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Preconception care service in Nigeria: an exploration of its knowledge, perception, experiences, need and feasibility

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2021

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**Preconception Care Service in Nigeria: An Exploration of its
Knowledge, Perception, Experiences, Need and Feasibility**

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A Thesis

Submitted to the School of Public Health, Faculty of Health Sciences, University of the
Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of

Doctor of Philosophy

Johannesburg, South Africa

April 2021

Declaration

I, Oludoyinmola Omobolade Ojifinni, declare that this thesis is my own original work, conducted under supervision. It is being submitted for the degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg, South Africa. It has not been submitted before for any degree or examination at any other University or institution.

A handwritten signature in black ink, appearing to read 'Ojifinni', is written over a light blue grid background.

Signed on the 22nd day of April 2021 in Johannesburg, South Africa

Dedication

To God Almighty, my Saviour, Father and Friend – *Whom have I in heaven but You? And earth has nothing I desire besides You. Psalms 73:25*

Output generated from the study

Published papers

Ojifinni, OO and Ibisomi, L. Preconception care practices in Nigeria: a descriptive qualitative study. *Reproductive Health*. 2020; 17(1) DOI: 10.1186/s12978-020-01030-6

Ojifinni, OO, Munyewende, P and Ibisomi, L. Exploring the perception of and attitude towards preconception care service provision and utilisation in a South Western Nigerian community – A qualitative study *African Population Studies*. 2021; 35 (1), 5230-5242 <https://doi.org/10.11564/35-1-1529>

Paper accepted for publication

Ojifinni, OO and Ibisomi, L. Exploring the need for preconception care: the pregnancy experiences of women with pre-existing medical conditions in Ibadan, Nigeria. *Accepted for publication in African Journal of Reproductive Health*

Papers undergoing peer review

Ojifinni, OO and Ibisomi, L. Health care providers perceptions about preconception care in Ibadan, southwest Nigeria – A qualitative study. *Submitted to Maternal and Child Health Journal*

Ojifinni, OO and Ibisomi, L. “Is the health system ready?” – a qualitative exploration of stakeholder opinions about the feasibility of preconception care services in the Nigerian health system. *Submitted to Reproductive Health*

Conference presentations

Ojifinni, OO, Munyewende, P and Ibisomi, L. (2019) Perceptions of Health Care Workers about Preconception Care in Ibadan, Nigeria. Oral presentation at the Wits School of Public Health Research Day, August 22, 2019

Ojifinni, OO, Munyewende, P and Ibisomi, L. (2020) Community perspectives about preconception care in Southwestern Nigerian – a qualitative study. Poster presentation at the 16th World Congress on Public Health: *Public Health for the future of humanity: analysis, advocacy, and action*. Virtual Edition, 12th to 16th October 2020

Abstract

Background

Preconception care (PCC) is specialised care targeted at optimising the health status of potential parents to ensure a healthy pregnancy experience and outcome. The core components of these programmes for women and men include health assessment or screening, health promotion or counselling and risk reduction through interventions for the treatment and management of pre-existing conditions. PCC programmes have been deployed in many high-income countries to improve reproductive health outcomes. Conversely, low- and middle-income countries including Nigeria have poor reproductive health outcomes due to pre-existing health, environmental and social conditions that can be mitigated by PCC services; these services are however not readily available. This study therefore explored and documented the existing preconception practices, described the knowledge, perception, felt need for PCC, provision and uptake of PCC services among health workers, women and men of reproductive age and assessed the feasibility of incorporating PCC services within the existing models of reproductive health services.

Methods

Following a pragmatic approach, the study used an exploratory qualitative design involving focus group discussions (FGDs), key informant and in-depth interviews (KIIs and IDIs). The participants were purposively selected to meet the study objectives. There were FGDs with 45 women and men of reproductive age and 12 religious leaders, KIIs were conducted with two community leaders and IDIs were conducted on nine women who had pre-existing medical conditions, nine nurses, 16 specialist physicians and 13 policy makers (seven at regional and six at national level). Thematic analysis using a hybrid of inductive and deductive coding was applied to the data generated.

Results

The findings revealed that while there are no structured PCC services in the country, some services are provided when health workers perceive a need or clients make a demand. Outside the health system, there are traditional and religious practices that also aim to optimise parental health and

improve pregnancy outcomes. Participants in the study showed good understanding of the importance of PCC and demonstrated a positive attitude towards its use describing potential benefits and possible barriers. The importance of PCC services to men's health was also highlighted.

Women and men of reproductive age stated their willingness to use PCC services, while health workers described the relevance of the services to their specialties and stated their willingness to provide or refer patients for the services. However, among the women who had pre-existing medical conditions, there was a lack of awareness of PCC and its potential benefit in optimising their health and improving their reproductive outcomes. Despite regular contact with the health system, the opportunity to adequately prepare for pregnancy through pregnancy planning and treatment modification was missed.

The policy makers provided insight on the opportunity to integrate PCC into existing health policies like the adolescent health and reproductive health policies. This integration would enhance the process of providing guidelines for the provision of PCC services. In addition, the health workers emphasised the need to integrate the services into existing platforms for reproductive health within the health system and ensuring that costs are kept at a minimum to encourage uptake.

Conclusion

There is a need for guidelines for PCC service provision in Nigeria. Pre-existing social avenues such as traditional and religious practices for the improvement of reproductive health should be identified and incorporated into the structured PCC services. Furthermore, health workers need to be proactive in the identification of women with pre-existing conditions that can be mitigated by PCC services as such women may not be aware of the potential benefits.

Acknowledgements

“If I have seen further than others, it is by standing on the shoulders of giants” ~ Isaac Newton

The journey to complete this PhD is one that I did not walk alone. I have been helped and I am grateful to everyone who has contributed to my success.

My supervisor, Prof Latifat Ibisomi: I am grateful for the guidance at every stage, from the conceptualisation of the study through the many iterations to the final draft you were always supportive. You went above the call of duty to show compassion and care every step of the way. I lack the words to fully express my gratitude for all that you have done to make my journey easier. Thank you, Ma’am.

Study participants, I acknowledge the people who spared the time to provide the information I have used in this research – the women and men, religious and community leaders, health workers and policymakers.

Research assistants, Dr Emmanuel Adebayo, and the team of Master students at the University of Ibadan who helped with the interviews are deserving of my gratitude. I also acknowledge the assistance of Dr Obioma Uchendu and Dr Morhason-Bello who facilitated contact with some of the study participants.

My protocol assessor, Dr Daphney Conco: From assessing my protocol to answering burning questions when I started the journey, you were always easily accessible. Your words kept ringing in my ears, *“we need to hear your voice”*. I hope I have finally spoken up enough to be heard.

My interim seminar assessor, Dr Chiweni Chimbwete: Your insightful comments and questions and the recording of my presentation and the private session were useful in getting the PhD to this final lap. The quote you shared with me has become a personal mantra – *“we do PhDs so that we can help others to do theirs”*. I have chosen to ensure the ripple of the stone you dropped in these waters keep going on as I continue paying it forward.

My qualitative methods experts, Prof Nicola Christofides and Dr Sara Jewett: I only needed to send an email or pop into your office, and I would get clarity on confusing issues. Thank you for the time and effort.

Dr Tomi Owopetu, Dr Tinu Oderinde, Dr Dupe Ariyo, Dr Laide Olabumuyi, Dr Pascalia Munyenwende and Christine Chawhanda: Thank you for your assistance with data collection and codebook development.

My sister and editor, Mrs Olubunmi Arokoyo: Thank you for the time spent reading my papers and thesis. You were always willing even when it was inconvenient and for that I am grateful.

My parents, Dr ‘Folajimi and Mrs ‘Labake Akindehin, Pastor Olowo and Mrs Florence Ojifinni: I am grateful for the psychological, emotional, financial and prayer support. May you continue to have reason to rejoice over us all.

My children: *MofifOluwa*, it has been such a joy to watch as you have transformed into a mature young lady; wise beyond her years. You are truly God’s blessing to me that adds no sorrow. I am grateful for your tremendous support as you take care of your brother and sister every time, even without my having to ask. *Modesire*, my young man in the house, the good and perfect gift sent from the Father of Lights. Thank you for being so sensitive and caring. *Iretomiwa*, the blessing of the Lord that sought me out, you are such a bundle of joy. I thank the Lord daily for you. Thank you for the smiles that always brighten my day.

My husband, Dr Kehinde Ojifinni: Words fail me to describe how much of a loving encourager you have been. You have blown wind into my sails and told me not just to fly but to soar. You have given me a true sense of succour and security under God. I am grateful for the last few years, looking forward to many more.

The Lord Almighty, to Whom I owe the very breath that keeps me alive. I am grateful for life, for salvation, grace, strength, wisdom and all the help I have received. To You alone be all the glory, honour, and majesty.

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List of acronyms

AIDS – Acquired Immune Deficiency Syndrome

ARFH – Association for Reproductive and Family Health

CDC – Centres for Disease Control and Prevention

FGD – Focus Group Discussion

FLHE – Family Life and HIV/AIDS Education

FMOH – Federal Ministry of Health

HIV – Human Immunodeficiency Virus

IDI – In-Depth Interview

KII – Key Informant Interview

LGA – Local Government Authority

LMIC – Low- and Middle-Income Country

LMIC(s) – Low- and Middle-Income Countries MCH – Maternal and Child Health

MTCT – Mother to child transmission

NPHCDA – National Primary Health Care Development Agency

PCC – Preconception Care

PI – Principal Investigator

RMNCH – Reproductive, Maternal, New-Born and Child Health

SMOH – State Ministry of Health

SPHCDA – State Primary Health Care Development Agency

STIs – Sexually Transmitted Infections

UCH – University College Hospital

UI/UCH – University of Ibadan/University College Hospital

UI – University of Ibadan

WHO – World Health Organization

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Preface

Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less. ~ Marie Curie

I started this journey, with some uncertainty. Preconception care (PCC) is not readily available in Nigeria and indeed most of Africa. My interest in PCC was piqued in my first clinical year in medical school during lectures on adolescent health. We were introduced to the concepts of preconception and inter-conception care for the first time and learnt how important PCC is to optimising women's health. Not much information was provided then and subsequently during clinical rotations through Obstetrics and Gynaecology or Community Health, PCC was hardly mentioned. My Master's research project was on the burden of reproductive morbidity and uptake of reproductive health services among female traders in Ibadan, Nigeria. One of my findings was that a high proportion of women did not use maternal health services – antenatal care and skilled birth attendance. However, I found that most of those who had antenatal care remained in the continuum of maternal health care till postnatal care which is consistent with the Nigeria Demographic and Health Survey reports¹⁻³. My mind was drawn back to PCC – I wondered if beginning maternal health services from the preconception period would result in more women being retained in the continuum of maternal health care. I read research that found that women who had PCC were more likely to have timely antenatal care services and continue to use maternal health services⁴.

On further review of literature I became aware of reproductive life planning, the aspect of PCC which helps individuals to plan if, when and how many children they want to have⁵. Reading about reproductive life planning reminded me of female teenagers who had questions about the choices to make regarding their sexual and reproductive health. One in particular was a patient I met in my second year of clinical training. She was a 15-year-old high school student who was on admission in the hospital because of complications of unsafe abortion. Her father had threatened to evict her and her mother from their home because of the unplanned and unwanted pregnancy, so she opted for an abortion. Abortions are illegal in Nigeria; hence the available option to her was an unsafe method which became complicated and resulted in renal failure – the reason for her hospitalisation. Such stories of teenage pregnancy and unsafe abortion resulting in severe

complications and sometimes death are not uncommon. PCC can mitigate these through reproductive life planning. Another instance where the benefits of PCC can be maximised is among women who have pre-existing medical conditions that can impact negatively on pregnancy outcomes. These medical conditions include hypertension, diabetes, sickle cell disorder, seizure disorder among others⁶. However, as previously stated, PCC services are not readily available in Nigeria and previous studies have shown low awareness among women of reproductive age. My PhD therefore explored knowledge, utilisation and need for PCC in Nigeria.

Structure of the PhD thesis

This PhD thesis is a monograph in the divided block format. The sections are as described below:

Chapter 1: Provides a general background and introduction to the whole thesis. A description of the content of preconception care is provided followed by the rationale and conceptual framework for the PhD. The chapter concludes with the study objectives.

Chapter 2: A review of the literature providing historical perspectives and delivery models for preconception care.

Chapter 3: A general overview of the methodology used for the study is provided in broad strokes. More specific details are provided in the result chapters.

Chapters 4 to 8: The study findings presented as papers viz:

- Chapter 4: Preconception care practices in Nigeria: a descriptive qualitative study
- Chapter 5: Exploring the perception of and attitude towards preconception care service provision and utilisation in a South Western Nigerian community – A qualitative study
- Chapter 6: Health care providers’ perceptions about preconception care in Ibadan, southwest Nigeria – A qualitative study
- Chapter 7: Exploring the need for preconception care: the pregnancy experiences of women with pre-existing medical conditions in Ibadan, Nigeria
- Chapter 8: “Is the health system ready?” – a qualitative exploration of stakeholder opinions about the feasibility of preconception care services in the Nigerian health system

Chapter 9: An integrated discussion of all the papers that form the PhD thesis

Chapter 10: The conclusion and recommendations

Chapter 1

1 Introduction

1.1 Background and definitions

The World Health Organisation (WHO) and the United States Centres for Disease Control and Prevention (CDC) have emphasised the need for a continuum of care to improve maternal and child health^{7,8}. The reproductive, maternal, new-born and child health (RMNCH) strategy was deployed as a priority particularly among many low- and middle-income countries (LMIC) to address this need. The RMNCH strategy covers health issues among adolescents and women before and during pregnancy and delivery. The strategy also caters for new-born babies within the first month of life and children⁹. The RMNCH strategy recognises the importance of the provision of continuum care in infancy, childhood, adolescence, and adulthood. It also recognises the importance of specific packages of care delivered at the community, primary care and referral level⁷. The strategy however leaves a gap in the preconception period when many health problems that could impact negatively on maternal and child health outcomes could have been mitigated^{10,11}. The recognition of this gap and the potential benefits of addressing it has led to increasing interest in preconception care in the last three to four decades^{7,10,11}. Research evidence shows that health problems such as nutritional insufficiencies and vaccine preventable diseases; behavioural issues like exposure to tobacco and alcohol; genetic conditions like sickle cell disease and environmental risks like exposure to radiation negatively impact maternal and child^{8,12}. Research has also shown that effective biomedical, behavioural, and social interventions delivered before conception can mitigate many of the identified problems^{8,12,13}.

The preconception period refers to the time when a woman of reproductive age has the potential to become pregnant or a man has the potential to impregnate his female partner¹⁴. Preconception health is a concept that refers to an individual's biopsychosocial wellness in the preconception period^{15,16}. Preconception care (PCC) is defined as specialized care targeted at women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that may militate against safe motherhood¹⁷. Men also require PCC as their preconception health affects their biologic and genetic contributions to pregnancy outcomes¹⁸. PCC optimizes health status towards ensuring a healthy pregnancy experience and improves the

health status of the parents. This is especially true when routine health care is integrated with a couple's reproductive plans through PCC irrespective of the couple's desire for a baby subsequently^{19–21}. PCC has the advantage of allowing time for behavioural interventions to take effect before conception occurs²². Interconception and Periconception care are related concepts that refer to similar interventions between pregnancies and those preceding and immediately following conception²². Many high-income countries have developed PCC programs to improve reproductive health outcomes^{23–25}. Most low- and middle-income countries however are yet to have such interventions despite poor reproductive health outcomes^{11,26}.

1.2 Content of preconception care

The WHO PCC package is an evidence-based set of interventions addressing 13 areas including nutrition, genetics, environmental health, infertility, sexually transmitted infections, interpersonal violence and substance use^{7,21}. This package is subdivided into a basic and an extended package. The components of the basic package include family planning, nutrition and micronutrients, tobacco cessation including second hand smoke, reduction of harmful exposures, as well as improving sexual health and behaviour through screening and counselling⁷. The extended package includes mental health problems, intimate partner and sexual violence, alcohol and drug use and non-population-specific genetic disease⁷. An adaptation of the package for region specific diseases is encouraged and should include health education and promotion, vaccination, nutritional supplementation and food fortification, family planning, screening and counselling, clinical interventions for infections, genetic and chronic conditions like hypertension and diabetes⁷. The set of interventions in the PCC package can be categorised into three core components for both women and men: health assessment (i.e. screening), health promotion (counselling) and interventions for the treatment and management of pre-existing conditions for risk reduction^{18,27}. For men, PCC is both to optimize men's health and to encourage support for women's preconception health status and reproductive plans^{18,28,29}. Reproductive planning is another component of PCC which assists individuals to decide if, when and how many children they want to have while ensuring health is optimized prior to conception^{5,30}.

1.3 Overview of specific health issues amenable to preconception care

Preconception care (PCC) is a strategy for reducing the proportion of pregnancies that are unplanned, too early or too close and has been shown to improve positive health behaviours and optimize health prior to pregnancy⁷. About a third of all pregnancies globally are unintended⁵ implying a sizeable proportion of women have unmet needs for contraception. Many of these unintended pregnancies are among adolescents. Globally, an estimated 16 million girls aged 16 to 19 years give birth annually with 95% of teenage deliveries occurring in developing countries^{5,31}. In Nigeria, the age specific fertility rate for the age group 15 to 19 years is 122/1000¹. Global elimination of 22 million unplanned pregnancies, 25 million induced abortions and 7 million miscarriages can be achieved through reproductive planning which is one of the components of PCC⁵.

Health problems that can be addressed in the preconception period include chronic, non-communicable diseases, infections, nutritional imbalances, substance abuse and environmental exposures (like organic solvents, pesticides and radiation)^{6,12,32–34}. Screening and treatment of infections within the PCC package are to prevent transmission of infections to the foetus³⁵. Infections covered include periodontal disease, Hepatitis B, rubella and tetanus which are vaccine-preventable, HIV/AIDS and other sexually transmitted infections (STIs) which can all affect the outcomes for both mother and child^{35,36}. Both extremely long (>60 months) and short (<6 months) inter-pregnancy intervals are associated with increased risk of eclampsia, third trimester haemorrhage, puerperal endometritis, low birth weight babies, premature rupture of membranes, preterm birth and small for gestational age babies⁵. Extremes of maternal age (before 18 and after 35 years) are associated with poor child health outcomes³⁷. The risk of maternal mortality is higher in adolescence when the pelvis is not yet fully developed^{5,38} as well as with increased parity and older maternal age due to associated medical morbidities³⁸. Both maternal undernutrition and over nutrition have been shown to have adverse effects on maternal, neonatal and child health outcomes^{37,39}. While undernutrition is an indirect cause of a fifth of maternal deaths during childbirth⁴⁰, maternal overnutrition and obesity can lead to increased risk of hypertension with pre-eclampsia/eclampsia and gestational diabetes^{37,41}.

The epidemiologic transition has led to an increase in the prevalence of non-communicable diseases globally⁶. Among women of reproductive age, hypertension affects about 3% and type II diabetes about 10% globally^{6,41}. This increases the risk of hypertensive disorders like eclampsia and other organ dysfunctions, worsening diabetic retinopathy, placental insufficiency and abruption, intrauterine growth restriction, preterm births and foetal loss^{6,21,41}. The foetus exposed to gestational diabetes has an increased risk of congenital malformations, macrosomia, birth injury, postnatal hypoglycaemia and perinatal mortality⁴². Pregnancy in women with sickle cell disease is associated with an increased risk of preeclampsia, maternal and perinatal mortality and other complications like abortion, stillbirth, low birth weight and vaso-occlusive crisis⁴³.

1.4 Problem Statement

Studies in different regions of Nigeria have shown low awareness and poor utilization of PCC⁴⁴⁻⁴⁸. Among the earliest documentation of the need for PCC in Nigeria is a paper by Omigbodun (2002)¹⁷. He noted that PCC is crucial as many women have pre-existing conditions including hypertension, diabetes and sickle cell disease that predispose them to complications in pregnancy. Hypertension is the most common non-communicable disease in Nigeria⁴⁹ with the overall prevalence rate in 2010 of 28% among persons 20 years or older and 25.2% among women. This prevalence is projected to rise to 30.8% overall and 29.0% among women by 2030⁵⁰. The prevalence of diabetes mellitus in Nigeria has been placed in the range of 8 to 10%⁵¹ while gestational diabetes had a reported prevalence of 13.9% among urban women⁵². About 24% of Nigerians have the sickle cell trait and the estimated prevalence of sickle cell disease is about 2%⁴⁹. A study showed that many intending Nigerian parents are unaware of their sickle cell trait status⁵³. These pre-existing conditions are among the common causes of preterm births and may lead to other maternal and child health complications^{54,55}. Nigeria is third among the top 10 countries with the highest number of preterm births after India and China^{54,56}.

Anaemia and micronutrient deficiencies are also prevalent among women of reproductive age in Nigeria. Nutrition related diseases are indirect causes of maternal morbidity and mortality, as well as underlying causes of about 53% of under-five mortality in the country⁵⁷. Studies among pregnant women in different cities of the country show anaemia prevalence of 12.3% in Lagos⁵⁸,

32.5% in Sagamu⁵⁹, 37.6% in Warri⁶⁰ and 64.1% in Enugu⁶¹. A systematic review of studies among women of reproductive age in Ethiopia, Nigeria, Kenya and South Africa showed a prevalence of 51% for anaemia, iron deficiency 9% and vitamin A deficiency 4%⁶². Among pregnant women, the prevalence was higher at 62% for anaemia, 61% for iron deficiency, 48% for vitamin A deficiency, in addition to 4% for folate and 46% for zinc⁶². There appears to be lack of understanding of anaemia prevention as expressed in the views of some women after childbirth, their husbands, and mothers in a qualitative study in Anambra, Nigeria. They believed that anaemia is typical in pregnancy and cannot be prevented⁶³.

Furthermore, there is a high rate of unintended pregnancies in Nigeria. A study using pooled demographic and health surveys (DHS) data to determine the prevalence of unintended pregnancies across sub-Saharan Africa reported a prevalence of 10.8% for Nigeria⁶⁴. Yaya et al (2018) analysed pooled data from the 2003, 2008 and 2013 Nigerian Demographic and Health Surveys (NDHS) and reported a national prevalence of unintended pregnancy among married women of 78.8%⁶⁵. At the subnational level, cross-sectional studies among women in antenatal clinics reported unintended pregnancy prevalence of 16% in Abuja⁶⁶, 21% in Lagos⁶⁷ and 35.9% in Sagamu⁶⁸. Unintended pregnancies often lead to induced abortions which because of cultural perceptions about unwanted pregnancy and the restrictive abortion laws in the country are usually unsafe^{64,65,68}.

Some of the elements of PCC as recommended by the WHO and CDC are already embedded in the reproductive Nigerian health services¹⁷. These include screening for genetic carrier states in both parents, identifying pre-existing medical conditions like diabetes, hypertension and HIV, screening for hepatitis B and providing vitamin supplementations¹⁷. However, there are no specific guidelines for provision of PCC nor organised PCC service in Nigeria⁶⁹. Inclusion of PCC within the reproductive health framework in the country requires political will to ensure that government policies and specific guidelines are developed¹⁷. The absence of an organised PCC guidelines and services in the country has given room to such care being haphazardly done or as demanded by patients. Given the high rates of unintended pregnancies, increasing prevalence of chronic medical conditions like hypertension and diabetes which can be mitigated by PCC, this study aimed to examine the awareness and perception about PCC. It examined provision of preconception health

services among specialist physicians and utilisation among women and men of reproductive age in south west Nigeria. The felt need for the service and feasibility of incorporating PCC within the existing models of reproductive health care are also assessed.

1.5 Study aim and objectives

1.5.1 Aim

To explore and document knowledge and perception about preconception care; lived experiences; the felt need for preconception care among adult women and men as well as health care providers and policy makers and the feasibility of integrating preconception care services within the existing reproductive health care framework in Nigeria.

1.5.2 Specific objectives

1. To explore and document the existing preconception care practices in Southwest Nigeria
2. To explore the knowledge and perceptions about preconception care service utilisation and delivery in Southwest Nigeria
 - 2.1. To explore the knowledge of and perceptions about utilisation of preconception care services among adult women and men in Southwest Nigeria
 - 2.2. To explore the knowledge of and perceptions about utilisation and delivery of preconception care services among health care workers in Southwest Nigeria
3. To explore and describe perceptions about the need for preconception care services among adults and health care workers in Nigeria
 - 3.1. To describe the perceptions of adult women and men about the need for preconception care services
 - 3.2. To describe the perception of health care workers about the need for preconception care services
 - 3.3. To explore the willingness of adult women and men to use and support the use of preconception care services
 - 3.4. To explore the pregnancy and post childbirth experiences of women who could have benefitted from preconception care services

- 3.5. To describe the willingness of healthcare workers to provide preconception care services
4. To explore the feasibility of preconception care service provision within the reproductive health care framework in Nigeria

1.6 Rationale

Policies, guidelines and standards of care have been proffered as important to the provision and uptake of PCC services in literature^{25,70,71}. Having policy guidelines and organized PCC services may however not be adequate for ensuring utilization of PCC services as shown in studies across countries where PCC has been used^{23,72,73}. Factors such as awareness of the services, perceived need, and willingness to use or provide PCC among the potential clients and service providers also play a role^{74–76}. Some studies show that individuals who would have used PCC services are unable to do so because health professionals do not provide the service^{77–79}. Lack of awareness of PCC guidelines and policies; inadequate understanding of personal roles in providing the service; thinking that provision of the service is someone else's responsibility and the belief that women should request the care were some of the constraints identified in studies among health professionals in the UK and Italy^{79–81}. General practitioners in Japan did not provide preconception counselling even though it was part of the recommended service because they were unwilling to discuss sexual and reproductive health issues⁷².

