealth status were significantly associated with maternal healthcare utilisation among adolescent mothers. Thus, maternal healthcare usage was discovered to be higher among mothers from higher socioeconomic strata, compared to those with low socioeconomic status. Findings from the qualitative study, however, did not show variations in maternal healthcare use according to educational and wealth status among respondents.

Findings from the qualitative study agreed with the quantitative findings showing that adolescent mothers who had permission to use the health facility encouraged antenatal care use, and that pregnancy intention and marital status did not have any bearing on respondents' maternal healthcare usage patterns. However, qualitative findings disagreed with the quantitative finding that respondents in female-headed households had lower use of skilled birth attendants. Rather, the presence or absence of financial and emotional support determined maternal healthcare utilisation among them, regardless of the sex of the household. Additionally, the healthcare preferences of adolescent mothers, their families and communities, and religious and cultural beliefs and traditions played major roles in deciding the pattern of adolescent

mothers' maternal health-seeking behaviour in Nigeria, while stigma and negative health workers attitudes did not show any influence on their patterns of service use.

These findings show that for maternal healthcare utilisation to increase among adolescent mothers in Nigeria, regardless of their position in socioeconomic strata, the existing health policies must ensure that equitable access to services must be provided for mothers in the lower socioeconomic strata through subsidising healthcare costs, to enable those who would be otherwise unable to pay for healthcare costs to access services. Also, programmes must focus on educating adolescent mothers and their families on the importance of modern maternal healthcare for the health of mother and child, as well as the importance of providing support for their pregnant daughters to ensure that they can access and use healthcare services. The general public also needs to be educated on the importance of modern maternal healthcare for pregnant women, to ensure that predominant religious and cultural traditions do not prevent adolescent mothers from using healthcare services. Future quantitative research may also examine the association of these sociocultural factors with maternal healthcare utilisation among adolescent and older mothers in Nigeria and other similar contexts.

9.2 Recommendations

The findings of the study have the following recommendations to policy and programme designers and implementers:

1. The study found that adolescent mothers from higher socioeconomic strata were more likely to make use of maternal healthcare, compared to those belonging to lower

socioeconomic strata. This means that greater attention needs to be directed towards adolescent mothers in less favourable circumstances. Community-based intervention programmes need to be targeted at these disadvantaged mothers, through community health extension programmes, providing them with the necessary information and support to enable them to use maternal healthcare. Also, community health extension workers may be trained to provide maternal healthcare services at the homes of adolescent mothers who may be unable to visit health facilities due to religious or cultural limitations.

2. The role of emotional and financial support from close relatives was extremely important in ensuring maternal healthcare utilisation among adolescent mothers in Nigeria. Adolescent mothers tended to rely on their mothers, older female relatives and partners for support during their pregnancy and postpartum periods, and were usually dependent on these persons for emotional and financial support, as well as advice on how to cope with their pregnancies due to their lack of experience and economic dependence on others. Public enlightenment programmes should be developed to educate and encourage close relatives of adolescent mothers on how to take adequate care of them, and to ensure that they support them adequately to make use of maternal healthcare, through the use of social, print and electronic media.
3. The study found that a lack of financial support was a significant barrier to healthcare access for several adolescent mothers. It, therefore, is recommended that the cost of healthcare in government health facilities should be either subsidised or totally removed

for mothers below age 20 who show proof that they cannot otherwise afford to pay for services.

4. Cultural healthcare preferences exerted a strong influence on the patterns of healthcare utilisation among adolescent mothers. Maternal healthcare utilisation patterns across the different contexts surveyed revealed that adolescent mothers were heavily influenced by the type of healthcare that was normative within their environments. It, therefore, is important to ensure that interventions to encourage adolescent maternal healthcare utilisation take the predominant cultural healthcare norms in each locality into consideration, rather than adopting a nationally uniform approach to the promotion of maternal healthcare utilisation. Also, culturally-sensitive public education and enlightenment programmes using social, print and electronic media should be developed to sensitise the general public about the need for modern maternal healthcare services for adolescent mothers. These could also encourage them and their families to make use of modern health services, rather than traditional healthcare providers.
5. The role of traditional birth attendants and “mission houses” in maternal healthcare service delivery needs to be re-examined. Findings from this study show that patronage of these providers is high; therefore, the 2016 National Health Policy needs to recognise their roles, integrate them into the maternal health service delivery process, and provide oversight for their functions through monitoring and training. Additionally, they may be recruited and trained as community reproductive health educators and service providers, as they are usually women who have earned the trust of other women within their communities.

6. The study found that there were no official programmes designed to address maternal health service delivery to adolescent mothers, and health workers used their own initiative to provide customised services for their adolescent clients. The provision of a standard package for maternal healthcare for adolescent girls should be integrated into the 2016 Nigerian Health Policy, which proposes addressing adolescent health issues. As adolescent motherhood is common in Nigeria, especially due to the cultural preference for early marriage in the Northern part of the country, it is necessary to create a standard package of healthcare for adolescent mothers.
7. The 2007 Nigeria Adolescent Health Policy aimed to increase reproductive health knowledge and reduce unwanted pregnancies among adolescent girls by 50% by year 2015. However, study findings showed that reproductive health knowledge was still poor among adolescent mothers. Therefore, policy implementers need to ensure that information and education about maternal healthcare be provided to adolescent girls through existing and innovative channels such as the use of IEC materials in health facilities and schools, traditional- and social media.
8. Findings from the study showed that government health centres in some rural areas lack proper oversight, as there were reports of absent staff making healthcare access difficult for adolescent mothers, as well as staff engaging in corrupt practices in the South East zone of the country. It is therefore recommended that the Federal and State Ministries of Health should give adequate attention and oversight to health facilities in the rural areas to ensure that health workers report for duty and are available to provide healthcare services to mothers.

9.3 Strengths and Limitations of the Study

The main strength of the study was that it used a mixed methods approach to examine the sociocultural influences on adolescent mothers' maternal healthcare utilisation patterns in Nigeria. It used nationally representative quantitative data from the Nigeria Demographic and Health Surveys. The Demographic and Health Surveys are conducted across a large number of countries, using standardised data collection instruments and sampling methods, which means that findings from this study may be used for comparison across countries. Also, data from three DHS surveys conducted between 2003 and 2013 were pooled to create a larger sample resulting in lower sampling errors.

Qualitative data were collected from urban and rural communities in the North West, South West and South East geopolitical zones of the country. The data were also collected across communities representing the three major ethnic groups in Nigeria. Additionally, collecting data not just from adolescent mothers, but from their mothers and guardians, as well as key informants such as senior health workers and community leaders, provided a more holistic picture of adolescent mothers' pregnancy experiences and maternal healthcare utilisation in Nigeria. Furthermore, using in-depth interviews and same-gender interviewers, rather than focus groups or group interviews provided privacy for the respondents and enabled them to speak freely about their experiences when prompted adequately, thereby ensuring the collection of a sizeable amount of information from them.

However, the study was not without limitations. The use of retrospective quantitative data was subject to recall bias, which meant that respondents may not have given information which

was completely accurate. Also, with the qualitative data, there is the possibility of social desirability bias, as respondents may have given information that they felt the interviewers would want to hear. As a result, study findings may contain errors due to the inaccuracy of data provided by respondents. Additionally, as the data were cross-sectional in nature, causality could not be established. To get around this limitation, the study focused on examining associations rather than causality. Furthermore, there was the possibility that some respondents from the DHS may have different sociodemographic and socioeconomic circumstances have changed in between the period when they experienced pregnancy and childbirth and when the data were collected.

9.4 Areas for Further Study

The study has provided important contributions to the literature on adolescent maternal healthcare utilisation in Nigeria. Findings from the study showed that social support, healthcare preferences and religious and cultural practices were major deciding factors for adolescent mothers' use of maternal healthcare services. Therefore, further quantitative investigations should be carried out to test the hypotheses that these factors are significantly associated with adolescent maternal healthcare utilisation using larger samples. Also, findings showed that several adolescent mothers reported being surprised at the realisation that they were pregnant, despite engaging in sexual intercourse. Future studies should examine the barriers to adequate reproductive health knowledge, contraceptive access and use which result in adolescent mothers falling pregnant in the first instance, to provide information for designing interventions to lower the rate of unwanted pregnancy among young girls. Additionally, this study by no means explored

all of the cultural contexts in Nigeria. Further qualitative studies are needed to explore the sociocultural influences on maternal healthcare among adolescents from the minority tribes in Nigeria, as quantitative findings from the Demographic and Health Surveys showed low levels of healthcare utilisation among them, especially among mothers from the Southern minority tribes. Also, the study found that there was high patronage of traditional and alternative birth attendants. Further research should be conducted to explore the reasons for continued patronage of these types of birth attendants among adolescent and older mothers across Nigeria. Such research would enable programme designers and implementers to create interventions that will lower TBA use while increasing modern healthcare utilisation. Findings also showed that Caesarean deliveries were high in the North West region. Further research should therefore be conducted to examine the contributory factors in that region; that would provide information for designing interventions to reduce the disproportionately high rate of Caesarean deliveries.

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pastorals of Liben Zone, Somali Regional State, Ethiopia, 2015. *International Journal of Women's Health*, 8. <https://doi.org/10.2147/IJWH.S123189>

APPENDICES

APPENDIX 1: LITERATURE REVIEW MATRIX

S/N	Title, Source, Author Year	Theory	Objectives and Hypotheses	Variables : IV, DV, covariates	Data Source, Sampling Strategy, Size	Level and Method of Analysis	Findings	Gaps
1	Woldemicael, G., and Tenkorang, E.Y. (2010). Women's autonomy and maternal health-seeking behaviour in Ethiopia. <i>Maternal and Child Health Journal</i> , 14, 988-998.		To examine the net effect of women's autonomy on their health seeking behavior in Ethiopia	Scale derived from women's autonomy (input in HH decision-making on larger purchases, daily needs and health needs, and freedom of movement) Scale derived from ANC, tetanus injection and skilled attendance at delivery	2005 EDHS	Hierarchical logit model	Women's autonomy, education, employment, wealth status and place of residence had association with MHC seeking behaviour Lack of transport and far distance to HF reduces usage Poorer use in adolescent mothers	Only recognizes poor usage in adolescents, does not explain why
2	Adedini, S.A., Odimegwu, C., Imasiku, E.N.S., Ononokpono, D.N., and Ibisomi, L. (2015). Regional variations in infant and child mortality in Nigeria: a multilevel analysis. <i>Journal of Biosocial Sciences</i> , 47, 165-187.	Mosley and Chen (1984) proximate causes of child mortality	To examine the effects of individual- and community-level characteristics on infant/child mortality in Nigeria. To determine the extent to which characteristics at these levels influence regional variations in	Community level-region, place of residence, community infrastructure, community hospital delivery and community poverty level Individual level-child's sex, birth order, birth interval, maternal	2008 NDHS	Multilevel cox survival analysis	Children of mothers aged <25 have worse outcomes than those of mothers >=25 possibly due to inexperience, early marriage and low education	Reasons for this not covered in the study, guesses made No information on cultural practices and distance from HF

			infant/child mortality in the country.	education, maternal age and wealth index Risk of infant (0-11 months) or child death (12-59 months)				
3	Biratu, B.T., and Lindstrom, D.P. (2006). The influence of husbands' approval on women's use of prenatal care: Results from Yirgalem and Jimma towns, south west Ethiopia. <i>Ethiopian Journal of Health and Development, 20(2), 84-92.</i>		To identify the relative influence of the attitudes and background characteristics of husbands and wives on prenatal care utilization, and in particular to identify the role of a husband's approval on prenatal care	Pregnancy wantedness Husband's approval of ANC Education, ethnicity, religion, sexual preference for the most recent pregnancy, type of union, age of the woman, parity, prior infant death, prior use of prenatal care, and place of residence	N=1750	Bivariate probit regression model Multivariate logistic regression Survival analysis	Higher use of ANC among women who wanted the pregnancy Higher proportion of users with husband's approval than without The influence of husband's approval declines by age, being highest before age 20 Younger women have lower use of prenatal care	Does not address why husbands' approval is highest for women <20
4	Bhattacharjee, S., Datta, S., Saha, J.B., and Chakraborty, M. (2013). Maternal health care services utilization in tea gardens of Darjeeling, India. <i>Journal of Basic and Clinical Reproductive Sciences, 2(2), 77-84.</i>		The study is aimed to find out the status of maternal health care services utilization and associated factors among recently delivered women in a block of Darjeeling district of West Bengal	Age, religion, caste, women's education, husband's education, per capita monthly income, and birth order. Barriers to utilization (ignorance, distance	Cross-sectional N=953	Bivariate Logistic regression	No relationship btw age and MCU Women 25-29 had highest use Religion predicted MCU (Hindu had highest use) Educated women more likely to use ANC but less likely for IPC and PNC	Adolescent mothers not prioritized Did not examine media exposure, autonomy, family structure, distance to HF and pregnancy intention

				to HF, cost, attitudes of health workers, Full ANC (≥ 3 visits, ≥ 1 TT injection, 100 iron and folic acid tablets) Delivery care Postnatal care			Husband's edu predicted increased MHC use Higher birth order decreased ANC use but increased IPC and PNC Ignorance of health needs, distance to HF, financial issues and bad attitude of health workers were identified as barriers to MHCU	HH and community factors not studied
5	Hernandez, J.C., and Moser, C.M. (2013). Community level risk factors for maternal mortality in Madagascar. <i>African Journal of Reproductive Health</i>, 17(4), 118-129.		To explore the effect of factors at the community level including the local health environment and access to healthcare resources on the level of maternal mortality	Doctors per 1,000 pop Primary clinics per 1,000 population Time to hospital (hrs) Commune with no vehicles Population no divided by 1000 Births divided by 1000 Female literacy Female wages Mean income Poverty gap Malaria Tuberculosis Agricultural workers No of households without toilets High crime rate	Data from 1993 population census and 2001 & 2007 commune censuses	Poisson/negative binomial regression and OLS	Number of doctors per 1,000, distance to HF, availability of transport, associated with MM Female literacy, higher mean income, associated with lower MM Presence of malaria and anaemia, agricultural labour for pregnant women increased MM	Only MM examined No individual level variables examined (they are important too)

				Cyclones				
6	Tekelab, T., and Berhanu, B. (2014). Factors associated with late initiation of antenatal care among pregnant women attending antenatal clinic at public health centers in Kembata Tembaro Zone, Southern Ethiopia. <i>Science, Technology and Arts Research Journal, 3(2), 108-115.</i>		To identify those factors associated with late initiation of antenatal care among pregnant women attending antenatal clinics in public health centers in Kembata Tembaro Zone, Ethiopia.	Sociodemographic variables Obstetric history Booking time	N=401 antenatal clients	Logistic regression	Unplanned pregnancies had more incidence of late ANC booking than planned Higher edu, maternal age <25, higher husband edu, urban res, lower income, nulliparity, abortion history and previous ANC were associated with early booking	Because all ages under 25 are lumped together, the effect of younger age can't be seen regarding timing
7	Magadi, M. (2006) Poor pregnancy outcomes among adolescents in South Nyanza Region of Kenya. <i>African Journal of Reproductive Health, 10(1), 26-38.</i>		To examine factors associated with poor pregnancy outcomes among adolescents in South Nyanza Region of Kenya.	Urban/rural res, school enrolment status, edu attainment, age, marital status, pregnancy order, desirability of preg, timing and frequency of ANC, and place of delivery or preg termination Pregnancy at <=15 Pregnancy outcomes (wastage, pre-term or full-term)	N=1247 (Adolescent Safe Motherhood Survey) 39 IDIs	Logistic regression	Undesired preg more likely to end in pre-term birth than desired Pre-term births more likely take place in the home Far distance to health facility may result in pregnancy wastage High incidence of negative outcomes among rural residents, low edu, very young mothers, unmarried teenagers and first pregnancies	Statistical significance issues, maybe a larger sample can yield different results Community level and cultural factors should have been examined also Retrospective data may lead to recall bias

							Poor MHC and unsafe abortion attempts led to preterm deliveries	
8	Baxter, C., and Moodley, D. (2015). Improving adolescent maternal health. <i>South African Medical Journal, 105(11), 948-951.</i>		Review of literature	Adolescent MHCU	Review	Review	Adolescents have increased risk of low birth weight and preterm labour Unmarried adolescents may face family and partner stress Also face negative healthcare provider attitudes May not have money to pay for health needs Pregnant adolescents may start ANC late	
9	Bantebya-Kyomuhendo, G. (2004). Cultural and resource determinants of severe maternal morbidity: lessons from some 'near miss' experiences. <i>African Sociological Review, 8(1), 67-82.</i>		To describe women's severe morbidity experiences, highlighting factors that constrain their ability to seek and obtain timely and appropriate obstetric care at formal health facilities when faced with life-threatening situations	Social and cultural factors- decision-making power, partner characteristics, distance to HF and quality of care provided, provider attitudes, preference for TBA, cultural beliefs concerning preg, family-level gender and power relations, 'birth culture'	6 IDIs with women who narrowly escaped death from maternal causes in three areas in Uganda	Manual content analysis	Provider attitudes, distance to facilities for EmOC, finance, permission and assistance from partners and male relatives are factors which determine women's delivery and morbidity outcomes. Low women's status means that men are decision makers for accessing EmOC	Very little information on pregnancy health-seeking behaviour

				Health provider factors Maternal morbidity			Marriage and being in union not necessarily protective Negative outcomes are tied more to a lack of social and financial support	
10	Ogu, R.N., Agholor, K.N., and Okonofua, F.E. (2016) Engendering the attainment of the SDG-3 in Africa: overcoming the socio cultural factors contributing to maternal mortality. <i>African Journal of Reproductive Health, 20(3), 62-74.</i>		Review of maternal health literature		Review	Review	Education helps women to be more aware of health needs and pregnancy complications Educated women are also likely to marry later and have smaller families Low status means less decision-making power Poverty reduces women's ability to seek proper pregnancy care and good nutrition	
11	Reynolds, H.W., Wong, E.L., and Tucker, H. (2006). Adolescents' use of maternal and child health services in developing countries. <i>International Family Planning Perspectives, 32(1), 6-16.</i>		To investigate associations between poor health outcomes and early childbearing To examine adolescent mothers' use of MCH services in developing countries	Mother's age, marital status, parity, education, place of residence, cultural factors (ethnicity, religion, language spoken at home), sex of the child, poverty/wealth status	DHS data from 15 countries: Africa (Ethiopia, Guinea, Malawi, Mali, Uganda); Asia (Bangladesh, Cambodia, India, Indonesia, Nepal); Latin	Logistic regression	In African countries, no significant difference btw age groups in ANC/delivery care usage. In Uganda, children of adolescents less likely to receive vaccinations. Difference in vaccine uptake except for BCG which may be because	Did not cover postnatal care The proxies for cultural context differed across countries were not sufficient to show how culture influenced ANC use for young women

			To assess ANC use, delivery care and infant immunization use	ANC Delivery care Infant vaccinations (BCG, DPT, OPV and measles)	America (Bolivia, Brazil, Guatemala, Nicaragua, Peru).		BCG is administered at birth No difference in skilled delivery care between adolescents and older women	
12	Yeboah, M.K. (2012). Social support and access to prenatal health services: a study of pregnant teenagers in Cape Coast, Ghana. <i>Journal of Science and Technology, 32(1), 68-78.</i>		To assess the impact of the presence or absence of social support on prenatal health seeking behaviour among pregnant teenagers in Cape Coast, Ghana	Maternal age, education, marital status, religious and cultural beliefs, SES, living arrangements and access to social support. Timing of prenatal care	N=340 aged 15-24	Logistic regression	Lack of social support (instrumental), poverty and young age were risk factors for late initiation of prenatal care for teenage mothers	Small sample; differing results may be obtained with a larger sample and in different context Only prenatal healthcare addressed
13	Atuyambe, L., Mirembe, F., Johansson, A., Kirumira, E.K., and Fazelid, E. (2009). Seeking safety and empathy: Adolescent health seeking behavior during pregnancy and early motherhood in central Uganda. <i>Journal of Adolescence, 32, 781-796.</i>	Kroeger (1983)	To explore adolescent health seeking behavior during pregnancy and early motherhood in order to contribute to health policy formulation and improved access to health care.		Qualitative study FGDs, KIs. 13 FGDs, 6 KIs	Latent content analysis	Gender power dynamics, shame and guilt related to being pregnant, far distance to HF and lack of transport and financial support, cultural reliance on traditional medicine as well as beliefs which oppose western medical practices, lack of compassion from health workers, cost of delivery process are factors which hinder adolescent girls from accessing MCH	Rural setting and context only, what happens in urban settings? Facility-based study, little knowledge about those who did not come to HF