Compared with the literature on PCC globally, research in Africa is sparse with Ethiopia having a larger number of PCC studies than other African countries^{29,82–87}. Many of the available studies focus on single intervention strategies like folic acid supplementation^{88–90} or the impact of PCC on specific diseases for instance, rheumatic heart disease⁹¹. Studies about PCC in Nigeria have been quantitative, health-facility based, conducted among pregnant women in antenatal care settings or among women with recent childbirths^{45,46,92–94}. These studies have shown low awareness, provision and use of PCC^{45,46,48,92–94}. One study among health workers in the northern part of the country showed poor knowledge of the components of PCC while less than half of the participants had provided the service prior to the study⁴⁸. There have however been no studies documenting the voices of men or policy makers in the country. In addition, there are anecdotal reports of traditional practices aimed at ensuring optimal maternal health in the preconception period. While

some of these practices are detrimental to health (for example, nutritional taboos) others are beneficial. Beneficial practices include premarital counselling provided to couples in community and religious settings as they prepare for marriage. These traditional marital counselling sessions are based on the premise that newly married couples will have children soon after their wedding. The contents of these sessions are however not documented in the literature. There is no known documentation of the existing practices related to PCC in Nigeria. There are also no known studies that have assessed the need for guidelines to streamline existing practices nor that have explored the perspectives of men and policymakers about PCC services in Nigeria. This study aimed to fill the gap in literature by documenting existing preconception practices exploring the awareness, perception, and practice of PCC, describing the felt need for PCC and identifying barriers to PCC service provision among adult women and men as well as health care providers and policy makers and assessing the feasibility of integrating preconception care service within the existing reproductive health care framework in Nigeria. In using a qualitative approach, this study went deeper to the core of the issues surrounding PCC services to provide a robust picture that will guide the integration of PCC services into the health system. This will help to inform the development of guidelines for PCC programs in the country.

Chapter 2

2 Literature Review

2.1 Introduction

This chapter provides a general review of the literature not covered in the subsequent results chapters. Section 2.2 provides historical perspectives on PCC service provision globally. Section 2.3 is a review of the delivery methods of PCC services across different countries. The conclusion in section 2.4 is an overview of PCC services in the African region.

2.2 Historical perspectives

Different models of PCC services have been used across countries globally. Early reference to preconception health dates back to the 19th century when William Potts Dewees referred to the importance of the health of the parents and particularly the mother prior to conception as influencing the health of the foetus and child upon delivery⁹⁵. The inadequacy of antenatal care services to address poor pregnancy outcomes was pointed out by Chamberlain in his review of services provided during the antenatal visits in 1978⁹⁶. Subsequently, PCC services were directed at and attended mainly by women with poor pregnancy outcomes^{97,98}. Concerns over poor infant health outcomes prompted a series of initiatives exploring the effectiveness of specific maternal and child health programs in the United States in the 1980s⁹⁹. An expert panel on the Content of Prenatal Care was set up which concluded that the preconception visit had an important role to play in improving infant health outcomes⁹⁹.

In 1990 the United States Public Health Service published a set of measurable objectives covering 22 priority areas tagged *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*^{99,100}. One of the objectives in the maternal and infant health priority area was provision of appropriate PCC and counselling by at least 60% of primary care providers¹⁰⁰. The expectation was that women who were planning a pregnancy would have a preconception visit where a health professional would address specific risks and provide interventions^{99,101}. These objectives were to be achieved by the year 2000 and have been updated every decade since the year 2000^{98,99,102}. Subsequently, the United States Centres for Disease Control and Prevention (CDC) sponsored a

national summit on PCC in 2005 and produced a set of recommendations to guide the country's PCC services¹⁰³. These recommendations aimed to improve the knowledge, attitudes and behaviours of women and men about preconception health and care; ensure that all women in the childbearing years receive PCC; reduce risks that resulted in a previous adverse pregnancy outcome through interconception care and reduce disparities in adverse pregnancy pregnancy^{8,104,105}. The understanding that the components of preconception health promotion are important both to the health of women and infants as well as the nation's morbidity and mortality rates prompted its integration into every contact with any woman of childbearing age^{99,101}. Six new objectives covering healthy weight, contraception use, discontinuation of alcohol and smoking, use of folic acid/multivitamins and discussion of preconception health with a health professional were added between *Healthy People* 2010 and 2020^{106,107}.

In addition, the CDC Select Panel on PCC established in 2005 reviewed the potential components of PCC and in 2008, published their recommendations in the clinical content of PCC^{98,108}. A systematic review of existing research further elaborated on these recommendations and provided more evidence in 2014³⁴. A total of 13 domains of PCC were described in both instances. These included health promotion activities, such as family planning and reproductive life plan^{5,70}; immunization for vaccine preventable diseases^{36,109}; treatment of infections^{35,110}; chronic medical conditions^{6,33}; addressing mental health conditions^{6,111}; preventing alcohol, tobacco, and illicit drug exposures^{32,112}; assessing family and genetic history^{6,113}; providing nutrition and dietary supplements^{40,114}; identifying hazardous environmental exposures^{112,115}; managing psychosocial stressors^{6,116}; modifying the use of medications and supplements^{40,117}; examining reproductive history^{5,118}; and providing PCC for special populations, including men^{18,28,119}.

2.3 A global picture of preconception care delivery methods

While the CDC recommendations were adopted by many countries, others had their own programs and delivery packages. Many high-income countries with better health systems use a range of recommendations for the delivery of preconception interventions. Incorporation of PCC and education into the school curricula, delivery through the workplace, media and community-based agencies are part of the PCC guidelines published by The Public Health Agency of Canada in

2000²⁰. Following this, there have been initiatives at provincial level with most public health units implementing at least one preconception initiative²⁰. PCC in most of Europe is still in the early phases of development where most countries have no national PCC agenda²⁵. All the countries in a review of guidelines in six European countries (Sweden, Italy, Belgium, Netherlands, United Kingdom and Denmark) had recommendations for folic acid use in the preconception period up to 8-12 weeks gestation in addition to guidelines for management of chronic diseases²⁵.

The Swedish National Food and Drug Agency in its guidance to health care providers and the public recommends folic acid intake from the preconception period till the 12th week of pregnancy. In addition, the Swedish Healthcare Direct provides advice on smoking cessation, reduced or no alcohol intake and maintenance of normal weight²⁵. Most reproductive health services including PCC services are provided by midwives at the primary care level while complicated cases are referred to a physician at the regional level¹²⁰. Italy has preconception clinics which provide guidelines for folic acid use and management of chronic medical conditions²⁵. The United Kingdom National Institute of Clinical Excellence (NICE) includes preconception information in the Clinical Knowledge Summary (CKS) webpages²⁵. Specific information is provided on identification of couples at risk of genetic or other conditions with adverse effects on pregnancy, avoidance of over-the-counter medications and herbal preparations by women preparing for pregnancy²⁵.

The guidelines in northern Belgium (Flanders) include folic acid use before pregnancy, screening and management of chronic diseases like epilepsy, cardiac and renal disease, mental health disorders, asthma and diabetes²⁵. The government of the Flanders released a public procurement on folic acid intake and periconceptional advice in 2011¹²¹. This was followed by the development and launch of a website in 2015 with information for professionals and people preparing for a pregnancy¹²¹. The French speaking part of Belgium has a different PCC program directed by the “Office de la Naissance et de l’Enfance (ONE translated Organization for Birth and Childhood)”²³. The program is domicile in the primary care setting and provides sensitization for individuals aged 15-45 years, general practitioners, gynaecologists, paediatricians, midwives, medical social workers, members of family planning centres and school health promotion centres²³. Assessment

of the program revealed a need to integrate the services among all institutions providing maternal and child health services²³.

Hungary¹²², Japan⁷² and the Netherlands²⁴ have PCC integrated into the primary health system and provided by general practitioners. Hungary has a periconceptional care model incorporated into the primary health care system. The model includes three steps: a reproductive health check-up, a 3-month preparation for conception and better protection in early pregnancy¹²². In Japan, PCC is provided in the primary care setting by family physicians although this has been hampered by the physician's reluctance to inquire about sexuality issues and future pregnancy intention⁷². In the Netherlands, health policy leaders have promoted PCC as a means of improving the health of the populace. There are preconception clinics to which couples may be referred supported by general practitioners^{24,123}. The Netherlands Health Council advises avoidance of alcohol for all women till breastfeeding has been discontinued and for men from the time attempts at pregnancy are being made till pregnancy is confirmed²⁵. Netherlands also has a website with preconception risk assessment questions and recommendations for risk reduction and folic acid use²⁵.

Prior to 2003, the Chinese law required premarital health check for couples about to get married, but the law was abolished and PCC guidelines established, the latest version of which was in 2011²⁴. The premarital health check included routine physical examination, laboratory tests and reproductive health education^{23,24,124}. This health check became voluntary with the introduction of PCC guidelines in 2003^{23,24}. The preconception guidelines cover the premarital health checks, primary prevention of HIV through voluntary counselling and testing and pre-pregnancy health services^{23,76}. Pre-pregnancy health services include folic acid supplementation for women desiring a pregnancy from three months before conception through the third month of pregnancy⁷⁶. Utilization of the services however plummeted since they were made voluntary due to poor coordination between the government organizations in charge of marriage and the family planning and health care services^{23,24,125,126}. Other factors affecting the reduction in PCC were the perception among women that voluntary meant unnecessary or unimportant^{23,76}.

Hong Kong launched a pre-pregnancy preparation service in 1998 following a public demand for PCC in the country²³. The PCC services were integrated with other sexual and reproductive health programs offered by the Family Planning Association of Hong Kong which minimizes the cost²³.

The program is composed of medical counselling and education services for couples preparing for pregnancy. Couples are provided with a compact disc which gives information on diet, exercise, tobacco cessation, avoiding alcohol, fertility regulation, conception, subfertility and laboratory investigations²³. Risk assessment of couples includes filling out a health assessment questionnaire and investigations led by nurses. Physicians take history and explain abnormal results while complicated problems are referred as appropriate to internists or obstetricians/gynaecologists²³.

The Society for Maternal and Foetal Medicine in South Korea in 2004 promoted a PCC program²³. This was due to the high rates of unintended pregnancies in the country with increasing rates of preterm births, high rates of termination of pregnancy following accidental exposure to potential teratogens during pregnancy and low use of folic acid²³. The goals of the program were to prevent birth defects and preterm births, increase intended pregnancy, reduce unnecessary pregnancy termination and recover high birth rates in order to maintain population replacement levels²³. The program package had two components: increasing awareness through lectures to obstetricians/gynaecologists and women of reproductive age attending maternity services and service delivery²³. The service delivery package includes clinic-based counselling and medical protocol examinations by physicians (including physical examination, laboratory test and a questionnaire). Follow up is provided for women who desire a baby after going through the protocol²³.

PCC is tagged pre-pregnancy care in Malaysia and is part of the maternal and child health services¹²⁷. All government health facilities provide the services led by Family Medicine Specialists and Obstetricians/Gynaecologists⁹⁸. The service consists of pre-marital HIV screening and a general wellness program that aims to provide women and men of reproductive age with the opportunity for a safe and successful pregnancy^{127,128}. The emphasis is on the importance of healthy living, reproductive health planning for prospective parents screening and counselling for women to reduce maternal and prenatal morbidity and mortality. The government also provides a webpage with preconception information⁹⁸.

2.4 Preconception care practice in the African region

Low and middle-income countries particularly in Asia and sub-Saharan Africa bear the highest burden of maternal and child morbidity and mortality^{11,26}. Many of the predisposing factors are amenable to PCC which is however not available or poorly utilized as shown by studies in Egypt^{89,129}, Ethiopia^{29,82,84,87}, Sudan⁹¹, South Africa¹³⁰ and Nigeria^{45,46,48,92-94}. These studies report low level of awareness, knowledge of components, provision, and utilisation of PCC services. The main services documented include folic acid administration in the three months prior to conception and treatment modification for women with pre-existing medical conditions. The available services are mostly provided without any specific guidelines or protocol^{29,45,48,84}. Awareness about PCC in these studies was reportedly through information provided by health care workers, media or community members^{83,92,94,130}. Studies among health workers in Ethiopia and Nigeria report the provision of counselling, modification of treatment plan for pre-existing conditions and screening^{48,82}. These services are provided opportunistically since there are no designated clinics. The WHO global consensus provides a harmonised definition for PCC and set out guidelines for expected content depending on the context in each subregion⁷. For the African subregion, the key points highlighted included the need to ensure PCC is communicated in clear terms to health workers, policy makers, faith-based organisations and other stakeholders who uphold cultural norms⁷. The recommended target population includes adolescents, couples, and individuals with diseases like diabetes and sickle cell. The importance of involving faith-based organisations and communities was also highlighted.

In Cairo, Egypt, a cross-sectional study among women in an antenatal clinic showed that awareness about folic acid and its use in the preconception period was low and was significantly influenced by level of education and gravidity⁸⁹. Knowledge about the importance of optimizing diabetes care before pregnancy was low among a group of Maltese women who participated in an interventional study and only 29.6% received any form of PCC¹³¹. Among those who were aware of the importance of their preconception health, health information had been received from their diabetologists¹³¹. In Sri Lanka, knowledge of PCC was influenced by educational status among the respondents in a descriptive, hospital-based study and most of the study participants received their preconception health education from the public health midwife and medical officer¹³². A

community based cross-sectional study in Ethiopia which defined PCC as any advice, treatment of lifestyle modification before pregnancy found that only about 28% of the study participants were aware of PCC⁸⁴. Level of knowledge was higher among older women (35-49 years), women with formal education, higher incomes and with more exposure to health services through family planning⁸⁴. Knowledge of PCC was low (11%) among women with rheumatic heart disease in a hospital-based descriptive study in Sudan and was associated with level of education, however most of the respondents displayed willingness to use PCC in subsequent pregnancies⁹¹.

In Kaduna, northern Nigeria, a community-based study among 150 women of reproductive age found only 4.0% were aware of PCC and only 2.7% had used PCC services in previous pregnancies⁴⁴. Only two out of 182 women in a community-based study in Bayelsa, in the Niger Delta region of Nigeria stated that PCC as a maternal health service should be provided in the health facilities⁴⁵. A hospital-based study in Enugu, Southeast Nigeria found that only 43.1% of the women were aware of PCC, and many had no knowledge of the contents⁴⁷. Among those who were aware of the concept of PCC, 68.4% planned their pregnancy and initiated consultations with health workers for counselling while planning⁴⁷.

In the South-western region of Nigeria, a community-based study in Ife showed that many women were aware of the concept of PCC through contact with antenatal clinics. There was awareness of the need for folic acid supplementation and behaviour modification (cessation of alcohol and tobacco use) before pregnancy⁴⁶. About 65% used some form of PCC including folic acid four weeks before pregnancy, healthy food choices, exercise for healthy weight and genetic counselling⁴⁶. Factors perceived to be responsible for not using PCC by the study participants were lack of awareness, fear of the cost of the service and health care workers not discussing preconception health and care⁴⁶. In a study among mothers at immunization clinics in Ibadan, Nigeria, 55.2% of the respondents were unaware of the benefits of folic acid and only 2.5% used the supplement in the preconception period while the majority only commenced use at some point during pregnancy⁸⁸.

2.5 Conceptual framework of preconception care services in Nigeria

This study explored the interplay between individual and health system factors and examined how these can inform PCC guidelines and policy, service provision and utilisation within the Nigerian health system. The conceptual framework used in this analysis is based on the Social Ecological Model which shows that individual's behaviours are influenced at multiple levels by interpersonal, community, institutional and policy-related factors¹³³. The study assumed that the interrelationship between individual, community and health system factors influence the likelihood of support for and the use of PCC in the Nigerian health system (Figure 2-1).

An individual's level of education is likely to influence his/her awareness of PCC and perception of need of PCC services. The use of these services will in addition be influenced by such a person's relationship with significant others including spouses and close family members. The acceptability of PCC in the community is also a factor that will influence the demand for the services. Availability and delivery of PCC services in the health system will depend on the level of awareness/knowledge among health workers, willingness of the health workers to provide the service, perception among the health workers of the acceptability of PCC by the community as well as the integration of PCC services within the existing reproductive health package rather than as a standalone program.

Individual, community level and health system factors all influence the demand for PCC services either directly or indirectly. The interplay at these levels determines the feasibility of PCC programming as the service can only be successfully implemented if there is willingness to provide and use the services at the health worker and community levels, respectively. Policies and standard operating procedures can then be established with the understanding that the services will be willingly provided and accessed. Availability of a PCC package in the Nigerian health system will ultimately lead to improvement in maternal and child health outcomes.

The socio-ecological framework may thus be used to explain perceptions and attitudes towards the provision and uptake of PCC. Based on this premise, the policy environment for PCC in the country is explored in Objective 1 (documenting existing preconception practices) and Objective 4 (exploring the feasibility of provision of PCC services). Intrapersonal, interpersonal, community

level and institutional factors that can influence PCC are described in Objective 2 (exploring the awareness and perceptions about preconception and) and Objective 3 (exploring and describing perceptions about the need for PCC) .

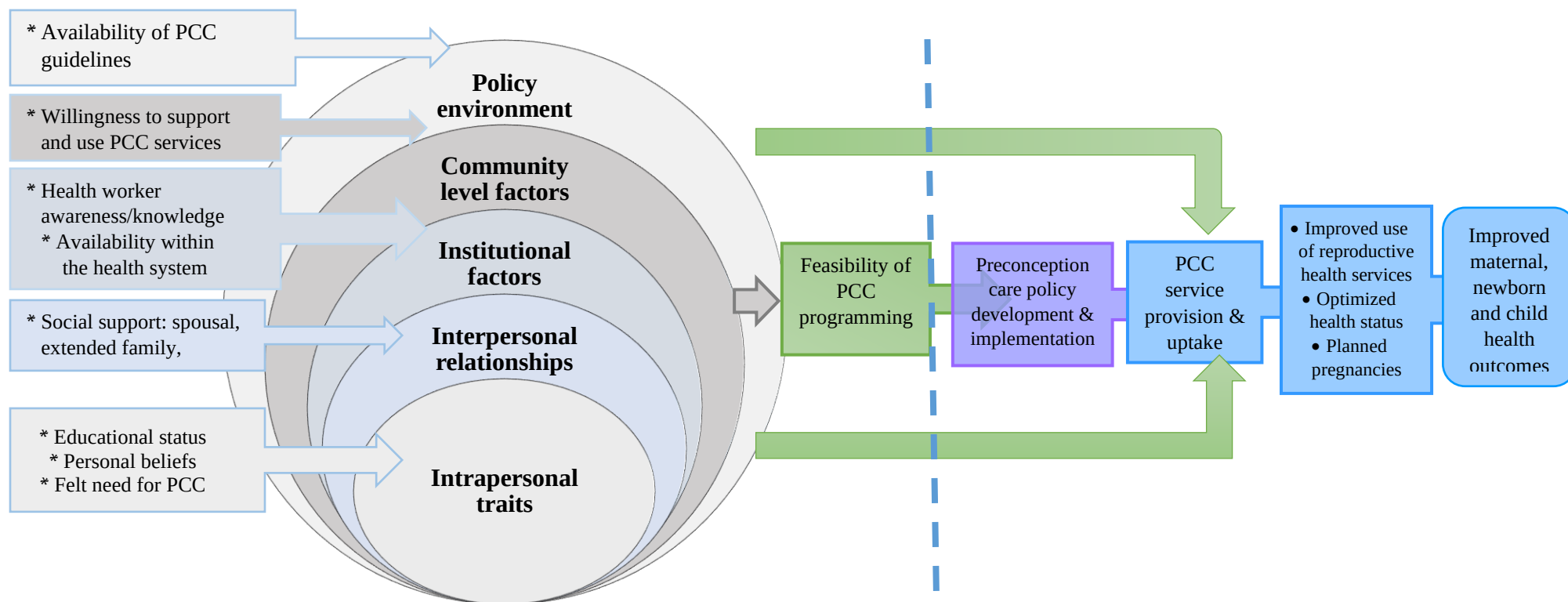


Figure 2-1 Conceptual Framework of Preconception Care Services in Nigeria

Source: Adapted from "The Socio-Ecological Model Approach to Understanding Barriers and Facilitators to Accessing Health Services by Sex Workers: A Systematic Review"²³⁶

----- Broken line indicates section beyond it was not operationalised

2.6 Summary

PCC for improving reproductive health outcomes is not a new concept. Many high-income countries have structured PCC services with policies, guidelines, and protocols. However, the availability of policies and guidelines does not always translate into uptake of services. African countries, including Nigeria, show low awareness of PCC services and where the services are provided, it is mostly opportunistic without the benefit of guidelines or policies to provide structure.

Chapter 3

3 Methodology

3.1 Introduction

This chapter gives a general overview of the methods as it applies broadly to the whole study. A description of the study design, study area and study population is provided. Broad details of the data collection, management and analysis are highlighted. More details of the methods are provided in the discussion chapters.

3.2 Research philosophy

Research is often influenced by philosophical assumptions which are based on beliefs or views about the type of problem to study. These assumptions may stem from subjective experiences or education and often determine the research questions and methods of data collection¹³⁴. This PhD research was based on an ontological assumption. The ontological assumption provides evidence of multiple realities as seen by different individuals, presenting their perspectives as themes developed from the data¹³⁴. Based on this assumption, the study reports different perceptions about PCC among the study population. Multiple methods of data collection and multiple sources were employed and the findings triangulated with emphasis placed on the practical implications of the findings¹³⁴⁻¹³⁶.

3.3 Study area

Nigeria is made up of the northern and southern regions which are further divided into six geopolitical zones for administrative purposes. The health system is managed by the three tiers of government in a concurrent manner from the federal to the state and local government levels viz: The federal government provides strategic oversight; the states have a technical function while the local government level is operational. Each level of government also provides services at the tertiary (federal), secondary (state) and primary (local government) levels respectively⁵⁷. There is disparity in access to health care services with a rural-urban and north-south maldistribution of health care workers⁵⁷. The southern part of the country has better access to health services, higher proportions of health workers and better health outcomes^{1,57}. For instance, antenatal care by skilled

providers was received by 86% of mothers in urban areas compared with 48% of mothers in rural areas while antenatal care coverage in the northeast is only 41% compared with 91% in the southeast^{1,57}. The prevalence of low birth weight is highest in the northwest region which had 27.2% compared with 4.7% in the southeast region while the prevalence in the rural areas was 9.7% compared with 7.6% in the urban areas¹³⁷.

Oyo State, where the study was conducted, is in southwest Nigeria. The state has a population of about 6.6 million people of whom an estimated 49.8% are women^{138,139}. The state was selected because as one of the southwestern states it has some of the better reproductive health indices in the country. For instance, the proportion of women who received ANC from skilled providers was 85.4% (national value – 67%) while 84.6% (national value – 43%) had skilled attendants at delivery³. The infant mortality rate was 41/1000 live births (national value – 67/1000) while the under-5 mortality rate was 64/1000 live births (national value – 132/1000)³. In addition, the state has a tertiary hospital, the University College Hospital (UCH) located in Ibadan North Local Government Area (LGA) of Ibadan, the capital city. The UCH provides referral services for the state and most of the south-western region of the country. All medical and surgical specialties are available in the hospital. The Adeoyo Maternity Hospital, also in Ibadan North LGA, provides tertiary maternal health services. There are 43 secondary level hospitals and 146 primary health care centres in the public sector, spread across the 33 local government areas of the state¹⁴⁰. Each of the 33 LGAs has a health system headed by the Medical Officer of Health (MOH) with support from assistant directors overseeing different health programs including maternal and child health services. Community level interviews were conducted in Ibadan North LGA of Oyo State.

3.4 Study design

This was a qualitative study that followed a pragmatic approach involving multiple methods of data collection (focus group discussions (FGDs), key informant and in-depth interviews (KIIs and IDIs)) as well as multiple data sources – community members, community and religious leaders, health care providers and policy makers¹³⁴. The study was exploratory in nature, aiming to present the perspectives of diverse groups of stakeholders on the awareness, use and need for PCC in the maternal health services in Nigeria. Qualitative methods can be used to provide evidence of

population needs because they attempt to study and interpret phenomena in their natural settings and can thus inform health policy development and implementation^{134,135}.

3.5 Study population

The study population included all stakeholders at the community level, health care workers and policy makers. The health workers were selected based on their involvement and the relevance of their specialty to the care of women and men in the reproductive age group. These included specialists in Obstetrics & Gynaecology, Paediatrics, Public Health, Endocrinology, Family Medicine, Haematology, Cardiology, Neurology, Nephrology and Psychiatry. Policy makers were also selected based on the relevance of their ministries, departments, and agencies to reproductive health. These were the Federal and State Ministries of Health, Education, Women Affairs, Youth and Sports Development and the National and State Primary Health Care Development Agencies. Members of the community, including adult women and men as well as community and religious leaders were selected to provide the views of potential users of PCC at individual and community level.

3.6 Study sample

Participants for the study were purposively selected to meet the objectives. At the community level, the community leaders selected were members of the Ward Health Committee overseeing the primary health care centre in Ibadan North LGA where the study was conducted. These community leaders assisted with identification of the adult women and men within the community. The male community leader also helped with identification of the Muslim religious leaders. The Christian religious leaders were identified through the branch office of the Christian Association of Nigeria (CAN) in the LGA. Health workers in the identified specialties were approached and those who consented were interviewed for the study. The directors or unit heads in the selected ministries, departments, and agencies either consented to participate or identified the appropriate officers who were approached for the interviews.

A list of the groups that made up the study sample is provided in Table 3-1.