14	Owusu-Addo, S.B., Owusu-Addo, E., and Morhe, E.S.K. (2016). Health information-seeking behaviours among pregnant teenagers in Ejisu-Juaben Municipality, Ghana. <i>Midwifery</i>, 41, 110-117.	Wilson (1997) Information Seeking Model	To examine health information-seeking behaviours among pregnant teenagers in rural Ghana.		N=28 17 IDIs 1 KII 2 FGDs (N=11)	Thematic framework analysis	Shyness, health worker attitudes hinder information seeking at health facilities for pregnant adolescents Adolescents have unmet needs for information concerning pregnancy They may rely more on traditional sources such as mothers, friends and other acquaintances for information Low use of IEC materials by adolescents	Only information-seeking behaviour was examined; actual health-seeking behaviour was not examined
15	Sulaiman, S., Othman, S., Razali, N., and Hassan, J. (2013). Obstetric and perinatal outcome in teenage pregnancies. <i>South African Journal of Obstetrics and Gynaecology</i>, 19(3),77-80.		To compare obstetric and perinatal outcome in teenage and non-teenage pregnancies in Kuala Lumpur, Malaysia		Hospital records N=175 (<19) 200 (>=19)	Chi square and t-test	Teenage mothers have a higher risk of low birth-weight babies than older mothers Higher no of preterm deliveries No significant differences in pre-eclampsia, PPH and anaemia.	No information on health-seeking behaviour
16	Onoh, R.C., Ezeonu, P.O., Anozie, B.O., Esike, C.O.U., Obuna, J.A., Egbuji, C., Agwu, U.R., Agboeze, J., and Chukwudi, I.P. (2014).		To determine the obstetric and neonatal outcome of teenage pregnancy.	Obstetric outcomes among teenagers	N=8020 deliveries between January 2005 and December 2010.	Chi square test Fisher's exact test	Anaemia, malaria, preterm delivery, PPH and low birth weight were found as complications among teen mothers	Measures outcomes only, not preventive care

	Outcome of teenage pregnancy at a tertiary hospital in Abakaliki Southeast Nigeria. <i>Journal of Basic Clinical and Reproductive Sciences, 3(1), 22-26.</i>				N=137 age 13-19		No pregnancy induced hypertension Higher CS, birth asphyxia, perinatal mortality rates found among teen mothers	No mention of health-seeking behaviour
17	Woldemicael, G. (2006) Teenage childbearing and its health consequences on the mother and child in Eritrea. <i>Journal of Eritrean Medical Association, 1(1), 53-58</i>		To examine the health consequences of early motherhood on the mother and child in Eritrea, and the social and demographic context in which it occurs. To examine the level and trend of teenage childbearing in Eritrea.	Prenatal and delivery care Low birth weight Prolonged labour Infant and child mortality	Eritrea DHS 2002	Logistic and Cox regression	Children of mothers <18 are more likely to have low birth weight Children of mothers <20 have higher risk of mortality in the first two years of life	Little about the cultural and behavioural context of teen pregnancy; also determinants of ANC and PoD
18	Osoro, A.A., Ng'ang'a, M., Mutugi, M., and Wanzala, P. (2013). Determinants of maternal mortality among women of reproductive age attending Kisii General Hospital, Kisii Central District, Kenya (January 2009-June 2010). <i>East African Medical Journal, 90(8), 253-261.</i>		To describe the causes and determinants of maternal mortality among women of reproductive age seeking healthcare services at Kisii General Hospital.	Sociodemographic characteristics Maternal mortality causes	Verbal autopsies, hospital records and staff interviews using questionnaires N=72	Descriptive statistics	Transport, finances and distance to hospital were barriers to early seeking of intra partum care Majority (60%) of dead women were btw 15-25 Facility-based causes were delay in attendance by staff, lack of blood for transfusion, and no money for drugs	No info on ANCU Small sample, facility-based only

							Major complications leading to death were postpartum sepsis, bleeding, hypertension and pre-eclampsia. Social reasons were: permission had to be sought from husbands/ mothers-in-law to use HF which may lead to delay in seeking care, reliance on elderly women as birth attendants, delay in reaching the health facility, limited access to financial resources for women, delay in receiving care at HF, preference for TBAs because of perceived bad HW attitudes	
19	Singh, P.K., Rai, R.K., Alagarajan, M., and Singh, L. (2012). Determinants of maternity care services utilization among married adolescents in rural India. <i>PLoS ONE</i>, 7(2), e31666, 1-14.	Thaddeus and Maine (1994)	To assess the factors associated with selected maternal healthcare indicators with reference to adolescent mothers in the age group 15–19 years living in rural India	Socioeconomic and demographic predictors such as age of the woman at birth, women's education, husband's education, religion, social group, women's autonomy, mass media exposure, wealth quintile, family structure,	Data from NFHS 2005-6 N=3599	Logistic regression	Women and partner edu, econ status were significant predictors of use of ANC and safe delivery Higher birth order decreased the likelihood of ANC use and safe delivery	Married adolescents only, what of the unmarried ones with unintended pregnancies?

				birth order and interval, status of the child, visit of health provider and region of residence were included as predictor variables in the study. Adolescent women receiving full antenatal care, those who had safe delivery and adolescent women who received postnatal care within 42 days of delivery.				
20	Singh, P.K., Kumar, C., Rai, R.K., and Singh, L. (2014). Factors associated with maternal healthcare services utilization in nine high focus states in India: a multilevel analysis based on 14 385 communities in 292 districts. <i>Health Policy and Planning, 29, 542-559.</i>	Social capital (Coleman) Social networks (Gage 2007) Community awareness and diffusion (McNay et al 2003, Gage and Calixte 2006)	To examine factors associated with maternal healthcare utilization in nine high focus states in India, which shares more than half of the total maternal deaths in the country; accounting for individual-, household-, community- and district-level characteristics.	ANC use, Skilled birth attendance, postnatal care after birth Indv./household level- mother's age at childbirth, birth order, education, awareness of health services, social group (caste), religion, occupation and economic status Comm. Level- place of residence, proportion of	Data from District Level Household and Facility Survey 2007-8	Multilevel regression	Individual-level factors such as birth order (inverse), women's edu and knowledge of ANC, social status and religion and household weath status have effect on MHCU Comm. Level factors such as rural/urban res, poor infrastructure, accessibility and communication hindered MHCU District level factors such as PHC/pop ratio, proportion of PHC with	Cultural practices may be a predictor of MCHU but could not be inferred from available data HW attitudes, waiting time and other facility-specific measures not considered

				illiteracy and proportion of poverty District-level-availability of health services, avg popn covered by HS, %age of pregnancies registered			available labour rooms and percentage of registered preg women influenced MCHU	
21	Sedgh, G., Bankole, A., Oye-Adeniran, B., Adewole, I.F., Singh, S., and Husain, R. (2006). Unwanted pregnancy and associated factors among Nigerian women. <i>International Family Planning Perspectives</i> , 32(4), 175-184.		To understand the factors related to unwanted pregnancy in Nigeria.	Unwanted pregnancy Age, marital status, education, parity, SES, religion, place of residence, region, ever use and current use of contraceptives	N=2978 (community based study) Questionnaire	Univariate analysis and multivariate logistic regression	More than half of adolescents tried to terminate an unwanted preg Wealthier women were also likely to want to end an unwanted preg Unmet need for contraception was also a reason for wanting to end unwanted preg Unmarried adolescents had 31% unwanted preg, highest	Does not link unwanted preg and maternal health seeking behaviour
22	Singh, A., Kumar, A., and Pranjali, P. (2014). Utilization of maternal healthcare among adolescent mothers in urban India: evidence from DLHS-3.		To examine the factors associated with selected indicators of utilization of maternal healthcare services with reference to adolescent mothers (13–19 years) living in urban India.	Woman's education, husband's education, religion, caste, exposure to mass media, economic status, employment,	DLHS 2007-8 India	Bivariate Logistic regression	22.9% ANC 70.5% IPC 65.1% PNC ANC low among illiterates; less than half use IPC and PNC	Urban adolescents only, what of rural? Community level variables not examined

	PeerJ 2:e592; DOI 10.7717/peerj.592			parity, and region of residence. Full ANC (>=3 visits, 2 TT injections and iron+folic acid tablets for 90 days), safe delivery and PNC			Poor SES results in lower ANC, IPC and PNC use Religion also affects use, Muslim women less likely to use than Hindu women except for PNC Higher parity mothers have less use than first time mothers	Beliefs and cultural values could not be examined
23	Banerjee, B., Pandey, G.K., Dutt, D., Sengupta, B., Mondal, M., and Deb, S. (2009). Teenage pregnancy: a socially inflicted health hazard. <i>Indian Journal of Community Medicine</i> , 34(3), 227-231.		To assess the magnitude of the problem of teenage pregnancy and its complications.	Anaemia, low birth weight and preterm delivery	Hospital based study for four months in West Bengal Teen mothers 15-19 (N=58) Older mothers 20-24 (N=91)	Bivariate stats	Anaemia, LBW, stillbirth, labour complications and preterm delivery more among teen mothers Greatest risk among the poorest and low SES because of nutritional challenges and poor health-seeking behaviour	Small sample Bivariate results do not show whether the interaction of other factors have led to these outcomes Facility-based Little info on health-seeking behaviour and associated factors
24	Mehari, K., and Wencheke, E. (2013). Factors affecting maternal health care services utilization in rural Ethiopia: A study based on the 2011 EDHS data.		To fill the existing information gap about maternal health care by providing empirical evidence-based on the data of the 2011 EDHS by way of identifying factors/predictors	Mother's age, mother's educational level, educational level of husband/partner, work/employment status of mother,	2011 EDHS N=6251 rural women aged 15-49	Logistic regression	Adolescents less likely to use MHC Higher levels of partner and mother's edu contributed to higher MHCU	Does not give reasons why adolescents' use is low Why only rural women? What about urban?

	<i>Ethiopian Journal of Health and Development, 27(1), 16-24.</i>		that affect maternal health services in rural Ethiopia.	birth order, wealth index, region, sex of household head, and religion. ANC, IPC and PNC			Higher HH wealth increased MHCU	
25	Babalola, S., and Fatusi, A. (2009). Determinants of use of maternal health services in Nigeria- looking beyond individual and household factors. <i>BMC Pregnancy and Childbirth, 9, 43-55.</i>		To examine the determinants of maternal services utilization in Nigeria, with a focus on individual, household, community and state-level factors.	ANC, IPC, PNC Individual and HH: rank of the most recent birth, education, ethnicity, age at last birth, attitudes towards family planning, ideal family size and socioeconomic status. Community level: type of place of residence (urban versus rural), media saturation in the local government area (LGA) of residence, and prevalence of the small family norm in the LGA of residence. State level: the ratio of Primary Health	2005 NARHS N=2148	Multilevel analysis GLLAM	Less than half of mothers used ANC, 29% used skilled delivery and 28.8% used PNC as at last delivery Middle aged women were more likely to use MHC than older and younger mothers Ratio of PHC/pop significant for ANC and IPC not PNC Higher use among Southern tribes and minorities than Hausa/Fulani/Kanuri Higher use as SES increases	No focus on adolescents, age is just a variable No examination of distance to HF and availability of health services within locality The sociocultural context of MHCU is not addressed

				Care (PHC) facilities to the population				
26	Adebowale, S.A., and Udjo, E. (2016). Maternal health care services access index and infant survival in Nigeria. <i>Ethiopian Journal of Health Sciences</i>, 26(2), 133-146.		To study the association between infant mortality and maternal health care access index in Nigeria.	Infant survival Maternal Health Care Services Access Index (computed from ANC, TT, Place of delivery and birth attendance) <i>Demographic</i>; (age, marital status, birth order, preceding birth interval, children ever born, marital status and sex of the child), <i>Socioeconomic</i> (wealth index, education, ethnicity, religion, region, work status, place of work, place of residence and husband's education), <i>environmental and health related</i> factors (sources of drinking water, toilet facility, cooking fuel and size of the child at birth).	NDHS 2013	Bivariate Cox regression Brass method	As MHCI increases, infant deaths reduce Women 20-34 were likely to have lower infant mortality than 15-19. Those 35-49 were more likely to have higher IM The components of the index had no significant association when entered into the model by themselves.	No focus on adolescent mothers Retrospective reporting may mean underreporting of children's deaths

27	Okigbo, C.C., and Eke, A.C. (2015). Skilled birth attendance in Nigeria: a function of frequency and content of antenatal care. <i>African Journal of Reproductive Health, 19(1), 25-33.</i>		To examine the influence of antenatal care (ANC) on skilled birth attendance (SBA) in Nigeria	ANC visits and content SBA woman's: age (grouped as 15-24, 25-29, 30-34, and 35 or more years); educational attainment (none, primary, and secondary/higher education); marital/union status (married/has partner vs. single/divorced/separated); religion (Christianity, Islam, or other/no religion); residence (urban vs. rural); region of country (northern vs. southern geopolitical zones), household wealth index, and reproductive health factors such as parity prior to last pregnancy (1-2, 3-4, or 5+ children) and intention of last pregnancy (wanted at the time vs.	MICS 2011 N=9879 (age 15-49)	Logistic regression	The quality of ANC received (in terms of number of services) is positively associated with the use of skilled attendance at birth, while number of ANC visits was negatively associated with SBA Different contexts btw North and South mean that higher ANC and SBA use in South Higher SBA in rural areas Higher SBA among women who wanted pregnancy	Focus only on women's individual characteristics Contextual factors not examined, recognized necessity for qual studies to understand the influence of context
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				not wanted at the time).				
28	Rai, R.K., Singh, P.K., and Singh, L. (2012). Utilization of maternal health care services among married adolescent women: insights from the Nigeria Demographic and Health Survey, 2008. <i>Women's Health Issues, 22(4), e407-e414.</i>	Thaddeus and Maine (1994) cause of maternal mortality Andersen & Newman	To examine the factors associated with selected maternity services for married adolescent women who have had at least four antenatal care (ANC) visits, those who have undergone safe delivery care, and those who received postnatal care within 42 days of delivery	Maternal age (<18, and 18–19), women's education , husband's education , place of residence, mass media exposure , wealth quintile , religion , social group , women's work status , birth order and interval , head of the household) and region of residence ANC IPC PNC	NDHS 2008 N=2434	Chi square Binary logistic regression	Women and husband's edu, wealth status, region of residence were sig predictors of MHCU Northern adolescents less likely to use MHC Mass media exposure made ANC more likely Higher birth order and shorter interval negatively associated with IPC Higher likelihood of urban mothers using MHC Full ANC use positively associated with IPC and PNC PNC associated with IPC	Married adolescents only; unmarried and unintended pregnancies? No immunization Individual only characteristics, no contextual factors examined
29	Ononokpono, D.N., Odimegwu, C.O., Imasiku, E., and Adedini, S.A. (2013). Contextual determinants of maternal health care service utilization in Nigeria.		To explore the relationship btw community factors and ANC use, and to explore how community factors moderate the relationship btw individual factors and ANC use	Maternal age at last birth, education, religion, ethnic origin, occupation, a woman's autonomy, and household wealth index.	2008 NDHS N=16005 (aged 15-49)	Multilevel modelling	Residence is related to ANC use, with SW having highest Positive association with community hospital delivery	Perceptions of use of HC services and distance to HF not measured Only ANC measured, other MCH silent

	<i>Women and Health</i> , 53, 647-668.			Region of residence, community hospital delivery, community women's education, community mass media exposure, and community poverty. ANC visits			Comm poverty –vely associated with ANC use Comm mass media use +vely related to ANC use Comm poverty moderated the association btw edu and ANC use Edu, employment and wealth index were +vely related with ANC use	All women, teenage pregnancy not highlighted
30	Ononokpono, D.N., and Odimegwu, C.O. (2014). Determinants of maternal health care utilization in Nigeria: a multilevel approach. <i>Pan African Medical Journal</i> , 17(Supp.1), 2-7.		To examine the contribution of community factors in explaining variations in the use of health facilities for delivery in Nigeria.	Maternal age at last birth, education, religion, ethnic origin, occupation, women's autonomy, parity and socioeconomic status. Place of residence (urban and rural), region of residence, community level education and ethnic diversity.	N=17542 NDHS 2008	Multilevel analysis	Ethnic diversity negatively associated with ANC use	Distance to HF not examined
31	Aremu, O., Lawoko, S., and Dalal, K. (2011). Neighborhood socioeconomic disadvantage,	Andersen theory of healthcare utilization	To investigate the effect of neighborhood and individual socioeconomic position on the utilization	Women's occupation, women's and partner edu, HH wealth status,	N=15162 Women 15-49 NDHS 2008	Multilevel discrete choice analysis	Household wealth status, women's occupation, women's and partner's high level of education	No examination of provider attitudes or HF characteristics

	individual wealth status and patterns of delivery care utilization in Nigeria: a multilevel discrete choice analysis. <i>International Journal of Women's Health, 3, 167-174.</i>		of different forms of place of delivery among women of reproductive age in Nigeria.	possession of health insurance, Neighbourhood socioeconomic disadvantage, community physician-provided prenatal care, region of residence Place of delivery			attainment, and possession of health insurance were associated with use of private and government health facilities for child birth relative to home delivery Higher birth order and young maternal age were associated with use of home delivery Younger women less likely to deliver in facility Living in a highly socioeconomic disadvantaged neighborhood is associated with home birth compared with the patronage of government health facilities.	All women examined, no info on adolescent mothers No info on cultural context
32	Antai, D. (2009). Faith and child survival: the role of religion in childhood immunization in Nigeria. <i>Journal of Biosocial Sciences, 41, 57-76.</i>		To assess the role of mother's religious affiliation in child immunization status of surviving children 12 months of age and older in Nigeria	Mother's religion Child's sex, maternal age at childbirth, birth order and interval, mother's region of residence and place of residence, mother's and	2003 NDHS	Logistic regression	Religion associated with risk of non-immunization (Muslims were less likely to immunize than other religions) Low SES increased risk of non-immunization	Only immunization in older children was examined. Nothing from teenage mothers

				father's edu, occupation			while media exposure reduced risk	
				Child's immunization status			Higher risk of non- immunization in NW, NE, SE and SS compared to SW	
33	Vundule, C., Maforah, F., Jewkes, R., and Jordaan, E. (2001). Risk factors for teenage pregnancy among sexually active black adolescents in Cape Town. <i>South African Medical Journal, 91(1),73-80.</i>		To investigate the risk factors for teenage pregnancy among sexually active adolescents in an urban and peri-urban context.	Teenage pregnancy Mean household size, living with biological parents, presence of mother and father, education, alcohol use, schooling history, mother's edu, parents occupation, type of house and no of rooms, presence of TV set, age diff betw girl and partner, no of partners, age at FSE, coerced sex, previous STD, pregnancy history, contraceptive use, couple communication about sex and contraception, source of sex info, perception of preg among friends	N=191 cases (pregnant) N=353 matched controls (not pregnant) Case-control design Black adolescent girls aged <19	Conditional logistic regression Stepwise (backward and forward)	Births to unmarried teen mothers have a financial burden on families especially where the father cannot or will not support Large household size and non-nuclear families associated with pregnancy Presence of the father reduced pregnancy risk Having a TV reduced risk of preg No sig relationship btw school performance and religiosity and preg Preg teens had boyfriends several years older than they Forced sex a sig predictor of preg	No mention of healthcare utilization and health-seeking behaviour in pregnancy

							Frequent intercourse and non-use of contraception also associated with preg Communication about sexual matters with boyfriends increased preg risk Less communication with family members Having pregnant friends was a strong risk factor for preg	
34	Coovadia, H., Jugnundan, Y., Ramkissoo, A. (2016). Adolescence: the age of Proteus. <i>South African Medical Journal, 106(7), 659-661.</i>		Review	Review	Review	Review		
35	Corcoran, J., Franklin, C., and Bennett, P. (2000). Ecological factors associated with adolescent pregnancy and parenting. <i>Social Work Research, 24(1), 29-39.</i>	Brofenbrenner ecological systems theory (1979)	To discover the combination of factors that successfully predict adolescent pregnancy and parenting in SW US.	Macrosystem (household income, race, parents' occupations) Mesosystem (family structure and functioning, religion, problems with friends, neighbourhood,	N=105 age 11-22	Logistic regression	Low income associated with increased preg risk Low communication betw family and teens predicted preg risk Alcohol use and stress associated with preg	Small sample Program-based recruiting so results might be biased No explanation of health-seeking behaviour

				school and social support) Microsystem (self-esteem, depression, stress, alcohol and drug abuse) Adolescent pregnancy and childbearing				
36	Palermo, T., and Peterman, A. (2009). Are female orphans at risk for early marriage, early sexual debut, and teen pregnancy? Evidence from sub-Saharan Africa. <i>Studies in Family Planning</i>, 40(2), 101-112.		To examine orphanhood status as a determinant of early marriage, early sexual debut and teen pregnancy	Orphanhood status (single or double) Ever married, ever had sex, ever pregnant	DHS surveys in 10 African countries (Benin (2006), Chad (2005), Congo/Brazzaville (2005), Côte d'Ivoire (2005), Lesotho (2004), Malawi (2004), Mozambique (2003), Tanzania (2004), Uganda (2006), and Zimbabwe (2005–06)) Age 15-17	Logistic regression	Inconclusive Orphanhood predicted early sex, marriage and preg differently for different countries Not much statistical significance Orphans in lowest wealth quintile had all three outcomes	More work is needed to know the peculiar circumstances or orphans needed to put them at risk of these outcomes

37	Raneri, L.G., and Wiemann, C.M. (2007). Social ecological predictors of repeat adolescent pregnancy. <i>Perspectives on Sexual and Reproductive Health, 39(1), 39-47.</i>	Social ecological theory	To examine the individual, peer, family and community-level risk factors for repeat pregnancy	Self-esteem, depression, substance use (ind) Romantic relationships (dyad) Mother's age at childbearing, closeness to mother, having a sister who was/is a teen parent, abuse (family) School status, religiosity, number of friends with babies, number of friends who are school dropouts, perceived stigma, comm violence (peer/comm) Race (social sys) Repeat pregnancy within 24 months	Aged 12-18 Hospital records between December 1993-February 1996. N=932	t-test and chi square Logistic regression	Lack of use of contraception resulted in repeat preg In-school girls less likely to have repeat preg Girls with preg friends likely to have repeat preg Girls no longer in a relshp with their child's father have higher risk of repeat preg Girls with partners more than 3 years older were likely to have repeat preg	Old data Context-specific No investigation of health-seeking behaviour
38	Odimegwu, C.O., and Mkwanaenzi, S. (2017). Factors associated with teen pregnancy in sub-Saharan Africa: a multi-country cross-sectional study	Social disorganization theory	To assess the contextual factors associated with teenage pregnancy in sub-Saharan Africa	Age, place of residence, edu status, employment status, sex of HH head, marital status (ind) Family disruption (fam)	DHS from 11 African countries Tanzania, Ethiopia, Rwanda and Uganda from East Africa,	Multilevel logistic regression	Teen pregnancy associated with family disruption, comm level female unemployment and comm poverty in Southern and East Africa, while only associated with comm poverty in West Africa	Social and cultural variables and context not examined Preg only, no MHCU

	<i>African Journal of Reproductive Health</i> , 20(3), 94-107.			Community poverty and female unemployment Teenage preg	Malawi, Mozambique and Zimbabwe from Southern Africa as well as Senegal, Nigeria, Niger and Cote d'Ivoire from West Africa. Only one country from Central Africa (Cameroon)		Higher risk of teen preg in rural areas in WA	
39	Oyefara, J.L. (2011). Determinants of adolescent fertility in contemporary Yoruba society: a multivariate analysis. <i>Gender and Behaviour</i> , 9(2), 3979-4004.	Structural functionalist theory by	To examine the determinants of adolescent fertility	Teen preg	N=1,000 Age 15-49 10 IDIs Quant and qual	Logistic regression Content analysis	Parental marital disruption predicts teen preg Religion had no influence on teen preg Working teens less likely to get preg Lower edu status predictor of teen preg	Context-specific Non-representative sampling method Only non-marital preg studied Preg intention not examined
40	Deardroff, J., Gonzales, N.A., Christopher, S., Roosa, M.W., and Millsap, R.E. (2005). Early puberty and adolescent pregnancy: the influence of alcohol use.		To examine whether early puberty is linked to early sexual debut and alcohol use	Age at menarche, first sex, first preg, first alcohol use	N=666 aged 18-22	Path analysis	Early puberty, first sex and alcohol use linked to early preg	Older adolescents No study of HSB

	<i>Pediatrics</i> , 116(6), 1451-1458.							
41	Amobi, I., and Igwegbe, A. (2004). Unintended pregnancy among unmarried adolescents and young women in Anambra State, South East Nigeria. <i>African Journal of Reproductive Health</i>, 8(3), 92-102.		To identify the characteristics and factors influencing unintended pregnancy among unmarried women in a rural community in south-east Nigeria		N=136 Hospital based data (January 1998-December 2001) Questionnaire and IDI 10 IDIs		Forced marriage, physical and verbal abuse, stigma, psycho-social stress are experienced by girls as a result of non-marital preg Transactional sex, multiple partnerships, older partners and condom non-use are associated with non-marital preg Condom use was very low among the study pop (13.5%) Poor sex edu was found among the study pop Unsafe abortion attempts	Small sample, facility based, context-specific No study of HSB
42	Ugoji, F.N. (2011). Parental marital status and peer influence as correlates of teenage pregnancy among female teens in South-South Nigeria. <i>Gender & Behaviour</i>, 9(2), 4125-4139.		To examine the influence of parental marital status and peer influence on teenage pregnancy among female teens in SS Nigeria	Parental marital status Peer influence Teen pregnancy	Purposive sampling N=324	Correlation and Multiple regression	Females with single parents more likely to have teen preg probably due to poverty Peer influence is a better predictor of teen preg Girls with single parents more likely to get	Bivariate level Small sample, context-specific Non-probabilistic sampling, so not representative

							pregnant than those with both parents	
43	Adebowale, A.S., and Akinyemi, J.O. (2016). Determinants of maternal utilization of health services and nutritional status in a rural community in South-West Nigeria. <i>African Journal of Reproductive Health, 20(2), 72-85.</i>		To identify the determinants of maternal utilization of health services and nutritional status in a rural community in south-west Nigeria.	Sociodemographic characteristics Nutritional status ANC use, skilled ANC provider, place of delivery, skilled delivery assistant, postnatal care	N=772 aged 15-49	GLLAM Logistic regression	Maternal age not associated with no of ANC visits, skilled ANC provider, place of delivery or skilled delivery assistant Age only significantly associated with use of postnatal care Higher risk of maternal mortality among teenage girls	Rural only Context-specific No info on adolescent women, the influence of age is not examined
44	Amoran, O.E. (2012). A comparative analysis of predictors of teenage pregnancy and its prevention in a rural town in Western Nigeria. <i>International Journal for Equity in Health, 11(1),37-43.</i>		To determine the recent prevalence and identify factors associated with teenage pregnancy in a semi-rural area in Nigeria		PHC in Sagamu (facility-based) N=225 Questionnaire		More unwanted preg among teens More likelihood of pregnancy among tens of low SES, Muslim, Hausas, education below post-secondary Less incidence among those employed in white collar jobs	Facility based, limited reach No examination of HSB
45	Adedokun, S.T., Uthman, O.A., Adekanmbi, V.A., and Wiysonge, C.S. (2017). Incomplete childhood immunization in Nigeria: a multilevel analysis of individual		To examine the independent effects of individual-, community- and state-level factors on incomplete childhood immunization in Nigeria	Individual (mother's age, education, wealth index, marital status, occupation, sex of child, and birth order) Community (place of residence, difficulty	NDHS 2013 N=5754 (aged 12-23 months)	Multilevel logistic regression	83% of children of young mothers aged 15-24 not completely immunized Children of younger mothers less likely to have complete immunisation	Immunisation only, other HSB not covered

	and contextual factors. <i>BMC Public Health</i> , 17,236-245.			experienced in getting to health facilities, ethnicity diversity index and community socioeconomic status) State (socioeconomic status and educational level) Complete immunization of children aged 12-23 months				
46	Srivastava, A., Mahmood, S.E., Mishra, P., and Shrotriya, V.P. (2014). Correlates of maternal health care utilization in Rohilkhand Region, India. <i>Annals of Medical & Health Sciences Research</i> , 4(3), 417-425.		To assess the pattern and identify underlying factors on maternal health care utilization in rural areas	Utilization of maternal medical services mother's age at birth, birth order, residence, region, women's education and work status, socioeconomic status based on per capita monthly income, religion and household decision-making autonomy	N=369 Aged 15-49	Multinomial logistic regression	Young mothers aged below 25 more likely to use ANC	Because young mothers are grouped with teen mothers, this does not give a good reflection of teenage mothers' ANC use Context-specific
47	Ovikuomagbe, O. (2017).		To examine the determinants of the decision to use healthcare services	ANC , PoD and PNC use	Harmonized Nigeria Living Standard Survey 2010	Logit and probit regression	Young mothers less likely to use ANC	Because young mothers are grouped with teen mothers,

	Determinants of maternal healthcare utilization in Nigeria. <i>African Research Review, 11(2), 283-294.</i>		by women within the reproductive ages of 15 to 49 with at least a child	Education, distance to HF, mothers' age, HH income,			Christian and Muslim women more likely to use ANC than traditional religion ANC use higher in NC, NW, SS and SE than SW, except NE Short distance betw 30-59 mins reduced ANC use in rural and urban areas Higher edu means preference for HF delivery Age, residence, religion, income, and distance were not significant predictors of PoD	this does not give a good reflection of teenage mothers' ANC use Only distance to HF examined as comm variable, cultural and contextual determinants not studied
48	Chaibva, C.N., Roos, J.H., Ehlers, V.J. (2009). Adolescent mothers' non-utilisation of antenatal care services in Bulawayo, Zimbabwe. <i>Curationis, 32(3), 14-21.</i>		To identify factors influencing adolescents' non-utilisation of ANC services in Bulawayo.	ANC use Socioeconomic issues, individuals' perceptions about ANC, limited knowledge about ANC, policies and structural barriers	N=80	Bivariate analysis	Poor knowledge of ANC benefits, policy barriers (need for ID card), high fees, bad health worker attitudes, poor family and social support systems, low personal autonomy, fear of HIV testing Adolescents fear disclosure of their pregnancies to their parents	Non-probability sampling, small sample Facility-based leaving out those who don't use facility Small sample size

49	Doyle, A.M., Mavedzenge, S.N., Plummer, M.L., and Ross, D.A. (2012). The sexual behaviour of adolescents in sub-Saharan Africa: patterns and trends from national surveys. <i>Tropical Medicine and International Health</i>, 17(7), 796-807.		To describe the sexual and reproductive behaviour of adolescents in sub-Saharan Africa, particularly 15- to 19-year-olds.	Sexual intercourse before the age of 15. • Marriage before the age of 15 (females only). • Sex in past year among never-married adolescents. Multiple sexual partnerships. _ Sex with a partner ≥ 10 years older (females only). _ Condom use at last sex (among never-married adolescents only). _ An HIV test with known result. • Currently pregnant or have had a child (females only). Current use of a modern contraceptive (including condoms) among never-married adolescents who had had sex in the last 30 days (females only).	DHS/AIS between 2000-2010 24 SSA countries	Descriptive statistics	Early pregnancy more common among least educated and rural females 4% in Rwanda to 39% in Niger (2005 data) Early childbearing slightly more common in W-A	Descriptive statistics only
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50	Dairo, M.D., and Owoyokun, K.E. (2010). Factors influencing the utilization of antenatal care services in Ibadan, Nigeria. 12(1), 3-13.		To assess the factors that determine the utilization of antenatal care service in Ibadan.	ANCU Place of residence, religion, age, ethnicity, marital status, education, parity, husband's edu and occ, occupational status, decision-making, hh income,	N=400 Random sampling Facility based (women doing PNC)	Logistic regression	Urban women more likely to use ANC Women <25 have less usage of ANC Non-Christian women more likely to use ANC	Facility based, leaves out women who don't use facility for PNC Does not further pursue why usage is lower among younger women
51	Ochako, R., Fotso, J., Ikamari, L., and Khasakhala, A. (2011). Utilization of maternal health services among young women in Kenya: Insights from the Kenya Demographic and Health Survey, 2003. <i>BMC Pregnancy and Childbirth</i>, 11, 1-9.		1) To determine the relationship between timing of first antenatal care (ANC) visit and type of delivery assistance 2) To establish the determinants of timing of first ANC visit and type delivery assistance.	Timing of initiation of ANC Type of delivery assistance	2003 KDHS Age 15-24 N=1675	Ordered logistic regression	Women from rich households, married women more likely to initiate ANC early Women with low edu , higher parity, less likely to initiate ANC early Effect of age of ANC initiation statistically insignificant, though older women had higher likelihood of early initiation Urban women, educated, wealthy, never married women more likely to use skilled assistance Early ANC initiation associated with skilled assistance at delivery	Inconclusive on age, maybe non-ordered logit model could show a different result No examination of reasons for use of TBAs over skilled providers

							Large proportion of young women do not start ANC in first trimester, also use TBAs.	
52	Banke-Thomas, O.E., Banke-Thomas, A.O., and Ameh, C.A. (2017). Factors influencing utilisation of maternal health services by adolescent mothers in Low-and middle-income countries: a systematic review. <i>BMC Pregnancy and Childbirth</i>, 17, 65-78.		To understand the factors that influence adolescent utilisation of essential maternal health services (MHS) How has MHS utilisation by adolescent mothers been assessed? What are the factors affecting utilisation of MHS by adolescent mothers?		Systematic review of articles up to December 2015 on adolescent maternal health utilisation	Systematic review	Wealth quintile, media exposure and rural/urban residence were commonly adjudged as significant, education of the adolescent mother and her partner were the commonest significant factors that influenced MHS utilisation. Use of ANC also predicted IPC and PNC	
53	Magadi, M.A., Agwanda, A.O., and Obare, F.O. (2007). A comparative analysis of the use of maternal health services between teenagers and older mothers in sub-Saharan Africa: Evidence from Demographic and Health Surveys (DHS). <i>Social Science and Medicine</i>, 64, 1311-1325.		To examine how maternal health care indicators (antenatal and delivery care) of teenagers compare with those of older women in sub-Saharan Africa; To determine the extent to which differences in maternal health care between teenagers and older mothers vary across countries in the region;	Parity, premarital births, educational attainment and urban/rural residence	DHS from 21 SSA countries between late 1990s and early 2000s Benin, Burkina Faso, Cameroon, Chad, Comoros, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mali,	Multilevel logistic regression	Teenagers have poorer ANC and delivery care use than older women Premarital and unintended pregnancies more likely to have poorer use of MHC Teenagers with the least favourable characteristics (premarital births, high parity, rural residence and no formal education)	More information is needed at the country level, as cultural contexts and utilization rates will vary within each country

			To examine the country-effect on maternal health care among teenagers in the region.		Mozambique, Niger, Nigeria, Senegal, Tanzania, Togo, Uganda, Zambia, Zimbabwe		who were in countries where a relatively high proportion of pregnant women had skilled delivery attendant (or start antenatal care early in pregnancy) appeared to be particularly disadvantaged.	
54	Olusanya, B.O., and Ebuehi, O.M. (2012). Addressing the needs of adolescent mothers and their offspring in Nigeria: a community-based study. <i>International Journal of Adolescent Medicine and Health, 24(4), 307-313.</i>		To determine the perinatal profile of adolescent mothers with surviving offspring against the backdrop of limited community-based data on the outcomes of adolescent pregnancy in low-income countries	Marital status, ethnicity (Yoruba, Hausa, Ibo, and others), religion, formal education (none, primary, secondary and postsecondary), occupation (none, formal, or informal employment), social class (high, middle, or low), parity, antenatal care, herbal drug use in pregnancy Place of delivery (hospital or outside hospital), and mode of delivery (vaginal or cesarean).	Case-control study Age 13-19 Facility based Records betw Jan 2005 and June 2008 241 cases 1205 controls	Conditional and unconditional logistic regression	Children of adolescent mothers more likely to be malnourished Low birth weight and preterm births and outside hospital delivery (63.5%) Early childbearing associated with low education and SES, no occupation, Hausa women Adol preg associated with malnutrition in infants More likely to deliver outside hospitals	Facility based, context specific, limited to women who brought their children for PNC Non-probabilistic sampling, no info about the women who did not use the facility Sample was not sufficiently powered so results may be interpreted with caution
55	Dahiru, T., and Oche, M.O. (2015). Determinants of antenatal care, institutional delivery		To investigate the potential factors related to use/non-use of antenatal care, institutional delivery and postnatal	ANC, IPC and PNC Age, geopolitical zone, place of residence, maternal and husband’s edu,	2013 DHS N=	Logistic regression	Young women aged 15-24 were more likely to have at least 4 ANC visits, less likely to deliver in HF and use PNC	No explanation for why younger women have lower facility delivery and postnatal care

	and postnatal care services utilization in Nigeria. <i>Pan African Medical Journal, 21, 321-337.</i>		care	wealth index, religion, parity, presence of cowives, sex of hh head, pregnancy intention, decision-making, health insurance			SW women have highest odds of ANC use Older women in their 30s, urban, educated, with educated partner, higher wealth status, with health insurance, and more autonomous women more likely to use ANC Higher maternal and partner edu, urban res, higher hh wealth status, women enrolled in HIS, lower parity, influence facility delivery Age of mother, geopolitical zone, place of residence, maternal and husband levels of education, wealth level, parity, pregnancy wantedness, ANC attendance, health facility delivery and the position of the decision maker predict PNC	
56	Mairiga, A.G., and Saleh, W. (2009). Maternal mortality at the State Specialist		To analyse and document maternal mortality with the view of finding the trends over the last	MM, direct and indirect causes of MM	Hospital records from January 2001-December 2007	Descriptive statistics	Highest proportion of maternal deaths among adolescents	Context specific only, does not measure HSB

	Hospital, Bauchi, Northern Nigeria. <i>East African Medical Journal, 86(1), 25-30.</i>		seven years, common causes and attributing socio-demographic factors.	Age, parity, booking status				
57	Emelumadu, O.F., Ukegbu, A.U., Ezeama, N.N., Kanu, O.O., Ifeadike, C.O., Onyeonoro, U.U. (2014). Socio-demographic determinants of maternal health-care service utilization among rural women in Anambra State, South East Nigeria. <i>Annals of Medical and Health Sciences Research, 4(3), 374-382.</i>		To explore patterns of maternal health (MH) services utilization and the socio-demographic factors influencing it in Anambra State, South East Nigeria.	Age, marital status, educational status and parity, pattern of ANC and natal service utilization and outcome of pregnancy during their most recent confinement	N=310 aged 15-49 Questionnaires	Chi test and multinomial logistic regression	High incidence of late booking and incomplete ANC use High use of skilled delivery Unmarried women, women with lower SES, lower edu and grand multiparous women less likely to deliver in facility Less hospital delivery among younger women	Rural women only Context specific Small sample No PNC
58	Idowu, A., Olowookere, S.A., Abiola, O.O., Akinwumi, A.F., and Adegbenro, C. (2017). Determinants of skilled care utilization among pregnant women residents in an urban community in Kwara State, Northcentral Nigeria.		To identify factors influencing SBA utilization in Ilorin, Nigeria.	Age, edu, parity, ANC use, proximity to HF SBA use	N=400	Logistic regression	Lower use of SBA among adolescents Higher parity reduced SBA Close proximity to HF increased SBA	Context specific, no explanation of lower use in younger women

	<i>Journal of Health Sciences, 27(3), 291-298.</i>							
59	Ayuba, I.I., and Owoeye, G. (2012). Outcome of teenage pregnancy in the Niger Delta of Nigeria. <i>Ethiopian Journal of Health Sciences, 22(1), 45-50.</i>		To evaluate risk factors associated with teenage pregnancy and compare the obstetric and fetal outcome to older parturient.	Sociodemographic factors Pregnancy outcomes	Case-control Hospital data from Jan 2007 to December 2010 83 cases (13-19) 1258 controls (20-32)	Logistic regression	Teens more likely to be unbooked for ANC Anaemia, preeclampsia, preterm labour and PPH, and lower birth weight and mean Apgar scores more prevalent in teen than older mothers Also more Caesarean sections in adol mothers No sig diff in maternal and perinatal mortality btw two groups Adolescent mothers disadvantaged wrt income, edu, and SES Pregnancy seen as increasing social status	No study of reasons for HSB and barriers to care Small sample for teen mothers Facility-based, so only valid for those teenagers who delivered in those facilities
60	Shahabuddin, A.S.M., Delvaux, T., Abouchadi, S., Sarker, M., and De Brouwere, V. (2015) Utilization of maternal health services among adolescent women in		To understand the health-seeking behaviour of adolescent women in Bangladesh with respect to the use of maternal health services.		Review of literature published in Bangladesh	Review	High prevalence of home deliveries by TBAs Higher women's edu and autonomy means higher use of ANC, IPC and PNC	Married adolescent women only

	Bangladesh: A scoping review of the literature. <i>Tropical Medicine and International Health</i>, 20(7), 822-829.						Lower use of PNC among adolescent mothers Low MHCU Adolescent mothers need HC most but use it least Late ANC booking	
61	Atuyambe, L., Mirembe, F., Tumwesigye, N.M., Johanssen, A., Kirumira, E.K., and Faxelid, E. (2008). Adolescent and adult first time mothers' health seeking practices during pregnancy and early motherhood in Wakiso district, central Uganda. <i>BMC Reproductive Health</i>, 5, 13-23.		To compare the health seeking practices of first time adolescents and adult mothers during pregnancy and early motherhood in Wakiso district, Uganda.		First time mothers cases 13-19 (442) Control 20-29 (320) N=762	Descriptive statistics Logistic regression	Higher stigma among adolescent mothers Rejection from partners and parents No statistical difference in place of delivery btw adolescent and older mothers Relatives gave advice on place of delivery more for adolescent mothers Lower initiation and completion of immunisation	Rural area
62	Maswikwa, B., Richter, L., Kaufman, J., and Nandi, A. (2015). Minimum marriage age laws and prevalence of child marriage and		To examine the associations of minimum marriage age laws with child marriage and adolescent birth in Sub-Saharan Africa.	Presence of laws restricting child marriage, stating the minimum age at marriage, minimum age at marriage with parental	DHS and Child Marriage Database created by McGill University Global Resource and	Binary logistic regression	Adolescent pregnancies are almost five times more prevalent among women who married as adolescents Countries with consistent laws against	No mention of pregnancy healthcare usage

	adolescent birth: evidence from sub-Saharan Africa. <i>International Perspectives on Sexual and Reproductive Health</i>, 41(2), 58-68.			consent and age of sexual consent Child marriage Adolescent childbearing Household wealth, location, education, religion, child marriage	Information Directory (GRID) 12 sub-Saharan countries		child marriage have about 25% lower than countries without	
63	Campos, A.C.S., Barbieri, M., Torloni, M.R., and Guazzelli, C.A.F. (2012). Does motherhood affect the quality of life of adolescents? <i>Journal of Pediatric Adolescent Gynecology</i>, 25, 380-383.		To assess the quality of life of female adolescents with children compared to those without them.	Motherhood Quality of life	WHOQOL-BREF questionnaire 91 females aged 16-19 40 mothers, 51 non-mothers Brazil	Kruskal-Wallis and t-tests	Lower quality of life indices among adolescent mothers	Small sample size No mention of healthcare use
64	Samandari, G., and Speizer, I.S. (2010). Adolescent sexual behaviour and reproductive outcomes in South America: trends over the past two decades. <i>International Perspectives on Sexual and Reproductive Health</i>, 36(1), 26-35.		To describe trends in sexual behaviour, union status, contraceptive use and childbearing among adolescents aged 15-19.	Sexual experience, contraceptive use, union status and childbearing Age, educational level, area of residence, socioeconomic and marital status	DHS between 1987 and 2007 in El Salvador, Nicaragua, Honduras and Guatemala.	Logistic and Cox regression	Low socioeconomic status and rural residence among adolescent girls associated with motherhood	Maternal health usage not covered