Table 3-1 List of study participants

Groups	Sub-groups	No	
Community level	Adult women	23	
	Women with pre-existing medical conditions	9	
	Adult men	22	
Community leaders	Woman	1	
	Man	1	
Religious leaders	Christian	7	
	Muslim	5	
Health workers	Primary	Medical Officer of Health	1
		Assistant director for maternal and child health services	1
		Clinical nurse/midwife in the primary health centre at the LGA	1
	Secondary	Gynaecologist/Obstetrician (government facility)	1
		Paediatrician (government facility)	1
		Gynaecologist/Obstetrician (private facility)	1
	Tertiary	Clinical nurse/midwife (government facility)	2
		Community Medicine	2
		Gynaecology & Obstetrics	2
		Paediatrics	2
		Cardiology	1
		Nephrology	1
		Neurology	1
		Endocrinology	1
		Psychiatry	1
		Haematology	1
		Public Health nurse	3
		Clinical nurse	3
		Policymakers	National
Family Health Unit, FMOH	1		
Community Health Services at the National Primary Health Care Development Agency (NPHCDA)	1		
Family Life and HIV/AIDS Education Department, Ministry of Education	1		
Ministry of Youth Development	1		
Ministry of Women Affairs	1		
State	Oyo State Primary Health Care Development Agency (SPHCDA)		
	Family Life and HIV/AIDS Education Department, Oyo State		1
	Ministry of Education		1
	Oyo State Ministry of Sports and Youth Development		1
	Oyo State Ministry of Women Affairs – Gender, Child welfare and Social welfare units		3
Total		107	

3.7 Study tools

Interview guides were prepared for the research based on the objectives and literature on PCC. Table 3-2 highlights the themes explored with the various categories of study participants. While the community members and health care providers provided opinions on all four objectives, the interviews among the policy makers spoke to the first and fourth objectives. Case studies of women with pre-existing medical conditions covered objective three, while the community and religious leaders gave opinions on the first three objectives. The guides were translated into Yoruba, the local language. Back-translation was done to ensure consistency of meaning. Both the English and Yoruba version of the tools were available at each interview and participants selected their preferred language at the start of the interview. Content validation of the interview guides (Appendices 4 to 8) was done by two qualitative researchers, after which the guides were pretested, and ambiguous questions deleted or modified prior to data collection. An explanation of the meaning of PCC as obtained from literature was inserted at this point to ensure clarity and consistency across the interviews and for the diverse groups of study participants. For this purpose, PCC was described as *“a special type of care provided for women and men of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. The goal is to ensure parents are in optimal state of health before pregnancy occurs. It includes screening, counselling and treatment/management of pre-existing medical conditions as well as reproductive life planning”*.

Table 3-2 Study tools and themes explored

Study population	Themes explored	Objectives covered	Tool used
Community members	Existing services; perception; awareness and knowledge; utilisation	1, 2, 3, 4	FGD guide (Appendix 4)
Women for case studies	Pregnancy experience, awareness, use, benefits and need for PCC	3	In-depth interview guide (Appendix 5)
Community and religious leaders	Existing services; awareness and knowledge of PCC; content of counselling services	1, 2, 3	Key informant interview guide (Appendix 6)
Health care workers	Existing services; perception; awareness and knowledge; utilisation; need for service; feasibility of service	1, 2, 3, 4	In-depth interview guide (Appendix 7)
Policy makers	Existing services; perception; awareness and knowledge; utilisation; need for service; existing policies and guidelines; feasibility of service	1 and 4	In-depth interview guide (Appendix 8)

3.8 Data collection

Research assistants were recruited to help with the data collection. These were Masters students and recent Masters graduates in the Faculty of Public Health of the University of Ibadan, Nigeria. The research assistants included three women and three men who were specifically trained for the research. The one-day training was aimed at familiarising the research assistants with the concept of PCC and the data collection tools. All the research assistants had prior experience conducting qualitative interviews. They worked alongside the principal investigator (PI) to conduct the interviews. The PI facilitated the policy maker interviews, while the interviews with other study participants were facilitated by the research assistants. Debriefing sessions were held after each round of interviews. Most of the interviews were conducted between March and October 2018, however, the interviews with women who had pre-existing medical conditions held between June and December 2019. A total of 59 interviews including 10 FGDs, two KIIs and 47 IDIs was conducted. The interviews lasted between 30 and 45 minutes, while the FGDs lasted between 45 minutes to an hour each. All interviews were recorded using a digital recorder.

3.9 Data management

All recordings were transcribed verbatim by the interview facilitators and translated as needed (for those conducted in Yoruba). The recordings were saved in a password protected laptop and deleted from the digital recorders. The PI read the transcripts and edited as necessary to ensure consistency with the audio recordings. The transcripts were imported into MAXQDA 2018¹⁴¹ for further reading and analysis.

3.10 Data analysis

Thematic analysis using a hybrid of inductive and deductive coding was applied in analysing the data^{142,143}. At the initial phase of the data analysis, codes were generated deductively from the study objectives and existing literature on preconception health and PCC services, while inductive codes were derived from the transcripts. The PI identified three colleagues who acted as independent coders to assist with the codebook development for the data analysis. Four of the transcripts were selected for first reading and inductive codes were identified. The team discussed the initial codes following which the transcripts were imported into MAXQDA 2018 and coded independently by two of the team members. A team discussion was held after the coding and agreement reached on codes and definitions. A fourth coder applied the agreed-on codes independently to the same set of transcripts and intercoder agreement was determined. We achieved an intercoder agreement of 94.92% with a Kappa statistic of 0.95. An intercoder agreement of 80 to 90% is recommended depending on the size of the codebook^{134,144}. An experienced qualitative researcher independently reviewed the themes and codes before the final code list was agreed on. The code development process is described in Appendix 9. Through this process, a set of five initial themes were generated. Further analysis was conducted in accordance with the objectives and is described in more detail in subsequent chapters as it applies to each segment of the results.

3.11 Ethical considerations

This PhD research was conducted in compliance with all ethical standards. An information sheet (Appendix 1) was provided for the participants with details of the study process and implications.

Consent for participation and for recording of the interviews and discussions was obtained from all participants (Appendix 2 and 3). Participation in the study was voluntary and not associated with any risks. No identifying data was collected, and all information generated was securely handled. The interview recordings were transferred to a password enabled computer accessible only to the researcher and deleted off the digital recorders. The interview transcripts were also only accessible to the researcher. Ethical approval was received between December 2017 and March 2018 from the Federal Ministry of Health (NHREC Approval Number NHREC/01/01/2007-14/12/2017), the Oyo State Ministry of Health (Approval number AD/13/479/565), the University of Ibadan/University College Hospital (UI/UCH) Institution Review Board (UI/EC/17/0390) and the Wits Human Research Ethics Committee (Medical) (Clearance number M171054). The ethics clearance certificates can be found in Appendices 10 to 13.

3.12 Study Limitations

The qualitative nature of the study and the fact that it was conducted in southwestern Nigeria implies that the views expressed may not depict the understanding of PCC in other parts of the country. However, the metropolitan nature of Ibadan, the study area and the diversity among the study population reduced the possibility of this.

3.13 Researcher positionality

Here, I reflect on my own perceptions and presuppositions about PCC and how these may have influenced the direction and findings from the research. I am a Community Physician, a wife, and a mother of three children. My interest in this topic was stimulated by the ideas brought up during one of our family health lectures in medical school. We had been taught about maternal and child health care, then the place of adolescent health, preconception and interconception care was mentioned briefly. My interest was piqued as I learned how family planning could be beneficial to many of the women I had come across who had poor obstetric outcomes due to lack of awareness. I was later to learn that this was not just family planning or contraceptives but reproductive life planning. Some of the findings from my masters research further stimulated my desire to look more into this area. I found that many of the women who used antenatal care also went on to have

skilled attendants at delivery. A friend whose study was on postnatal care found that many women who had antenatal care also had skilled attendants at delivery and received postnatal care. I felt this will increase their chances of remaining within the continuum of maternal and child health services if the women were introduced to the services earlier. This informed more in-depth reading and greater interest in PCC literature.

My role as a researcher was partly that of an insider. As a Community Physician, I had worked in the Nigerian health system for almost 15 years. I was thus familiar with many of the issues raised by some of the study participants particularly the health workers. As a woman I had needed to reflect on what choices to make with respect to my reproductive life plan. Having a supportive husband made this easier for me possibly more than it would have been for other women. As a mother I had to consider my health and its implications for the children I planned to have. From my personal reading and understanding from medical school, I knew the importance of PCC. Knowing that there were no PCC services available, I had only used folic acid when I knew I wanted to conceive. Already I knew my blood group and genotype, I had taken the complete doses of Hepatitis B and tetanus immunizations as a medical student and I knew I had no preexisting medical problem. These experiences placed me partially in the position of an outsider when considering the views of the community members (adult women and men) who participated in the study. My awareness of the possibility of these experiences influencing my ability to view the data objectively informed my decision to delegate the health worker interviews to the research assistants. However, these experiences may have influenced my facilitation of the policy maker interviews as I was able to probe the responses with a fair understanding of the perspectives of the providers (health workers) and users (adult women) of PCC services. To ensure I was objective in the data analysis, my supervisor assisted through discussion of my assertions about the data and review of my analysis.

3.14 Summary

This chapter has highlighted the methods used in the PhD research overall. The following five chapters present the results of the study and provide further details as they apply to each section of the results. Table 3-3 gives an overview of the study objectives as they are linked with each of the result chapters.

Table 3-3 Objectives and research output

	Objectives	Study population	Research output
1.	To explore and document the existing preconception care practices in Southwest Nigeria	Adult women and men; Community and Religious leaders; Health workers; Policy makers	Preconception care practices in Nigeria: a descriptive qualitative study – Chapter 4
2.	To explore the awareness and perceptions about utilization and delivery of preconception care services in Southwest Nigeria	Adult women and men	Exploring the perception of and attitude towards preconception care service provision and utilisation in a South Western Nigerian community – A qualitative study – Chapter 5
		Health workers	Health care providers perceptions about preconception care in Ibadan, southwest Nigeria – A qualitative study – Chapter 6
3.	To explore and describe the perceptions about the need for preconception care services among adults and health care workers in Nigeria	Health workers	
		Adult women and men	Exploring the need for preconception care: the pregnancy experiences of women with pre-existing medical conditions in Ibadan, Nigeria – Chapter 7
4.	To explore the feasibility of preconception care service provision within the reproductive health care framework in Nigeria	Policy makers and Health workers	“The health system is ready” – a qualitative exploration of stakeholder opinions about the feasibility of preconception care services in the Nigerian health system – Chapter 8

Results

Chapter 4

4 Paper 1: *Preconception care practices in Nigeria: a descriptive qualitative study*

This paper has been published in **Reproductive Health 2020; Volume 17 Article Number 172.*

4.1 Abstract

Background: Preconception care is a specialized care targeted at women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that may militate against safe motherhood and positive pregnancy outcome. Despite the known need for preconception care in Nigeria, routine preconception care services are not available in the country. This study explores existing preconception care practices in the country in order to encourage building on it and formalising it for inclusion in routine maternal and child health services in the country.

Methods: Forty-one in-depth interviews and 10 focus group discussions were conducted in this descriptive qualitative study to explore the existing preconception care services from the perspectives of community members (women and men in the reproductive age group), community and religious leaders, health care professionals as well as policy makers. Thematic analysis was carried out using MAXQDA 2018.

Results: Participants stated that there are no defined preconception care services in the health care system nor are there any structures or guidelines for preconception care in the country. Preconception care services are however provided when health workers perceive a need or when clients demand for it. The services provided include health information, education and counselling, treatment modification, medical check-up, and screening. Outside of the health system, there are some traditional, religious, and other practices with similar bearing to preconception care which the participants believed could be included as preconception care services. These include premarital counselling services by religious bodies, family life and HIV education within the secondary school system and some screening and outreach services provided by non-governmental and some governmental agencies.

Conclusion: There is a need to provide structure and guidelines for preconception care services in the country so that the services can be properly streamlined. This structure can also involve practices that are currently not within the health system.

4.2 Background

Preconception care is a specialized care targeted at women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that may militate against safe motherhood¹⁷. The case has also been made for the inclusion of men in preconception care because of their biologic and genetic contribution to pregnancy outcomes¹⁸. The concept of preconception care is not entirely new since as far back as 1858 Dewees' "*Treatise on the physical treatment of children*" described the need to investigate potential parents for hereditary diseases prior to marriage and childbearing⁹⁵. The aim is to optimise maternal health and ensure a healthy pregnancy experience and subsequent wellbeing of the baby¹⁹⁻²¹. Thus, specific conditions that are amenable to preconception care include: those that need time for correction to be implemented before conception; interventions not normally provided during pregnancy; interventions that are considered only because a pregnancy is planned and conditions that can change the choice or timing of conception²¹. Having preconception care has also been shown to improve the use of antenatal care, delivery and postnatal care services; thus contributing to improved reproductive health outcomes¹⁴⁵. The components of preconception care are health assessment, health promotion and management of pre-existing conditions^{18,27}. These categories cover sexually transmitted infections including HIV screening, management of interpersonal violence including intimate partner violence, mental health problems, substance abuse (including alcohol and drug use), tobacco cessation (including second hand smoke), family planning, nutrition, genetics screening, environmental health and management of infertility^{7,21}.

Many high-income countries initiated preconception care programs to combat unplanned pregnancies, and poor maternal/child health outcomes^{25,99}. The mode of delivery of the preconception care services includes incorporation of preconception care and education into the school curricula, delivery through the workplace, media and community-based agencies as found in Canada²⁰. Countries like Hungary¹²², Japan⁷² and the Netherlands²⁴ have preconception care integrated into the primary health system and handled by general practitioners. In Malaysia,

preconception care is part of the maternal and child health services provided in all government health facilities led by Family Medicine Specialists and Obstetricians/Gynaecologists^{98,127,128}. In the United States, the Centre for Disease Control and Prevention's Select Panel on Preconception Care recommends preconception care to be provided to all women of reproductive age at every contact with the health system⁷⁰. On the other hand, many low and middle income countries have no definite structure or guideline for preconception care²⁴. Awareness, knowledge and use of preconception care services is low in many countries as shown by studies in Ethiopia, Egypt, Sudan and Nigeria^{84,86,87,89,92,93,146}. These studies show higher level of awareness and use among women with higher educational attainment and those who have had prior contact with the health system for family planning or antenatal care services^{84,86,92,93}.

Preconception care in Nigeria is necessary due to the large number of women with communicable and non-communicable diseases such as HIV, hypertension, diabetes and sickle cell disease (among numerous others) who can potentially benefit from such service^{17,69}. The national guidelines for the prevention of mother-to-child transmission (MTCT) of HIV identifies preconception care as a primary prevention strategy¹⁴⁷. However, routine preconception care services are not available in Nigeria¹⁴⁸, although research has shown sporadic provision and use of preconception care services within the health system. For instance, a study in Giwa, Kaduna State, northern Nigeria found that only 4% of study participants were aware of preconception care while only 2.7% used preconception care services⁴⁴. Another study in Ile-Ife, southwest Nigeria, found that 65.3% of the women interviewed across primary health care facilities knew the components of preconception care, but only 34.1% had ever sought preconception care services⁴⁶. The preconception care practices identified in this study were use of folic acid four weeks before conception, choosing healthy food items, maintaining a healthy weight through physical activity, tobacco and alcohol cessation, genetic counselling, treatment of sexually transmitted infections and chronic diseases, avoidance of unprescribed medications and toxic substances⁴⁶. In another study among women in Ibadan, also in southwest Nigeria, only 2.5% of participants used folic acid in the preconception period. Awareness and use of folic acid was associated with higher level of education and upper socioeconomic status⁸⁸. The use of preconception care along with care by a multidisciplinary team during pregnancy was associated with better pregnancy outcomes in a case-control study among pregnant women with sickle cell disease in Kano City, northern Nigeria¹⁴⁹.

Given the foregoing, the need for improved awareness and use of preconception care services in Nigeria is evident. Anecdotal reports of practices aimed at ensuring optimal maternal health before and during pregnancy as well as positive pregnancy outcomes exist. These include traditional fattening rooms and premarital counselling in community and religious settings. The details of these in relation to preconception care have not been documented in the literature. Thus, there is the need to document the existing preconception care practices as a foundation for establishing preconception care as a routine service within the maternal and child health framework in the country. This study explores and documents the existing preconception care practices and services from the perspectives of women and men in the reproductive age group (community members), community and religious leaders, health care professionals as well as policy makers.

4.3 Methods

This study used a qualitative descriptive approach. The qualitative descriptive approach provides direct descriptions of events or phenomena as presented by study participants staying as close as possible to the data with minimal interpretation or attempts at theory development^{150–152}. In this study, we provide a description of the different preconception practices and services in Nigeria from the perspectives of the different groups of participants.

4.3.1 Study setting

The Nigerian health system operates at three levels – primary, secondary and tertiary – managed respectively by the local government, state and federal authorities in a concurrent manner⁵⁷. Within this context, there is a rural-urban and north-south disparity in education, socio-economic opportunities and in access to health services⁵⁷. The urban south has better access to health workers and health services and this translates to better health indices including better reproductive health outcomes^{3,57}. The study was carried out in Ibadan North Local Government Area (LGA) of Oyo State, an urban LGA in southwest Nigeria, on the premise that the population is better informed and can provide information on the array of existing preconception care practices to jumpstart the discussion on the need for the service in the country. Ibadan North LGA has all three levels of the health system represented including the University College Hospital, Ibadan, a tertiary centre. There are two secondary health facilities, one private and one government-owned – the Adeoyo Maternity Hospital as well as 10 primary healthcare centres (PHCs) – one located in each of the

10 political wards. All the health facilities provide maternal and child health services with the primary health centres giving preventive and some curative services while the secondary and tertiary health facilities are referral centres providing specialist services.

4.3.2 Study population

Participants in this study were women and men in their peak reproductive ages (18-49 years and 18-59 years, respectively) and community leaders from Yemetu Ward 3, in the selected LGA. Yemetu Ward 3 was purposively selected because of its proximity to the tertiary and secondary health facilities in addition to having a PHC. The community leaders were the representatives of the community on the Ward Health Committee that provides oversight to the PHC in the ward. Christian clergy in the community were selected with the assistance of the branch office of the Christian Association of Nigeria within the community while Muslim clergy were identified with the help of the male community leader. Health care providers involved in provision of maternal and child health services and those who provided care for chronic medical conditions that can affect pregnancy outcomes were also interviewed for this study. They included health care workers at the primary (3), secondary (5) and tertiary health care levels (13 specialist physicians and 5 nurses covering 10 different medical specialities – Obstetrics & Gynaecology [Ob/Gyn], Paediatrics, Public Health, Endocrinology, Family Medicine, Haematology, Cardiology, Neurology, Nephrology and Psychiatry). The variations in the number of health workers at the different levels was patterned after the staff distribution at each level. In addition, the national and state Ministries, Departments and Agencies that cover maternal and child health related programs were identified and policy makers from relevant units and departments were interviewed.

Participants in this study were selected purposefully as being able to provide the needed information. Men and women in the community were selected to provide information on existing cultural/traditional practices for improving preconception health. Health workers in the specialities selected are either directly involved in maternal and child health care (Ob/Gyn, Paediatrics, Public Health and Family Medicine) or have patients whose medical conditions may require preconception care if within the reproductive age group. The policy makers were selected from the Ministries, Departments and Agencies that provide oversight to maternal and child health services and related programs at the national and state levels. These were the Ministry of Health, Ministry of Education, Ministry of Women Affairs, Ministry of Youth and Sports Development and the

National and State Primary Health Care Development Agencies. The community and religious leaders were selected on the basis of their involvement in providing counselling to young people while the community members were selected as being potential users of preconception care services. The community leaders assisted in recruiting the women and men.

4.3.3 Data collection

The women and men FGDs listed in Table 4-1 were further disaggregated by educational level - less than junior secondary education and junior secondary education and above. The interviews at the community level held at locations within the community chosen by the study participants while the health workers and policy makers interviews held in the participants' offices.

Table 4-1 Study Population and Method of Data Collection

Study population		Number of interviews
Community members	Women	4 Focus group discussions <ul style="list-style-type: none"> • Single – 2 groups • Married – 2 groups
	Men	4 Focus group discussions <ul style="list-style-type: none"> • Single – 2 groups • Married – 2 groups
	Community leaders	2 Key informant interviews <ul style="list-style-type: none"> • One woman • One man
Religious leaders		2 Focus group discussions <ul style="list-style-type: none"> • Christians • Muslims
Policy makers	National	6 In-depth interviews
	State	7 In-depth interviews
Health workers at the primary, secondary, and tertiary levels of the health system	Specialist physicians	16 In-depth interviews
	Nurses	9 In-depth interviews

Interview guides were developed for the study following a review of preconception care literature. Content validation of the instruments was done by two experts in qualitative research after which the instruments were pretested and ambiguous questions were removed or revised. Open-ended questions explored the participants' awareness and opinions about preconception care, and

description of existing preconception care services that they know of. A description of preconception care as found in the literature was provided and participants were asked if they knew of any such services and where they were provided. For the purpose of the research, preconception care was described “*as a special type of care provided for women and men of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. The goal is to ensure parents are in optimal state of health before pregnancy occurs. It includes screening, counselling, and treatment/management of pre-existing medical conditions as well as reproductive life planning.*” The interviews were conducted in English or Yoruba (the local language depending on the participants’ preference) by eight trained research assistants who were Master’s in Public Health students at the University of Ibadan, Nigeria who had prior experience in qualitative data collection. A one-day training was conducted for the research assistants to familiarise them with the interview guides and concept of preconception care. Interview guides had been translated into Yoruba and back translated to ensure consistency of meaning with the aid of a professional service. The interviews lasted between 30 minutes and 1 hour.

4.3.4 Data management and analysis

Interviews were recorded digitally and transcribed verbatim. To ensure that the transcripts correctly captured the interviews, the first author read each transcript while listening to the audio recordings. Transcripts were imported into MAXQDA 2018 for coding and thematic analysis. An initial set of codes were derived inductively from reading four of the transcripts, one each from the different groups of participants. Two independent coders (not co-authors) coded the initial set of transcripts along with the first author. The codes thus generated were reviewed and intercoder agreement reached between all three coders. The codes which came from recurring ideas and patterns found during multiple readings of the transcripts were merged into themes and applied to the rest of the transcripts with modifications as necessary during the analysis. Where necessary, explanations of the terms used by the participants is provided while redundant words such as “erm” and “uhm” are deleted for clarity. We used the SRQR checklist as a guide in writing this article

4.3.5 Ethical considerations

Ethical clearance for the study was obtained from the University of Ibadan/University College Hospital (UI/UCH) Institution Review Board (Clearance number UI/EC/17/0390) and the Wits Human Research Ethics Committee (Medical) (Clearance number M171054). All participants were provided with information sheets containing details of the study. Participation was voluntary. All willing participants appended the consent form by signature or thumbprint for participation in the study as well as for audio recording of the interviews. To maintain confidentiality, all transcripts were deidentified and labelled with codes.

4.4 Results

The participants in the study were 98 – 49 males and 49 females. The sociodemographic characteristics of the study participants are shown in Table 4-2.

Table 4-2: Sociodemographic characteristics of the participants

Sociodemographic characteristics		Community members		Religious leaders		Health workers		Policy makers
		Women and men	Community leaders	Christian	Muslim	Doctors	Nurses	
Data collection method		FGD	KII	FGD		IDI		IDI
Total sample		n=45	n=2	n=7	n=5	n=16	n=9	n=13
Sex	Male	22	1	6	5	13	0	2
	Female	23	1	1	0	4	9	11
Age (in years)	18-25	15	0	0	0	0	0	0
	26-35	8	0	0		1	2	1
	36-45	14	1	1		9	4	3
	≥46	8	1	6		7	3	9
Level of healthcare	Primary	–	–	–	–	1	2	–
	Secondary	–	–	–	–	3	2	–
	Tertiary	–	–	–	–	13	5	–

Three main themes relating to the different preconception care practices in the country emerged from the data and these are shown in Table 4-3. All the groups of participants described different forms of preconception practices while health workers stated the preconception services, they provided in the first theme “preconception practices and services provided”. The second theme

was on “how preconception care is provided” while the third theme focused on “programs and services related to preconception care”.

Table 4-3: Themes derived from the data

Themes	Sub-themes
Preconception practices and services provided	No defined preconception care service
	Health information, education, and counselling
	Medical check-up and screening
How preconception care is provided	No laid down structure or guideline: Services are provided as the need arises for <ul style="list-style-type: none"> • People with diabetes, hypertension, sickle cell disorder or other medical illnesses • Those who have had complications in previous pregnancies
	When demanded by clients <ul style="list-style-type: none"> • Due to delay in pregnancy or infertility • Some educated or knowledgeable clients
	Related cultural practices
	Premarital counselling <ul style="list-style-type: none"> • Provided by religious groups – Christian and Muslim
	Family Life and HIV Education (FLHE) <ul style="list-style-type: none"> • For secondary school students
Programs and services related to preconception care	Services provided by Non-Governmental Organisations (NGOs) <ul style="list-style-type: none"> • Association for Reproductive and Family Health (ARFH) and other similar agencies
	Some government-sponsored programs

4.4.1 Preconception Practices and Services Provided

4.4.1.1 No defined preconception care service

The policy makers highlighted the lack of a defined preconception care service in the country. They stated that the health policies on maternal and child health services in Nigeria focus on the

use of ANC and skilled delivery services and not on specialised or specific care in preparation for conception.

“What we’ve been focussing on majorly is when women are pregnant. How can we get them to the clinic to attend ANC? (Policy Maker National 1)

“As you can see, we have done a little research to know what exactly preconception care is all about. When we looked at it, all the documents that we have don’t speak to this. What it speaks on is the care for the women when they are pregnant. ... But it doesn’t cover before conception.” (Policy Maker National 4)

The health workers reiterated the lack of preconception care services in their facilities, describing services provided only when individuals present for other reasons.

“There is no special program for preconception care in this health facility. It is only when they come for any form of advice or any form of ailment, or when they want to be pregnant and they are unable to conceive, it is then that we meet them” (Primary care level Clinical Nurse)

“... most of what we provide is informal. There’s no particular clinic that is preconception. Right now, most people just come for gynae clinic. It’s the gynae clinic that we now convert to a form of preconception clinic, so it’s done at the discretion of the doctor. If he doesn’t feel like doing it there’s nothing anyone can do because that is not what the patient came for.” (Tertiary care level Ob/Gyn 2)

Some of the participants identified services that were within the scope of preconception care but were not consciously referred to as preconception care at the time they were being provided. They described such services as constituting preconception care because they were aimed at improvement of future pregnancy outcomes.

“I am not aware, but I believe that this is actually happening almost every day without us knowing. People visit clinics for screening {for chronic diseases like hypertension and diabetes}. Screening is something that we encourage, and our health promotion division program is always sensitizing the public about ...” (Policy Maker National 2)

“Like I said it’s done everywhere but not recognizable in the sense that you are doing preconception care. We do it for our patients, when we are managing some patients who are likely to have a bad outcome if we don’t manage some conditions before they get pregnant” (Tertiary care level Ob/Gyn 1)

Some private health facilities are known to provide preconception care services in a well-defined manner. However, the prohibitive cost of the service and out-of-pocket payment has taken the service out of the reach of the common masses.

“It {preconception care} is being done elsewhere so we should do it. It’s being done in some highbrow private hospitals in Nigeria. I know one or two private hospitals in Nigeria that runs preconception clinics, it’s just that patients will pay out of pocket.” (Tertiary care level Ob/Gyn 1)

4.4.1.2 Health information, education, and counselling

The provision of health information, education and counselling was described by some of the participants. Such information and education were aimed at encouraging behaviour or lifestyle change ahead of pregnancy to ensure a good outcome. Mention was made of information provided on a general note as part of regular counselling and health talks given in the hospital setting, for instance at the antenatal clinic where the providers aim to address future pregnancies.

“Most of the care when it comes to my own speciality revolves around health education, health promotion, health information about the things women can do, living healthy to ensure that when they are pregnant, they go through pregnancy, delivery and all the things that come along with pregnancy at maximum health level. We encourage women to make an informed choice about the things they should do to ensure that their bodies are healthy enough to be able to achieve conception” (Tertiary care level PH Nurse)

“Well maybe the one I’m aware of would be the one that is done during antenatal period at the antenatal clinics. That’s when they talk about preconception care that I am aware of but apart from that I am not sure there is any.” (Tertiary care level Endocrinologist)

“What you mentioned is in two sections. If you are talking about counselling, there are two ways. You counsel in godly way which is done in church and counsel medically which is done in the hospital. And when you are talking about treatment of any infectious diseases which might cause delay, that will be done in the hospital as well” (FGD Married Men, Participant 4)

According to the clinicians, certain health conditions necessitate counselling and may even require other measures like medications, investigations, or treatment adjustments. The services provided in these instances will therefore be specific for the health condition suspected or identified.

“When we have a patient with certain health conditions that may make further pregnancies eventful, we will see her in the gynaecological clinic and then provide appropriate counselling. Sometimes you have to give drugs depending on the nature or sometimes we may ask her to do some investigations.” (Tertiary care level Clinical Nurse)

“We try to avoid giving drugs that may be teratogenic {cause birth defects} to the baby if the woman gets pregnant, ... If they are getting married, we may change the medication we are giving them. So, there is a way we try to tell all the caregivers that for those who are getting pregnant, the care will be different” (Tertiary care level Nephrologist)

4.4.1.3 Medical check-up and screening

Community and religious leaders identified their recommendation of medical check-up or screening for couples who are about to get married or newlywed and planning for pregnancy as part of preconception practices. They stated that this would ensure that medical conditions that can affect pregnancy intentions adversely are detected and addressed early.

“I advise the youth around me to be cautious and not get infected. Whoever you are in love with, go with him/her to the hospital to do test and check your health status for the future. When a man and woman want to get married, they have to go for thorough medical check-up whether they are both AA or SS. They have to check well so they don't now detect they have an incurable disease after getting married. Marriages can run into problems without proper check-up. So, I implore the youths that they shouldn't because of love not go for proper medical check-up before they get married, so they can live together in good health” (Community leader, woman)

“You see in our church we have a marriage committee in charge of teaching people that are preparing for marriage especially on medical tests like HIV, genotype and blood group because those are very important” (FGD Christian Clergy; man, 2)

“During the sessions, they will be told that they need to have some investigations done to check for their compatibility. The test will help them to know if there is anything that may lead to delay in pregnancy. It is also possible that the man has an illness which may cause some health problems for the woman” (FGD Muslim Clergy; man, 3)

4.4.2 How Preconception Care is Provided

4.4.2.1 No laid down structure or guidelines

The health workers expressed the opinion that just as there is no defined preconception care service in the country, there is no laid down guideline, policy, or structure for such service. They stated

that preconception care services are provided to clients without following any defined format but as each occasion presents itself or at the discretion of the provider.

“For now, in our health system, we don’t have a package for preconception care, that is let me say a structured package for preconception care that is being implemented in our health system. But when a client presents, we use the same principle and the knowledge we have as professionals to take our patients through any issue they present.” **(Primary care level Public Health Physician)**

“In our day-to-day practice, there is no way we don’t tackle preconception care. We do preconception care for any patient that needs it because we are family physicians. But there is no laid down rule for it. We have to do it and even any doctor that comes in contact with anybody in the reproductive age group should provide it” **(Tertiary care level Family Physician)**

“I have had to provide it in a private hospital not in the government hospital because it is not a service that has found its root, it’s not well established in government facilities. In fact, there’s no clinic for preconception care at the moment in this hospital so you know it’s not common; most people do an informal care. They come to you, talk to you, you advise them but to have a clinic for preconception care it’s in private setting. Even then it’s quite rare.” **(Tertiary care level Ob/Gyn 2)**

Some of the physicians described an obligation to provide preconception care ahead of future pregnancies for patients with a poor obstetric history or who had previous complications in pregnancy.

“Actually, in this setting we only select some women that I provide preconception care for. It is not really done, but maybe women of reproductive age that have been diagnosed with diabetes mellitus, asthma or hypertension or women that are on anticonvulsants. You already know that their drugs can affect the child and some anticonvulsants are associated with congenital anomalies. So, those women are offered preconception care at least three months before pregnancy occurs. But it is not done routinely” **(Secondary care level Ob/Gyn)**

Having described the lack of a defined preconception care service, participants who provided preconception care services spoke of giving such services when they saw the need for it. The emphasis was on the fact that such services were not routinely provided.

“Well, I have provided such care, but it is not something I do routinely. At times I have someone come that has high blood pressure and I know the person must be attended to

before the person gets pregnant. Or I have to care for someone that has diabetes or someone that in her last pregnancy had an unpleasant experience, like some abnormality in the baby, or “spontaneous” death. So, sporadically, yes, I have offered such services. But it is not something I do routinely When I see the need arising, in peculiar cases I have offered the services” (Ob/Gyn Private)

Even among specialists whose patients may be at risk of poor pregnancy outcomes, there is no defined guideline or format for providing preconception care to such patients. The specialists only made referrals when a complication draws attention to the possibility of poor outcomes in the patients.

“What we do may not necessarily be preconception care. When there is a need, if a sickle cell disease patient has issues concerning conception, we refer them to Obstetrics and Gynaecology unit and for the males if they have issues like that, we refer them to the urologist and so, we haematologists don’t manage them alone, we refer them for specialist care” (Tertiary care level Haematologist)

4.4.2.2 When demanded by clients

Some health workers stated that while most health facilities do not offer routine preconception care, some knowledgeable clients request for and receive the service.

“Yes, actually preconception care is not something that is popular amongst our people. ... But when you have reasons to see a gynaecologist to discuss preconception care they will offer it on a one-to-one basis. It is still something that is between the learned few or some people that had bitter experiences in the past and the doctor has already counselled that ‘to avert such occurrence again you have to come early’. So, it’s not like there is a preconception clinic” (Secondary care level Paediatrician)

In other instances, the service is provided as part of care for a couple who present on account of infertility or delay in attaining conception. For such people, providing preconception care is at the discretion of the doctor who is attending to the patient.

“And then we have those who come to you because they cannot get pregnant. They come not desiring ab initio to have preconception. They just come that “ah we cannot get pregnant, help us”. So, it is in those kinds of people we generally tend to introduce preconception care which is based on the doctor’s discretion” (Tertiary care level Ob/Gyn, 2)

4.4.3 Programs and Services Related to Preconception Care

4.4.3.1 Related cultural practices

Some of the participants described traditional practices that relate to preconception care. These included cultures where women who are about to get married are taught different things regarding marriage by older women. The participants believed that some of these teachings relate to preconception care.

“Traditionally, we have all those fattening rooms¹. Preconception care is an integral part of what they do in the fattening room {teaching on marital etiquette}. ... when girls are getting married, mothers give them information and sometimes they get it from elderly aunties, friends, at community level.” (Policy Maker National 3)

“When a woman gets engaged and is planning for marriage, what we learnt in terms of religion and what was handed over to us is that they would have some time for lessons where she is taught how to behave in her new home, how to care for her husband, how to take care of herself, what to do when she wants to have intercourse with her husband. Older people in the community who are experienced teach the younger women the different things they need to know and do.” (FGD Muslim Clergy man 3)

4.4.3.2 Premarital counselling by religious bodies

The participants referred to premarital counselling provided by religious groups as constituting some form of preconception care. They stated that the counselling often includes referral for medical screening which can help towards optimising preconception health of the couple.

“What I know is, in my own church, before they join husband and wife together, they have to have gone for medical check up to ensure they are medically fit and compatible so that the marriage will not have problems and people will begin to wonder why the church did not help initially.” (Community leader, woman)

“I know that people who undergo premarital counselling will at one time or the other in their various churches go through it {preconception care}. In the community, if there is a youth friendly centre, they can walk in and access some care. They can have privileged information about what they need to do when they are preparing for pregnancy” (Tertiary care level Clinical Nurse, Ob/Gyn)

¹ The fattening room is a traditional practice in southeastern Nigeria where young girls are kept for a few months in preparation for marriage. During the period, they are taught about marital etiquette and fed with a fattening diet.

“To an extent the religious institutions do it a bit, all those screening {for HIV, blood group and genotype} that they do before marriage in the mosque or in the churches is a kind of preconception care.” (Tertiary care level Ob/Gyn, 2)

“In churches where a man and a woman want to get married, they will instruct them to go and do some test maybe they are compatible with each other” (FGD Married Women, Participant 5)

“In the Catholic Church you have something like the holy rosary where children are taught to be prayerful, to remain virgins till they get married and so on. That is an aspect of preconception care. When people are about to get married, they go through marriage classes. In those marriage classes, they talk about preconception care. Recently in the Catholic Church in Lagos state, ... they started an organization that takes care of the needs of couples that have issues including counselling and admonition, even prayers and I’m sure they have preconception care” (Policy Maker National 3)

The religious and community leaders discussed the areas of emphasis in their premarital counselling sessions in relation to preparation for pregnancy. The highlights were the need for a couple to be truthful in their dealings with one another so that they can address health issues ahead of their marriage and avoid complications when the issue of pregnancy comes up.

“The man and woman must be truthful with one another. Secondly, medical check-up is very important for the woman before she gets married. For example, some women are not truthful; she knows that she has fibroids, but she will not tell her husband and when they finally get married problems will arise” (FGD Christian Clergy Male, 4)

“Being truthful is very important between the wife and the husband because it has an impact on pregnancy. For example, you that know that you are SS, and the husband is SS and because you want to marry him, you said you are AA” (FGD Christian Clergy participant, woman)

The need for a couple to understand the optimal age for conception to avoid complications was stated by one of the participants in the Christian clergy group. This he highlighted having noted a particular personal experience which made him emphasise age in his premarital counselling sessions.

“The other thing I think is important before pregnancy is the age, either underage or overage. For example, someone who is 50 years and above and wants to get pregnant we should try to discourage her. If she gets pregnant, she will give us much work to do. As part of the counsel that I normally give my people especially the women, it is best for a

woman if she has the privilege, to start having children around 25 years of age. Once she is approaching 35 or 38 years or after 40 years, with my experience and knowledge there may be complications” (FGD Christian Clergy participant, man 5)

The importance of premarital counselling to identify and address potential problems was also emphasised among the Muslim clergies.

“The first thing once a man and woman have agreed to get married is that they will attend premarital counselling. The marriage counselling is very important and helpful for our youth these days and we have had examples where it is through the counselling that potential issues are identified and handled. Such wards off future problems as much as possible.” (FGD Muslim Clergy; man 3)

4.4.3.3 Family Life and HIV Education (FLHE)

The provision of Family Life and HIV Education (FLHE) within the secondary school curriculum was seen by some of the participants as constituting a form of preconception care while others viewed the program as one into which preconception services could be added.

“There are some programs we are running in secondary schools now that are under family life HIV education, sex education is also there and some other topics. I think this one also can be incorporated into that, so that they will have the knowledge before going into higher institution” (Policy Maker State, 7)

“FLHE is already giving preconception care. We are giving sexual and reproductive health information that are imbued with life skills and then HIV counselling” (Policy Maker National 3)

“I know that even part of the curriculum of secondary school girls includes physical and health education wherein they are taught about simple things like hygiene, and nutrition, balanced diet and so on. That is the only place, I can think of in our environment where such care is being given” (Tertiary care level Paediatrician)

4.4.3.4 Services provided by non-governmental organisations (NGOs)

The participants opined that some non-governmental organisations that provide reproductive health services should be able to provide preconception care given the type of services available in such organisations.

“I’m not aware of any functional program on preconception care. May be in some places like Association for Reproductive and Family Health (ARFH). I’m not sure of the programs

they have but I know that they have programs for adolescents and youth, but I don't know if they actually go deeply as to do preconception care.” (Tertiary care level Public Health Nurse, Ob/Gyn)

“We have a lot of NGOs like ARFH. They are doing reproductive service. But a lot of patients still need awareness. Because a lot of them don't even know, they are not aware of these NGO's. Then I don't know if it is free or they pay for it” (Secondary care level Clinical Nurse)

“Yes, we do, but I wouldn't say it is well established. I wouldn't say it is as it should be. So, we have associations like ARFH and FHI. I know that they do give some form of this care. I know there are outreaches that give some of this care and I know that some organizations that have HIV screening also give some of this care.” (Tertiary care level Paediatric Cardiologist)

4.4.3.5 Some government-sponsored programs

In describing some preconception care services they had seen or heard of, some of the participants referred to government-sponsored outreach or screening programs. Although these were not called preconception care services by the providers, the participants felt that such services covered some aspect of preconception care.

“You wouldn't call it a preconception health service, but it is like there are some kind of programs that the government puts in place regarding that, not to say this is a preconception service that has all the packages that you need to have. We have youth friendly services, we have family planning clinics and then even when you go to clinic, health workers sometimes give health talk” (Policy Maker National 6)

“I think the main thing is that we haven't seen stand-alone programs or interventions in that line. It can be part of other interventions. For instance, when you do HIV counselling and testing, during the pre-test counselling, we use the opportunity to let the young people know what the body components are, it's an opportunity to educate them, especially in some parts of the country where you cannot really get them to discuss that, you can use it as an entry to the community. You tell them something like "you know, as a child when you are growing up, you don't want to get pregnant, there are things you could do, do you know your ovulation period" (Policy Maker National 5)

4.5 Discussion

This study aimed to document existing preconception practices in Nigeria. This is the first attempt to document the preconception practices found in the country. The practices highlighted include services provided within the health care system as well as cultural and religious practices that aim to ensure as well as improve maternal health and positive pregnancy outcomes. Pregnancy and childbirth have always been seen as important for the average African individual, whether man or woman although the responsibility is often placed on the woman as the one who carries the pregnancy and is therefore liable for the outcome. It is therefore understandable that the practices highlighted in this study appear to primarily focus on the woman.

The absence of a laid down structure or guidelines for preconception care came up repeatedly in the discussions with different participants. This buttresses Adesina et al's view that preconception care is not a routine service within the Nigerian health care setting¹⁴⁸. It has been documented that the lack of guidelines for preconception care leads to opportunistic rather than routine provision of service by health care providers^{25,154}. The services provided as stated by our study participants are often dependent on the ability of the provider to determine when there is a need based on the patient's previous obstetric history and pregnancy outcomes. Thus, preconception care services are sporadic at best within the Nigerian health system, depending mainly on clientele and the discretion of the provider. Patients who need preconception care as mentioned by the study participants include those who require blood pressure or blood sugar control due to hypertension or diabetes, sickle cell disorder and seizure disorder, among others. The presence of a large number of women in these categories has also been noted^{17,69}.

Health workers in this study described a few instances when patients requested for preconception care because they had been informed previously or because of some health condition that they had. This is in keeping with the findings from previous research around the country where some women in the higher educational and socioeconomic groups were more aware of the concept of preconception care and had requested for or used such services^{44,46,88}. Demanding for preconception care by the patients implies that such patients are prepared and making conscious plans for pregnancy⁷⁸. This is often not the case in Nigeria as pregnancies are largely unplanned or unintended at the time they occur^{69,155}.

The content of preconception care services described in this study included provision of information, education, and counselling. These were provided as part of general counselling in antenatal clinic settings or to patients as individuals during clinic encounters for other reasons. Thus, usually of benefit to subsequent pregnancies and not the first one. Some of the participants in previous studies in Ibadan⁸⁸, Kaduna⁴⁴ and Ile-Ife⁴⁶ who were aware of preconception care had reported receiving their information from antenatal clinics. Medical check-up and screening were also mentioned as being an important aspect of preconception care. Referral for medical check-up could be provided as part of premarital counselling for couples who are about to get married. Some government outreach and screening programs targeted at improving population health also provide screening services.

Programs described as having similarity to preconception care services in this study included some traditional, cultural, and religious practices which addressed women's preconception health. These practices are particularly addressed to women who are preparing for marriage. Older women in the family and community teach the younger women what they need to know based on personal experience. Programs that include men are the premarital counselling offered by religious groups. Such premarital counselling sessions often include referral for investigations and screening to ensure compatibility and address any health issues that may affect pregnancy outcomes. Premarital health screening has been documented in Malaysia and China^{24,127}. The Malaysian program includes a premarital HIV screening and general wellness program for men and women of reproductive age to ensure a safe pregnancy¹²⁷. In China, the premarital health check including medical examinations and health education as part of preconception care was required up till 2003 when it was abolished in favour of an upgraded preconception care guideline within the country's maternal and child health services^{24,126}.

Elements of preconception care services are believed to be offered within the secondary school settings through the Family Life and HIV Education (FLHE) curriculum in the country. The FLHE curriculum aims towards HIV prevention through improved awareness and education¹⁵⁶. The curriculum includes family life, sex, environmental, nutritional and health issues which are integrated with HIV prevention messages into different aspects of the educational syllabus^{156,157}. It is therefore not surprising that some participants assumed that preconception care would be part of the contents within the FLHE curriculum. The fact that the curriculum already addresses

reproductive health issues is an opportunity to provide preconception counselling to adolescents within the school setting.

The limitation of this study is the fact that it was carried out in southwest Nigeria which is dominated by the Yoruba tribe. The practices highlighted here may therefore not be fully representative of other tribes in the country. However, Ibadan where the study was conducted is metropolitan and some practices among other tribes such as the traditional fattening room which is a practice in the South East region of the country was also described.

4.6 Conclusions

This study explores preconception practices among women and men in Nigeria. Although there are no routine preconception care services within the health system nor are there guidelines or structures for preconception care, health workers provide preconception care services when there is need for it. Furthermore, some traditional and religious practices aimed at improving pregnancy outcomes fall within the bounds of preconception care. This study highlights the need for guidelines and a structure for preconception care services in the country. Such guidelines can incorporate the existing forms of care that are not within the health system such as premarital counselling and the fattening room practices. This will help to improve maternal health and pregnancy outcomes as well as reduce the burden of pregnancy-related maternal and child morbidity and mortality in the country.

Chapter 5

5 **Paper 2:** *Exploring the perception of and attitude towards preconception care service provision and utilisation in a South Western Nigerian community – A qualitative study*

**This paper has been published in African Population Studies 35 (1), 5230-5242*

5.1 Abstract

Hospital-based, quantitative studies in Nigeria show low levels of knowledge and use of preconception care (PCC) services. This study aimed to explore the perception of and attitude towards PCC in a southwestern Nigerian community using qualitative methods.

During 2018, 57 adult women and men were purposively selected for focus group discussions (FGDs) and key informant interviews (KIIs) held with one female and one male community leader in Ibadan North Local Government Area, Oyo State, Nigeria. The FGDs and interviews held within the community were digitally recorded, transcribed verbatim and analysed thematically using MAXQDA v2018.

The participants expressed their opinions about PCC placing it in the context of a marital relationship. PCC was described as important for addressing the effects of possible exposures that may affect pregnancy and for ensuring a positive pregnancy outcome. The barriers to PCC uptake mentioned included lack of awareness and prohibitive cost of service. Expressing their willingness to use and promote the use of PCC, they also stated the need to improve awareness at community level to ensure uptake of the service.

5.2 Introduction

The World Health Organisation (WHO) emphasises that the preconception period is critical in reducing pregnancy complications for women and improving birth outcomes⁷. Evidence from life course epidemiology studies has shown that the intrauterine environment determines the risk of chronic disease in later life^{79,158,159}. The intrauterine environment and foetal development is influenced by factors like parental lifestyle including maternal and paternal nutritional status, diet and environmental exposures which can be modified in the preconception period^{25,79}. In addition, evidence from both animal and human experimental epidemiological research has shown that changes in the sperm genome can occur due to men's environmental and lifestyle exposures^{160–164}. These genetic changes have been associated with low sperm motility, increased time to pregnancy and occurrence of birth defects^{162–165}. The preconception period is a critical window when these lifestyle issues can be addressed while optimising both maternal and paternal health to improve reproductive health outcomes^{79,166}.

Preconception care (PCC) has therefore been globally advocated as part of the life-course approach to control noncommunicable diseases^{79,167,168}. The WHO defines PCC as the provision of biomedical, behavioural and social health interventions to women and couples before conception occurs, aimed at improving their health status, and reducing behaviours and individual and environmental factors that could contribute to poor maternal and child health outcomes⁷. PCC is therefore a set of preventive interventions for women of reproductive age and their partners aimed at improving pregnancy outcomes⁹⁰. The PCC package includes three core components viz: health assessment (i.e., screening), health promotion (counselling) and interventions for the treatment and management of pre-existing conditions for risk reduction^{7,108}. PCC also includes reproductive life planning which assists individuals to decide if, when and how many children they want to have while ensuring health is optimized prior to conception^{5,169}. Preconception interventions have been implemented in developed countries such as the United States of America and across Europe and have the potential to mitigate many of the preventable causes of maternal and child morbidity and mortality^{25,79,90}. These interventions include promoting reproductive health, screening and management of chronic conditions, substance abuse and lifestyle changes, nutritional supplementation and prevention and treatment of infections¹⁰⁹. Some countries including Australia, Hungary, Netherlands and Sweden offer PCC services at the Primary Health Care (PHC)

level ^{162,170}. PHC preconception interventions include risk assessment, therapeutic (e.g. folic acid supplementation and immunisation) and behavioural (e.g. smoking cessation and exercise) interventions ^{34,171,172}.

Although interest in PCC has increased globally in the past decade, it's uptake is low or almost non-existent in most African countries including Nigeria ^{44,46,84,89,132,146}. Cross-sectional studies in parts of Nigeria, Ethiopia, Sudan and Egypt have linked this low uptake to lack of a specified PCC service, low utilisation of maternal health services such as antenatal care and family planning, low level of education and lack of spousal support ^{29,84,87,89,93,146}.

Nigeria has a need for PCC given the increasing prevalence of noncommunicable diseases among women of reproductive age which predispose them to pregnancy complications and poor birth outcomes ^{3,49}. For instance, the prevalence of hypertension among women 20 years and above was estimated at 25.2% in 2010 and projected to rise to 29% by 2030 ⁵⁰. However, a systematic review of studies on hypertension in Nigeria reported a crude prevalence of hypertension among adult women ranging from 10% to 47.3% in 2015 ¹⁷³. Whereas the prevalence of diabetes mellitus is estimated to be 2.8% in the general population, a review of existing records placed the prevalence of gestational diabetes at 4.2% among urban women ^{49,51}. Furthermore, the maternal and child health indicators in the country are unsatisfactory^{3,174}. The maternal mortality ratio was 512/100,000 live births, lifetime risk of maternal death was 1 in 34, only 67% of women received antenatal care and 39% delivered in health facilities. The neonatal mortality rate was 39/1000 and was highest among women who were ≤ 20 years or ≥ 40 years, had birth intervals < 2 years or parity ≥ 7 years ³. Having PCC can play a role in mitigating these poor reproductive health indices through optimising maternal health and reproductive life planning. In addition, PCC is recognised as a primary prevention strategy for prevention of mother to child transmission of HIV in the National Guidelines for the Prevention of Mother to Child Transmission ¹⁴⁷. However, there is no specific PCC guideline while awareness and use of PCC services are low in the country as shown in previous hospital-based cross-sectional studies by Idris, et al in the north ⁴⁴, Olowokere, et al in the southwest ⁴⁶, Ekem et al in the southeast ⁹³ and Onasoga et al in the south-south ⁴⁵. A cross-sectional study among health care providers in northern Nigeria showed that while most had heard of PCC, only about a third knew up to 75% of the components while less than half had provided PCC services ⁴⁸. When PCC services are provided, it is often in an opportunistic manner when

knowledgeable patients demand for the service or when the health worker identifies a need based on a patient's reproductive history^{48,148,175}. The services provided in these cases include folic acid supplementation, counselling on lifestyle modification and screening for chronic diseases^{46,48,92,93}.

Most of the existing literature on PCC in Nigeria mainly used quantitative methods to assess the knowledge, awareness and utilisation among pregnant women in hospital^{46,93} or community settings^{44,45}. The opinion of men about PCC has not been documented previously although it has been shown that men's involvement and use of PCC improves the likelihood of women using the service^{162,165}. Furthermore, men's use of PCC services is also beneficial to their personal health^{90,162,164}. However, the belief that men are not interested in fertility issues hampers their inclusion in reproductive health research¹⁷⁶. This article was part of a larger study exploring the need for and feasibility of PCC in Nigeria. To achieve broader aim, this study was designed as a situation analysis describing what is known at the community level to identify the gaps that need to be filled in promoting uptake of PCC within the community. This study therefore used qualitative methods to explore perception of and attitude towards PCC service provision and utilisation among women and men in a southwestern Nigerian community.

5.3 Data and Methods

5.3.1 Study setting

This qualitative explorative study was carried out in Yemetu Ward 3 of Ibadan North Local Government Area (LGA) of Ibadan, Oyo State Nigeria. Nigeria is divided into 36 states and Oyo State is in the southwestern part of the country. The state is divided into 33 LGAs for administrative purposes. Ibadan North LGA is one of the five urban LGAs within the Ibadan metropolis which is the state capital. The Nigerian health system operates at three levels – the primary, secondary and tertiary in increasing order of specialisation. The Yemetu Ward 3 of Ibadan North LGA was selected because of the presence of the three levels of healthcare: The University College Hospital – a tertiary health facility, Adeoyo Maternity Hospital – a secondary health facility as well as 11 primary healthcare centres. All the facilities provide maternal and child health care services.