65	Conde-Agudelo, A., Belizán, J., and Lammers, C. (2004). Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: cross-sectional study. <i>American Journal of Obstetrics and Gynecology</i>, 192, 342-349.		To determine whether adolescent pregnancy is associated with increased risks of adverse pregnancy outcomes.	Age, education, parity, marital status, height and weight, inter-pregnancy interval Birth weight, Apgar score,	N=854,377 Latin American women aged 10-24 years between 1985 and 2003 Data from Perinatal Information System database combining data from Uruguay, Argentina, Peru, Colombia, Honduras, Paraguay, El Salvador, Chile, Bolivia, Costa Rica, Panama, Dominican Republic, Nicaragua, Brazil, Ecuador, Mexico, Belize, Venezuela	Logistic regression	Highest risk of maternal and early neonatal death, and anaemia for adolescents <15 All age groups of adolescents had higher risks for postpartum hemorrhage, puerperal endometritis, operative vaginal delivery, episiotomy, low birth weight, preterm delivery, and small-for-gestational-age infants. Adolescent women had lower risk of gestational diabetes, Caesarean delivery and third-trimester bleeding Preeclampsia, eclampsia, anemia, operative vaginal delivery, episiotomy, postpartum hemorrhage, and puerperal endometritis increased with younger maternal age Low and very birth weight, small for	No investigation into maternal health usage
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							gestational age, preterm delivery and early neonatal death increased with younger age, especially among girls under 15 Risk of dying from maternal causes is 4 times more in girls under 16 compared to those aged 20-24	
66	Agunbiade, O.M., Titilayo, A., and Opatola, M. (2009). Pregnancy stigmatisation and coping strategies of adolescent mothers in two Yoruba communities, Southwestern Nigeria. Presented at 26th IUSSP International Population Conference, Marrakech, Morocco, September 27-October 2, 2009.		To explore the experiences of adolescent mothers with unintended pregnancies and strategies adopted in resolving the stigma in two Yoruba communities in Southwestern Nigeria.	Adolescent non-marital and unintended pregnancy	Qualitative data Age 12-21 48 IDIs	Thematic content analysis	Girls below age 18 are physically unprepared for pregnancy Teen pregnancy leads to imagined and experienced stigma; the girls were used as negative examples in the community Fear of stigma and negative health worker responses led to late ANC booking and use of non-orthodox health system Stigma exacerbates the strain of the pregnancy experience for adolescent girls Low SES found among adolescent mothers	Unintended pregnancies only, what about where pregnancies are actually wanted? Little said about other barriers to HC utilization, more exploration needed of the types of healthcare accessed

							Low social support mechanisms; support restricted to informal channels such as mothers and well-meaning family and non-family members Sexual abuse, forced sex and incest featured in many respondents' stories	
67	Neal, S., Matthews, Z., Frost, M., Fogstad, H., Camacho, A.V., and Laski, L. (2012). Childbearing in adolescents aged 12-15 years in low-resource countries: a neglected issue. New estimates from demographic and household surveys in 42 countries. <i>ACTA Obstetrica et Gynecologia Scandinavia</i>, 91, 1114-1118.		To estimate childbearing to girls aged 12-15 years using DHS data		DHS data since 2003 for 42 resource-poor countries across the world (28 Africa, 6 Asia, 6 Latin America, 2 Eastern Europe).	ASBR, percentage of girls who gave birth at age 15 or younger, and estimated actual number of births to girls <15 yearly.	Highest number of <15 births in West and Central Africa. More than a million births to girls <15 in Africa and Asia, just over 300,000 in LA and Caribbean Around 2.5 million estimated overall Around 270 000 estimated for Nigeria	More needs to be known about potential health risks of very young mothers, as well as tends and determinants of early preg
68	Gross, K., Alba, S., Glass, T.R., Schellenberg, J.A., and Obrist, B. (2012).		To assess the timing of adult and adolescent women's first ANC visit and identify factors influencing early and late attendance	Age, parity, marital status, ethnicity, history of abortion/stillbirth, education, social	405 women Convenience sampling	t-test Univariate and multivariate linear regression	Unmarried adolescents may have unplanned pregnancies, live at home, and have no financial or social	Consequences of disadvantages in social and economic support on sba and pnc need to

	Timing of antenatal care for adolescent and adult mothers in south-eastern Tanzania. BMC Pregnancy and Childbirth, 12, 16-27.		Do pregnant, especially adolescent women start ANC late? What factors are associated with early or late ANC attendance? Do adolescent women differ from adult women in terms of economic and social support?	and economic support ANC knowledge and perception, pregnancy perception Timing of first ANC visit	Exit interviews with questionnaire from ANC users	Logistic regression	support from the child's father No difference in timing of ANC visits between adolescents and adult women	be further investigated
69	Tatum, C., Rueda, M., Bain, J., Clyde, J., and Carino, G. (2012). Decisionmaking regarding unwanted pregnancy among adolescents in Mexico City: a qualitative study. <i>Studies in Family Planning</i> , 43(1), 43-56.		To examine the factors influencing how young women in a setting in which abortion was recently legalized make reproductive decisions when confronted with an unwanted pregnancy	Unwanted pregnancy Personal characteristics, attitudes towards abortion and motherhood, support networks	IDIs and FGDs with women who had pregnancy btw age 13-17 N=24		Parents, close friends and partners have an important role in determining the outcome of a pregnancy, whether termination or continuation Girls often consult their friends first when they discover they are pregnant Girls often go with their parents' wishes concerning the pregnancy to avoid conflict Poor health worker responses to pregnant teens	Small sample size Need to explore health sector factors which hinder adolescent access to services for unwanted pregnancies
70	Kawakatsu, Y., Sugishita, T., Oruenjo, K., Wakhule, S.,		To assess the current	Place of delivery	N=2,026	Logistic regression with backward	Mothers <20 had higher odds of facility delivery	

	Kibosia, K., Were, E., and Honda, S. (2014). Determinants of health facility utilization for childbirth in rural Western Kenya: cross-sectional study. BMC Pregnancy and Childbirth, 14, 265-274.		situation of facility delivery, and to investigate factors that influence the utilization of delivery services in health facilities in rural Kenya using a community-based, large-population cross-sectional study.	Maternal health knowledge, wealth index, perceived CHW performance, social capital, media exposure, household sanitation	Primary quantitative data Cluster sampling	stepwise elimination	Higher edu, more knowledge of MH issues, knowledge of English, complete ANC use, primigravidae, non-poor wealth status, presence of sanitation facilities in HH, HH size ≤ 5, and close distance to HF increased odds of facility delivery.	
71	Faye, C.M., Speizer, I.S., Fotso, J.C., Corroon, M, and Koumtingue, D. (2013). Unintended pregnancy: magnitudes and correlates in six urban sites in Senegal. <i>Reproductive Health</i>, 10(1), 59-68.		To examine the extent of unintended pregnancy among urban women who have ever been pregnant; Identify key determinants of unintended pregnancy experience among those women; Make programmatic recommendations for improving urban women's access to and use of family planning to meet current and future fertility desires.	Education, religion, marital status, age, work status, parity, ever use of contraceptive, type of union, decision-making on finances and no of children, discussion on family planning, wealth status. Pregnancy wantedness: then, later or not at all	N=5769 Age 15-49 Data from 2011 ISSU study 6 urban areas in Dakar	Multinomial logistic regression	Unintended pregnancies higher in women <25, poor and with parity 2 or higher, low participation in decision-making and lack of fp discussion	What then is the outcome of an unintended pregnancy?
72	Exavery, A., Kanté, A.M., Hingora, A.,		To quantify the extent of mistimed and	Pregnancy wantedness	N=910 Age 15-49	Chi square	Late ANC initiation was a feature of mistimed	What of SBA and PNC?

	Mbaruku, G., Pemba, S., and Phillips, J.F. (2013). How mistimed and unwanted pregnancies affect timing of antenatal care initiation in three districts in Tanzania. <i>BMC Pregnancy and Childbirth, 13</i>, 35-45.		unwanted pregnancies, To determine the level of early ANC initiation as a proportion of women initiating ANC in the first trimester, To assess the association between mistimed pregnancy and timing of ANC initiation To assess the association between unwanted pregnancy and timing of ANC initiation among women of reproductive age who gave birth in the past two years in three districts	Timing of ANC initiation Parity, education, age, household wealth, marital status, district of residence , distance to HF		Multinomial logistic regression	and unwanted pregnancies Rich women delayed ANC initiation More early initiation among young women <20	Qualitative study needed for further understanding of individual and communal perceptions related to unwanted preg and ANC timing
73	Yardley, E. (2008). Teenage mothers' experience of stigma. <i>Journal of Youth Studies, 11</i>(6), 671-684.		To explore the impact of stigma on teenage mothers.		Qualitative study N=20 IDIs		High stigma for adolescent mothers Negative responses from health workers Stigma reduces where adolescent pregnancy is normative	Does stigma reduce their usage of health services? In what ways does the stigma affect healthcare access for them and their children?
74	Shahabuddin, A., Nöstlinger, C., Delvaux, T., Sarker, M.,	Social-ecological model	To explore maternal health care-seeking behavior of adolescent	ANC, PoD, SBA and PNC	N=30 16 <18, 14 18-19	MAXQDA 11	Adolescent girls had little decision-making autonomy concerning	Rural-only context, what

	Delamou, A., Bardaji, A., et al. (2017). Exploring maternal health care-seeking behavior of married adolescent girls in Bangladesh: A social-ecological approach. PLoS ONE 12(1):e0169109. doi:10.1371/journal.pone.0169109		girls and their experiences related to pregnancy and delivery in Bangladesh.	Health sys level: availability of HF, HW attitudes and quality of care; accessibility (distance and cost) Comm level: influence of CHWs, poverty, religious beliefs, traditional beliefs, cultural/spiritual, influence of neighbours Interpersonal/family level: fam tradition, husbands' knowledge and perception, influence of MIL and other relatives Indv level: age, edu, knowledge and perceived need of HC, mistrust, shyness and modesty, financial burden, family support for home delivery, low autonomy	Prospective qualitative study, two-phase data collection Purposive sampling Married adolescent women		their health, decisions were made by husbands, parents-in-law (esp. mothers-in-law), parents and senior relatives The mother-in-law's role was the strongest in determining ANC use and PoD. Modesty and shyness reasons for home rather than facility delivery Muslim religion was a major determinant of place of delivery and PNC Poor services at HF and inaccessibility to HF reduce use	happens in urban settings? What about unmarried girls? No study of pregnancy intention
75	Shahabuddin, A.S.M., De Brouwere, V., Adhikari, R., Delamou,		To identify the determinants of institutional delivery	Place of delivery	N=1662 age 15-24	Chi square Binary logistic regression	Girls <20 had more institutional deliveries than those =>20	Problem of recall bias as retrospective data were used

	A., Bardaj, A., and Delvaux, T. (2017). Determinants of institutional delivery among young married women in Nepal: evidence from the Nepal Demographic and Health Survey, 2011. <i>BMJ Open</i>:e012446. doi:10.1136/bmjopen-2016-012446		among young married women in Nepal.	Age, ethnicity, educational level, religion, ecological zone, place of residence, wealth, parity, sex of the head of household, the woman's involvement in a community group, number of ANC visits for the most recent live birth, autonomy in household decisions (own healthcare, making major household purchases and visits to family and relatives.)	Nepal DHS 2011		Women with complete ANC usage had more odds of institutional delivery than those with incomplete Primigravidae were more likely to deliver in facility than non Muslim women more likely to deliver in facility than Hindu women	Only married women covered, what happens to single women No community level determinants examined No info about distance to HF or quality of care among hc providers Recognised need for qual resh for exploration
76	Bearinger, L.H., Sieving, R.E., Ferguson, J., and Sharma, V. (2007). Global perspectives on the sexual and reproductive health of adolescents: patterns, prevention and potential. <i>Lancet</i>, 369, 1220-1231.		To discuss the patterns and prevalence of adolescents' sexual behaviours and reproductive health outcomes To present strategies that have been shown to reduce threats to the sexual and reproductive health of adolescents, and discuss key steps towards achieving		Systematic review	-do-	Adolescent girls have lower nutritional stores than adult women; their pelvises are also still growing compared to those of adult women.	

			goals relating to young people's reproductive rights.					
77	Ntoimo, L.F.C., and Odimegwu, C.O. (2014). Health effects of single motherhood on children in sub-Saharan Africa: a cross-sectional study. <i>BMC Public Health</i>, 14, 1145-1157.	Economic resource model	To examine the influence of single motherhood on under-five children's health status To examine the factors that account for difference in outcomes btw single and two parent households	Stunting Child survival Mother's marital status Household wealth, mother's occupation, education, place of residence, age at first birth, religion, ethnicity, number of surviving children, mother's health behaviour (ANC use, duration of breastfeeding, preceding birth interval, place of delivery and BMI)	Cameroon DHS (2011), Nigeria DHS (2008), DRC DHS (2007). Women age 15-49	Logistic regression Cox proportional hazards analysis	Single motherhood associated with stunting in Cameroon and DRC, not in Nigeria. Single motherhood increased U5 mortality risk in all three countries.	Does not disaggregate single mothers by age, other single mothers are also lumped together (never married, separated and divorced); so are outcomes worse or better for children of adolescent, never married single mothers?
78	Ganchimeg, T., Mori, R., Ota, E., Koyanagi, A., Gilmour, S., Shibuya, K., Torloni, M., Betran, A., Seuc, A., Vogel, J., and Souza, J. (2013). Maternal and perinatal outcomes among nulliparous adolescents in low- and middle-income		To investigate the risk of adverse pregnancy outcomes and caesarean section among adolescents in low- and middle-income countries.	Risk of adverse pregnancy outcomes Maternal age, education and marital status, ANC visits, maternal height, gestational age at birth Country-level determinants	23 countries in Africa (Algeria, Angola, Democratic Republic of Congo, Niger, Nigeria, Kenya, and Uganda), Asia (Cambodia, China, India, Nepal, the Philippines, Sri	Multilevel regression	Adolescent pregnancy associated with increased risks of LBW, preterm delivery and perinatal mortality, more among younger adolescents <=15 Higher risk of CS among <=15 Risk of CS lower among 16-19 than 20-24	Did not examine all indicators of SES Facility-based, only urban respondents, what about the rural and those who didn't use the facilities?

	countries: a multi-country study. <i>British Journal of Obstetrics and Gynaecology</i>, 120, 1622–1630.			Institutional-level determinants (laboratory tests; anaesthesiology resources; services provided for intrapartum care, delivery, and care of the newborn baby; and the presence or absence of basic emergency medical and obstetric care facilities, intensive care units, and human training resources)	Lanka, Thailand, and Vietnam) and Latin America (Argentina, Brazil, Cuba, Ecuador, Mexico, Nicaragua, Paraguay, and Peru) Facility-based cross-sectional data from the World Health Organization (WHO) Global Survey on Maternal and Perinatal Health.		Higher rate of within hospital maternal death among those ≤ 19 in Africa	
79	Guliani, H., Sepehri, A., and Serieux, J. (2014). Determinants of prenatal care use: evidence from 32 low-income countries across Asia, sub-Saharan Africa and Latin America. <i>Health and Policy Planning</i>, 29, 589-602.		To assess the differential influence of the observed individual, household and community factors on both prenatal attendance and the number of visits across the three world regions.	ANC usage and frequency Maternal educational attainment, maternal age at last live birth, marital status, employment status, pregnancy wantedness and parity Household economic status (as	DHS data from 32 low-income countries	Binary and multilevel logistic Two part model	Teenage mothers, unmarried women and those with unwanted pregnancies are less likely to use ANC and have fewer visits Women with edu more likely to use ANC Higher parity women less likely to use ANC	Did not check for accessibility to HF

				measured by wealth) and household size Place of residence (urban/rural areas) and a regional poverty indicator.			Poor women less likely to use ANC and have fewer visits	
80	Santos, K.A. (2012). Teenage pregnancy contextualized: understanding reproductive intentions in a Brazilian shantytown. <i>Cad. Saúde Pública</i> , 28(4), 655-664.		To investigate whether adolescent females consider pregnancy to be a problem, analyzing their discourse in the light of their socioeconomic scenario and consequent aspirations while investigating the role of different actors in their decision-making process.		Qualitative Participant observation, IDIs, KIIs and FGDs 10 IDIs each with teen mothers who gave birth under 18 and by age 18 or older and 5 mothers of teen mothers		Low level of unwantedness Family support especially for mothers makes pregnancy and childcare easier; parents recognized as major emotional support source for unplanned pregnancies Transactional sex major driver of teen pregnancies Girls who fall pregnant often have had prior poor educational performance, so schooling interruption not thought a major loss; ability to work and provide economically is preferred. Motherhood is seen as maturity; may bring a sense of fulfilment and achievement	No exploration of HSB

							Lack of privacy prevents girls from using health services No negative health outcomes found among very young mothers	
81	Gurmu, E., and Dejene, T. (2012). Trends and differentials of adolescent motherhood in Ethiopia: evidences from 2005 Demographic and Health Survey. <i>African Journal of Reproductive Health, 16(4), 162-174.</i>	Interactive theory Rational choice theory	To examine the levels and trends of adolescent motherhood in Ethiopia To identify socioeconomic and demographic factors determining adolescent motherhood	Adolescent motherhood Maternal age, education, religion, media exposure, occupation, place and region of residence, marital status, age at FSE	2005 Ethiopian DHS Women aged 20-49 N=10818	Multilevel regression	Adolescent motherhood is more common in disadvantaged settings with low education and poverty Associated with early marriage and early first sex, limited access to contraceptives, poor education, rural residence, agric work	Retrospective reporting used, not current experiences, therefore very subject to recall bias
82	Clark, S. and Hamplová, D. (2013). Single motherhood and child mortality in sub-Saharan Africa: a life course perspective <i>Demography, 50(5), 1521-1549.</i>		To investigate women's lifetime risk of single motherhood. To investigate whether children of single mothers are more likely to die before age 5 than children of married mothers	Child's sex, birth order, age, length of preceding birth interval, whether any siblings have died previously. Mother's age, education	DHS data from 11 African countries (DRC, Ghana, Kenya, Nigeria, Liberia, Sierra Leone, Zambia, Ethiopia, Malawi, Tanzania and Zimbabwe).	Survival analysis	Children of never married women were found to have elevated mortality in six countries, while children of mothers formerly in union had elevated risk of dying in nine countries; children of divorced mothers had highest risk	No explanation for WHY children of unmarried mothers have higher mortality risk Poor proxies for examining single motherhood

83	Ganchimeg, T., Ota, E., Morisaki, N., Laopaiboon, M., Lumbiganon, P., Zhang, J., Yamdamsuren, B., Temmerman, M., Say, L., Tunçalp, O., Vogel, J.P., Souza, J.P., and Mori, R. (2014). On behalf of the WHO Multicountry Survey on Maternal Newborn Health Research Network. Pregnancy and childbirth outcomes among adolescent mothers: a World Health Organization multicountry study. British Journal of Obstetrics and Gynaecology, 121 (Suppl. 1), 40–48.		To investigate whether adolescent mothers are at higher risk of adverse pregnancy outcomes compared with mothers aged 20–24 years after controlling for country and health facility effects and potential confounding factors.	Demographic and reproductive characteristics, pregnancy and childbirth complications and their management, and maternal and newborn morbidity Availability of obstetric and newborn services, laboratory tests and human resources	WHO Multicountry Survey on Maternal and Newborn Health 2010-11 N=124446 Mothers age <=24 Case 10-19 Control 20-24	Chi square Multilevel logistic regression	Adolescent mothers have lower risk of preeclampsia but higher risk of eclampsia Lower risk of CS Higher risks of low BW and preterm delivery Higher risk of neonatal mortality which was partly explained by poor SES	Urban facility users only; facilities have emOC facilities therefore are referral centres for crises; therefore risks may be overstated No data on ANC
84	Atuyambe, L.M. (2008). Adolescent motherhood in Uganda: dilemmas, health-seeking behaviour and coping responses.	Kroeger (1983) model of HCU Moos (2002) Adolescent coping responses	To explore and analyze adolescents' experiences, health seeking behaviour and coping responses during pregnancy and early motherhood in Wakiso district, Uganda.	ANC (usage, timing and no of visits) Immunisation Problems during preg, stress, violence, decision-making autonomy, distance, lack of transport, distance	Mixed methods-qualitative leading to quantitative (N=762, 442 adolescents, 320 adults)	Manual content analysis Logistic regression	Pregnant adolescents need more specialized care than older primigravidae Married adolescents are better able to deal with the stress of pregnancy than unmarried (protective	No examination of parental view of adolescent pregnancy Attrition