5.3.2 Study population

The total study population of 59 participants included 23 women aged 18 to 49 years and 22 men aged 18 to 59 years within the selected community; one female and one male community leader who are both members of the Ward Development Committee (which oversees the activities in the primary healthcare centres); as well as seven Christian and five Muslim clergy who provided premarital counselling within their religious groups. Anecdotal reports show that premarital counselling often includes discussions around the couple's plan for pregnancy and childbirth which may include preconception health information.

5.3.3 Recruitment of participants

The community members were purposively selected from Yemetu Ward 3 of Ibadan North LGA with the assistance of the male and female community leaders and grouped by sex, educational and marital status. In addition, the secretary of the Christian Association of Nigeria in the LGA assisted in recruiting volunteers among the Christian clergy while the male community leader assisted in recruiting Muslim clergy using a snowball approach.

5.3.4 Data collection procedure

This study collected information using focus group discussions (FGDs) among women, men, and religious leaders while key informant interviews (KIIs) were conducted with community leaders. The interview guides focused on awareness, and perception about PCC services and its utilisation. The participants were asked what they understood by the term “preconception care” then they were provided with the definition of PCC obtained from literature and asked the following questions: (1) Having heard the description of preconception care, do you believe it is necessary to have preconception health and care as part of the maternal and child health services in your community? (2) Would you be willing to use or support the use of such a service? (3) In your opinion, would women and men in the community be willing to use such a service? (4) Do you think your community would be willing to support the use of such a service? Responses to the questions were probed as needed during the interviews.

Four Master’s students from the Faculty of Public Health, University of Ibadan who had been involved in qualitative data collection were trained to assist in the data collection and supervised by the first author. They worked in two teams composed of one male and one female and used open-ended interview guides. While one of the team members facilitated the discussion, the other made field notes which were later integrated into the transcripts. Eight FDGs were held with the adult women and men, disaggregated by sex, marital and educational status (Figure 1). Each group had between five and eight participants.

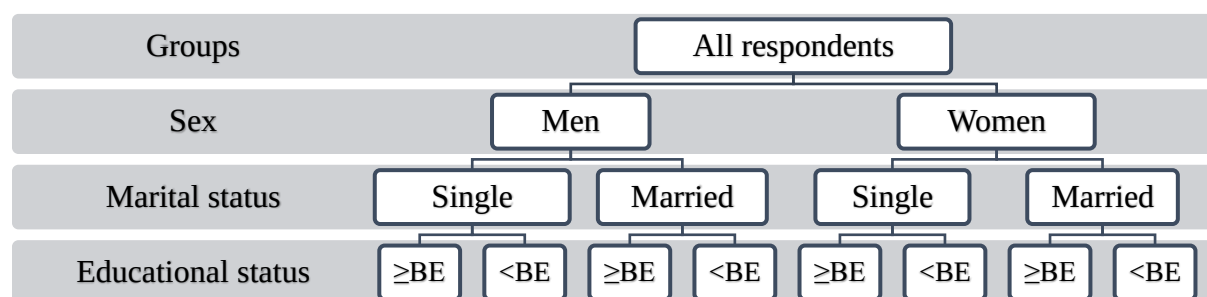


Figure 5-1 Disaggregation of study participants

(²BE – Basic education, nine years of schooling (also referred to as junior secondary school)).

Further, one FGD with the Christian religious leaders and one with Muslim clergy while KIIs were held with two community leaders – one female and one male. In total, there were 10 FGDs and two KIIs. All were conducted at venues within the community selected by the participants and digitally recorded. The data collection took place between April and December 2018. The interview questions were based on PCC literature and reviewed by experts in qualitative research. The guides were pretested, and ambiguous questions were rephrased. Interview guides were translated into Yoruba (the local language of the area) by a professional service and back-translated to ensure consistency of meaning. The interviews were conducted in Yoruba or English depending on the participants’ preference and the FGDs lasted about 45 minutes to one hour while the KIIs

² In order to meet the country’s manpower requirement for national development, the Universal Basic Education (UBE) which was launched in October 1999 made it compulsory for every Nigerian child to be educated free of tuition up to junior secondary school level ^{2,235}.

lasted between 25 and 30 minutes. The twelve audio recordings were transcribed verbatim (and translated into English where necessary).

5.3.5 Data management and analysis

All transcripts were deidentified, labelled with codes and stored in a password-protected laptop to which only the research team had access. Thematic analysis of the data was done using a hybrid of inductive and deductive coding on all the transcripts^{142,143}. Deductive codes were prepared from previous literature and the study objectives while inductive codes were identified while reading through the data. These codes were merged during analysis in the fifth step of the six phases of thematic analysis namely – familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report¹⁴³. The twenty-two codes generated were collated into six themes that formed the codebook. Data triangulation was used by convergence of information from the different groups of participants for defining the themes. All the data analysis was done using MAXQDA software for qualitative data analysis¹⁴¹.

5.3.6 Ethical considerations

Information sheets with the study details were provided to the participants. All participants understood that they could withdraw from the study at any time. Consent forms were signed for participation in the interviews and for voice recording. Ethical approval was obtained from the Oyo State Ministry of Health Ethics Committee in September 2017 (Approval number AD/13/479/565) and from the Wits Human Research Ethics Committee (Medical) in March 2018 (Clearance certificate number M171054).

5.4 Results

There were more females 23 and males 22 among the participants. The participants were all between 18 and 59 years. Among the FGD participants, there were 10 single women, 12 single men, 13 married women and 10 married men. All the married participants had children. About one-third of the participants had less than junior secondary education. There were 17 traders, 13 artisans and 12 students among the community members. The six themes identified from the discussions/interviews are shown in Table 5-1.

Table 5-1 Focus group discussion and key informant interview themes

Theme	Description
Perception about preconception care	<ul style="list-style-type: none"> • Context of preconception care • Description of preconception care
Perception about the importance of and need for preconception care	<ul style="list-style-type: none"> • Importance of preconception care • Who needs preconception care? • Men's need for preconception care • Potential benefits of preconception care
Opinions about what preconception care should cover	<ul style="list-style-type: none"> • Issues to address in the preconception period • Addressing existing health conditions
Possible barriers to the use of preconception care services	<ul style="list-style-type: none"> • Description of hindrances to the use of preconception care services
Willingness to use and support the use of preconception care services	<ul style="list-style-type: none"> • Participants' willingness to use preconception care services • Opinion about use of preconception care services in the community • Willingness to support the use of preconception care services in the community

5.4.1 Perception about preconception care

5.4.1.1 Context of preconception care

Anecdotally, pregnancy is culturally expected and acceptable only within marriage in most Nigerian communities. Hence most of the discussions centred around PCC for couples planning marriage or already married.

“We expect that 9 to 10 months after a couple's wedding, we should congratulate them on safe delivery.” [Muslim Clergy FGD, P5]

“For you to think that you want to conceive, it means that you are married. ... There are some medical issues that are obstacles to childbearing. The woman and her partner need to visit the hospital to find out if they are compatible in terms of their Rhesus factor, their blood group and their genotype.” [Single women FGD, ≥BE, P3]

5.4.1.2 Description of preconception care

The participants understood PCC to be care needed in preparation for pregnancy which included medical check-up. While medical check-up can be assumed to capture screening for chronic conditions, a component of the WHO package of PCC, there is more to the components than what the participants described. Other measures described as non-medical activities such as husbands' care for their wives, pampering and ensuring avoidance of stressful activities in preparation for pregnancy are not part of the components of PCC.

"It is the care where a woman does medical check-up before she gets pregnant ..."
[Community Leader, Woman]

"I think preconception care actually means necessary activities including both medical and non-medical activities the couple preparing for pregnancy should undergo to ensure a smooth process when the time of getting pregnant comes." **[Single women FGD, ≥BE, P2]**

"That's the normal care you give to your wife before she conceives. I believe preconception care should start immediately after marriage. You know, all manner of pampering, for a lady not to stress herself, make your wife happy by buying good stuff for her, taking her out. That's my own understanding." **[Married men FGD ≥BE, P2]**

Participants also stated that while the term PCC appears to focus only on women, the service should be for women and men to detect and treat any health problems ahead of marriage since they are both involved in the process of childbearing.

"I think hearing the word preconception to laymen, they will think that it's strictly for ladies. And it's beyond that. This preconception care is supposed to be for both men and ladies that are intending to be fathers or mothers in the future." **[Single women FGD, ≥BE, P1]**

".... This care needs to be carried out before couples get married at all." **[Married men FGD, ≥BE, P5]**

5.4.2 Perception about the importance of and need for preconception care

In describing the need to have preconception care, the participants expressed their opinion about the importance of PCC services identifying people who they believed may need PCC and sharing their views on its potential benefits.

5.4.2.1 Importance of preconception care

The participants stated their opinion about the importance of adequate care before pregnancy, expressing the view that PCC is needed for women who may have experienced certain exposures that may compromise their health and affect pregnancy outcomes.

“What we are talking about here is preconception care which we don’t really take as important in Nigeria and in Africa. ... I think if we have more awareness about preconception care in our local community and beyond, things will be better.” [Married men FGD, ≥BE, P5]

“PCC is very important, but our community members don’t know and it is endangering their lives. The lifestyle of many women before they get pregnant has compromised their health ... and this endangers them when they get pregnant.” [Christian Clergy, FGD, P1]

The importance of PCC for pregnancy planning, preventing unwanted pregnancy and avoiding unsafe abortions was discussed among the single women. They believed when a couple has made adequate plans on when they desire pregnancy, complications associated with unwanted pregnancies can be avoided.

“I think the couple has to avoid abortions. If they are not ready to be parents, they should not go into premarital sex. Because once the lady gets pregnant ... and they abort, this may hinder them from having a child in the future. With preconception care, they can plan better and avoid unwanted pregnancy” [Single women FGD, ≥BE, P1]

Another reason the participants believed PCC is important is that it helps in identifying potential problems in either the man or the woman, which may prevent a couple from achieving their pregnancy intentions or lead to infertility. Timely identification of the problem and provision of adequate treatment to the affected party can be done through preconception care. PCC was also described as being important because the baby’s health depends on the mother’s.

“It is important for the couple to go for check-up before marriage ... There are some women and men with health problems that ...if the check-up had been done right from the onset, they would have been informed about their partner’s inability to give birth.” [Single men FGD, <BE, P7]

“... the woman must receive proper care and be in good health before pregnancy otherwise it will be like putting the cart before the horse ...” [Christian Clergy FGD, P2]

“... the care of the baby depends on the mother. ... If the mother ... eats well balanced diet and does other necessary things at the appropriate time, the baby will be healthy.” [Single men FGD, <BE, P3]

The importance of checking a couple's genetic compatibility and determining their blood group, genotype and rhesus status prior to pregnancy was also emphasised. The danger of having children with the sickle cell disorder was mentioned. .

“It is important for a couple to know about preconception care when planning to get pregnant because both of them may belong to the blood group AS. So, they won't be caught unawares that their baby is SS at the eleventh hour.” [Single men FGD, <BE, P1]

“In terms of compatibility, rhesus compatibility can affect or lead to spontaneous abortion even if the person gets pregnant. This too can be checked through preconception care” [Married men FGD, ≥BE, P4]

“We have heard stories of babies who died immediately after birth or not too long after in the past. ... That shouldn't happen these days because we are learned. Immediately we start courting, the counselling and necessary tests should also be done.” [Married men FGD, ≥BE, P1]

5.4.2.2 Who needs preconception care?

Participants expressed the opinion that women, men and couples require PCC. In particular, they mentioned couples who had just begun courtship or were newlywed as needing PCC to identify and address potential problems early.

“Those who are planning to get pregnant, those that are married, those that are pregnant already and those that have even given birth and are still planning to have another baby all need preconception care” [Single women FGD, <BE, P3]

“Well, I will say preconception care is for couples. It is needed immediately they start courting. Once they start courting, they need counselling because they have to know each other's status.” [Married men FGD, <BE, P1]

5.4.2.3 Men's need for preconception care

There were differing opinions regarding men's need for preconception care. Some participants believed that men's preconception health is important. Others, particularly the married men felt that men do not need any form of care in the preconception period. One of the participants referred

to such care as “pampering” which is not necessary because men should be tough and provide for their families.

“It is important to consider the health status of the man. I’ve heard about men with low sperm count which can prevent them from getting a woman pregnant. A man needs to look into that. They also need good hygiene and proper nutrition ... Then if a man’s occupation causes some kind of stress it may affect him getting his wife pregnant.” [Single women FGD, ≥BE, P2]

“Either one is married or not married, it is good to receive preconception care. I liked eating sweets until a nurse told me that it causes watery sperm. In the case of a couple, they should know their medical conditions. For instance, the husband may have low sperm count that may lead to infertility.” [Single men FGD, <BE, P1]

“For men, the number one thing is you need to go out there, find what the family will eat and keep yourself safe. There is no need for any special care or pampering. As far as you are perfectly okay, I don't think there is any necessary care again for a man.” [Married men FGD, ≥BE, P5]

Participants opined that the kind of social and environmental exposures men have in the preconception period could affect pregnancy plans negatively. They stated that men who intend to get their wives pregnant should avoid substance use including alcohol and tobacco. They believed men must avoid multiple sexual partnerships which may predispose them and their wives to infections. and maintain their scrotal temperature within acceptable limits to ensure good sperm integrity.

“What a man eats can prevent him from getting a woman pregnant because if a man desires a child and engages himself in excess drinking of alcohol, smoking or taking some dangerous substances he will find it difficult to have a child. Also, a man who is a notorious womanizer, will find it difficult to get a woman pregnant.” [Married men FGD, ≥BE, P3]

“The man planning conception with his wife should avoid extramarital affairs; he can become infected and transmit the infection to his wife. He should also avoid alcohol consumption and eat moderately. Bad eating habit is harmful to the man's health, the woman's health and eventually affect the baby.” [Married women FGD, <BE, P1]

“I will talk about the temperature in terms of clothing and occupation. The temperature of the scrotum affects the survival of the sperm cells. For example, if someone is a long-distance driver, the temperature of the heat from engine can affect the quality of the sperm cells. Also, the emissions from the use of laptops and tight clothing can affect the quality

of sperm and when that happens, getting a woman pregnant will be difficult.” [Married men FGD, ≥BE, P4]

The married women stated that men’s need for medical check-up in the preconception period may depend on findings of their partners’ check-up.

“It is not as if both of them will go {for check-up} at the same time. It is the wife's diagnosis - the result of her test that determines whether the husband will be called upon.” [Married women FGD, <BE, P3]

5.4.2.4 Potential benefits of preconception care

The participants expressed their belief that PCC reduces the likelihood of delayed conception, complications in pregnancy like recurrent stillbirths, and increases the chances of a positive outcome.

“Preconception care is very important as it is the foundation for both the woman and the man to make the journey of pregnancy easy. It will minimize the occurrence of many complications during pregnancy and lead to positive outcomes at delivery.” [Christian Clergy, FGD, P1]

“With preconception care, delay in getting pregnant will not be there or when they want to give birth, even after giving birth there won’t be any problem for the child because both the husband and wife have taken care of themselves.” [Married women FGD, ≥BE, P4]

With the identification and treatment of pre-existing health problems through PCC, participants believed that subsequent pregnancies are more likely to result in healthy babies. In addition, the doctor and parents can plan and prepare ahead for potential health challenges in the baby when s/he is born.

“Then there will be no trouble or anxiety about what their child will be like. The health of the child will be assured as stated in the Quran. If they eat good food and drink good water, and they live in a good environment, they will have confidence in their own health and be well assured that both the man and the woman can be parents because they know their state of health is adequate.” [Muslim Clergy FGD, P4]

“If a couple that wants to get pregnant realize they have a health challenge, they should go to the hospital and do a check-up. The doctor will give the right diagnosis and appropriate treatment to both of them and advise them on the type of treatment the child may need after delivery.” [Community Leader, Woman]

“For women with HIV, they will start taking care of them from the early stage of pregnancy. I have a close relative that went for this before she got pregnant. ... If it had been someone that did not have any check-up, it would have spread to the baby.” [Married women FGD, ≥BE, P4]

“When you have the care, your mind will be at peace. ... And for the man as well, his mind will be at rest that ... I should be able to get my wife pregnant. And the woman is at rest that her baby will be healthy.” [Single women FGD, ≥BE, P4]

5.4.3 *Opinions about what preconception care should cover*

Participants expressed their opinions on health and non-health issues that can be addressed in the preconception period. The participants also mentioned methods of addressing the health conditions identified through medical check-up or screening.

5.4.3.1 **Issues to address in the preconception period**

The participants mentioned the need for newly married or intending couples to go for counselling. They believed this counselling should include encouraging medical check-up and discussing timing of sexual intercourse. Participants also stated their belief in the importance of women paying attention to their nutrition and hygiene as well as avoiding stressful activities, substance abuse and self-medication in the preconception period.

“The couple should go for counselling. I think there are some groups of people that do counselling about how to make babies and the things you are supposed to do during that period.” [Single women FGD, ≥BE, P4]

“A woman should keep herself safe and not do difficult jobs and watch her eating habits during her ovulation period. She needs to know the time of her ovulation and she needs to exercise.” [Married men FGD, <BE, P2]

“Concerning men’s health. ... Sometimes they have sex with their wives with the eagerness that “I want to get my wife pregnant” but they don’t know the actual time when she’s likely to get pregnant. I think they still need medical advice about that.” [Single women FGD, <BE, P3]

“I think for both the man and the woman, one of the primary things that they should not do at all is consumption of alcohol or use medications without being prescribed by their physicians. That is important for both parties.” [Single women FGD, ≥BE, P2]

“A woman must take caution with the consumption of medications before and during pregnancy. Even before pregnancy, she shouldn't take just any drug. ...” [Married women FGD, <BE, P5]

“We must maintain high level of cleanliness and we must create some time to rest. This is important for both the man and his wife. We must eat nourishing food like vegetables and fruits.” [Married women FGD, ≥BE, P2]

5.4.3.2 Addressing existing health conditions

The treatment of infections and other health conditions, use of folic acid, couple's genotype, rhesus and HIV status determination and diagnosis of hypertension made up the discussion on addressing pre-existing health conditions through PCC.

“There are some cases where a couple will not achieve pregnancy because they have not identified their problem. What they must do is go for test, ..., and if there is any {problem}, receive adequate treatment.” [Married women FGD, <BE, P2]

“A woman who is hypertensive before pregnancy may have a dangerous pregnancy. ... These things must be taken care of before the woman gets pregnant.” [Christian Clergy FGD, P2]

“... HIV test and other blood tests, urine test must be done and checking of blood pressure because hypertension is a popular thing now.” [Married women FGD, ≥BE, P4]

“In preconception care ... you can talk about the actual preparation of the reproductive system - getting rid of infections like urinary tract infections using antibiotics and also the use of folic acid.” [Married men FGD, ≥BE, P4]

5.4.4 Possible barriers to the use of preconception care services

In identifying possible barriers to PCC use, participants believed the assumption that hospital services are costly, hospital protocols and processes and fear of the outcome of their medical check-up may prevent people from accessing the service. Other barriers identified include cultural views about hospital services, preference for traditional medicine providers, religious beliefs and lack of awareness of PCC and its potential benefits.

“Many people assume that the hospital expenses are too high. Some say that their ancestors didn't go to hospitals, see any doctors or receive any injections so they can use herbs to

take care of the pregnancy, but this is inadequate knowledge. This is what the doctors were trained for. [Christian Clergy, FGD, P6]

“... They might even make jest that “what is this program meant for?” because they are not aware of the benefits. Some people are afraid of knowing their health status. ... Also, the norms, customs and religious beliefs of the people in the society may make them feel that this {preconception care} is not welcome.” [Single women FGD, ≥BE, P1]

“In the hospitals, there are a lot of protocols and things that must be done before a woman can be attended to. This may be viewed negatively and lead to people not wanting to use the service.” [Single men FGD, <BE, P4]

5.4.5 Willingness to use and support the use of preconception care services

Many of the participants expressed their willingness to support and use PCC services if it is provided in their community.

“If such a program exists in our community, I as a person will support it because we don't have to go far to get such a beneficial service.” [Single men FGD, ≥BE, P3]

Participants also gave their opinion on possible community support for PCC services and the need to raise awareness about the importance of PCC. They believed increased awareness will improve the willingness to support and use PCC.

“Our community will be willing to use and support the program because it is part of precautions against unwanted medical situations. Those who don't understand will say no and those who understand and know what it {PCC} means will say yes. If the majority say yes, then everybody will agree. That is why it is good to make them aware of the program.” [Married men FGD, ≥BE, P3]

The community and religious leaders stated their willingness to include PCC in the premarital counselling they provide to couples who are about to wed. They expressed the opinion that everyone who is aware of the importance of PCC should spread the information within their spheres of influence.

“I am one of the Ward Health Committee members for the health centres that care for pregnant women in this community. It is very important that I give advice on preconception care because in this community, we take anything relating to health as very serious and important.” [Community Leader, Man]

“If everyone who understands the importance of preconception care through western education or religion either Muslim or Christian shares the knowledge with the people around them, starting with their immediate family, the information will begin to go around. The whole community will be well informed till it covers the whole society and in the long run the nation.” [Muslim Clergy FGD, P3]

5.5 Discussion

This study explored the perceptions about and attitudes towards preconception care (PCC) among women and men in a Nigerian community. The novelty in this study is the inclusion of male voices in the discussion of PCC which has not been done in previous studies in the country. The participants gave their opinions on what they believed PCC is, describing its components and highlighting its importance and benefits to potential parents. There was general awareness of PCC, its importance and relevance to women and men and the potential benefits to families and communities. The level of understanding of PCC among the participants contrasts with the low awareness recorded in previous studies in the country ^{44–46,48,88,93}. Demonstrating an awareness of the requirements for optimal preconception health, the participants enumerated medical and non-medical preparations for pregnancy. Highlights of the discussions included addressing specific health issues in the preconception period; ensuring adequate nutrition; avoiding exposures that can have negative health impacts such as alcohol and substance abuse; maintaining good hygiene and planning for childbearing. These measures are consistent with the components of PCC described in literature ^{34,172}.

Regarding whom PCC should be provided for, participants stated that preconception preparations are essential for both women and men who intend to have children although, the term PCC appears to be targeted at women. While some of the men in our study believed that PCC includes pampering ‘delicate women’ and is not necessary for men, others identified the possibility of low sperm count which may affect pregnancy intention as necessitating PCC for men. These resonate with some European studies that showed lack of awareness of the biological importance of paternal preconception health ¹⁷⁷ and the importance of PCC for men to address exposures and lifestyle changes ^{145,171}. Previous studies have also shown that men would benefit from PCC for reproductive life planning, health risk assessment, health promotion and interventions to optimise their health ^{18,28,178}. In addition, PCC for men is also beneficial as it increases the likelihood of their female partners adhering to recommended lifestyle changes for improving preconception

health ^{28,162}. It is therefore important to continue to engage men in the discussion on PCC and incorporate their needs into PCC deployment in the country.

Furthermore, individuals who have known health problems were specifically mentioned as requiring PCC to optimise their health before pregnancy. This included persons with HIV, hypertension, diabetes and sickle cell disorder. The potential for reduction of delay in achieving pregnancy and addressing causes of infertility were also mentioned as instances where PCC can be useful. The prevalence of the sickle cell trait in Nigeria is 24% while about 2% of the population is living with sickle cell disorder ⁴⁹. Health challenges associated with sickle cell are therefore a reality for many of the participants and may explain its emphasis in the discussions. The issue of assessing compatibility before marriage was also well discussed. In addition, the increasing prevalence of these chronic noncommunicable diseases in the country ^{49–52} means that many of the participants have relatives on treatment for one or the other. Hence the consciousness of the health implications of such diseases in the discussions. This awareness can be a starting point for promotional campaigns on the need for PCC in the country.

The participants described benefits of having PCC for the parents, neonates and the community stating that treatment of identified health problems in the preconception period minimises the risk of complications during pregnancy and at delivery and improves the chances of positive pregnancy outcomes. Other studies have also shown that preconception interventions improve maternal health and birth outcomes ^{13,145,171,179,180}. In promoting PCC deployment in the country, the potential benefits as understood at the community level can be leveraged in the design of awareness campaigns.

Participants in the study felt that greater awareness and understanding of the benefits of PCC will influence the use of the service. However, they identified potential barriers to use to include cost of the service, hospital protocols and processes, cultural and religious beliefs, lack of awareness of the potential benefits, and fear of the possible outcomes of medical screening. Other studies have also identified similar barriers to the use of PCC services. Cultural and religious barriers, hospital protocols, lack of awareness of PCC and its benefits, and fear of the result of health screening have also been described as barriers to PCC use in other studies ^{81,145,171,181}. It is

important to bear these potential barriers in mind in the design and deployment of PCC services in the country.

5.6 Conclusion

This study shows that there is an understanding of the importance of preconception health and the need for PCC particularly for women at the community level in southwest Nigeria. There is also a positive attitude towards the use of PCC services although such services are not yet routinely available in the country. The fact that there is already some awareness of PCC, its importance and benefits at community level can be leveraged on in deploying routine PCC services. There is however a need to ensure awareness is raised on the biological importance of paternal preconception health especially among the men.

Chapter 6

6 Paper 3: *Health care providers perceptions about preconception care in Ibadan, southwest Nigeria – A qualitative study*

**This paper is in the first cycle of peer review in Maternal and Child Health Journal.*

6.1 Abstract

Objectives: Preconception care (PCC) is a recognised strategy for optimising maternal health and improving maternal and neonatal outcomes. PCC services are minimally available and not fully integrated into maternal health services in Nigeria. This study explored perceptions about PCC services among health care providers in Ibadan, Nigeria.

Methods: A case study research was done among 26 health care providers – 16 specialist physicians and nine nurses covering 10 specialties at the primary, secondary, and tertiary health care levels. In-depth interviews were digitally recorded, transcribed verbatim and analysed on MAXQDA using thematic analysis.

Results: Almost all participants stated that PCC services should be offered at all three levels of health care with referral when needed between lower and higher levels. Participants stated that although all people of reproductive age would benefit from PCC, those who had medical problems like hypertension, sickle cell disease, diabetes and infertility would benefit more. Participants opined that delayed health care seeking observed in the community may influence acceptability of PCC especially for people without known pre-existing conditions. All specialist physicians identified the relevance of PCC to their practice. They identified potential benefits of PCC including opportunity to prepare for pregnancy to ensure positive pregnancy outcomes.

Conclusions for practice: Preconception care is perceived as being more important for promoting positive pregnancy outcomes in people with known medical problems and is relevant to different specialities of medical practice. Provision of the service will require establishment of guidelines and uptake will depend on acceptability to community members who will benefit from the service.

6.2 Background

Strategies for improving reproductive health outcomes have gone through several paradigm changes over the years. The most recent is the continuum of care approach, recognised as an effective means of delivering reproductive, maternal, newborn and child health (RMNCH)^{10,14}. An effective continuum of care caters to the health needs of women and adolescents in two dimensions – [a.] time (throughout the life cycle i.e. before, during and after pregnancy) and [b.] place (wherever care can be provided i.e. households, communities and health facilities)^{10,14}. Preconception care (PCC) is a risk reduction strategy that fills the gap in the continuum of care approach to RMNCH by catering to the health needs of the adolescent girl and woman before and between pregnancies. PCC has been recommended by the World Health Organisation (WHO), the US Centres for Disease Control and Prevention (CDC) and the American College of Obstetricians and Gynaecologists (ACOG) for both women and men in the childbearing ages as a strategy for optimising parental health and improving maternal and neonatal outcomes¹⁵⁴. PCC is defined as *“the provision of biomedical, behavioural and social health interventions to women and couples before conception occurs. It aims at improving their health status and reducing behavioural, individual and environmental factors that contribute to poor maternal and child health outcomes”*⁷. PCC includes preventive (e.g. vaccinations and genetic screening), therapeutic (treatment for chronic medical conditions) and behavioural (e.g. alcohol reduction and smoking cessation) interventions^{81,182}. For PCC to be effective, the services must cover the entire reproductive period, an approximate four-decade span in a woman’s lifetime. By implication, every encounter a woman has with the health system should include counselling on appropriate medical care and healthy behaviour¹⁸².

Thus, health care workers, irrespective of their specialty and level of healthcare, need to be aware of PCC and its components. They should also understand the need among their clientele in order to be able to provide counselling and referral if necessary. Previous cross-sectional studies among health workers in the Netherlands and United Kingdom showed that their ability to provide PCC services was influenced by their attitudes and perception of the service^{73,154}. Systematic reviews of research among health workers showed that provision of PCC was hindered by lack of familiarity with the concept and its potential benefits. Negative attitudes towards PCC and poor conviction of its importance were also noted^{73,154}. Other quantitative studies in parts of Europe, Canada and the USA have also shown that confusion about who should provide PCC^{81,170,183},

perception of lack of opportunity to provide PCC¹⁸⁴ and lack of motivation to provide PCC are barriers to provision by health care workers⁸⁰. On the other hand, good knowledge and having a positive attitude towards PCC have been identified as facilitators of provision of PCC services by health care workers^{154,170,183,185}.

Globally, a large proportion of maternal deaths are attributable to indirect causes (i.e. pre-existing medical conditions) including cardiovascular diseases and hypertension, endocrine disorders like diabetes, chronic respiratory diseases and cancers¹⁸⁶. In sub-Saharan Africa, this proportion is 28.6% while HIV attributable maternal deaths are 6.4%¹⁸⁶. Nigeria, with a maternal mortality ratio of 576/100,000 live births, accounts for almost 20% of global maternal deaths^{1,187}. Pre-existing medical conditions including hypertension and diabetes which are associated with the indirect causes of maternal deaths are prevalent and increasing in magnitude among women of reproductive age in Nigeria^{49–52}. PCC can provide an important link between services providing maternal care and those managing these pre-existing medical conditions.

However, preconception care services are still evolving in Nigeria. There is evidence that health workers sometimes provide preconception care services although most studies that have assessed PCC in the country have been on the awareness and utilisation among women within health facilities^{44–47}. In one of these studies, participants attributed their lack of awareness to the fact that health care workers do not discuss PCC during routine health visits⁴⁶. Moreover, participants who had some knowledge about PCC had obtained information from antenatal clinics during their previous pregnancies^{44,46,88}. A cross-sectional study among doctors and nurses in a teaching hospital in northern Nigeria reported 83.3% awareness and 23% with knowledge of up to three-quarters of the components of PCC⁴⁸. Given that the likelihood of using PCC services is dependent on health care workers' knowledge, attitudes and providing information on PCC to their patients¹⁵⁴, this study explored the perceptions about PCC services among health care workers, as well as their opinions about acceptability of PCC services in the Nigerian health system.

6.3 Methods

6.3.1 Study design and setting

We used a case study approach to explore the perceptions of health care workers at various levels of the Nigerian health system about PCC. Case study approach to qualitative studies is appropriate

for illustrating specific issues in a real life contemporary setting^{134,188}. We explore PCC within the Nigerian health system from the perspectives of health care providers at the three levels of the health system. The Nigerian health care system runs at three levels – tertiary, secondary and primary – managed in a concurrent manner by the three tiers of government (federal, state and local government) as follows: The federal government provides strategic oversight and manages tertiary health care which is provided by the teaching hospitals; the states have a technical function and provide secondary health care in the state specialist hospitals while the local government level is operational and includes primary health care services provided at the grassroots level⁵⁷. A two-way referral method operates within the health system with patients referred to higher levels for more specialised services and stepped down to lower levels when the specialised services are no longer needed⁵⁷.

From its definition and identified components, PCC includes primary prevention strategies through screening, vaccinations and behavioural modification^{7,81,182}. These services are provided mainly at the primary health care level although they are also available at the secondary and tertiary levels. PCC also includes treatment of pre-existing medical conditions^{7,81,182} which are provided mainly at the secondary and tertiary levels. With the two-way referral system, such services may be provided at the primary care level. Ibadan North Local Government Area (LGA), one of the five urban LGAs in Ibadan metropolis, Oyo State, southwest Nigeria was purposively selected because it has health facilities at the three levels of health care. These include: The University College Hospital (UCH), which provides tertiary services for the state and most of the south-western region of the country. All medical and surgical specialties are available in the hospital. The Adeoyo Maternity Hospital and some private health facilities within the LGA provide secondary maternal and child health services within the obstetric/gynaecology and paediatric specialties. Primary health care services are provided by the Primary Health Centres (PHCs) of which there are 10, one located in each of the 10 political wards in the LGA. The Medical Officer of Health (MOH), who is a Public Health physician is the only medical doctor in the LGA and is supported by other cadres of health workers including nurses, midwives, and community health officers. The Director of Maternal Health Services assists the MOH in providing oversight for maternal and child health services in the LGA. Each of the PHCs is headed by a clinical nurse who provides maternal and child health services at the ward level.

6.3.2 Participant characteristics and sampling

The aim was to determine the perception about preconception care from the potential providers and specialists whose clients are more likely to require preconception care for management of pre-existing conditions. The health workers selected for this study were therefore specialist physicians and nurses/midwives whose specialty includes care for women and men within the childbearing years. Paediatricians were also included because the health of newborn babies depends on their parents' health. These specialists are found more at the tertiary level. We set out to interview a minimum of 12 physicians, that is at least one physician from each specialty and one from the secondary and primary levels of care. The numbers selected were based on the services available at each level of health care available in the LGA as described above. In addition, we planned to interview at least two nurses at each level of the health system. At the tertiary health facility, specialist physicians who were fellows or trainees at the senior registrar level in Cardiology, Endocrinology, Family Medicine, Haematology, Nephrology, Neurology, Obstetrics & Gynaecology, Paediatrics, Psychiatry and Public Health were interviewed. These specialists were selected due to their relevance to the management of many of the pre-existing medical conditions that require PCC services. Public health nurses and clinical nurses who were at least senior nursing officers also participated in the study. Selection of the more senior cadre of nurses was because nurses are often transferred between specialties. Senior nursing officers would thus have had the opportunity to work in more than one of the specialties of interest. At the secondary level of care, two Obstetrician/Gynaecologists were selected, one from the Adeoyo Maternity Hospital, a government-owned hospital and the other from a private hospital where assisted reproductive services are provided. One Paediatrician and one clinical nurse were also selected from the Adeoyo Maternity Hospital. The Medical Officer of Health who is the only physician at the LGA, the Director of Maternal Health Services in the LGA (who is also a public health nurse) and one clinical nurse who covers the PHC at the LGA headquarters were interviewed at the LGA level.

6.3.3 Data collection process

Data collection was supervised by the first author, conducted by four Master's students from the Faculty of Public Health, University of Ibadan, Nigeria who were experienced in qualitative data collection and had been trained for the purpose of the study. These research assistants were younger and less experienced in biomedical sciences than the participants. The researchers had no

direct relationship with the participants prior to the study and contact was only made during the interviews. The first author set up the time for the face-to-face interviews with the study participants but was not directly involved in the data collection. The first author opted not to conduct the interviews to avoid desirability bias affecting the responses as she is a Community Physician and had worked with many of the participants. The interviewers' younger age and lower qualification compared to the participants may have influenced their ability to probe on some of the points raised by the participants. The effect of this was minimised by debriefing the research assistants after each interview. We went through their field notes and made reflective diaries which complemented the transcripts. Issues that could have been probed further were discussed for inclusion in subsequent interviews.

All the health workers approached for the study agreed to participate and were interviewed at their convenience in their offices. The research assistants worked in pairs with one facilitating and the other taking field notes. Each interview, lasting an average of 30 minutes, was digitally recorded in English language. In-depth interview guides containing open-ended questions with probes were used for data collection. The questions were developed for this study using information from existing literature. The main interview questions were: What form of care should be provided for women of childbearing age that differs from other patients seen in your practice? Would you say men require similar care? What do you understand by the term preconception care? A definition of preconception care was provided to the participants here following which they were asked: Would you say there is a role for preconception care services in your practice? For which category of people?

6.3.4 Data management and analysis

The interviews were transcribed verbatim by the research assistants who conducted the interviews. The transcripts were read by the first author, integrated with the field notes and compared with the audio recordings individually to ensure there was no missing information. Transcripts were returned to the participants for review after editing and their corrections duly implemented. A hybrid of inductive and deductive coding were used by the first author in the development of the codebook for thematic data analysis^{142,143}. Deductive codes were derived from the objectives and study instruments while inductive codes were developed through reading the transcripts. To

enhance trustworthiness and avoid introduction of the researchers' biases into the analysis, a sample of the transcripts and the study objectives were given to two independent coders who are not co-authors on this article but have some experience in qualitative research. The coders identified recurring patterns in the data and developed a set of codes. The initial set of twenty-seven codes generated were merged into six themes to form the codebook. A third researcher who had more experience in qualitative research than the first set of independent coders also reviewed the codebook with the transcripts to achieve inter-coder agreement. A consensus on the themes and subthemes was reached through discussion between the independent coders and the authors. The first author applied the codebook to the transcripts and suitable quotes were selected for the paper. All data analysis was done using MAXQDA 2018 qualitative data analysis software. The themes generated from the data are shown in Table 6-2. The Standards for Reporting Qualitative Research (SRQR) checklist guided the preparation of this article¹⁵³.

6.3.5 Ethical considerations

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the University of Ibadan/University College Hospital (UI/UCH) Institution Review Board Ibadan, Nigeria (Clearance number UI/EC/17/0390) and the Wits Human Research Ethics Committee (Clearance number M171054).

6.3.6 Study Limitations

Having male representation among the nurses in this study may have provided a balance to the views provided. In our setting however, it is uncommon to find male nurses outside the theatre or emergency department. Further, specialties like Ob/Gyn, Neurology, Nephrology and Cardiology have more male than female doctors which reflects in the study population. It was therefore not possible to ensure complete gender balance among the participants.

6.4 Results

Twenty-six in-depth interview transcripts were analysed. There were nine nurses and seventeen specialist physicians who had worked for between one and 32 years (median 13.5years) in the health system. Three interviews were held at the primary level, five at the secondary level and 18

at the tertiary level. Participants' details are shown in Table 6-1. The main themes generated from the data are shown in Table 6-2.

Table 6-1 Sociodemographic characteristics of the study participants

Sociodemographic characteristics		Doctors	Nurses	Total
Sex	Male	12	0	12
	Female	5	9	14
Age	26-35	1	2	3
	36-45	9	4	13
	≥46	7	3	10
Specialty	Cardiology	1	—	1
	Clinical Nursing	—	4	4
	Endocrinology	1	—	1
	Family Medicine	1	—	1
	Haematology	1	—	1
	Nephrology	1	—	1
	Neurology	1	—	1
	Obstetrics/Gynaecology	5	—	5
	Paediatrics	2	—	2
	Psychiatry	1	—	1
	Public Health	3	—	3
	Public Health Nursing	—	5	5
Cadre	Fellow	14	—	14
	Senior Registrar	3	—	3
	Senior Nursing Officer	—	5	5
	Chief Nursing Officer	—	2	2
	Deputy Director of Nursing	—	2	2
Level of Healthcare	Primary	1	2	3
	Secondary	3	2	5
	Tertiary	13	5	18

Table 6-2 Themes generated from the data

Themes	Description/Subthemes
Scope of preconception care	<ul style="list-style-type: none"> • Description of PCC • Components of PCC • Personnel who should be involved in provision of PCC
People who require PCC	<ul style="list-style-type: none"> • Participant's description of people who require PCC
Where PCC services can be provided	<ul style="list-style-type: none"> • Type of facility for provision of PCC services • Level of health care for PCC services
Acceptability of preconception care	<ul style="list-style-type: none"> • Participant's perceptions of the acceptability of PCC to community members
Relevance of PCC to specialties	<ul style="list-style-type: none"> • Opinions about the importance of PCC to clients seen in each participant's specialty
Possible benefits of PCC	<ul style="list-style-type: none"> • Descriptions of the potential benefits of PCC

6.4.1 Scope of Preconception Care

The health workers provided definitions of the scope of services that they understood PCC to cover. They described PCC in terms of its components and who should be involved in its provision.

6.4.1.1 Description of PCC

While some of the participants referred to PCC as care specifically for women, others described it as care for both women and men or couples who are preparing for childbearing.

“Preconception care is care that is given to women of childbearing age before they get pregnant” – Tertiary care level, Public Health Nurse (Ob/Gyn)

“Preconception care is a form of care given to people, men and women prior to the time that they plan to get pregnant as a form of preparation” – Primary care level, Public Health Physician

From the perspectives of some of the participants PCC can be described in relation to the timing of conception as care provided at least three months before a woman gets pregnant.

“In my own opinion, preconception care is any care that is given to women of reproductive age at least three months before they get pregnant” – **Secondary care level, Ob/Gyn**

Other opinions about PCC described it as care provided for couples who have peculiar health problems that may affect pregnancy. In such instances, participants described PCC as care to address health problems before pregnancy occurs.

“Pre-conception care refers to the services you offer a couple prior to pregnancy especially because there are health issues that may influence the anticipated pregnancy. Services such as medical, counselling services, indicated by peculiar health issues that could potentially affect the pregnancy.” – **Tertiary care level, Neurologist**

Other participants who gave their description in terms of the timing of PCC, stated that such care should start as early as possible in a girl’s life. In this instance, the description of PCC was provided in terms of service content with emphasis on the need to provide preventive measures like vaccinations and HIV prevention in adolescence.

“Preconception care is the care that women receive prior to conception and should be given right from school. If we take the Nigerian setting, right from the secondary school, a woman should have tetanus toxoid vaccination, her nutrition, sexual and reproductive care generally and how she would not contract HIV are part of preconception care. So, preconception care starts as early as possible and includes every care given to a girl child before pregnancy.” – **Tertiary care level, Cardiologist**

6.4.1.2 Components of PCC

The participants gave their opinions on what the components of PCC should be, identifying health education and counselling on adoption of a healthy lifestyle through improved nutrition, use of folic acid and immunisation against diseases like tetanus. They further mentioned the need to determine haemoglobin genotype and rhesus compatibility, identify and treat diseases including sexually transmitted infections and HIV, as well as planning towards a desired number and spacing of children.

“The elements of preconception care may be primordial, primary or secondary. For primordial you tell a woman to take folic acid before conception to prevent neural tube defect in the baby. For primary, you tell the woman to take tetanus toxoid, have hepatitis screening and immunisation before she gets pregnant. If the woman is rhesus negative, you give her certain medications to prevent complications. For secondary care, women who

have delay in getting pregnant can be offered curative treatment after identifying the cause.” – Primary care level, Public Health Physician

“Preconception care ... starts with a girl or a boy determining his or her genotype. Those who have been diagnosed with noncommunicable diseases at a very young age (less than 40) either hypertension or sickle cell disease need to take good care of themselves, using their medications appropriately. We take history of congenital abnormalities in the family; ensuring they don’t have any sexually transmitted disease prior to conception, take folic acid, eat balanced diet and see health personnel for preconception counselling. It also includes family planning” – Tertiary care level, Public Health Physician

“It is composed of health education, immunisations, supplementations for example, of folic acid which we normally give when they come to ANC, but it is late then, folic acid should be given preconception. Screening for HIV, diabetes, hypertension, syphilis and hepatitis, genotype and blood group; these are the prongs that constitute preconception care.” – Tertiary care level, Paediatric Cardiologist

6.4.1.3 Personnel who should be involved in provision of PCC

The participants’ views varied regarding who should provide PCC services in the health care setting. The need for a multidisciplinary approach was brought forward as participants described services they believed should be provided by different specialties. Regarding primary responsibility for PCC however, some participants stated that family physicians should oversee provision of PCC services since they are usually the first contact most people have with the health system. Others believed PCC as a specialised service and should be provided by obstetricians and gynaecologists who are primarily responsible for women’s reproductive health.

“As a paediatrician, I would say the paediatrician is the best to provide the service but, not to be biased, Family Physicians are in the best position. They are the ones people go to when they want to do all the entry things {i.e., First point of contact in hospital settings}. The Paediatricians should be involved too, Obstetricians come later then everybody involved in Health Education. It is multidisciplinary. We need politicians as well because they formulate policies.” – Tertiary care level, Paediatrician

“Doctors usually gynaecologists, nurses, the whole team that provides antenatal care can also provide preconception care.” – Secondary care level, Ob/Gyn

“Actually, preconception care should be run by the obstetrics and gynaecological practitioners – the doctors, the nurses – because that is their area not just the general practitioner” – Tertiary care level, Clinical Nurse

On the other hand, some participants expressed the opinion that any doctor or health care provider who provides care for women should be able to offer PCC.

“To the best of my knowledge, it is the healthcare provider or doctor who is the first person you see in the clinic. I am not aware of any particular specialist for preconception care. I think every healthcare provider should be able to do provide preconception care.” –

Tertiary care level, Nephrologist

With regards to providing preconception counselling particularly to adolescents and youth, some of the public health specialists expressed the opinion that teachers should be involved in PCC, particularly with counselling and health education.

“If it is for education or counselling, I believe the teachers in secondary schools should be involved. Then when it comes to rendering particular care, health workers should be involved too. If you come in contact with any youth, {either as} health workers or teachers should be able to provide this type of care either in the form of counselling {as teachers and health workers} or actual care {as health workers}” –

Tertiary care level, Public Health Nurse

6.4.2 People Who Require PCC

Generally, most of the health workers interviewed indicated that all women and men in their childbearing years should have preconception care. In their opinion, this includes those who are preparing for their first pregnancy and those who have had children before but will like to have more. They believed that such people also need PCC to prepare for subsequent pregnancies.

“Women of reproductive age group will benefit more from preconception care, from adolescents to young adults, single or married because it is not everybody who gets married that easily gets pregnant immediately. Then it is also meant for people who after conception and birth need to know what to do to prepare themselves for subsequent pregnancies”. –

Tertiary care level, Public Health Physician

Some of the participants stated that every girl child should be included in the provision of PCC since they all have the potential for childbearing, and it is impossible to say who may or may not want to have children when they grow older.

“It is required for every girl child. How many people know whether they are going to get married or get pregnant? So, everybody should have it.” – **Tertiary care level, Paediatric Cardiologist**

Further, they provided descriptions of circumstances where they believed PCC may be very crucial because of the possibility of negative pregnancy outcomes. Their descriptions included instances when couples have health challenges that may affect their ability to conceive or impact negatively on pregnancy outcomes. The health challenges mentioned include genetic conditions, hypertension, diabetes and epilepsy for which women require medications that may need to be modified before pregnancy to prevent abnormalities in the baby.

“I think preconception care is required by women and their partners who may have a peculiar health challenge, for instance, a genetic condition that is potentially transmissible to their children. Women of reproductive age group who have epilepsy also need preconception care along with their partners because there are anti-epileptic drugs that are potentially teratogenic {can cause abnormalities in the baby}.” – **Tertiary care level, Neurologist**

“It’s for women who have risk factors for having a child with congenital problems or pregnancy with adverse outcomes. Patients with high blood pressure need to have their blood pressure stabilised. Patients who are on drugs may need to change their drugs prior to conception because many of the drugs predispose those patients to congenital abnormalities. Those who are diabetic and are on oral hypoglycaemic agents you want to switch to insulin.” – **Tertiary care level, Ob/Gyn**

Participants stated their opinions on the need to determine haemoglobin genotype compatibility in the preconception period to avoid having babies with sickle cell disorder (Sickler).

“In cases of genotype incompatibility (the AS, SS), through preconception we can guide them on the kind of person to marry. Somebody that is SS should not marry somebody that is AS otherwise they have at least 50% chance of having a Sickler and you know the burden of taking care of a Sickler. Similarly, those who are AS should marry AA, so they don’t have children who are Sicklers.” – **Tertiary care level, Clinical Nurse**

6.4.3 Where PCC Services Can Be Provided

6.4.3.1 Type of health facility for provision of PCC services

Secondary level service providers and public health specialists expressed the view that facilities providing maternal health services are an appropriate location for PCC services. They indicated that any facility that provides family planning services, antenatal and delivery care are centres where potential clients for PCC already receive care.

“Preconception care should be provided in any centre where care is offered to women of reproductive age since they are the ones who need to access preconception care. Any centre where they offer antenatal services, obstetrician and gynaecological services, family planning, mother and child care, are potential places where clients that will benefit can be found.” – **Secondary care level, Ob/Gyn**

The common opinion among the tertiary level specialists was a specialised clinic where people of reproductive age can be referred for preconception counselling. The proponents of this idea believe that since PCC is a specialised care mainly for people who are otherwise healthy, potential clients may not want to use the regular health facilities catering to those who are ill.

“I think the best way to do it is to have a standardized clinic for this age group. So, any physician that comes across people of this age group will refer them to that clinic, not because they are ill but for them to be given some information on preconception care.” – **Tertiary care level, Family Physician**

Some of the participants highlighted a general reluctance to engage with health facilities in the community. In their opinion, many people at the community level are hesitant about the use of health facilities unless it is necessary. These participants suggested the provision of PCC – particularly health education and information services – through community outreaches, social media outlets and youth friendly health centres.

“Well, it would have been a good idea for preconception care to be rendered in a place like the obstetrics and gynaecology clinic, but our culture may not allow that. We may have to go out to the schools or community since people most likely will not come to the hospital until they have problem trying to get pregnant. There can be community outreaches to discuss things like blood group, blood level, genetic counselling which many of them need” – **Tertiary care level, Public Health Nurse**

“Preconception care can be provided in youth friendly centres I mean clinics where youth, teenagers and adolescents can walk in. It is a very good avenue where we can counsel, screen and provide the necessary information. On the social media, awareness can be created on reasons why women need to check themselves before pregnancy.” – **Tertiary care level, Clinical Nurse**

6.4.3.2 Level of health care for PCC services

The participants expressed their views about the place of PCC within the three levels of health care in the Nigerian health system. Some participants stated that PCC services should be provided at all three levels of health care with emphasis on the primary health care level since it is a health promoting/primary prevention service. Health workers at the primary and secondary levels of care and public health specialists opined that laboratory facilities and equipment needed for medical screenings are either already present or can be provided at the primary health level. They believed that referral to higher levels of care can be provided as needed.

“Preconception care should be at the 3 levels – the primary, secondary and tertiary. The primary, is the grass root level, where we meet many clients between 15-49 years. But people in that age group are also at the secondary and tertiary levels so it {preconception care} should be available at the three levels.” – **Primary care level, Public Health Nurse**

“Preconception care should ideally be provided in primary health care just like antenatal care service is in primary health care because it is closer to the public. But the primary health care providers should be able to tell if someone needs to be referred to secondary health care like they do for antenatal.” – **Secondary care level, Ob/Gyn and Tertiary care level, Public Health Nurse**

Participants at the tertiary level stated that because of the level of expertise needed for some aspects of PCC like genetic counselling, the minimum should be provision at secondary care level.

“Preconception care can’t be approached in primary health centres, I think it is best handled in tertiary health centres” – **Tertiary care level, Haematologist**

“Preconception care should be provided in hospital facilities like in secondary health centres or in tertiary health centres, because we need to have the manpower for it. We need nurses, genetic counsellors, social workers—an outreach team (because sometimes you need to know where the patients live), lab facilities for medical screening, and doctors, obstetricians who will take most of the decisions. It should be in a facility like a secondary health centre where you can take decisions before the woman gets pregnant and of course

in tertiary health centres but not in primary health centres.” – Tertiary care level, Ob/Gyn

6.4.4 Acceptability of PCC

Believing the concept of PCC is new to the prevailing culture, participants opined that PCC may not be accepted generally by those who should use the service. They described the general attitude towards health issues as that of avoidance of health facilities unless there is a problem. They gave examples of people with known illnesses like hypertension which require regular follow up clinic visits, often missing their appointments because they feel well. Such people, they believed may not attend a preconception clinic when they have no physical evidence or symptom of ill-health. In addition, they suggested that the acceptance of PCC may be affected by the fact that the services are not free. Health services generally require out of pocket payment in the country except for a few people who have some form of health insurance. Even then, the health insurance schemes often exclude preventive services, catering more for curative ones.