	Ph.D thesis, Department of Obstetrics and Gynaecology, Makerere University, Uganda and Department of Public Health Sciences, Division of International Health, Karolinska Institutet, Sweden.		To describe pregnant adolescents' experiences and problems To describe adolescents' health-seeking behaviour during pregnancy, delivery and early motherhood To explore and analyze adolescents' coping responses during pregnancy and early motherhood To compare the health-seeking practices of adolescents and adult mothers during pregnancy and early motherhood	to HF, pregnancy intention, gender power relations, preference for traditional medicine and practices, HW attitudes, financial support, stigma	Age 13-19 and 20-29		effect) due to support from spouses and families Pregnant adolescents use both traditional and modern HC Poor H/S behaviour , poor MHC and immunization Preg adolescents suffer from DV from both parents and partners Increased stigma and susceptibility to violence from parents and partners, insufficient feeding, lack of financial support, restrictions in mobility, negative health worker attitudes Trust in traditional practices encourages use of tba; older women may also discourage girls from using HF	
85	Antai, D. (2011). Inequalities in under-5 mortality in Nigeria: do ethnicity and		To assess whether under-5 mortality varies across socio-geographical contexts,	Risk of under 5 death Ethnicity Sex of child, birth order and interval,	NDHS 2003 N=3725 mothers of 6029 children	Multilevel analysis	Mothers age 15-18 had lowest odds of under-5 mortality Significant difference in U5MR by ethnic	Cultural beliefs not examined No explanation given for why U5MR is lower in

	socioeconomic position matter? <i>Journal of Epidemiology</i>, 21(1), 13-20.		To examine the individual-level relationship between ethnicity and under-5 mortality, To determine whether contextual explanatory factors account for variation in under-5 mortality.	maternal age and age at first birth, religion, education, occupation Community maternal edu, ANC usage rate			groupings, highest among Hausa/Fulani/Kanuri	youngest mothers
86	Wall, L.L. (1998). Dead mothers and injured wives: the social context of maternal morbidity and mortality among the Hausa of Northern Nigeria. <i>Studies in Family Planning</i>, 29(4), 341-359.		Review	Review	Review	Review	54% of VVF occurs in mothers under 20; nearly 6% to girls under 13; 52% to primigravidae It is mainly a result of obstructed labour Non-existent autonomy for married adolescent women means they cannot seek healthcare for themselves during pregnancy Nutrition competition between adolescent mothers and their fetuses Because of <i>kunya</i> a young girl is not expected to draw attention to herself during pregnancy, thus she seeks no healthcare	

							and continues her normal amount of domestic labour It was a source of pride to deliver higher-order children on their own	
87	Thaddeus, S., and Maine, D. (1994). Too far to walk: maternal mortality in context. <i>Social Science and Medicine</i> , 38(8), 1091-1110.		Research into three delays: delay in decision to seek care; delay in arrival at HF; and delay in provision of adequate care.				Clients may delay seeking care due to unfriendly HF staff Women's status and distance to HF and lack of transport serve as barriers	
88	Singh, P.K., Singh, L., Kumar, C., Rai, R.K. (2013). Correlates of maternal healthcare service utilisation among adolescent women in Mali: analysis of a nationally representative cross-sectional survey, 2006. <i>Journal of Public Health</i> , 21, 15-27.	Thaddeus and Maine (1994) three delays model	To examine the factors associated with the utilisation of maternal healthcare services by married adolescent women in the age group 15–19.	ANC, SBA and PNC Composite barrier index developed from: Knowing where to go Getting permission Getting money needed for treatment Distance to the health facility Getting transport Not wanting to go alone Concern that there may not be a female health provider	Mali DHS 2006 Ever-married adolescent women age 15-19 N=1,646	Chi square, logistic regression	Factors such as women's education, husband's education, women's barrier index, mass media exposure, place of residence and previous delivery support used appeared to be the most significant factors associated with maternity services utilisation among Malian adolescents Work status significant only for PNC, working more likely to use than non-working	Ever married adolescents only Cultural context of MHCU not examined

				Age at birth (<18, 18-19), education, husband's edu, work status, mass media exposure, sex of HH head, wealth quintile, ethnicity, preg intention, birth order and interval, place of residence, region			Increase in barrier resulted in lower likelihood of safe delivery and PNC use Usage of antenatal care is tied to safe delivery and postnatal care	
89	Rai, R.K., Singh, P.K., Kumar, S., and Singh, L. (2013). Factors associated with the utilization of maternal health care services among adolescent women in Malawi. <i>Home Health Care Services Quarterly</i>, 32(2), 106-125.		To examine the factors associated with the utilization of selected maternal health care services among married adolescent women (aged 15–19 years)	ANC and PNC Age, edu, partner edu, work status, personal barrier index, mass media exposure, religion, wealth quintile, ethnic group, birth order and interval, place and region of residence	2010 Malawi DHS Married adolescents age 15-19 N=2160	Logistic regression	Husband's edu significant for ANC but not PNC Maternal age, household economic status, and wantedness were found to be significant factors associated with antenatal care uptake; Mothers aged below 18 were less likely to have complete antenatal care personal barriers to utilizing health care services, birth order and interval, religion, and ethnic group help	Married adolescents only No investigation into cultural context

							explain the variation in the utilization of postnatal care services.	
90	Kupoluyi, J.A. and Oyinloye, B.O. (2014). Socioeconomic and demographic factors influencing the use of maternal health care services among young mothers in Nigeria. <i>Ife Social Sciences Review</i>, 23(1), 187-200.		To examine the socioeconomic and demographic factors influencing the use of skilled provider for ANC, delivery and PNC services among young mothers 15-24 in Nigeria	Timing and number of ANC, DHF, PNC Wealth status, rural/urban residence, region, education, partner's education and occupation, religion, age, partners age, age at first birth and marriage	N=4567 aged 15-24	Logistic regression Chi square	No significant diff in 15-19 and 20-24 in ANC, DHF and PNC use; religion, age at fb Place of residence sig for ANC, but not DHF or PNC Region sig for ANC and DHF (ANC more likely in SE, less likely in NW, SS, SW and NE not sig but lower), DHF less likely in NE, NW, SS, more likely in SW and SE but not sig Husband's edu sig for ANC and DHF, not PNC Age at fb and birth interval sig for PNC only	No examination of marital status, and cultural factors influencing young women's MHCU
91	Kaphagawani, N.C. and Kalipeni, E. (2017). Sociocultural factors contributing to teenage pregnancy in Zomba District, Malawi. <i>Global Public Health</i>, 12(6), 694-710.		To explore sociocultural and other risk factors associated with unplanned teenage pregnancy in Zomba District in Malawi.	Age, education, SES, age at marriage, contraceptive use, knowledge of SRH, source of SRH information, cultural practices, gender inequity, physical and sexual violence, cultural practices	N=505 (age 13-19) attending antenatal clinics Questionnaire designed using WHO guidelines and scales	Descriptive, Chi square Logistic regression (for predictors of unplanned preg)	Early sexual debut and marriage, low levels of contraceptive use, low educational levels, low socioeconomic status, lack of knowledge of reproductive and sexual health, gender inequity, and physical/sexual violence were risk factors for unplanned	No study of HSB Small range of cultural context

				Unplanned teenage pregnancy			teen pregnancies. Also cultural practices such as initiation into womanhood among Yao responsible for early pregnancy	
92	Lubbock, L.A. and Stephenson, R.B. (2008). Utilization of maternal health services in the department of Matagalpa, Nicaragua. <i>Pan American Journal of Public Health, 24(2), 75-84.</i>		To explore the perceptions and factors that influence women's decisions to seek maternal health care in rural and semirural municipalities within the department of Matagalpa, Nicaragua	Sociocultural and logistical predictors of women's maternal healthcare access (barriers to accessing care, gender roles, perceptions of health care, support, and the health care system).	Qualitative data Mothers aged 18+ N=37 IDI	Analytic induction Thematic analysis with MAXQDA	Costs of transportation, medicines and healthcare and lost hours and wages from work were barriers to MHCU Cost of older children and family maintenance was opportunity cost for health seeking Lack of funds for transport during emergencies Husbands' and family support important, especially for childcare so pregnant women can go to hospital Knowledge of HC efficacy also encouraged use Communication with husbands, health workers and other experienced women influenced women's MHCU	Context-specific Teenage mothers not included, so information on their own challenges

							Preference for traditional HC reduced MHCU Perceived uncaring attitude of health workers reduces MHCU, as well as poor communication and embarrassment from doctor examinations Husbands' perceived displeasure and jealousy from examination by doctors reduces MHCU Women's role as primary caregiver to children may reduce MHCU	
93	Garcés, I.C., Scarinci, I.C., and Harrison, L. (2006). An examination of sociocultural factors associated with health and health-care seeking by Latina immigrants. Journal of Immigrant Health, 8, 377-385.	PEN 3 model (Airhihenbuwa 2004)	To examine the sociocultural factors associated with health maintenance and health care seeking among Latina immigrants	Cultural beliefs, influences and practices, health practices and health-seeking behaviour	Qualitative, 8 FGDs N=54	Thematic analysis	Use of alternative medicine and health care pluralism common because of cultural values from home country	

94	Simkhada, B., van Teijlingen, E.R., Porter, M., and Simkhada, P. (2008). Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature. <i>Journal of Advanced Nursing, 61(3), 244-260.</i>		To identify and analyse the main factors affecting the utilization of antenatal care in developing countries		Systematic review of both quantitative and qualitative articles	Systematic review	Social and cultural factors play a strong role in determining ANC in developing countries Traditional perceptions about healthcare are important influences on usage	
95	Cheng, C., Fowles, E.R., and Walker, L.O. (2006). Postpartum maternal health care in the United States: a critical review. <i>Journal of Perinatal Education, 15(3), 34-42.</i>		To highlight the importance of postpartum maternal health, identify inadequacies in the current practices of postpartum care, and provide recommendations on policy and practice for a comprehensive approach to care of women after childbirth.		Systematic review of literature on postpartum care practices	Systematic review	Social support is necessary for new mothers in the postpartum period Cultural practices may determine health outcomes of mother and child Cultural and contextual differences also result in different health outcomes Postpartum care encompasses both physical and mental healthcare	
96	Jat, T.R., Ng, N., and San Sebastian, M. (2011).		To estimate the effects of individual, community and district level characteristics on	Use of any antenatal care during pregnancy, skilled attendance	N=15782 aged 15-49	Multilevel logistic regression	61.7% women received any ANC, 49.8% women	

	Factors affecting the use of maternal health services in Madhya Pradesh State of India: a multilevel analysis. <i>Interntional Journal for Equity in Health, 10(1), 59-69.</i>		the utilisation of maternal health services with special reference to antenatal care (ANC), skilled attendance at delivery and postnatal care (PNC)	at delivery, postnatal care (checkup by health professional within two weeks of delivery).	Indian District Level Household and Facility Survey 2007-08 (DLHS-3)	received skilled attendance at delivery and 37.4% received any PNC within two weeks of delivery in Madhya Pradesh. HH SES and women's edu influenced MHC Urban dwellers were more likely to use MHC Decrease in SDC and PNC with increased birth order Women from scheduled tribes and Hindus least likely to use MHC Agricultural workers and labourers less likely to use MHC Muslim and non-scheduled tribes women were more likely to receive ANC. Mother's level of education, use of ANC and household socioeconomic status were the strongest factors associated with of the	
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							use of skilled attendance at delivery. Older age women, those with poorly educated husbands less likely to use SDC Mother's edu, wealth status and birth order (first birth) were predictors of PNC	
97	Magadi, M.A., Madise, N.J., and Rodrigues, R.N. (2000). Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities. <i>Social Science and Medicine</i>, 51, 551-561.		To examine the community-level variations in antenatal care timing and frequency among different communities	ANC timing and frequency	1993 Kenya DHS N=5014 live births to 3930 women	Multilevel logistic regression	Lower frequency among unmarried women and <20 Shorter birth intervals, unwanted preg associated with lower freq Distance to HF predicts ANC freq Higher wealth status, lower birth order, preg desirability, presence of Comm Hlth Worker associated with earlier timing of ANC Traditional beliefs may account for wide variability in ANC use patterns The region of residence, the household socioeconomic status,	

							the employment status of the mother and ethnicity are important predictors of ANC use Higher parity women, those with high fertility intention, those who start childbearing in their teens, and those who have never used modern family planning methods tend to be those with more traditional health beliefs and are less likely to seek appropriate maternity services.	
98	Mrisho, M., Schellenberg, J.A., Mushi, A.K., Obrist, B., Mshinda, H., Tanner, M., and Schellenberg, D. (2007). Factors affecting home delivery in rural Tanzania. <i>Tropical Medicine and International Health</i>, 12(7), 862-872.		To understand factors influencing the choice of place of delivery and discuss their implications for neonatal survival	SES, education, ethnicity, gender of HH head, age at child birth, Home delivery	Women 15-49 Primary data Mixed methods Quant N=21600 Qual 32 IDIs, 2 FGDs and participant observation	Thematic analysis with Nvivo Logistic regression	Women living in female headed households more likely to deliver in HF than women in male headed households Younger mothers more likely to deliver in HF Cost of delivery materials, rude health workers, lack of privacy at HF, traditional beliefs and sudden onset of labour are major drivers of home delivery	

99	Tsegay, Y., Gebrehiwot, T., Goicolea, I., Edin, K., Lemma, H., and San Sebastian, M. (2013). Determinants of antenatal and delivery care utilization in Tigray region, Ethiopia: a cross-sectional study. <i>International Journal for Equity in Health</i>, 12(1), 30-39.		To determine the prevalence of maternal healthcare utilisation and explore its determinants among rural women aged 15–49 years in Tigray, Ethiopia.	ANC and institutional delivery Mother's age, marital status, education, husband's occupation, proximity of HF, history of prolonged labour, parity, receiving ANC advice	N=1113 Primary data Women 15-49 who had given birth at most 5 years prior	Univariate and multivariate logistic regression	ANC use 54%, ID 4.1% Factors associated with ANC utilisation were marital status, education, proximity of health facility to the village, and husband's occupation, while use of institutional delivery was mainly associated with parity, education, having received ANC advice, a history of difficult/prolonged labour, and husbands' occupation.	
100	Bunting, L., and McAuley, C. (2004). Research Review: Teenage pregnancy and motherhood: the contribution of social support. <i>Child and Family Social Work</i>, 9, 207-215.		To provide a critical analysis of the role of support in teenage motherhood.	Family, partner and peer support	Review of literatures from US and UK	Literature review	Adequate social support from mothers, partners and peers reduces the negative effects of pregnancy and childcare on teenage mothers	
101	Spear, H.J., and Lock, S. (2003). Qualitative Research on Adolescent Pregnancy: A Descriptive Review and Analysis		To (a) examine qualitative studies on adolescent pregnancy and determine methods used; (b) describe and analyze primary findings; (c) develop and define common themes across studies; and (d)		Review of qualitative literature	Literature review	Mixed findings on adolescent pregnancy effect on teen mothers. For some it was an initiation to adulthood, and welcome. For others, it was seen as an unwelcome intrusion into their lives. The third set of adolescent	

	<i>Journal of Pediatric Nursing, 18(6), 397-408.</i>		recommend need for further qualitative research based on the review.				mothers were uncertain about pregnancy effects	
102	Chikalipo, M.C., Nyondo-Mipando, L., Ngalande, R.C., Muheriwa, S.R., and Kafulafula, U.K. (2018). Perceptions of pregnant adolescents on the antenatal care received at Ndirande Health Centre in Blantyre, Malawi. Malawi Medical Journal. Accessed at http://www.mmj.mw/?p=6725		To explore the views of pregnant adolescents towards the antenatal services they receive at Ndirande Health Centre in Blantyre, Malawi, specifically their perceptions of the care received	Age, marital status, educational level and number of ANC visits	N=15 adolescent girls aged 14-19 Semi-structured IDI	Thematic content analysis	Adolescent mothers preferred having a separate clinic day for them Most started ANC in second trimester Delayed initiation could be explained by not knowing preg symptoms, denial of preg and feelings of stigma Adolescents were pleased with quality of services However, little information given them about labour and delivery Needs of married and unmarried adolescents may differ	

103	Acharya, D.R., Bhattarai, R., Poobalan, A., van Teijlingen, E.R., Chapman, G. (2010). Factors associated with teenage pregnancy in South Asia: a systematic review. <i>Health Sciences Journal, 4(1), 3-14.</i>						SES, low edu, cultural acceptance and expectation of preg due to early marriage and family structure related to adol preg Low decision-making ability associated with adol preg Low use of MHC services	
104	Shrestha S. (2002). Sociocultural factors influencing adolescent pregnancy in rural Nepal. <i>International Journal of Adolescent Medicine & Health, 14, 101-109.</i>						Higher teenage pregnancy recorded among Hindus than other religions in Nepal	
105	Sedgh, G., Finer, L.B., Bankole, A., Ellers, M.A., and Singh, S. (2015). Adolescent pregnancy, birth, and abortion rates across countries: levels and recent trends.		To examine pregnancy rates and outcomes (births and abortions) among 15- to 19-year olds and 10- to 14-year olds in all countries for which recent information could be obtained and to examine trends since the mid-1990s.	Data on adolescent pregnancy, births and abortion	Vital statistics and UN data for 21 countries with complete pregnancy data	Frequencies, estimates and rates Trend analysis Chi square	Highest levels of adolescent pregnancy and births in Mexico and SSA countries Highest rate of pregnancies among 10-14 year olds in Hungary Teen births are highest in the countries with	No examination of maternal health seeking behaviour; only provides knowledge on adolescent pregnancy statistics

	<i>Journal of Adolescent Health, 56, 223-230.</i>						highest teen pregnancy rates Highest abortion rates in England and Wales and Sweden	
106	Rutaremwya, G., Wandera, S.O., Jhamba, T., Akirior, E., and Kiconco, A. (2015). Determinants of maternal healthcare utilization in Uganda. <i>BMC Health Services Research, 15, 271-278.</i>	Andersen Behavioural Model of Healthcare Utilisation	To examine the predictors of usage of maternal health services in Uganda	Maternal health care utilisation: ANC, SBA and PNC categorized into three: desirable (complete use of all MHS packages), moderate (partial use), undesirable (none use of all packages). Sociodemographic predictors, enabling factors (income and health insurance) and healthcare need factors	Uganda DHS 2011 1764 women aged 15-49	Multinomial logistic regression	Desirable package was influenced by secondary or higher education, urban residence and rich wealth status Muslim women less likely to use moderate package. Married women less likely to use moderate package; also women who had no problem with distance to HF had higher likelihood of usage of moderate package	Cultural factors were not examined in study The bundling of maternal health services into packages do not provide a clear picture of the use of the different MHS in Uganda, and the factors that drive the usage of the different services
107	Althabe, F., Moore, J.L., Gibbons, L., Berrueta, M., Goudar, S.S., Chomba, E., Derman, R.J., Patel, A., Saleem, S., Pasha, O., Esamai, F., Garces, A., Liechty, E.A., Hambidge, M., Krebs, N.F., Hibberd, P.L., Goldenberg, R.L., Koso-Thomas, M.,		To determine whether adolescent mothers are at higher risk of maternal and perinatal adverse outcomes compared with mothers aged 20–24 years in a prospective, population-based	Antepartum and postpartum hemorrhage, obstructed labor, hypertensive disorders, maternal sepsis, and maternal mortality at 42 days postpartum. The perinatal outcomes	The Global Network's Maternal Newborn Health Registry Mothers aged <15, 15-19 and 20-24 (comparative) in Kenya,	Descriptive analysis, generalized linear models	Adolescent mothers aged 15-19 were discovered to have a lower risk of obstructed labour and hypertension than mothers 20-24 No difference in risk of antepartum and postpartum hemorrhage	Socioeconomic factors alone could not explain maternal and perinatal outcomes