“Preconception care on its own is not something that is popular. Generally, our people don’t believe that there is something wrong with them until they have some pain or discomfort. When women are not pregnant and you ask them to come for investigation, they will look at you, wondering what you are talking about. ... Even hypertensives will not go to the clinic unless they have a problem; they will say my clinic is tomorrow, but I’m ok. So, women will usually not come for preconception care for you to be able to detect anything till the point of booking for the pregnancy.” – Tertiary care level, Public Health Nurse

“Acceptance may be an issue; patients accepting that they do need it {PCC} especially when they need to pay for the services. The services are not covered by health insurance, patients have to pay from their pockets. NHIS {National Health Insurance Scheme} covers antenatal but it does not cover preconception care. Many people are not well informed, they don’t have adequate formal education and they see hospital as a place they only go when complication has arisen. But preconception care is a preventive measure before they even show any sign of disease. Even when they are sick people are reluctant to come to the hospital, how much more when they don’t have symptoms.” – Tertiary care level, Ob/Gyn

6.4.5 Relevance of PCC to Specialties

The different specialists gave their views on the importance of PCC to their clients. The paediatricians believed PCC would improve the health of the newborn, since many potential problems would have been addressed before pregnancy and detailed attention paid during pregnancy to whatever issues were detected in the preconception period. Other specialists like the cardiologist, endocrinologist, neurologist and nephrologist stated that they would have addressed chronic illnesses, controlled the condition or modified the medications used in the preconception period to prevent development of congenital abnormalities in the baby. The family physician viewed PCC as part of routine daily duties for every woman of reproductive age seen in clinic.

“Some of our patients have hypertension, migraine and other chronic illnesses that require medications. Some of these anti-hypertensives and other drugs could affect pregnancy, some of them are teratogenic {can cause abnormality in the child} and are contraindicated in the pregnancy. So, we give them information about the drug and tell them ‘if you get married and want to get pregnant, let us know so that we can change this medication to the one that will be suitable’.” – **Tertiary care level, Neurologist**

“Having preconception care will reduce the rate of disease we see in neonates (babies in the first 28 days). Many neonates develop complications that are due to certain experiences while they were in the womb. Having preconception care will improve the quality of health of the babies that women bear.” – **Tertiary care level, Paediatrician**

“As Family Physicians, preconception care is part of our job. We provide counselling, health promotion and health education to our patients. Most of our patients don’t know about their health especially about preconception care and in this area where emphasis is laid on childbearing, if the patient has a fertility problem, it is a big issue socially, within the family and in the whole community. We educate women of reproductive age to take folic acid before pregnancy to prevent congenital abnormalities especially spina bifida.” – **Tertiary care level, Family Physician**

6.4.6 Possible Benefits of PCC

Participants perceived that PCC provides an opportunity for potential users to make plans for childbearing in terms of number and spacing of children as well as to prepare financially for the baby.

“Well, I think preconception care enables couples to have a reproductive life plan and helps them to achieve their childbearing goals – when they want to get pregnant and how many times. People will draft a plan like I want to go to school now, I don’t want to get pregnant while I’m in school, after school I want to get married. If I’m sexually active now and I don’t want to get pregnant yet because I’m in school I know I have to get contraceptives.” – **Tertiary care level, Public Health Physician**

“There are a lot of benefits from it. It improves the health outcome for the baby and the mother. It also helps to prepare them financially for pregnancy and the baby that is coming.” – **Secondary care level, Ob/Gyn**

In addition, they stated that PCC leads to improved health status of parents and increases the likelihood of positive pregnancy outcomes. They also highlighted promotion of the use of folic acid for prevention of neural tube defects in the newborn.

“Women receive treatment for their health conditions giving them a better chance of getting pregnant at the time they want. Preconception care will help them to eliminate pre-existing conditions paving a way for them to easily get pregnant and sustain that pregnancy.” – **Tertiary care level, Public Health Nurse**

“Preconception care will help women to be in the best state of health to carry their pregnancy to full term. They will avoid foetal malformations, unnecessary pregnancy losses, increase the chances that the pregnancy gets to full term and reduce problems with delivery.” – **Tertiary care level, Endocrinologist**

“If a woman starts using folic acid up to 13 weeks before getting pregnant as encouraged during preconception care, she will avert some congenital anomalies like neural tube defect or spinal bifida.” – **Tertiary care level, Paediatrician**

Using the example of diseases which do not manifest in the parents but can affect the children, genetic screening in the preconception period leading to reduction in transmission of genetic was mentioned as a possible benefit.

“It is all about dodging a bullet really, anticipating what can potentially happen and taking proactive steps to avoid or mitigate whatever issues the condition may be associated with. For instance, muscular dystrophies manifest in childhood usually before the age of 20 and often lead to death. Women who are carriers of the defective genes are not affected but they can potentially have sons who develop the disease. With adequate preconception care, testing and counselling it’s possible to avoid having a child with these conditions.” – **Tertiary care level, Neurologist**

In addition, the possibility of a couple planning for marriage checking their HIV status and deciding if they want to continue their relationship and plan for childbearing was mentioned.

“Preconception care is also important for intending couples, a preconception clinic visit can change the dynamic of a {planned} marriage. Some people are not aware of their HIV status for instance, and only get to know that one of them is HIV positive when they are ready to marry. Breaking up at this time is more painful. But if during the courtship people come to the preconception clinic, they can have the information and decide if they want to continue or not. It is important to face reality and know what you are going into, who you are going to marry. That’s one area where preconception care can help.” – Tertiary care level, Ob/Gyn

6.5 Discussion

This study explored the perceptions about PCC among health workers at the three levels of health service provision in Ibadan, Nigeria. This is the first study to qualitatively explore the perceptions about PCC among health care providers in Nigeria whereas previous studies examined the awareness, knowledge and utilisation of PCC among women of reproductive age^{44–47}. In addition, a previous study among health workers in northern Nigeria used quantitative methods to assess the awareness and knowledge about PCC⁴⁸. One other study among health workers in Africa was a cross-sectional study in Ethiopia⁸². The health workers in our study described their understanding of the scope of PCC, individuals who need PCC services as well as health facilities and the level within the health system where PCC services ought to be provided. They also provided their opinions about the acceptability of PCC services, its relevance to their practice and the possible benefits of PCC services. The provision of PCC in Nigeria is relatively new and gradually developing in different parts of the country⁴⁸. Previous studies have shown there is some uptake of PCC services in the country, mainly among women in the higher socioeconomic and educational groups who request PCC from health care providers when they desire pregnancy^{44,46,88}.

Whereas previous studies show a low knowledge and awareness of PCC among health workers in other countries such as Australia⁷⁵, New Zealand¹⁸⁴, Iran¹⁸⁹, and Ethiopia⁸², our study shows that knowledge and awareness of PCC and its primary components among health workers at all levels are high and in line with those described by the WHO and CDC^{7,81,182}. This has major implications of facilitating access and acceptability of PCC at the population level and can improve reproductive health outcomes when integrated with routine maternal and child health services.

Although varied, the descriptions provided by our study participants included salient points such as providing care to optimise the health of women and men before conception. The components identified by the participants were preventive and therapeutic services and reproductive health planning to ensure readiness for childbearing. These highlighted areas speak to the prevailing issues affecting reproductive health outcomes both within the country and in the African continent. For instance, key populations identified as requiring PCC by the African subgroup in the WHO meeting to develop a global consensus for PCC include people with diabetes, sickle cell disease, epilepsy and adolescents⁷. Furthermore, in Nigeria, maternal anaemia^{155,190}, hypertension^{50,173}, sickle cell disease^{51,52}, diabetes and unplanned pregnancies^{69,155} are major maternal and child health issues. Considering that the WHO preconception guidelines gives room for countries to identify specific areas to be targeted depending on their identified needs^{7,191}; guidelines for PCC in Nigeria can be developed to mitigate these prevalent health problems that can impact on pregnancy outcomes.

The participants in this study had different opinions on who should oversee provision of PCC. While some believed that every health care provider should be able to provide PCC at every contact with people in the reproductive age bracket, others felt family physicians or obstetricians/gynaecologists should be responsible. Studies in Australia⁷⁵, London¹⁹² and Netherlands¹⁷⁰ have also shown that family physicians and general practitioners believe they should oversee PCC services. Another study among a different group of general practitioners in London found that the participants believed that public health specialists should be the primary providers of PCC⁸⁰. This opinion is consistent with that of some of our study participants who believed that PCC should be offered at the primary health care level with referrals to the higher levels of care when needed. By implication, PCC should be available at every level in the health care system as the services required may differ per person. Thus, while some level of screening such as for hypertension and diabetes may be provided at the primary level, other more specialised care like genetic screening will require secondary or tertiary level services.

The suggestion by some of our study participants that PCC should be provided at every contact with the health care system is also documented in literature^{41,193}. Providing PCC at every contact with the health system is referred to as opportunistic PCC and ensures that women's awareness about their reproductive health is raised at every opportunity^{30,70,71}. It also serves to improve their

health status irrespective of pregnancy intention^{70,194}. Thus, every health care provider has the obligation to ask their patients about reproductive health plans at every contact to provide necessary information and counselling. This may also improve the chances of modification of management plans for people who have chronic diseases and reduce the chances of congenital abnormality in their babies. The variations in opinions about who should oversee and where to provide PCC services implies a flexibility within the health system in terms of integration of PCC services with existing services. When developed, PCC guidelines can make allowance for opportunistic education, information, and counselling for all people of reproductive age at whatever level of the health care they are seen. The guidelines can also regulate the referral system for different areas of care needed by everyone.

The culture of delayed health care seeking was observed by our study participants as a possible barrier to the acceptance and utilization of PCC. Similar to this finding, a study among physicians in Ontario, Canada reported clients not visiting health facilities till they are pregnant as a barrier to the use of PCC services¹⁹⁵. In addition, the fact that many pregnancies are unplanned means that many women are only seen in health facilities after pregnancy and men are hardly catered for^{5,69,155}. To combat this, our study participants mentioned use of community outreaches, social media, secondary schools, and youth friendly health centres as avenues for provision of PCC. The WHO African subgroup at the meeting to develop a global consensus on PCC also identified community- and faith-based organisations, the educational system and existing Ministries of Health programs as avenues for provision of PCC services⁷. Community outreaches, social and other media outlets have the advantage of being available to people in their comfort zones. Information, education, and counselling regarding preconception health status can therefore be provided through these means. The importance of reproductive health planning and the need for PCC can potentially reach the community level without individuals having to visit the health facility.

The need to pay out of pocket for health services was another potential problem that may hinder acceptance and use of PCC. To mitigate this, the National Health Insurance Scheme and other payment schemes for health services need to include PCC as part of their coverage. PCC guidelines in the country will also need to include ensuring costs are kept at a minimum to encourage uptake of the services.

That PCC is beneficial to the individual and couple was well noted by the study participants. Benefits highlighted include prevention of transmission of genetic diseases, opportunity to plan ahead financially and improvement in the health status of the individual. The potential to improve individual health status is one of the justifications providing for opportunistic PCC. This implies the use of every clinic encounter to discuss weight management, dietary requirements, exercise, reduction/cessation of alcohol and tobacco use and making deliberate decisions concerning family planning and contraceptives among others⁷⁰.

6.6 Conclusion

This study highlights the perceptions about preconception care among health care workers at the three levels of the health care system in Nigeria. The participants had high level of knowledge of the components of PCC and were generally positive about the services. This suggests a potential for including PCC services in the maternal, newborn and child health services in the country as it is seen as an important service for improving maternal and child health outcomes. For PCC services to be provided however, there is a need to develop guidelines for the services to be offered at each level of care. The guidelines must include algorithms for two-way referral for more specialised care and step down to lower levels when the need for specialised care has been met. There must also be provisions for PCC services in the available health insurance schemes to improve uptake. The services must be integrated within the existing maternal and child health services to improve delivery and encourage uptake within the community.

Chapter 7

7 Paper 4: *Exploring the need for preconception care: the pregnancy experiences of women with pre-existing medical conditions in Ibadan, Nigeria*

**This paper has been accepted for publication in African Journal of Reproductive Health.*

7.1 Abstract

Background: Pre-existing medical conditions predisposing to poor maternal and child health outcomes are amenable to preconception care (PCC). Despite an increasing pool of women of reproductive age with pre-existing medical conditions, PCC services are not provided routinely in Nigeria. This study explores the pregnancy experiences of women with pre-existing medical conditions to make a case for PCC services.

Methods: Nine women having pre-existing medical conditions were purposively selected for in-depth interviews at two referral hospitals for maternal and child health services in Ibadan North LGA, Oyo State, Nigeria. Thematic analysis was done using MAXQDA 2018.

Results: There were seven pregnant and two non-pregnant participants having either hypertension, diabetes mellitus, sickle cell disorder, chronic hepatitis, HIV, or secondary infertility. None of the participants were aware of PCC and although they all desired their current pregnancy, there was no active preparation: they neither notified their health care providers about their desire for pregnancy nor had their medications adjusted or changed till after pregnancy. All except one of the participants believed they could have benefitted from PCC if they had been aware before pregnancy.

Conclusion: The regular contact with the health system afforded by their pre-existing medical conditions is an opportunity for participants to have been adequately prepared for pregnancy through counselling, adjustment or change in treatment to prevent complications. This opportunity was missed among the study participants. Health care providers need to be proactive and ask women of reproductive age about their pregnancy desires during routine clinic visits in order to make adequate preparation.

7.2 Introduction

Preconception care (PCC) is defined as any intervention provided to women, men and couples of childbearing age, regardless of pregnancy status or desire, before pregnancy, to improve health outcomes for women, newborns and children^{22,162}. PCC services aim to detect, treat, or counsel about pre-existing medical, social, and behavioural conditions that may impede positive reproductive outcomes. Medical conditions that are amenable to PCC include non-communicable diseases like hypertension and diabetes, genetic disorders including sickle cell and thalassaemia, infectious disease including Hepatitis B and C, sexually transmitted infections including HIV^{6,35}. Also included within the coverage of PCC are lifestyle modifications such as reduction of alcohol intake, and cessation smoking and other substance use, encouraging a healthy diet and exercise^{40,112}. Addressing these conditions in the preconception period ensures optimal health before pregnancy occurs and improves the chances of a positive outcome for the mother and child^{12,196}.

Low and middle income countries (LMIC) particularly in Asia and sub-Saharan Africa have the poorest maternal and child health indices globally¹¹. Many of the predisposing factors to poor maternal and child health outcomes are due to diseases amenable to PCC. However, PCC services are either non-existent or weak in many LMICs. Studies from Jordan, Iran, Sudan, Ethiopia and Nigeria show low awareness and utilisation of PCC services^{44,45,86,87,91–93,197,198}. In these studies, utilisation of PCC was influenced by health care providers' provision of PCC information, presence of chronic medical conditions and sociodemographic factors including educational and wealth status.

In Nigeria, there is an increasing pool of women with pre-existing medical conditions that require PCC^{50,51}. Hypertension, which had a prevalence of 25.2% among women is the most common non-communicable disease in Nigeria⁴⁹. Diabetes mellitus has a prevalence ranging from 8 to 10% in the country⁵¹ while the reported prevalence of gestational diabetes is 13.9% among urban women⁵². About a quarter of the Nigerian population have the sickle cell trait while the estimated prevalence of sickle cell disease is 2%⁴⁹. The maternal mortality ratio in the 2018 demographic and health survey is 512/100,000; 67% of pregnant women received antenatal care and only 43% had skilled birth attendants at delivery³. The use of PCC has been shown to be significantly associated with timely antenatal care which is linked with improved birth preparedness and better

maternal and child health outcomes⁴. PCC is identified as a primary prevention strategy for prevention of mother to child transmission of HIV in the Nigerian National Guidelines for the Prevention of Maternal to Child Transmission of HIV¹⁴⁷. The guidelines however do not state any implementation strategy and the country has no specific PCC guidelines¹⁴⁷. PCC services are therefore provided in an opportunistic manner when health care providers see the need for it^{48,92}. This article is part of a larger study that explores the need for and feasibility of PCC services in Nigeria. To achieve the broader aim, this study explores the need for routine PCC services in the country through the pregnancy experiences of women with pre-existing conditions who may have benefitted if such a service was available.

7.3 Methodology

7.3.1 Study design and setting

This exploratory qualitative study used a case study research design. Case study research is appropriate for exploring naturally occurring events in a contemporary setting when the boundaries between the phenomenon being studied and its context are not clearly evident^{134,135,188}. The case may be single or multiple (for comparison) and may be individuals, communities, events, or processes existing within a bounded system defined by certain predefined parameters^{134,188}. The issue illustrated in this study is the need for preconception care within the Nigerian health system. The parameters within which the cases were bounded was their experience of pre-existing medical conditions in pregnancy found commonly in pregnancy within the country. These pre-existing conditions include diabetes mellitus, hypertension, and sickle cell disorder⁴⁹⁻⁵¹. The study was conducted in the obstetric and gynaecological clinics and lying-in wards of two hospitals in Ibadan North LGA of Oyo State, southwest Nigeria. The first, Adeoyo Maternity Hospital is a secondary health facility while the second, University College Hospital (UCH), Ibadan is a tertiary health facility. Both facilities are referral centres for maternal and child health services in the state while the UCH also provides referral services in maternal and child health for most of the southwestern region of the country and beyond.

7.3.2 Participant characteristics and sampling

Using pre-existing medical conditions in their previous or current pregnancy as parameters bounding the cases, women aged 18 to 49 years were purposively selected from the obstetric or

gynaecological clinics or the lying-in wards. Pre-existing medical conditions commonly occurring among women of reproductive age in southwest Nigeria include hypertension, diabetes mellitus and sickle cell disorder⁴⁹⁻⁵¹. These were represented among the study sample along with chronic hepatitis, HIV, previous pregnancy loss of unknown cause and secondary infertility.

7.3.3 Data collection

Data collection held between June and December 2019 was through one-on-one in-depth interviews conducted by three research assistants supervised by the first author. The research assistants were female resident doctors in Community Medicine in the UCH and the interview schedules were constrained by work commitments hence the need for three interviewers. Each person was responsible for only three interviews. They were familiar with qualitative data collection and were trained for the purpose of the study. Neither the first author nor the research assistants had any prior engagement with the participants before the interviews. The participants were identified with the assistance of chief nursing officers, also females, in the obstetrics and gynaecology department of the hospitals. They were then approached by the research assistants and invited to participate in the study. Everyone who was invited accepted to participate in the study. The plan was to conduct a minimum of five interviews and for the data collection to continue until saturation was reached. After nine interviews, responses to interview questions were similar despite the differences in pre-existing medical conditions among the participants and the interviews were discontinued. The interviews held in private rooms provided by the chief nursing officers who assisted with case identification in the obstetric or gynaecological clinic or the lying-in ward of the two hospitals.

Interview guides based on literature were used for the interviews. The interview guides were pretested with two women at Adeoyo Maternity Hospital, facilitated by one of the research assistants. Both women were in their 50s and identified by the chief nursing officer at the clinic as having experienced pre-existing medical conditions in pregnancy. The questions that were unclear to the participants or generated ambiguous responses were rephrased after the interviews. The main interview questions are shown in Table 7-1.

Table 7-1 Interview questions

S/N	Questions	Probes
1.	Please describe your experience during your most recent pregnancy	Did you want to be pregnant at the time or would you have wanted to delay it a little? Why? Did you receive any special care at the time? Why and for what? Were you healthy or ill? What medications were you using? Did they need to be changed or adjusted? Why?
2.	What is your understanding of preconception care?	What does the term mean to you? Who needs such care and for what?
3.	Then, a description of PCC from literature was provided after which participants were asked: Can you describe your understanding of this concept before or around the time of your pregnancy?	In what way could an understanding of preconception care have helped you at the time, if at all? Would you say it could have helped your preparation for pregnancy in any way? Could your attitude to your treatment have been different in any way? Are there any consequences you have experienced that could have been avoided if you knew about and used preconception care? Please provide details.

All the interviews were digitally recorded and lasted an average of 30 minutes. The interviewers made field notes during the interviews.

7.3.4 Data management and analysis

The audio recordings were transcribed verbatim by the first author, reviewed by the interviewers, and integrated with the field notes to ensure all information was adequately captured. Thematic analysis was done by the first author using a hybrid of deductive and inductive coding^{142,143}. Analyst triangulation was done to improve credibility with an independent researcher who was not a part of the research team coding two of the nine transcripts^{136,199}. The coding was done manually at this point and the total of 26 codes derived from the data were merged into six themes. Both coders met to review the codes, reached an agreement on code definitions and rules, and merged the codes into themes. These themes made up the codebook which was applied to the rest of the data by the first author. The transcripts were imported into MAXQDA 2018 qualitative data analysis software for further analysis.

7.3.5 Ethical consideration

The participants were provided with information sheets containing the details of the study and provided consent for the interview and audio recording. No identifying information was documented; audio recordings and transcripts were labelled with codes and saved in a password-enabled laptop accessible only to the authors. Ethical approval for the study was obtained from the University of Ibadan/University College Hospital (UI/UCH) ethics committee (Clearance number UI/EC/17/0390), Oyo State Ethics Committee (Approval number AD/13/479/565) and the Wits University Human Research Ethics Committee – Medical (Clearance number M171054).

7.4 Results

7.4.1 Participants' sociodemographic characteristics

Nine transcripts were analysed with the mean age of the participants being 36.2 ± 3.7 years. All the participants had completed secondary education and were employed at the time of the study. Although all the participants were married, one of them had experienced teenage pregnancy before she got married and that was the pregnancy of reference at her interview. Seven of the women were pregnant at the time of their interview. The mean number of previous pregnancies was 2.4 ± 1.0 while the modal number of living children was one with three women having no living child at the time of the interview. Further details of the participants' characteristics are shown in Table 7-2.

Table 7-2 Sociodemographic characteristics of the participants

Code*	Age	Number of		Medical problem	Pregnancy Status
		Previous pregnancies	Living children		
PW1	37	3	1	HIV	Pregnant
PW2	38	1	2	Hypertension	Pregnant
PW3	30	1	1	Chronic Hepatitis	Pregnant
PW4	40	3	3	Diabetes Mellitus	Pregnant
PW5	38	3	0	Hypertension	Pregnant
PW6	41	4	3	Hypertension & Diabetes	Pregnant
PW7	33	3	0	Sickle cell disorder	Pregnant
NPW1	32	2	1	Previous pregnancy loss of unknown cause	Not pregnant
NPW2	37	2	0	Teenage pregnancy & Secondary infertility	Not pregnant
Mean	36.2 ± 3.7	2.4 ± 1.0			

*PW – Pregnant woman; NPW – Nonpregnant woman. Also used in the results.

7.4.2 Study themes

An initial set of 26 codes were identified from recurring patterns in the data which were merged into six themes through discussion to arrive at a consensus. The six themes identified are shown in Table 7-3.

Table 7-3 Themes identified from the data

Theme	Description
Awareness about preconception care	Participant's awareness about preconception care. Includes responses stating knowledge of preconception care as a concept. Also includes description or opinion about awareness of preconception care in general
Desire for pregnancy	Participants state whether they desired their most recent pregnancy.
Preparation for pregnancy	Descriptions participants give about what they did either medically or in their homes as part of self-care in preparation for pregnancy. Includes description of visits to health facilities or discussion with medical personnel about what they needed to do while preparing for pregnancy.
Use of medications before and during pregnancy	Includes participants description of the treatment they received for any pre-existing medical ailment; medications taken etc. before pregnancy. Also includes adjustments to treatment while planning for pregnancy and after they found out they were pregnant.
Opinion about preconception care	Participant's opinion about what preconception care is. Includes definitions, descriptions, and perceptions. Also includes description of who requires preconception care, and conditions in which it is required.
Potential benefit of preconception care	Participant's description of how preconception care could have helped them in previous pregnancies if they had been aware of and/or used the service. Includes descriptions of experiences that could have been avoided or mitigated by preconception care. Also includes opinions on whether or not participants believe preconception care is necessary for them as individuals.

7.4.3 Awareness about preconception care

When asked to describe what they considered PCC to be, most of the participants stated that they were unaware of the concept.

I'm not aware of it. In fact, this is my first time of hearing anything about this. – PW1

When they were given the description of PCC, one of the participants said, “*but we don't do that*” while all the others declared “*I've not heard of that before*”. Only one participant remembered being told about something similar during a previous pregnancy.

*I heard of something like this in the hospital during my last pregnancy about 6 years ago.
– PW4*

A participant said she realised her need for care before pregnancy when she had a spontaneous abortion. Before then she believed there was no need to seek medical attention before pregnancy. Her comment highlights the anecdotal report of beliefs within the community that pregnancy is expected after marriage and requires no intervention.

I didn't know I was supposed receive any care before pregnancy. After marriage, the next thing is pregnancy. I believe that it's those who are unable to conceive that should seek for care. Once a woman can conceive, she doesn't need any care. But a woman who has delays needs to go for medical check-up. It was not until I had miscarriages that I realised I needed to come to the hospital to find out what I needed to do or to avoid. – NPW1

7.4.4 Desire for pregnancy

All the participants stated that they desired their current pregnancy while those who were not pregnant at the time of the study expressed their desire for pregnancy.

I wanted the pregnancy at the time it came, even before that time because I had lost two pregnancies earlier. – PW6

In support of their desire for pregnancy, two of the participants had discontinued the family planning method they had been using in anticipation.

I had been using family planning for seven years, but I stopped a year ago because we wanted another baby. – PW2

Although they desired and planned to have another pregnancy, two of the participants stated that the timing was not in keeping with their desire. They had given up on their expectation for pregnancy when they finally became pregnant.

I wanted it, but I was not expecting it at this time. When I was pregnant in 2015, I expected and desired to get pregnant. But when the child became ill and died in 2016, I took my mind off having more children. I only prayed that God should keep the ones that are alive, but God knows the reason for this current pregnancy. I believe it is God's will. – PW6

The pregnancy just came. I was planning and preparing for it, but it did not come on time as I expected. It just came suddenly. – PW4

7.4.5 Preparation for pregnancy

Preparations for pregnancy differed among the participants depending on their previous pregnancy experiences. Although all the participants stated that they had planned for their current pregnancies, special preparation for pregnancy were only described by those who had experienced complications in their previous pregnancies or had delay in achieving conception. For instance, one of the participants sought information on the internet because of her previous experience.