	Carlo, W.A., Cafferata, M.L., Buekens, P., and McClure, E.M. (2015). Adverse maternal and perinatal health outcomes in adolescent pregnancy: The Global Network's Maternal Newborn Health Registry study. <i>Reproductive Health, 12 (Supp.2), S8-S16</i>		observational study of newborn outcomes in low resource settings.	were: preterm birth (live birth at <37 weeks' gestation), LBW (live birth weighing <2,500g at birth), stillbirth (fetal deaths occurring >500 g [or >22 weeks gestation]), early neonatal deaths (neonatal deaths 0-6 days after birth), neonatal deaths (neonatal deaths 0-28 days after birth), perinatal deaths (neonatal deaths 0-6 days plus stillbirths).	Zambia, India, Pakistan, Guatemala and Argentina N=269273		or maternal sepsis among adolescents 15-19 years and <15 years compared to adults 20-24 years Adolescent mothers did not have significantly higher stillbirth risk. Adolescents used SBA more than older counterparts Younger and older adolescent mothers had higher risk of preterm birth and low birth weight	
108	Afulani, P.A. (2016). Determinants of stillbirths in Ghana: does quality of antenatal care matter? <i>BMC Pregnancy and Childbirth, 16, 132-148.</i>		To examine the factors associated with stillbirths in Ghana, focusing on the role of ANC quality.	ANC quality score composed from being weighed, blood pressure checked, a urine sample taken, a blood sample taken, education received on signs of pregnancy complications, education received on where to go in the event of a complication, received or told to	2007 Ghana Maternal Health Survey N=4868	Multilevel regression Moderation and mediation analysis	Women who received higher quality ANC were less likely to have a stillbirth Skilled birth attendance and place of delivery do not significantly influence risk of stillbirths Having pregnancy complications, a past stillbirth, multiple pregnancies and a sister who died from maternal causes were	Focuses on ANC only Examines only stillbirths while ignoring other birth outcomes Does not differentiate birth outcomes by maternal age

				buy iron supplements, received an anthelmintic, and received tetanus vaccination. Health service utilisation (ANC/SBA), maternal risk factors for adverse outcomes Sociodemographic factors Birth outcome: live or stillbirth			associated with higher risk of stillbirth Never married women had higher odds of stillbirths Urban residence led to higher risk of stillbirth	
109	Pradhan, R., Wynter, K., and Fisher, J. (2018). Factors associated with pregnancy among married adolescents in Nepal: secondary analysis of the National Demographic and Health Surveys from 2001 and 2011. <i>International Journal of Environmental Research and Public Health</i>, 15, 229-240.	Social determinants of health	To describe the prevalence, and identify factors associated with pregnancy among adolescents in Nepal between 2001 and 2011	Pregnancy prevalence among married adolescents Women's highest level of education attained, religion, ethnicity, wealth status, place of residence (urban/rural), ecological region (mountains, hills or Terai (plain land)), developmental region (Eastern, Central, Western,	Nepal DHS from 2001-11 2524 married adolescent women aged 15-19	Logistic regression	Women in the Eastern region were more likely to have adolescent pregnancy Older age at FSE was associated with lower likelihood of adolescent pregnancy, while larger age difference between partners increased the likelihood of adolescent pregnancy Respondent's and partner's education were not significantly associated with adolescent pregnancy	Pregnancy was focus not MHC

				Mid-Western, Far-Western), woman's age at first sexual intercourse, and her husband's age, education, and occupation..				
110	Tsawe, M., and Susuman, A.S. (2014). Determinants of access to and use of maternal health care services in the Eastern Cape, South Africa: a quantitative and qualitative investigation. <i>BMC Research Notes</i>, 7, 723-732.		To explore the factors associated with access to and use of maternal health care services.	Access to MHC ANC usage Age, marital status, education, occupation, residence, distance to HF, means of transport, cultural factors, knowledge of ANC services offered, presence of medical aid	Mixed methods Quantitative: N=267 primary data from women Qual: IDIs and KIIs from health care professionals	Logistic regression	Women aged 35-39 and 40+ more likely to use ANC than younger women Unmarried women more likely to use ANC Women with secondary and higher education are more likely to use ANC Women who used private transport were less likely to use ANC than women who walk Women who say cultural factors don't prevent them from using ANC were more likely to use it Women who were not knowledgeable about ANC and did not find MHC information useful were less likely to use ANC	Small sample size, leading to limited generalizability

							Qual: poor health worker attitudes, bad service, lack of knowledge of ANC benefits, and poor referral of women to ANC services reduce ANC use	
111	Asare, B.Y., Baafi, D., Dwumfour-Asare, B., and Adam, A. (2019). Factors associated with adolescent pregnancy in the Sunyani Municipality of Ghana. International Journal of Africa Nursing Sciences, 10, 87-91.		To investigate the factors associated with adolescent pregnancy in Sunyani municipality, Ghana		N=245 (120 cases, 125 controls) aged 15-19 Cases were pregnant adolescents, and controls were not pregnant	Chi square Logistic regression	Rural residence, being an apprentice rather than in school, lower economic status, being unemployed were associated with higher risk of pregnancy	Not nationally representative, small sample
112	Owolabi, O.O., Wong, K.L.M., Dennis, M.L., Radovich, E., Cavallaro, F.L., Lynch, C.A., Fatusi, A., Sombie, I., Benova, L. (2017). Comparing the use and content of antenatal care in adolescent and older first-time mothers in 13 countries of		To assess the use of antenatal care, its content, and providers of this care, with a focus on comparing adolescent and older first-time mothers in west Africa using DHS data.	Whether the woman had her blood pressure taken, had a urine sample taken, had a blood sample taken, and whether she received information on pregnancy complications.	DHS between 2010-2014 in 13 West African countries (Benin, Burkina Faso, Cote d'Ivoire, The Gambia, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo)	Descriptive	Adolescent mothers use ANC but start later, have fewer visits and receive fewer services than older mothers)	Only ANC studied

	west Africa: a cross-sectional analysis of Demographic and Health Surveys. <i>Lancet Child and Adolescent Health</i>, 1, 203–12				N=19211 (10025 adolescents, 6099 young adults, 3087 adults)			
113	Christofides, N., Jewkes, R.K., Dunkle, K.L., McCarty, F., Shai, N.J., Nduna, M., and Sterk, C. (2014). Risk factors for unplanned and unwanted teenage pregnancies occurring over two years of follow-up among a cohort of young South African women. <i>Global Health Action</i>, 7 (1), 23719.		To describe the range of risk and protective factors for incident unwanted and unplanned pregnancies occurring over 2 years of follow-up among a cohort of adolescent women in the Eastern Cape, South Africa To investigate the relationship between gender inequality and gender-based violence and subsequent unplanned and unwanted pregnancies	Age, having a pregnancy prior to baseline, education, time between interviews, study intervention arm, contraceptive use, experience of intimate partner violence, belief that the teenage girl and her boyfriend are mutual main partners, and socioeconomic status	Longitudinal study over 2 years RCT N=922	Logistic regression	Girls who experienced physical abuse were more likely to get pregnant Girls with higher SES were less likely to get pregnant The belief in exclusive partnership increased the likelihood of pregnancy Girls who suffered child sexual abuse were more likely to get pregnant	Pregnancy only, no study of MHCU
114	Zepro, N.B., and Ahmed, A.T. (2016). Determinants of institutional delivery service utilization among pastorals of Liben Zone, Somali		To Identify the determinants and constraints of institutional delivery	Institutional delivery Age, education, occupation, husband's education and occupation,	Women aged 15-49 N=385 Mixed methods, primary data	Logistic regression Thematic analysis	Women whose family members preferred facility delivery were more likely to deliver in a HF	Context-specific

	Regional State, Ethiopia, 2015. <i>International Journal of Women's Health</i>, 8,705-712.			monthly household income, problems in current pregnancy, visits to HF in current pregnancy, ANC visits	Questionnaires and FGDs		Closeness to HF increased likelihood of facility delivery Women with educated husbands more likely to deliver in HF Women who used ANC were more likely to deliver in a HF Qual: misconceptions about religious ordinances concerning male health workers, cultural practice with preference for home delivery, poor service at HF, partner not allowing women to use HF contributed to non-use of HF for delivery	
115	Saptarini, I., and Setyonaluri, D. (2018). Pregnancy intention and utilization of maternal and child health care services in Indonesia. <i>Jurnal Kesehatan Reproduksi</i>, 9(1), 2018: 27-36.		To investigate the association between pregnancy intention and utilization of mother and child health care.	Pregnancy intention Sociodemographic variables, parity and health insurance MHCU (ANC, SBA, PNC and immunisation)	Indonesia Demography Health Survey 2012 Women aged 15-49 N=9256	Logistic regression	Highest rate of intended pregnancy found among adolescents (91.6%) Women with unintended pregnancies were less likely to use ANC and SBA Women with higher education, high wealth status, and who have health insurance were	Context not in SSA

							more likely to use maternal health services, while multiparous women were less likely to use MHS	
116	Rosenberg, M., Pettifor, A., Miller, W.C., Thirumurthy, H., Emch, M., Afolabi, S.A., Kahn, K., Collinson, M., and Tollman, S. (2015). Relationship between school dropout and teen pregnancy among rural South African young women. <i>International Journal of Epidemiology</i>, 44(3), 928-936.		To estimate the association between school enrolment and incident teen pregnancy.	Age; calendar year; household socioeconomic status; household size; and gender, educational attainment and employment of household head, school enrolment Incidence of teenage pregnancy	N=15457 girls aged 12-18 Longitudinal data from 2000-11 from Agincourt HDSS	Cox proportional hazards	School enrolment had a protective effect against teen pregnancy The study found high incidence of teenage pregnancy	Outcome was teen pregnancy; study did not examine MHCU among teen mothers
117	Egbe, T.O., Omeichu, A., Halle-Ekane, G.E., Tchente, C.N., Egbe, E., and Oury, J. (2015). Prevalence and outcome of teenage hospital births at the Buea health district, South West Region, Cameroon.		To determine teenage pregnancy prevalence in study area To compare delivery outcomes between teenage and adult mothers To identify factors associated with adverse pregnancy outcomes	Maternal age, gravidity, religion, marital status, number of antenatal visits, employment status and level of education Preeclampsia-eclampsia, premature rupture of membranes,	Case control (case 14-19, control 20-29). N=508 (148 cases, 360 control)	Mantel Haenszel method Chi square and Fisher's exact tests Logistic regression	Adolescents who were unemployed, with lower educational levels were more likely to get pregnant Most adolescent pregnancies were pre-marital Adolescent mothers were more likely to have adverse outcomes	Pregnancy outcomes investigated, no inquiry into MHCU

	<i>Reproductive Health</i> , 12, 118-127.			placenta previa, placenta abruption, perineal tear, and episiotomy Prematurity, low birth weight, post term, 5 min Apgar scores < 7, stillbirth, and neonatal death.			than older mothers such as low birth weight, preterm births and lower Apgar scores, as well as higher likelihood of perineal tears Married adolescents had lower incidence of adverse pregnancy outcomes	
118	Naigaga, M.D., Guttersrud, O., and Pettersen, K. S. (2015). Measuring maternal health literacy in adolescents attending antenatal care in a developing country – the impact of selected demographic characteristics. <i>Journal of Clinical Nursing</i> , 24, 2402–2409.	Social cognitive theory by Bandura	To describe how selected demographic characteristics ‘explain’ the observed variance in the distribution of MHL estimates in adolescents attending antenatal care (AC) in Uganda	Maternal health literacy Sociodemographic characteristics	Pregnant adolescents aged 15-19 attending antenatal care MaHeLi scale	Mann Whitney U test	Maternal health literacy higher in adolescents 16-19 Access to reproductive health information leads to higher health literacy Adolescents who had at least primary education had higher health literacy	Maternal health literacy is outcome variable Facility based study
119	Godha, D., Gage, A.J., Hotchkiss, D.R., Cappa, C. (2016). Predicting maternal health care use by age at marriage in multiple countries.		To explore the association of child marriage with maternal health care utilization, after controlling for background characteristics, and to investigate how this association varies by	Use of ANC, SBA and institutional delivery Age at marriage (15-17 and <14) Respondent’s age in years, education, and religion;	DHS for 7 countries (Bangladesh, Burkina Faso, Ethiopia, Mali, Mozambique, Nepal, Niger). Women aged 20-24	Logistic regression	Women who married at younger ages were less likely to use MHC	Study does not give reasons why maternal healthcare use varies between women married at younger and older ages

	<i>Journal of Adolescent Health</i> , 58, 504-511.		rural-urban residence and birth order.	household wealth terciles; and spouses' relative education and age.				
120	Manyeh, A.K., Akpakli, D.E., Kukula, V., Ekey, R.A., Narh-Bana, S., Adjei, A., and Gyapong, M. (2017). Socio-demographic determinants of skilled birth attendant at delivery in rural southern Ghana. <i>BMC Research Notes</i>, 10, 268-274.		To examine factors contributing to this low trend of skilled deliveries in the Dodowa Health and Demographic Surveillance System.	Skilled delivery assistance Maternal age, education, parity, first live birth or not, marital status, ANC attendance, and wealth index	N=1874 Women aged 15-49 Dodowa HDSS	Logistic regression	Women from poor households, higher CEB, who had no education and did not use ANC were less likely to use a skilled attendant at delivery Women aged 20 and above were more likely to use SDA than adolescents 15-19	The study examines SDA, but not ANC and PNC
121	Krugu, J.K., Mevissen, F.E.F., Prinsen, A., and Ruiter, A.C. (2016). Who's that girl? A qualitative analysis of adolescent girls' views on factors associated with teenage pregnancies in Bolgatanga, Ghana. <i>Reproductive Health</i>, 13, 39-50.		To explore the psychosocial and environmental factors influencing the sexual decision-making of adolescents	Themes covered: relationships, sex, pregnancy, family planning and psychosocial determinants (knowledge, attitudes, self-efficacy, norms, risk perceptions)	IDIs N=20 aged 14-19 Adolescent girls who had never been pregnant and were in school	Thematic analysis	Few girls spoke to their parents about sexual matters, and most conversations were on abstinence Sexually active girls reported using condoms to avoid pregnancy School-based sex education was more comprehensive	Study population could have been biased due to it being only in-school girls

							Girls were able to negotiate condom use with their partners and had no problem with carrying condoms. However, they felt it was their partners' responsibility to buy condoms. Girls showed a high sense of self-efficacy and had definite future goals Girls have negative belief towards other types of contraceptives as they believed they could make them infertile.	
122	Musoke, D., Ekirapa-Kiracho, E., Ndejjo, R., and George, A. (2015). Using photovoice to examine community level barriers affecting maternal health in rural Wakiso district, Uganda. <i>Reproductive Health Matters, 23 (45), 136-147.</i>	Social determinants of health	To explore community level barriers affecting maternal health in rural Wakiso district, Uganda.	Community-level barriers in access to MHC	N=10 (5 male, 5 female) aged 18-29	Photovoice Community-based participatory research approach	Far distance to HF meant patronizing TBAs, also poor access roads made going to HF difficult Long wait times at HF Poor service package at government clinics; private practice by govt health workers Low income acts as a barrier for women to access MHC	Context-specific, findings not generalizable

							High rate of teen pregnancies observed in study site, as well as low contraceptive use and close birth spacing	
123	Mombo-Ngoma, G., Mackanga, J.R., Gonzalez, R., Ouedraogo, S., Kakolwa, M.A., Manego, R.Z., Basra, A., Ruperez, M., Cot, M., Kabanywany, A.M., Mastiegui, P., Agnandji, S.T., Vala, A., Massougbodji, A., Abdulla, S., Adegnika, A.A., Sevene, E., Macete, E., Yazdanbakhsh, M., Kremsner, P.G., Aponte, J.J., Menendez, C., and Ramharther, M. (2016). Young adolescent girls are at high risk for adverse pregnancy outcomes in sub-Saharan Africa: an observational multicountry study. <i>BMJ Open</i>, 6, e011783		To assess whether young adolescent girls constitute a group at increased risk for adverse birth outcomes among pregnant women in sub-Saharan Africa.	Preterm delivery and LBW	Data collected from an RCT done in Benin, Gabon, Mozambique and Tanzania	Logistic regression	Young maternal age is associated with preterm delivery and LBW , especially among mothers aged 16 and below	No examination of MHC

124	Kirbas, A., Gulerman, H.C., and Daglar, K. (2016). Pregnancy in adolescence: is it an obstetrical risk? <i>Journal of Pediatrics and Adolescent Gynecology</i>, 29, 367-371.		To investigate whether there is an increased risk for perinatal complications in adolescent pregnancies.	Obstetric risks (preterm birth and preeclampsia).	Case control study Case: adolescents aged 15-19 Control: women aged 20-34 N=582 case, 2920 control Ankara, Turkey	Chi square and Fisher used for cat variables, t-test and Mann-Whitney U test for cont variables, logistic regression	The study found that adolescent mothers had higher risk of preeclampsia and preterm delivery than older mothers. Pregnant adolescents had less health insurance, were more likely to be unmarried, and had lower use of antenatal care. Also pregnant adolescents had lower use of folic acid and had higher rates of anaemia than adult mothers	Only delivery outcomes were considered, their health seeking behaviour was not studied.
125	Yakubu, I., and Salisu, W.J. (2018). Determinants of adolescent pregnancy in sub-Saharan Africa: a systematic review. <i>Reproductive Health</i>, 15, 15-25.		To identify factors influencing adolescent pregnancies in sub-Saharan Africa in order to design appropriate intervention program	Sociocultural, environmental and economic factors, individual factors, and health service-related factors	Sys rev N=24	Systematic review	The study categorized factors influencing adolescent pregnancies into four: Sociocultural, environmental and Economic factors (Peer influence, unwanted sexual advances from adult males, coercive sexual relations, unequal gender power relations, poverty, religion, early marriage, lack of parental counseling and guidance, parental neglect, absence of affordable or free education, lack of	Study looked only at adolescent pregnancy and not at all at MHCU

							comprehensive sexuality education, non-use of contraceptives, male's responsibility to buy condoms, early sexual debut and inappropriate forms of recreation), Individual factors (excessive use of alcohol, substance abuse, educational status, low self-esteem, and inability to resist sexual temptation, curiosity, and cell phone usage), Health service-related factors (cost of contraceptives, Inadequate and unskilled health workers, long waiting time and lack of privacy at clinics, lack of comprehensive sexuality education, misconceptions about contraceptives, and non-friendly adolescent reproductive services,) as influencing adolescent pregnancies in Sub-Saharan Africa	
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126	Kawakita, T., Wilson, K., Grantz, K.L., Landy, H.J., Huang, C., and Gomez-Lobo, V. (2016). Adverse maternal and neonatal outcomes in adolescent pregnancy. <i>Journal of Pediatrics and Adolescent Gynecology</i>, 29, 130-136.		To investigate the maternal and neonatal outcomes and to explore the indication of primary cesarean delivery and length of labour in adolescent pregnancy	Age, race/ethnicity, marital status, insurance type, substance abuse, BMI, hospital type, gestational age at delivery, presence of diabetes	Women aged <25 N=43537 deliveries	Fisher's exact test, Wilcoxon test and chi square Binomial and multinomial logistic regression	Younger adolescents (<15) had lower likelihood of caesarean delivery, and increased likelihood of anaemia, preterm delivery, postpartum haemorrhage and preeclampsia Older adolescents (16-19) had lower likelihood of caesarean delivery, and increased risk of anaemia, preterm delivery and blood transfusion than women aged 20+ Adolescents (both younger and older) had lower likelihood of their babies requiring emergency treatment in the NICU, and had higher likelihood of shorter second stage of labour	Maternal and neonatal outcomes studied, no study of MHCU
127	Somefun, O.D., and Ibisomi, L. (2016). Determinants of postnatal care non-utilization among women in Nigeria, <i>BMC Research Notes</i>, 9, 21-31.		To identify factors that are significantly associated with the non-use of postnatal care services in Nigeria	Postnatal care use (measure derived by combining PNC use, provider and timing) Age of mother at last birth, antenatal care use, birth order, birth size,	N=19418 women aged 15-49 Secondary data from Nigeria DHS 2013	Multinomial logistic regression	Women who were 25-34, wanted the pregnancy later, had primary or higher edu, were middle class and rich, received ANC, did not have a problem with distance to HF and gave birth in a non-health facility had lower	Cultural factors which could prevent PNC use are not examined

				child sex, distance to health facility, pregnancy wantedness, education, marital status, occupation, place of delivery, place of residence, region, religion and household wealth status.			odds of non-utilisation, while women of 'other' religions, and with higher parity had higher odds of non-utilisation of PNC	
128	Sarker, A.R., Sheikh, N., Mahumud, R.A., and Sultana, M. (2018). Determinants of adolescent maternal healthcare utilization in Bangladesh. <i>Public Health, 157</i> , 94-103.		To identify the factors associated with adolescent maternal healthcare utilization in Bangladesh.	Adolescent pregnancy, use of contraceptives, ANC, facility delivery, present of SBA Age, education, work status, family planning knowledge, region and wealth index Age (<18 and 18-19)	Bangladesh DHS 2014 N=2029 aged 10-19	Chi square Logistic regression	Being employed, knowledge of STIs, and urban residence increased likelihood of contraceptive use Having knowledge of contraception, higher SES, and urban residence increased likelihood of ANCU, facility delivery and skilled birth attendance	No study of cultural influences on MHCU
129	Flanagan, K.F., Cunningham, S.D., Lewis, J.B., Tobin, J.N., and Ickovics, J.R. (2019). Factors associated with pregnant adolescents' access to sexual and reproductive health		To examine access to, and factors associated with, receipt of sexual and reproductive health services deemed essential by the World Health Organization among pregnant adolescents in New York City.	DV- comprehensive perinatal care, access to FP, HIV testing, sexual health knowledge IV- age, race/ethnicity, place of birth, food and housing security,	N=649 pregnant adolescents aged 14-21. RCT between 2008 and 2012.	Logistic regression	Lower likelihood of contraceptive use, HIV testing and high sexual knowledge among girls under 18. Higher level of sexual knowledge among black women. Higher likelihood of comprehensive perinatal care and contraceptive use	No examination of sociocultural factors which could influence adolescent mothers' SRH use

	services in New York City. <i>Sexual & Reproductive Healthcare, 19, 50–55.</i>			relationship status, experience of discrimination			among immigrant women , but lower likelihood of high sexual knowledge among them Adolescents who reported food insecurity had lower likelihood of comprehensive perinatal care	
130	Adedokun, O., Adeyemi, O., and Dauda, C. (2016). Child marriage and maternal health risks among young mothers in Gombi, Adamawa State, Nigeria: implications for mortality, entitlements and freedoms. African Health Sciences, 16(4), 986-999.		To examine the maternal health implications of early marriage on young mothers	Education, age, marital status, type of marital union and reproductive health decision-making Child marriage, maternal health risks	N=200 Age 15-24 Primary data Quant and qual Six FGDs and IDIs	Logistic regression Textual analysis	Girls aged 15-19 had higher likelihood of pregnancy complications than those 20-24 Girls with primary or lower education, low income and low decision-making power are more likely to experience complications Likelihood of complications increased with higher parity	Pregnancy complications and contraceptive use examined; little attention paid to MHCU
131	Atekyereza, P.R., and Mubiru, K. (2014). Influence of pregnancy perceptions on patterns of seeking antenatal care among women in reproductive age of		(i)To understand the women's social definitions and perceptions on their pregnancy; (ii) To understand the sociocultural beliefs related to pregnancy among	Sociocultural factors which influence the use of antenatal care	N=45 Age 15-49 10 IDIs and 4 FGDs	Thematic and content analysis	Lower use of ANC among teen respondents 19 and below, due to poor financial power and low knowledge of healthcare needs	Context-specific

	Masaka District, Uganda. <i>Tanzania Journal of Health Research, 16(4), 1-12.</i>		women of the reproductive age group; and, (iii) To examine the influence of social definitions, perceptions and beliefs about pregnancy on women's antenatal care seeking behaviour patterns to inform the decentralised health care delivery system in Uganda.				Women who lived far from clinics found it difficult to access ANC and used TBAs instead Women with tertiary education reported more ANC use compared to those with lower or no education Having wanted pregnancies made women eager to use ANC Observed late booking for ANC, as well as high use of TBAs in study population Cultural beliefs influence desired pregnancy care, e.g. the use of herbs and observance of taboos to avoid danger to mother and child	
132	Oguntunde, O., Aina, O., Ibrahim, M.S., Umar, H.S., and Passano, P. (2010). Antenatal care and skilled birth attendance in three communities in Kaduna State, Nigeria.		To assess antenatal care (ANC) coverage, place of delivery and use of skilled birth assistants in three communities in Kaduna State, Nigeria.	Number of ANC visits	N=332 women aged 15-49	Chi square	Most women stated ANC in the 4th month Women with secondary and higher education were more likely to book in first trimester SBA use increased with increasing education	Cultural factors hindering utilisation of ANC and SBA not examined

	<i>African Journal of Reproductive Health</i> , 14(3), 89-96.		To explore socio-demographic factors influence ANC and delivery care coverage in three northern Nigerian communities.					
133	Adatarar, P., Afaya, A., Baku, E.A., Salia, S.M., and Asempah, A. (2018). Perspective of traditional birth attendants on their experiences and roles in maternal health care in rural areas of Northern Ghana. <i>International Journal of Reproductive Medicine</i>, doi: 10.1155/2018/2165627		To explore and describe the role of traditional birth attendants in maternal health care in the rural areas in Ghana.	Roles of TBAs	Qualitative N=10 TBAs IDIs	Thematic analysis	TBAs are used where there is difficulty in accessing HFs; also at times when trained health personnel are unavailable such as at night and during weekends TBAs offer natural family planning training to couples They also advice women on nutrition during pregnancy using locally available foods They provide psychological support for women during labour and delivery by doing whatever it takes to encourage them and minimize their fears TBAs are not adequately recognized by govt health workers	The study focused on the roles of TBAs only from their own point of view, and not from the clients' point of view Other aspects of MHCU were not covered

134	Rukundo, G.Z., Abaasa, C., Natukunda, P.B., Ashabahebwa, B.H., and Allain, D. (2015). Antenatal services for pregnant teenagers in Mbarara Municipality, Southwestern Uganda: health workers and community leaders' views. <i>BMC Pregnancy and Childbirth</i>, 15, 351-355.		To assess stakeholders' views concerning factors affecting availability, accessibility and utilization of teenager friendly antenatal services in Mbarara Municipality, Southwestern Uganda.		KIs with health workers, community leaders, welfare officers, TBAs	Manual thematic analysis	No teenager friendly services in the study location, teenagers had to use adult facilities and services Teenage mothers may not necessarily have risk pregnancies Teenagers had low pregnancy-related knowledge and this makes attending to them more difficult; also, having to receive services at the same time as adult women intimidates them Unintended pregnancy among teenagers makes them reluctant to use MHC services Teenage mothers often lack the financial and social support to use ANC	
135	Kayombo E.J. (2013). Impact of training traditional birth attendants on maternal mortality and morbidity in Sub-Saharan African countries.		(i) What has been the major role of TBAs in reproductive health that attracts many women to prefer to use them for delivery and other health problems?;		Literature review	Literature review	TBAs have been an important resource in low income countries for providing maternal care especially in rural areas. As such, training should be provided for them to enable them complement the efforts	

	<i>Tanzania Journal of Health Research</i> , 15(2), 1-11.		(ii) Are there any efforts to train TBAs as intervention and what approaches are used in order to improve health care outcomes?; and (iii) If yes what is the impact of training TBAs on reducing maternal and infant mortality rate? To describe the impact of training TBAs on reducing maternal mortality in Sub-Saharan Africa				of orthodox health care services	
136	Crissman, H.P., Engmann, C.E., Adanu, R.N., Nimako, D., Crespo, K., and Moyer, C.A. (2013). Shifting norms: pregnant women's perspectives on skilled birth attendance and facility-based delivery in rural Ghana. African Journal of Reproductive Health, 17(1), 15-26.		To understand the barriers to SBA and HCF delivery through the underrepresented perspective of pregnant women.	Barriers to SBA and HCF utilisation	N=85 pregnant women Semi-structured interviews	Grounded theory method	Cost of payment for services and required items; transport difficulty; bad health worker attitudes; not having a person to provide support during labour; and quick onset of labour can serve as barriers to women's HF delivery	Facility based study means that respondents may already be biased towards using HF for delivery

137	Lerberg, P., Sundby, J., Jammeh, A., and Fretheim, A. (2014). Barriers to skilled birth attendance: a survey among mothers in rural Gambia. <i>African Journal of Reproductive Health, 18(1), 35-43.</i>		To identify the most important barriers for use of skilled attendance during childbirth by women in rural Gambia.	Barriers to SBA use	N=432 women aged 15-49 who had given birth outside a health facility in the last six months	Descriptive statistics	Lack of access to transport, quick onset of labour, not having enough time to go to HF, negative health worker attitudes, and not wanting to deliver in the facility were some of the barriers respondents cited as preventing facility delivery	Only skilled birth attendance, other types of MHCUs not addressed
138	Arai, L. (2007) Peer and neighbourhood influences on teenage pregnancy and fertility: qualitative findings from research in English communities <i>Health and Place, 13, 87-98.</i>		To extend the existing qualitative research on community and peer influences on teenage reproductive behaviour focusing on the transition from teenage pregnancy to fertility	Peer and neighbourhood influences-having friends or family members who were teen mothers, community perception of teen pregnancy, Teenage pregnancy and fertility	Data collected from in-depth interviews with teen mothers from Inner London, Northumberland and Greater Manchester (areas with differing rates of teen pregnancies) N=15 Data also collected from KIIs with programme coordinators N=9	Thematic analysis	Births to teenage mothers occur in settings where they are generally accepted by families, peers and communities. Also, neighbourhood poverty and lack of opportunities may be factors responsible for teenage motherhood. Where conditions are less accepting, or where opportunities for women are more, teen pregnancies end more in abortions.	Focus on only teen pregnancy and motherhood Area of focus is small; results are not generalizable to SSA

139	Wado, Y.D., Sully, E.A., and Mumah, J.N. (2019) Pregnancy and early motherhood among adolescents in five East African countries: a multi-level analysis of risk and protective factors. <i>BMC Pregnancy and Childbirth, 19, 59-69.</i>		To identify the contextual factors that influence adolescent pregnancy in five East African countries.	Individual level: girl's education, exposure to media, age, and age at first sex. Household level: household wealth index, place of residence, sex of the household head and living arrangement (family structure) Community-level variables: cluster level household poverty and cluster level adolescent education. Sociodemographic factors: age, place of residence, religion, and marital status Self-reported pregnancy or motherhood among adolescent girls	Adolescent girls aged 15-19 DHS from five EA countries: Kenya, Uganda, Tanzania, Malawi and Zambia	Multilevel LR	Adolescent pregnancy is common Education and household wealth associated with pregnancy; higher wealth and education reduce odds of adolescent pregnancy Higher media exposure was associated with lower odds of pregnancy Married adolescents and those living with non-parent relatives had higher odds of pregnancy Sex of HH is not associated with pregnancy Only in Uganda was poverty associated with adolescent pregnancy	The study only covered pregnancy and not MHCU among adolescent mothers
140	Maly, C., McClendon, K.A., Baumgartner, J.N., Nakyanjo, N., Ddaaki, W.G., Serwadda, D., Nalugoda, F.K., Wawer, M.J.,		To explore perceptions of adolescent pregnancy among a sample of currently pregnant and never pregnant		N=26 adolescent mothers aged 15-19 In depth interviews	Grounded theory	Premarital pregnancies seen as shameful, high stigma associated with premarital pregnancies and abortion Pregnant girls met with verbal and physical	No focus on MHCU for adolescent mothers

	Bonnevie, E., Wagman, J.A. (2017) Perceptions of adolescent pregnancy among teenage girls in Rakai, Uganda. <i>Global Qualitative Nursing Research, 4, 1-12</i>		(but sexually active) teenage girls living in the rural Rakai District of Uganda.				abuse from their parents and families; some are kicked out of home and forced to go and live with their partners Pregnancy linked to financial benefits, coercion Low knowledge of reproductive health Low personal agency and early marriage responsible for pregnancy among adolescent girls Pregnancy often ended the educational career of adolescent girls	
141	Mekonnen, T., Dune, T., Perz, J. (2019) Maternal health service utilization of adolescent women in sub-Saharan Africa: a systematic scoping review <i>BMC Pregnancy and Childbirth, 19, 366-381</i>		To synthesize all studies done on maternal healthcare utilization among adolescent mothers in sub-Saharan Africa and make recommendations to policymakers, programme planners and clinicians, to improve the maternal health of adolescent women in Sub-Saharan Africa.		27 studies that examined antenatal care, skilled birth delivery and PNC service utilisation of adolescent mothers in Sub-Saharan Africa	Systematic review	Educational status, partner education, age, residence, economic status and knowledge and perceived need influenced maternal health care Social and cultural beliefs and practices such as religion	Study is a summary of findings from previous studies

							Healthcare preferences also determine adolescent MHCU Health worker attitudes in Nigeria determine TBA vs modern facility use	
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APPENDIX 2: POLICY BRIEF

Thesis Topic: The Sociocultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria: A Pooled Data Analysis.

By

Christiana Alake Alex-Ojei

**Demography and Population Studies Programme, Schools of Public Health and Social Sciences,
University of the Witwatersrand, Johannesburg, South Africa.**

Targeted Policy Users: Federal Ministry of Health, Nigeria; Federal Ministry of Women Affairs and Social Development; National Population Commission; United Nations Population Fund; Action Health Incorporated; Association for Reproductive and Family Health; Women's Health and Research Centre.

Introduction

Maternal healthcare utilisation among adolescent girls aged 15-19 has been discovered to be consistently low in Nigeria, compared to utilisation among mothers aged 20 and above, despite greater risk for adverse pregnancy and childbirth outcomes among younger mothers. While previous research has largely focused on the sociodemographic characteristics which influence maternal healthcare usage among adolescent mothers in Nigeria, little is known about the sociocultural characteristics of young mothers, their families and environment, and how these have consistently resulted in low maternal healthcare utilisation among this group of mothers.

Context and Methods

The study was conducted among adolescent mothers aged 15-19 living in Nigeria. It used mixed methods to examine the sociocultural factors which were associated with their use of antenatal care, type of birth attendant used, and postnatal care use. Secondary quantitative data from the Nigeria Demographic and Health Surveys conducted between 2003 and 2013 were used with a sample size of 3200 adolescent mothers aged 15-19. Primary qualitative data were collected from fifty-five adolescent mothers (including a few young mothers who gave birth under age 20), nineteen of their own mothers or female guardians, five female community leaders and six senior health workers across rural and urban communities in Katsina State (North West), Ondo State (South West) and Imo State (South East).

Specific Findings

The study discovered that complete antenatal care, skilled birth attendance, and postnatal care use were low among adolescent mothers in Nigeria, while the majority of them started antenatal care in the fourth month or later. Also, it was discovered that unassisted births and the use of unskilled birth attendants such as friends and relatives was high among adolescent mothers. It was also discovered that the use of traditional birth attendants was high in the North West zone, and use of the “mission house”, an alternative/traditional birth attendant was high in the urban part of the South West zone. Additionally, information provided from health workers revealed that there were no specially designed programmes of action for adolescent maternal healthcare service provision.

Adolescent girls with higher education and household wealth, those whose partners were educated, those who did not find it difficult to get to the health facility, and those living in the South West were more likely to use antenatal care during pregnancy. Findings from the qualitative study revealed that antenatal care was influenced by the presence of social support, in form of emotional and financial support; healthcare preferences of adolescent mothers, their families and communities, and religious and cultural practices. Findings on timing of antenatal care initiation showed that likelihood of late initiation was higher among Hausa, Fulani and Northern minority adolescent mothers, those who lived in the South South and South West zones. Reasons given for late ANC initiation in the qualitative study include the fear of stigma, poor reproductive health knowledge, and bad health worker attitudes.

Living in a male-headed household was associated with the usage of skilled birth attendants for adolescent mothers in Nigeria. Additionally, adolescent mothers with educated partners, higher wealth status, and who made less than four, and four or more antenatal care visits were more likely to make use of skilled birth attendants. However, adolescent mothers over the age of 18 were less likely to make use of skilled birth attendants. Also, qualitative findings suggested that the presence of emotional and financial support, preference for modern healthcare, religious and cultural beliefs in support of modern healthcare use, and positive health worker attitudes encouraged adolescent mothers to use skilled birth attendants.

Postnatal care use was associated with having secondary and higher education, living in the North East and North West, and having complete antenatal care use and using a skilled attendant at birth. Qualitative findings showed that complete postnatal care usage, that is, for both mother

and baby, was more common in the North West region than in the South West and South East. Partner support and permission were also important for postnatal care use.

Policy Recommendations

in light of the findings from the study, the following recommendations are proposed for policy development and restructuring.

1. The study showed the importance of financial support from the family as an enabler of maternal healthcare. It is proposed that the cost of maternal healthcare for adolescent mothers in government-owned health facilities should be either removed if possible, or heavily subsidised to cater for those girls whose families are either unwilling or unable to pay for their healthcare costs.
2. Lower utilisation of maternal healthcare was found among adolescent mothers who were from lower status backgrounds. Efforts must be made by local health authorities with the use of community health extension workers to identify adolescent mothers in these situations and if possible, bring maternal healthcare to them in their homes.
3. The use of traditional and alternative birth attendants for maternal healthcare was culturally acceptable in parts of Nigeria. It is advised that further efforts must be made to collaborate with these practitioners to educate them on pregnancy danger symptoms and integrate them into the existing healthcare delivery system, by encouraging them to refer their clients to the appropriate health facilities quickly when they notice any danger signs.
4. it was also discovered that there were no specific programmes of action for adolescent maternal healthcare provision, and reproductive health knowledge was also discovered

to be low among adolescent mothers. It is advised that provision of a standard package for maternal healthcare for adolescent girls should be integrated into the 2016 Nigerian Health Policy, which proposes addressing adolescent health issues. This standard package of care should incorporate enough flexibility to accommodate the peculiar challenges and needs of adolescent mothers.

5. The 2007 Nigeria Adolescent Health Policy aimed to increase reproductive health knowledge and reduce unwanted pregnancies among adolescent girls by 50% by year 2015. However, study findings showed a low level of reproductive health knowledge among adolescent girls. Therefore, health education and contraceptive awareness should continue to be promoted to sexually active adolescent girls to enable them know pregnancy symptoms, know how to take care of themselves when pregnant, and prevent pregnancy, through family life education in schools, and through community health extension workers for adolescent girls who are out of school. Reproductive health education targeted at adolescent girls should also continue to be promoted through the use of traditional and social media as well as IEC materials.

APPENDIX 3: BIOSKETCH FOR CHRISTIANA ALAKE ALEX-OJEI

Christiana Alake Alex-Ojei has a Bachelor of Science degree in Demography and Social Statistics from Obafemi Awolowo University, Ile-Ife, Nigeria, and a Master of Science degree in Sociology (Demography and Population Studies option) from the University of Ibadan, also in Nigeria.

She is a lecturer in the Department of Demography and Social Statistics, Federal University, Oye-Ekiti, Nigeria, where she teaches demographic and statistical methods, computer appreciation, introduction to population studies, population and the environment, research methods and labour force concepts to undergraduate students. She has worked on research projects on family life education for adolescents, and antenatal care utilisation among women of reproductive age in Nigeria. She has also published and co-authored articles on topics such as fertility behaviour, adolescent sexual behaviour, intergenerational sexual activity, and general and maternal healthcare access and utilisation.

Publications from Thesis

1. Alex-Ojei CA, Odimegwu CO and Akinyemi JO. Patterns of delivery assistance among adolescent mothers in Nigeria, *Midwifery*, 82, 102619, 2020.
2. Alex-Ojei CA and Odimegwu CO. Correlates of antenatal care usage among adolescent mothers in Nigeria: a pooled data analysis. *Women and Health*, 61,1, 38-49, 2021.

Conferences Attended

1. Population Association of South Africa 2018 conference, Stellenbosch, South Africa. 16th -20th July, 2018.

Paper accepted: Correlates of maternal healthcare utilisation among adolescent mothers in Nigeria.

2. Population Association of South Africa 2019 Conference, Venda, South Africa. 10th-12th July, 2019.

Paper accepted: Utilisation of skilled birth attendance among adolescent mothers in Nigeria: a pooled data analysis.

3. African Population Conference 2019, Entebbe, Uganda. 18th-22nd November, 2019.

Papers presented:

Correlates of antenatal care usage and timing among adolescent mothers in Nigeria

An investigation into the sociocultural influences on adolescent maternal healthcare utilisation in Nigeria

Patterns of delivery assistance among adolescent mothers in Nigeria

4. Population Association of America Annual Conference 2020, Washington DC, USA. April 22nd - 25th, 2020,

Poster accepted: The socio-cultural influences on adolescent maternal healthcare utilisation in Nigeria.

Drafts in Writing

1. The socio-cultural influences on adolescent maternal healthcare utilisation in Nigeria.

Planned future publications from thesis findings

1. Determinants of postnatal care use among adolescent mothers in Nigeria: a mixed methods investigation.

2. An investigation into the use of 'mission houses' as maternal healthcare providers in South West Nigeria.

3. An exploration into the factors which increase adolescent pregnancy risk in Nigeria.

APPENDIX 4: DISSEMINATION PLAN

Title	Conferences presented in	Articles published
Patterns of delivery assistance among adolescent mothers in Nigeria	1. Wits Postgraduate Cross Faculty Symposium 2019 2. African Population Conference, 18-22 November, Entebbe, Uganda	Alex-Ojei CA, Odimegwu CO and Akinyemi JO. Patterns of delivery assistance among adolescent mothers in Nigeria, Midwifery, 82, 102619, 2020.
Correlates of antenatal care usage among adolescent mothers in Nigeria: a pooled data analysis	African Population Conference, 18-22 November, Entebbe, Uganda	Alex-Ojei CA and Odimegwu CO. Correlates of antenatal care usage among adolescent mothers in Nigeria: a pooled data analysis. Women and Health, 61,1, 38-49, 2021.
Utilisation of skilled birth attendance among adolescent mothers in Nigeria: a pooled data analysis.	Population Association of South Africa 2019 Conference, Venda, South Africa. 10 th -12 th July, 2019. Accepted	Written and published as second article
An investigation into the sociocultural influences on adolescent maternal healthcare utilisation in Nigeria	African Population Conference, 18-22 November, Entebbe, Uganda	Draft in writing
The socio-cultural influences on adolescent maternal healthcare utilisation in Nigeria.	Population Association of America Annual Conference 2020, Washington DC, USA. April 22 nd -25 th , 2020,	Draft in writing
Correlates of maternal healthcare utilisation among adolescent mothers in Nigeria.	Population Association of South Africa 2018 conference, Stellenbosch, South Africa. 16 th - 20 th July, 2018.	Written and published as first article

APPENDIX 5: QUALITATIVE RESEARCH INSTRUMENTS

In-depth Interview Guide for Adolescent Mothers

Pregnancy experience

Were you planning to get pregnant when you did? If not, can you please tell me what happened?

How did your family react to the pregnancy?

How did the father react to the pregnancy?

Social and cultural norms and practices

I would like to know some things about the cultural attitudes towards adolescent pregnancy in your community.

What cultural practices are associated with adolescent pregnancy in this community?

How is adolescent pregnancy viewed in this community? Probe: is it accepted or seen as shameful?
(Presence or absence of stigma)

How are adolescent mothers treated or addressed? How were you treated during your pregnancy by your family/partner's family now/while you were pregnant?

Social support

Did you get any form of support during the pregnancy from your family and/or partner's family? Probe: financial support, emotional support, advice, help, transport and so on.

Who provides money for your daily needs? Who provides money for your healthcare needs?

Would you say this was helpful to you?

Marital status and living arrangements

Were you married or after before you got pregnant?

Do you live in your husband's house? What is the household structured like (nuclear/extended?)

Is your husband the father of your baby? How many other wives or partners does your husband have?

What is your position in the household? Do you live with the other wives?

What is the age gap between you and your husband?

Who makes major decisions in your household?

Who makes the decisions concerning you in your household?

Gender and family power relations

Would you say you are able to make decisions concerning your daily life - such as whether you can go out, how you feed, what you can spend money on, your healthcare and so on?

Who makes these decisions on your behalf?

Have you ever been physically abused by your husband/partner/anyone in your family/anyone in your husband/partner's family?

Maternal healthcare utilisation patterns

What type of healthcare do you prefer during pregnancy? Probe for: pluralism in care providers (use of both orthodox and traditional care practices).

What type of healthcare have you used/did you use during your pregnancy?

Why did you use this particular type of healthcare? Probe for: access, cost, convenience.

Did you use antenatal care? Where did you do it? How many times did you go? Can you tell me some of the services that were given to you?

How do the health workers treat you? Have you ever had bad treatment from them? Probe for: rudeness/disrespect/name calling, bad service.

If she has given birth: where did you give birth? Who assisted you during delivery? Why did you choose this particular person/place? What was your delivery experience like?

If she is still pregnant: where do you intend to give birth? Why did you choose this option?

Probe: accessibility, cost, convenience. Did you choose it on your own or did someone make the decision for you?

If she has given birth: after giving birth, where did you and the baby go for post-delivery checkup? Who attended to you? Did you choose this person yourself? Who made the decision for you?

Thank you for your time.

The Socio-Cultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria:

A Pooled Data Analysis.

In-Depth Interview Guide for Older Mothers

Good day madam. I would like us to discuss your perceptions about adolescent pregnancy. I will therefore be asking questions about your personal views and attitudes towards pregnant adolescents, as well as how your culture views adolescent pregnancy.

Perceptions about adolescent pregnancy

What do you think about pregnant adolescents? How common is adolescent pregnancy in this locality? How is adolescent pregnancy viewed in this community? How are pregnant adolescents treated in this community?

Are there any specific cultural practices associated with adolescent pregnancy?

What do you think about unmarried pregnant adolescents? What of those who are married?

Do you think that adolescent pregnancy requires special care compared to pregnancy in older women?

Should pregnant adolescents use any form of healthcare? Which type should they use?

Social support

Would you say that this community provides support for adolescent mothers? What means of support are available for adolescent mothers in this community? Probe: Formal or informal sources of support.

Could you suggest some means of providing support for adolescent mothers and their children in this community?

Healthcare preferences

What type of healthcare is preferred in this community? Probe for: traditional, orthodox, pluralistic healthcare use.

Do you think that pregnant adolescents require healthcare? Why? What type of healthcare would you suggest that pregnant adolescents use? Why?

Healthcare availability

Are there maternal health facilities available in this locality? What is your opinion about them? What have been your own experiences with maternal healthcare use in the past? Probe: cost, distance, quality of care services, health workers.

Thank you for your time

The Socio-Cultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria:

A Pooled Data Analysis.

Key Informant Interview Guide (Senior health worker)

Good day, I would like to ask you some questions concerning perceptions of adolescent pregnancy, and how pregnant adolescents are treated

How common is adolescent pregnancy in this locality? Are there any cultural practices in this locality that are related to adolescent pregnancy?

Could you tell me some of your experiences dealing with pregnant adolescents in this facility? Probe: challenges of pregnant adolescents, any form of support given.

How do you view pregnant adolescents? Do you think that adolescent pregnancies have higher risk than those in older mothers? Do they have special pregnancy challenges compared to older mothers?

Do pregnant adolescents need any special attention consideration compared to older women?

Are there any special services offered to adolescent mothers? Could you tell me about them?

Would you say that pregnant adolescents usually make use of health facilities for their maternal healthcare needs? What type of healthcare do they usually use? Probe for: traditional, orthodox and pluralistic.

Thank you for your time.

The Socio-Cultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria:

A Pooled Data Analysis.

Key Informant Interview (Community Leader)

Good day madam. I would like us to discuss your views about adolescent pregnancy and maternal healthcare utilisation. I will therefore be asking questions about your personal views and attitudes towards pregnant adolescents, how the culture in this locality views adolescent pregnancy, and maternal healthcare utilisation among pregnant adolescents.

How common is adolescent pregnancy in this locality? Probe for: marital vs non-marital pregnancy.

What do you think about pregnancy in unmarried adolescents? What of those who are married?

How is adolescent pregnancy viewed in this community? How are pregnant adolescents treated in this community? Would you say that adolescent pregnancy is accepted in this community? What is your opinion about adolescent pregnancy?

Are there any specific cultural practices associated with adolescent pregnancy?

Do you think that adolescent pregnancy requires special care compared to pregnancy in older women?

Should pregnant adolescents use any form of healthcare? Which type should they use?

Would you say that this community provides support for adolescent mothers? What means of support are available for adolescent mothers in this community? Probe: Formal or informal sources of support.

Could you suggest some means of providing support for adolescent mothers and their children in this community?

What type of healthcare is preferred in this community? Probe for: traditional, orthodox, pluralistic healthcare use.

Do you think that pregnant adolescents require healthcare? Why? What type of healthcare would you suggest that pregnant adolescents use?

Are health facilities available in this community? Probe for: access/distance, transport availability, cost, service quality, staff attitudes.

Thank you for your time.

APPENDIX 6: ETHICS

University of the Witwatersrand, Johannesburg, South Africa

Project Title: The Sociocultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria: a Pooled Data Analysis.

Principal Investigator: Christiana A. Alex-Ojei

Consent Form

The purpose of the research project has been explained to me and I understand what my participation in this research study involves. This includes the potential risks and benefits of my participation, and the protection of my private information.

S/N	Please tick whichever is applicable	Yes	No
1	I agree to participate in the in-depth interview.		
2	I agree to be audio-recorded during my participation.		
3	I agree that my participation will be anonymous.		
4	I agree that the researcher may quote me verbatim in the research report and other outputs.		
5	I agree that the information I give may be used by other researchers in follow-up studies		

..... (Signature of respondent)

..... (Date)

University of the Witwatersrand, Johannesburg, South Africa.

Project Title: The Sociocultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria: a Pooled Data Analysis.

Principal Investigator: Christiana A. Alex-Ojei

Parental Consent Form

The purpose of the research project has been explained to me and I understand what my child's/ward's *(please underline whichever is applicable)* participation in this research study involves. This includes the potential risks and benefits of her participation, and the protection of her private information.

Name of child:

I give my consent for her to participate in this focus group discussion/in-depth interview *(please underline the applicable)*

Yes [] No [] *(please tick an option)*

..... (Signature of parent)

..... (Date)

Thank you for your time.

Participant Information Sheet for In-Depth Interview (Adolescent Mothers)

Project Title: The Sociocultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria: a Pooled Data Analysis.

University of the Witwatersrand,

1 Jan Smuts Avenue, Braamfontein,

Johannesburg,

South Africa.

WITS 2050.

Good day madam.

My name is Christiana A. Alex-Ojei, and I am a PhD student in the Demography and Population Studies Programme, University of the Witwatersrand, Johannesburg. I am undertaking an academic research project which intends to investigate the sociocultural influences on maternal healthcare utilisation among adolescent mothers aged 15-19 in Nigeria.

I would like to invite you to be a part of this project by participating in an in-depth interview, which will involve you answering questions on your pregnancy experiences, your family characteristics, and cultural practices in your locality and how they influenced your usage of maternal health services. You were selected for this study because you are an adolescent mother, and live in either Ondo, Imo or Niger States. This interview will take between thirty minutes and one hour. I would also like to record the interview using a digital recorder, if you permit me to do so. The purpose of the recording is to have a backup record of responses which will be necessary for transcription and analysis of your responses. The interview will be conducted in the language most convenient for you (English, Pidgin English, Yoruba, Igbo or Hausa).

Participation in the interview is entirely voluntary and there are no adverse consequences if you decide not to participate. You will not be paid for participating in this interview, and you do not need to pay any money to participate also. If you do decide to participate, I assure you that you can refuse to answer questions that make you feel uncomfortable and you may refuse to participate or withdraw from the study at any time without penalty or loss of benefits to you. If this discussion causes you psychological distress, and you require support, counselling services or advice following the interview, these services are available free of charge. Please contact Dr. Abiodun M. Lawal, a clinical psychologist, via e-mail at abiodun.lawal@fuoye.edu.ng, or by phone at +234 803 721 3058.

Any information you give me will be confidential and I promise to treat it as such. Also, I will ensure that you remain anonymous, and all information that you give me will not be traceable to you. The information will be accessible to my field and desk research assistants, and they will also be required to keep it confidential. Findings from this study will be written up as a research dissertation, which publicly available on the Internet through the university online repository. They will also be presented at international conferences and published as journal articles in international journals. If you would like a copy of the abstract of the final dissertation, I will be happy to send it to you. If you have any concerns or complaints about the manner in which I have conducted the research, please contact the University of the Witwatersrand Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email hrec-medical.researchoffice@wits.ac.za or Shaun.Schoeman@wits.ac.za

Please note that you will be required to sign a consent form after going through this document if you would like to participate in the research project. Thank you.

Yours sincerely,

Principal Investigator: Christiana A. Alex-Ojei

christiana.alexojei@gmail.com

+27 81 289 3304, +234 805 583 3586

Supervisor: Professor Clifford O. Odimegwu

clifford.odimegwu@wits.ac.za

+27 11 717 4056

Participant Information Sheet for In-Depth Interview (Older Mothers)

Project Title: The Sociocultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria: a Pooled Data Analysis.

University of the Witwatersrand,

1 Jan Smuts Avenue, Braamfontein,

Johannesburg,

South Africa.

WITS 2050.

Good day madam.

My name is Christiana A. Alex-Ojei, and I am a PhD student in the Demography and Population Studies Programme, University of the Witwatersrand, Johannesburg. I am undertaking an academic research project which intends to investigate the sociocultural influences on maternal healthcare utilisation among adolescent mothers aged 15-19 in Nigeria.

I would like to invite you to be a part of this project by participating in an in-depth interview, which will involve you answering questions on adolescent pregnancy, cultural practices surrounding adolescent motherhood, and maternal healthcare utilisation for adolescent mothers in your locality. You were selected for this interview because you are a mother whose daughter is an adolescent mother, over the age of 35, and live in either Ondo, Imo or Niger States. The interview will involve my asking selected questions and you may respond based on your views. Please note there are no right or wrong answers. This interview will take between one and one and a half hours. I would also like to record the interview using a digital recorder, if you permit me to do so. The purpose of the recording is to have a backup record

of responses which will be necessary for transcription and analysis of your responses. The interview will be conducted in the language most convenient for you (English, Pidgin English, Yoruba, Igbo or Hausa).

Participation in the interview is entirely voluntary and there are no adverse consequences if you decide not to participate. You will not be paid for participating in this interview, and you do not need to pay any money to participate also. If you do decide to participate, I assure you that you can refuse to answer questions that make you feel uncomfortable and you may refuse to participate or withdraw from the study at any time without penalty or loss of benefits to you. If this interview causes you psychological distress, and you require support, counselling services or advice following the interview, these services are available free of charge. Please contact Dr. Abiodun M. Lawal, a clinical psychologist, via e-mail at abiodun.lawal@fuoye.edu.ng, or by phone at +234 803 721 3058.

Any information you give me during this interview will be confidential and I promise to treat it as such. I will do my best to ensure that you remain anonymous in the reporting of findings from this study. The information will be accessible to my field and desk research assistants, and they will also be required to keep it confidential. Findings from this study will be written up as a research dissertation, which publicly available on the Internet through the university online repository. They will also be presented at international conferences and published as journal articles in international journals. If you would like a copy of the abstract of the final dissertation, I will be happy to send it to you. If you have any concerns or complaints about the manner in which I have conducted the research, please contact the University of the Witwatersrand Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email hrec-medical.researchoffice@wits.ac.za or Shaun.Schoeman@wits.ac.za

Please note that you will be required to sign a consent form after going through this document if you would like to participate in the research project. Thank you.

Yours sincerely,

Principal Investigator: Christiana A. Alex-Ojei

christiana.alexojei@gmail.com

+27 81 289 3304, +234 805 583 3586

Supervisor: Professor Clifford O. Odimegwu

clifford.odimegwu@wits.ac.za

+27 11 717 4056

Participant Information Sheet for Key Informant Interview (Community Leader)

Project Title: The Sociocultural Influences on Maternal Healthcare Utilisation among Adolescent Mothers in Nigeria: a Pooled Data Analysis.

University of the Witwatersrand,

1 Jan Smuts Avenue, Braamfontein,

Johannesburg,

South Africa.

WITS 2050.

Good day madam.

My name is Christiana A. Alex-Ojei, and I am a PhD student in the Demography and Population Studies Programme, University of the Witwatersrand, Johannesburg. I am undertaking an academic research project which intends to investigate the sociocultural influences on maternal healthcare utilisation among adolescent mothers aged 15-19 in Nigeria.

I would like to invite you to be a part of this project by participating in a key informant interview, which will involve you answering questions on adolescent pregnancy, cultural practices surrounding adolescent motherhood, and maternal healthcare utilisation for adolescent mothers in your locality. You were selected for this study because you are a community leader, and live in either Ondo, Imo or Niger States. This interview will take between thirty minutes and one hour. I would also like to record the interview using a digital recorder, if you permit me to do so. The purpose of the recording is to have a backup record of responses which will be necessary for transcription and analysis of your responses. The interview will be conducted in the language most convenient for you (English, Pidgin English, Yoruba, Igbo or Hausa).

Participation in the interview is entirely voluntary and there are no adverse consequences if you decide not to participate. You will not be paid for participating in this interview, and you do not need to pay any money to participate also. If you do decide to participate, I assure you that you can refuse to answer questions that make you feel uncomfortable and you may refuse to participate or withdraw from the study at any time without penalty or loss of benefits to you.

Any information you give me will be confidential and I promise to treat it as such. Also, I will ensure that you remain anonymous, and all information that you give me will not be traceable to you. The information will be accessible to my field and desk research assistants, and they will also be required to keep it confidential. Findings from this study will be written up as a research dissertation, which publicly available on the Internet through the university online repository. They will also be presented at international conferences and published as journal articles in international journals. If you would like a copy of the abstract of the final dissertation, I will be happy to send it to you. If you have any concerns or complaints about the manner in which I have conducted the research, please contact the University of the Witwatersrand Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email hrec-medical.researchoffice@wits.ac.za/ Shaun.Schoeman@wits.ac.za

Please note that you will be required to sign a consent form after going through this document if you would like to participate in the research project. Thank you.

Yours sincerely,

Principal Investigator: Christiana A. Alex-Ojei

christiana.alexojei@gmail.com

+27 81 289 3304, +234 805 583 3586

Supervisor: Professor Clifford O. Odimegwu

clifford.odimegwu@wits.ac.za

+27 11 717 4056

Participant Information Sheet for Key Informant Interview (Senior Health Worker)

University of the Witwatersrand,

1 Jan Smuts Avenue, Braamfontein,

Johannesburg,

South Africa.

WITS 2050.

Good day madam.

My name is Christiana A. Alex-Ojei, and I am a PhD student in the Demography and Population Studies Programme, University of the Witwatersrand, Johannesburg. I am undertaking an academic research project which intends to investigate the socio-cultural dynamics of maternal healthcare utilisation among adolescent mothers aged 15-19 in Nigeria.

I would like to invite you to be a part of this project by participating in a key informant interview, which will involve you answering questions on adolescent pregnancy, cultural practices surrounding adolescent motherhood, and maternal healthcare utilisation for adolescent mothers in your locality. You were selected for this study because you are a senior health worker who works in a health facility in either Ondo, Imo or Niger States. This interview will take between thirty minutes and one hour. I would also like to record the interview using a digital recorder, if you permit me to do so.

Participation in the interview is entirely voluntary and there are no adverse consequences if you decide not to participate. If you do decide to participate, I assure you that you can refuse to answer questions that make you feel uncomfortable and you may refuse to participate or withdraw from the study at any time without penalty or loss of benefits to you.

Any information you give me will be confidential and I promise to treat it as such. Also, I will ensure that you remain anonymous, and all information that you give me will not be traceable to you. The information will be accessible to my field and desk research assistants, and they will also be required to keep it confidential. Findings from this study will be written up as a research dissertation, which publicly available on the Internet through the university online repository. They will also be presented at international conferences and published as journal articles in international journals. If you would like a copy of the final dissertation, I will be happy to send it to you. If you have any concerns or complaints about the manner in which I have conducted the research, please contact the University of the Witwatersrand Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email hrec-medical.researchoffice@wits.ac.za/ Shaun.Schoeman@wits.ac.za

Yours sincerely,

Researcher: Christiana A. Alex-Ojei

christiana.alexojei@gmail.com

+27 81 289 3304, +234 805 583 3586

Supervisor: Professor Clifford O. Odimegwu

clifford.odimegwu@wits.ac.za

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Permission Letter for Enumeration Areas: Ondo State

THE PRESIDENCY
NATIONAL POPULATION COMMISSION

E-mail: npopc.ondostate@gmail.com
Telephone: 08054135834
All Correspondence to be addressed to
the Hon. Federal Commissioner. In replying, please
quote the reference number and date of the letter.



Ondo State Office:
Igbatoro Road
P.M.B. 726,
Akure, Ondo State.

NPC/OD/8/S-18/Vol. 2/32

5th November, 2018.

Christiana A. Alex-Ojei (Miss),
Demography and Population Studies Programme,
Schools of Public Healthn and social Sciences,
University of then Witwatersrand,
Johannesburg,
South Africa.

**RE: Request for Access to Demographic and Health Survey Enumeration Area
Frame**

With reference to your letter of request for access to the 2013 NDHS AREA
FRAME dated 24TH October, 2018, I am directed to inform you that you are
hereby permitted to access and use the requested data.

We wish you success in you endeavours.

Yours faithfully,

Safe Akinola
Principal Cartographer

Permission Letter for Enumeration Area Use: Imo State



THE PRESIDENCY
NATIONAL POPULATION COMMISSION
IMO STATE OFFICE
FEDERAL SECRETARIAT COMPLEX, PORT HARCOURT ROAD, P.M.B 1548 OWERRI

Date: 10/01/2019

Christiana A. Alex-Ojei
Demography and Population Studies Programme
Schools of Public Health and Social Sciences
University of the Witwatersrand
Johannesburg
South Africa.

RE: REQUEST FOR ACCESS TO NIGERIA DEMOGRAPHIC AND HEALTH
SURVEY ENUMERATION AREA FRAME

With reference to your letter of request for access to the 2013 NDHS Enumeration Area Frame dated 9th January, 2019, I am pleased to inform you that you are hereby permitted to access and use the frame in your data collection exercise.

I wish you success in your endeavours.

Yours Faithfully,

A handwritten signature in blue ink, appearing to read 'Christopher O. Abadi'.

ABADI, CHRISTOPHER O.
STATE DIRECTOR

Permission Letter for Enumeration Area Use: Katsina State

NATIONAL POPULATION COMMISSION

NO. 62 MURTALA MOH'D WAY, P. M. B. 2097
KATSINA, KATSINA STATE, NIGERIA

E-mail: katsinastate.population@gmail.com
Telephone 065-432233

*All correspondence to be addressed to the
Hon. Federal Commissioner; in replying, please quote
The reference number and date of this letter.*



Npc/KTN/005/5.29/Vol 1/323

Ref. No. _____

Date 11/Dec/2018

Christiana A. Alex-Ojei (Miss)
Demography and Population Studies Programme,
School of Public Health and Social Sciences,
University of then Witwatersrand,
Johannesburg,
South Africa,

**Re: Request for Access, to Demographic and Health Survey Enumeration Area Frame
of NDHS 2013**

With reference to your latter of request dated 5th Nov.2018 on the above subject matter. I am directed to inform you that you are hereby permitted to access and use the data as requested.

Wishing you success in your endeavors

Yours Faithfully

Saleh Lawal

For Hon. Federal Commission