During my first pregnancy, my blood pressure became very high when I was around 7 months pregnant. I had eclampsia and became unconscious. I was referred to this hospital from the one I used close to my house. After the delivery, when I came out of coma the doctors told me I should have come earlier, and they would have given me some drugs. So, when we planned for this pregnancy, myself and my husband did a research on what happened then so that it will not happen again. We googled it at home and printed out the information, so we were fully prepared. – PW2

Another participant who had lost a child after birth sought medical care because she thought the baby died due to complications of fibroids that were discovered while she was pregnant. In order to avoid a recurrence, she sought medical care only to be diagnosed with hypertension and diabetes for which she was receiving treatment when she became pregnant again.

The baby I had in 2015 died in 2016. During the pregnancy I found out I had fibroids. So, after I had rested from all the stress of the baby's death, I came to the hospital because I thought the fibroids affected the baby and caused the sickness and led to the death. I decided to come and take care of myself so that the same thing will not happen again. When I was examined, it was discovered that my blood pressure was high, and I could not have the operation for the fibroids then. I was referred to the medical clinic for treatment. There, some other tests were done it was discovered that I have diabetes. I started treatment for both hypertension and diabetes. – PW6

One participant who had experienced delay in getting pregnant sought medical help to determine the cause of the delay.

I've had two pregnancies before now, the first one was a miscarriage at 3 months, then I had a delay of about 3 years before the second pregnancy. So, I went to the hospital to find out what was causing the delay then. That's the same reason why I came to the hospital now because it's now about 9 years since I had my second pregnancy. – NPW2

7.4.6 Use of medications before and during pregnancy

Those among the participants who had medical conditions that required treatment had been on medications. While some needed their medications to be changed or the dosage adjusted because of its potential impact in pregnancy, others did not. None of the participants informed their doctor of their desire for pregnancy however and change in medication was only effected during pregnancy for those who needed it.

I have been on mediations for HIV and the doctors have told me that it is safe for me to continue to use them even now that I am pregnant. – PW1

I did not tell my doctors that I desired to get pregnant. I was using medications for blood pressure and diabetes, but I was told to stop the blood pressure medications because it is now controlled. I am also using thyroid medications because it {the thyroid} was removed surgically. My diabetes medication was changed to insulin injection after I got pregnant because the doctor said those medications are not safe in pregnancy. – PW6

I have sickle cell disorder, but I haven't been on any medications apart from the routine paludrin {malaria prevention drugs} and folic acid because I haven't had any crisis for the past 4 years. – PW7

7.4.7 Opinion about PCC

While some of the participants expressed the opinion that PCC is beneficial for everyone and awareness should be raised about it, others believed that the benefits are not for everyone. Those with latter view stated that PCC may be of greater benefit to those who are unable to achieve conception spontaneously.

The way I understand it, particularly for someone who has gone through the kind of health challenges I've had, if one wants to get pregnant it is better to let one's doctor know about it. That way everything necessary would have been done to control all that the person is going through. They will be able to say what is the best time to get pregnant so that mother and the child will not be affected negatively. Awareness needs to be raised about this in our communities. – PW6

I understand that PCC is good especially for the baby, like now I was told that the folic acid is very important for the baby especially for their spinal cord and their brain. But to me not everybody needs PCC because our body system is not the same. Some people will have to see gynaecologists and maybe use fertility drugs. Other people won't even look for the pregnancy before they have it. – PW7

7.4.8 Potential benefit of PCC

The participants expressed varied views on potential benefits of PCC to their health conditions. Most stated they would have benefitted either through having better information and treatment or delaying pregnancy to address potential complications. One of the participants however felt she had no need for PCC because despite her medical health status, she had experienced no complications that PCC could have prevented.

If I had known about PCC before now, I would have considered giving more gap before having this pregnancy. Then I could have been treated for the hepatitis before getting pregnant. I've just been told in the clinic that I can't take the medications again until after delivery. Then they will have to treat the baby too. I would have avoided all that if I had known. – PW3

I think knowing about PCC would have helped me at the time I had my first pregnancy. I was a teenager then and my partner wanted a child. But I hadn't even completed my National Diploma and I didn't understand much. Maybe I would have delayed then, and things would have been different now. – NPW2

I don't think knowing about PCC could have helped me in any way because to me I have no issues. Yes, I have sickle cell, but I don't see it as a problem and my husband too doesn't have any problem. The two pregnancies I lost; I think it was due to the carelessness of the people in the private hospital I used then because they couldn't tell me what actually went wrong. That's why I said I don't think PCC would have helped me. – PW7

7.5 Discussion

This study describes the need for preconception care (PCC) services as part of maternal and child health care within the Nigerian health system using multiple case studies of women who had medical problems in pregnancy. The medical conditions experienced by the women in this study included hypertension, diabetes, HIV, chronic hepatitis, sickle cell disorder, teenage pregnancy, and secondary infertility. These are all conditions that have been shown to be amenable to interventions available through PCC^{5,6,34}. Most of the participants were unaware of PCC or its potential benefits to them at the time of their pregnancy. No participant informed their health provider about their intention to conceive and so did not have their medications adjusted where necessary until they were pregnant.

Only one of the nine participants in this study was aware of PCC and she had heard about the concept in the hospital during a previous pregnancy. Previous studies across Africa and Nigeria have shown that many women who are aware of PCC often receive their information from health facilities or health care providers^{46,84,86,87,91,93}. All the participants in this study had been diagnosed with different medical conditions before their pregnancy and had routine clinic visits for follow up. That they were unaware of the concept of PCC and its potential benefit for them implies a possible lack of awareness of the need among their health care providers. A study among health care workers in northern Nigeria showed that less than half of the participants had ever provided PCC⁴⁸. PCC is recognised in the Nigerian National Guidelines for the Prevention of Maternal to Child Transmission of HIV as a primary prevention strategy¹⁴⁷. However, the participant who was HIV positive was unaware of PCC, suggesting that the service had not been offered to her at any of her routine clinic visits before she became pregnant. By implication, there is a gap in the care of women of reproductive age who have chronic medical illnesses that should be filled by PCC services. There is a need for increased awareness among health care providers as an important source of information to this group of women. The health care providers' role includes informing women about the risks associated with pre-existing conditions, screening for those who are unaware of their health risks and treatment modification for those who are receiving medications^{7,10}. Thus, all health workers need to encourage their clients to discuss their pregnancy plans in order to begin or adjust treatment plans where necessary.

Although all the participants in the study stated their desire for pregnancy, the specific efforts by two participants was discontinuing their contraceptive methods, which is intuitive for anyone who desires pregnancy. Research on pregnancy intentions have shown that women with intended pregnancies are more likely to engage in positive health behaviours like use of vitamin supplements, including folic acid and avoiding alcohol and tobacco use^{200,201}. They are also more likely to seek medical interventions and use PCC services in order to avoid potential complications^{86,197}, a fact that was prominent among the participants in this study who had experienced complications in their previous pregnancies. However, none of the participants told their health providers about their desire for pregnancy, thus missing out on the opportunity to adjust their medications or receive necessary counsel on lifestyle modifications before pregnancy. By implication, health care providers who care for women of reproductive age with chronic medical conditions should ask them about their desire for pregnancy routinely so that they can

counsel them and adjust their medications in a timely manner. Beyond addressing known health problems, PCC also includes identification of pre-existing conditions^{12,202} and should therefore not be restricted to women who have known complications. The experiences of two of the study participants buttresses this point – one who had chronic hepatitis was only diagnosed in the current pregnancy while another was diagnosed with diabetes in her previous pregnancy. Optimising health in the preconception period through medical screening would have been beneficial in both instances.

The participants expressed different opinions about the possible benefits of PCC to the general population and to themselves with respect to their medical conditions. While most believed that PCC services as described in the interviews would benefit anyone who used it irrespective of pre-existing medical conditions, one of the participants who had sickle cell disorder dissented. She believed that only those who had difficulty with conceiving would need such care. She also stated that in spite of her pre-existing medical condition, PCC would not have helped her in any way. Such dissenting voices need to be identified and targeted information provided on the potential benefits. For instance, in the case of this participant, sickle cell disorder would benefit from premarital counselling and screening¹⁰⁹, as well as optimising the health of the mother in the preconception period because of the documented higher risk of maternal and foetal complications^{149,203}. In addition, having preconception care followed by effective antenatal care has been shown to be associated with a reduction in the occurrence of complications among women with sickle cell disorder¹⁴⁹.

7.6 Study strengths and limitations

The study was strengthened by the training and expertise of the researchers. The first author who was the principal investigator in the study is a Community Physician with several years of experience in clinical management of women of reproductive age. The second author is an epidemiologist of several years, an experienced demographer and population scientist. Their training and experience in addition to academic exposure was an advantage to their understanding and interpretation of the experiences described by the study participants.

In terms of the limitations of this case study research, the parameters within which the cases were bounded did not include sociodemographic characteristics. For instance, the experiences of the study participants may be different from those of women who are single, with lower levels of education or unemployed. The findings may therefore not be transferable beyond the demographics of the study participants.

7.7 Conclusion

This study showed a lack of awareness of preconception care (PCC) among a group of women with pre-existing medical conditions who would have benefited from the use of the service. While they all desired pregnancy, none of the participants' preparations included seeking information from their health care providers on what adjustments they may have needed to make to their treatment regimen. This implies a need for health care providers to include specific preconception information in their packages of care for women of reproductive age. There is also a need to improve awareness of the need for PCC among health care providers as they are an important source of information for women in the reproductive age group who have pre-existing medical conditions that can affect pregnancy negatively.

Chapter 8

8 Paper 5: *“Is the health system ready?” – a qualitative exploration of stakeholder opinions about the feasibility of preconception care services in the Nigerian health system*

**This paper has been submitted to Reproductive Health.*

8.1 Abstract

Background

Preconception care (PCC) services aim to improve reproductive health outcomes through the provision of biomedical, behavioural and social health interventions to women and couples before conception occurs. Countries that have deployed PCC services have policies that guide the services provided. In Nigeria, PCC is poorly developed and is often provided in an opportunistic manner with no guidelines in place to direct the provision. This study explored the opinions of policymakers and health workers about the feasibility of deploying PCC services in the country.

Methods

This study was a cross-sectional exploration of opinions about PCC service deployment within the Nigerian health system in which 39 in-depth interviews were conducted with policymakers at the federal and state tiers of government as well as health workers at the tertiary, secondary and primary levels of health care. The transcripts were analysed thematically using a hybrid of deductive and inductive coding on MAXQDA 2018 qualitative data analysis software.

Results

Four main themes emerged from the data – issues around policy for PCC, service integration and collaboration, health system readiness and challenges to PCC service deployment. While noting that the country has no PCC policy, participants identified existing policies into which PCC can be integrated. The participants also described the importance of policy to PCC provision and provided information on existing collaborations that can help the policy development and implementation process. Although many of the participants believed the health system is prepared

for PCC deployment, they identified challenges related to policy formulation and implementation, including financial challenges that could hinder the process.

Conclusion

Deployment of PCC services in the Nigerian health system is achievable as there are existing health-related policies into which the guidelines can be integrated. However, there is a need to consider the possible implementation challenges and address them as part of the planning process.

8.2 Introduction

Preconception care services have been initiated in many high-income countries to address unplanned pregnancies and poor maternal and child health outcomes²⁵. Preconception care (PCC) is the provision of biomedical, behavioural and social health interventions to women and couples before conception occurs⁷. PCC provides an opportunity to provide routine healthcare for women across their lifespan, and this can be integrated with their reproductive life plan²⁰. The aim of PCC is to ultimately improve maternal and child health outcomes. To achieve this aim, countries globally have adopted different models of PCC services. A common thread across the various countries that have PCC services is the use of specific national guidelines and policies. National guidelines and policies are important to ensure evidence-informed practice, provide guidance for comprehensive and consistent PCC service provision and prevent confusion of roles²⁰.

In the United States of America, Canada, Belgium, Sweden, Italy, United Kingdom, Denmark, Hungary, Netherlands, Hong Kong, China, South Korea and Malaysia there are national PCC guidelines for health providers to standardize PCC services for couples^{20,23,25,103}. These guidelines focus on the use of folic acid in the preconception period, tobacco cessation, alcohol reduction, and management of chronic illnesses^{23,25,127,204}. In addition, the United States guidelines include reproductive planning and PCC as part of every contact of women of reproductive age with the health system^{205,206 8,9}. The packages of care in Sweden, South Korea, Netherlands and Hong Kong include population based methods for raising awareness among the general population to trigger demand^{25,204}. Other models of delivery of PCC services are premarital health check in China which includes medical consultation, risk evaluation, physical examination, laboratory tests and preconception health education^{76,207}. Provision of PCC within primary health care settings by

midwives in Sweden includes risk assessment, folic acid supplementation, encouraging healthy diet of fruits and vegetables, counselling on smoking cessation and alcohol reduction and weight management. Individuals with complicated cases are referred to physicians²⁵. Provision of PCC by family physicians in Netherlands involves individual consultations with risk assessment and delivery of interventions for identified risks²⁰⁸. Although there is heterogeneity across the policies and guidelines in these countries, the availability of guidelines provides structure for the integration of PCC within each country's health services, addresses peculiar needs among each population group and encourages demand for the services.

In Nigeria, as in many low- and middle-income countries (LMICs), PCC is poorly developed and is often provided opportunistically with no guidelines or policies in place to direct the services^{48,209}. PCC studies among pregnant women in the country have shown awareness of the service among women of reproductive age ranging from 8.3% in Bayelsa State to 20.6% in Sokoto State, 44.2% in Ebonyi State, 63.5% in Osun State and 76% in Lagos^{45,46,92–94}. In these studies, the proportion of women who accessed PCC before pregnancy was even lower and the most common PCC provided was folic acid supplementation and dietary modification. However, given the increasing number of women with pre-existing medical conditions such as diabetes, hypertension and sickle cell disease and the higher risk of negative pregnancy outcomes among such women in the country^{6,49,57,203} there is the need for PCC deployment and guideline development. The guideline should specify who requires the service, when, where and how it should be offered and what components should be provided. This study explored the opinions of stakeholders – policymakers and health workers – about the feasibility of deploying PCC services in the country.

8.3 Methodology

This study was a cross-sectional exploration of opinions about PCC service deployment within the Nigerian health system. The study explored the health system at the tertiary, secondary and primary health care levels using in-depth interviews to obtain the perspective of health workers and policymakers.

8.3.1 Study setting

Politically, Nigeria operates a three-tier system with a democratically elected federal government at the national level, state governments in the 36 states and the Federal Capital Territory, each of which is subdivided into local government areas (LGAs) managed by local government authorities^{57,155}. Within the Nigerian health system, the local government authority manages the development, operation and provision of PHC services under the guidance of the National Primary Health Care Development Agency (NPHCDA)^{155,210}. The state governments perform a technical role – training staff, overseeing the activities at the local government level and providing secondary health services while the federal government provides strategic oversight and manages the tertiary health services^{57,155}. This study used multiple sites across the three tiers of government and the three levels in the health system. For the health system aspect of the study, Oyo State was purposively selected for two main reasons. First, it is one of the urban southern states with good access to health services and better reproductive health indices^{3,57}. Secondly, it has tertiary, secondary, and primary health facilities located in one of its LGAs.

8.3.2 Study population

The study population included policymakers at the federal and state levels and health workers at the primary, secondary and tertiary levels of care. At the federal and state levels, 13 policymakers were selected from Ministries, and Agencies with links to maternal and child health services. These were the Ministries of Health, Education, Sports & Youth Development, Women Affairs, and the Primary Health Care Development Agency at both federal and state levels. The health workers were purposively selected on the premise of their involvement in maternal and child health services. Working with varying staff population at each of the three levels of health care, three (3) health workers were selected at the primary level, five (5) at the secondary level and 18 at the tertiary level. All the policymakers and health workers approached for the study agreed to participate.

8.3.3 Data collection

Interview guides containing open-ended questions were developed for the study using information from existing PCC literature. The interview guides were pretested, and changes made to ambiguous questions before the study began. The main interview questions for the health workers were: What role is there for preconception care services in your practice? How would you go

about integrating preconception care services into your practice? What challenges do you foresee that may affect integrating preconception care into your practice? For the policymakers, the main questions were: How feasible is integration of a formal preconception care service into the existing maternal and child health care services? What opportunities exist for integrating preconception care service into the existing maternal and child health services? What policy opportunities or gaps can you identify as likely to catalyse the integration of preconception care into existing services? What challenges do you anticipate? The first author was responsible for the data collection and conducted all the policymaker interviews. There was no prior interaction between the interviewer and the participants besides the contact made to set up the interviews. However, because she is a Community Physician who has worked with many of the health workers previously, four research assistants were recruited for the health worker interviews. The research assistants were Master's students from the Faculty of Public Health, University of Ibadan, Nigeria who were experienced in qualitative data collection. Being of lower qualification and younger ages than most of the health workers could have affected the research assistants' ability to probe properly during the interviews. The effect of this was minimised by having debriefing sessions to review each interview and field notes with the first author after each interview. Notes were made on issues that could have been probed further and these were included in subsequent interviews. All the interviews were conducted face to face in the participants' offices and lasted about 30 to 45 minutes each.

8.3.4 Data management and analysis

The interviews were recorded with a digital recorder and transcribed verbatim by the research assistants. The first author read all the transcripts and integrated them with the field notes and reflective diaries, comparing them with the audio recordings to ensure there was no missing information. The transcripts were returned to the participants for review and corrections or additions were made as requested. The transcripts were imported into MAXQDA 2018 qualitative analysis software. Thematic analysis using a hybrid of deductive and inductive coding was done^{142,143}. As part of the measures to ensure trustworthiness of the analysis, two independent coders who are not authors on this paper but are experienced in qualitative analysis developed codes deductively by identifying recurrent patterns in four of the transcripts. The first author also coded the same set of transcripts and agreement on final codes was reached during a discussion session by the three coders. The initial set of 25 codes were merged into four main themes, two of which had subthemes (Table 8-2).

8.3.5 Ethical considerations

All the study participants were provided with information sheets giving details of the study and consent was obtained for both the interviews and the recoding. No identifying information was obtained; the transcripts were deidentified and stored in a password protected computer accessible only to the authors. Ethical approval for the study was obtained from the ethics committee of the University College Hospital (UCH), Ibadan, Nigeria, the Federal Ministry of Health, Nigeria and University of Witwatersrand Human Research Ethics Committee, Johannesburg, South Africa.

8.4 Results

Thirty-nine transcripts were analysed in this study – there were 13 policymaker transcripts (six at the federal and seven at the state level) and 26 health worker transcripts (13 specialist physicians and five nurses at the tertiary health care level; three specialists and two nurses at the secondary health care level; one specialist and two nurses at the primary health care level). The specialties covered in the study were those relevant to the management of pre-existing medical conditions that require PCC. They were from the following specialties: Cardiology, Community Medicine, Clinical Nursing, Endocrinology, Family Medicine, Haematology, Nephrology, Neurology, Obstetrics/Gynaecology (Ob/Gyn), Paediatrics, Psychiatry and Public Health Nursing. The health workers had been in service for between one and 32 years while the policymakers had worked for between four and 30 years. The age and sex distribution of the participants is shown in Table 8-1.

Table 8-1 Participants' age and sex distribution

		Doctors	Nurses	Policymakers	Total (N=39)
Sex	Male	13	0	2	15
	Female	4	9	11	24
Age	26-35	1	2	1	4
	36-45	9	5	3	17
	≥46	7	3	9	19

8.4.1 Study themes

The themes and subthemes identified from the data are summarised in Table 8-2.

Table 8-2 Themes identified in the study

Theme	Subtheme	Description
Issues around policy for PCC	Policies related to PCC	While the participants stated that there was no PCC policy, they identified existing policies that could be adapted to fit PCC
	Importance of policy to the provision of PCC	Description of the importance of policy to driving implementation of PCC
	Collaboration for policy development and implementation	Highlights the existing collaborations that could drive PCC policy development and implementation
Service integration and collaboration	–	Description of existing inter-specialty collaborations and referral systems that can drive PCC
Health system readiness	–	Opinions on the readiness of the health system to deploy PCC services
Challenges to PCC deployment	Challenges to policy formulation	Highlights possible challenges to developing PCC policy
	Challenges to service provision	Challenges to the provision and uptake of PCC services
	Financial challenges	Description of challenges related to funding of PCC services including budgetary allocation that can affect policy implementation and issues around payment for service by potential clients

8.4.2 *Issues around policy for PCC*

The subthemes under this theme included policies related to PCC, importance of policy to provision of PCC and collaboration for policy development and implementation.

8.4.2.1 **Policies related to PCC**

At both the national and state levels, none of the policy makers were aware of any existing policies that cover PCC. However, they identified policies which could be expanded to include PCC because of their related content. These include the gender policy, national health policy, child health policy, adolescent health policy, national youth policy and the reproductive health policy.

Although the national health policy covers a range of awareness and sensitization to communities, it does not cover preconception care. We have the national gender policy and the child health policy, but I don't think they cover preconception care. But they should. There are plans to review the national child health policy and I think the idea of preconception care can be included then. – National Level Policy Maker 4

I'm not aware of any policy that includes preconception care directly. But there are policies on adolescent health. I'm thinking of the RMNCAH strategy, in the past it was just integrated maternal, newborn and child health but now we have reproductive, maternal, newborn, child and adolescent health strategy (RMNCAH). It is wider, covering the women of reproductive ages which includes the group of people who need preconception care. That is one strategy that can be used or developed to form a guideline for preconception health care services. – National Level Policy Maker 6

I don't have comprehensive knowledge about the policies, but none of the few that I've worked with covers preconception care. I think it will be appropriate for it to be in the reproductive health policy. – State Level Policy Maker 6

Some of the participants opined that implementation of some programs and interventions in the existing health related policies provide an opportunity for PCC. However, they stated the need to have specific guidelines to structure PCC service delivery.

I think preconception care is already in our national health policy because prevention of maternal mortality is part of the national health policy. How will we do that if we don't do preconception health care? Not exactly as you described it but embedded in those programs and activities guided by the health policies, we include preconception care. The Federal Ministry of Health has also realized that there is a gap, and we need to have structured guidelines, but we have not started yet. – National Level Policy Maker 2

The Family Life and HIV Education curriculum covers preconception care, because it is giving sexual and reproductive health information inbuilt with life skills to young people, which is part of preconception care. So already, it is integrated in little bits into the different subjects that the students are taught. – National Level Policy Maker 3

I know the National Youth Policy is relevant in this case, our focus is ensuring the wellbeing of young people. And we have a National Strategy for Adolescents and Young People, ... it captures the knowledge gap but there isn't any policy that speaks to preconception care directly for now. – National Level Policy Maker 5

8.4.2.2 Importance of policy to the provision of PCC

The policy makers at both the national and state levels described the importance of policy to delineate roles and responsibilities in the provision of PCC services. In their opinion, implementation of PCC services can only be properly driven when there is a well-known policy providing direction to all stakeholders.

The federal ministry of health must make the policy to drive the process, informing the government at the lower levels and giving direction on how to provide the services. Once there is a policy, there will be direction because policy leads to coordination which gives direction on what to do during implementation. – **National Level Policy Maker 3**

Some private health facilities may be able to offer preconception care services, but as you know, their services are for profit. The government must include rules in the policy for any private hospital that wants to offer such services to have basic infrastructures and personnel that can provide the services. The policy also needs to state details of the services and limits that the facilities cannot go beyond to avoid complications. – **State Level Policy Maker 2**

The health workers also weighed in on the need to have a policy to entrench PCC into the existing primary health care system. Describing the need to improve political will at all levels of government, they spoke about the importance of policy and guidelines like what exists for other health programs such as antenatal care.

Politicians often make promises which they end up not fulfilling, you know... They introduce a program today and tomorrow it is cancelled. The ministry of health, the primary health care board, the federal government all have to be involved for preconception care to work. It cannot be done at the grass root; nothing can be done unless it is taken up by the government. Then they can make it compulsory with a solid program inculcated in the primary health care service. There needs to be something compelling it like we have for antenatal care because this program needs to come before antenatal. That is when it will be able to stand. – **Primary Care Level Clinical Nurse**

While describing the importance of guidelines and policies, one of the tertiary care level obstetricians spoke of an ongoing process where guidelines for the management of pre-existing medical conditions are being prepared. This he believed should also cater for preconception care services.

There is no doubt that we should have that policy, but for now we are targeting pregnancy outcomes, ... we are doing guidelines for medical conditions which can also be preconception care. We are at the verge of doing guidelines for hypertension in pregnancy, other conditions like anaemia in pregnancy, and some other medical conditions in pregnancy. And hopefully we are going to have preconception components of those guidelines. – **Tertiary Care Level Ob/Gyn**

This statement is in tandem with that of one of the national level policy makers who stated that the need for PCC guidelines had been identified at the national level and steps are being taken to provide a guiding policy. This policy will guide implementation and is expected to direct the integration of PCC into existing programs.

... we are like the thermometer of the Nigerian people when it comes to issues relating to making policy on their health. We have seen it, our thermometer has picked it and we are already acting, taking necessary steps that will lead to the formulation of the policy. And we don't formulate policy without developing the implementation strategy. We mobilize relevant stakeholders that will do the situation analysis and produce effective strategies for implementation of the policy. And thank God it is not going to entail the formation of new structures. We have existing structures that will just integrate the program into. – **National Level Policy Maker 2**

8.4.2.3 Collaboration for policy development and implementation

As part of the discussion on the process of policy development, the policy makers spoke about the opportunities for integration of PCC into the health-related policies in existing collaborations between ministries. They noted that taking advantage of these collaborations, relevant stakeholders can be identified, and a special team created to work on PCC without being stalled by the bureaucracies of the civil service.

We used to have collaborative efforts between the Ministry of Women Affairs, Ministry of Health, Ministry of Education and Ministry of Information. We call them line ministries because the mandate of one affects the other. There is a maternal and child health policy that was developed by health in collaboration with some stakeholders from the line ministries. So, this one also can be done together jointly. They can all include preconception care in their sensitization and advocacy programmes. – **National Level Policy Maker 4**

We have what we call line ministries, just like a joint program. These line ministries can set up a special committee. For instance, on HIV we have a Critical Mass Committee, and

that has been driving interventions in line of HIV. It's not about following normal civil service routes, you know, it delays a lot of things. But when you have a critical team, you know this is the team, they work as if they are separate from the organisation ... but the Ministry of Health should coordinate in collaboration with other line ministries. – National Level Policy Maker 5

I don't know who will draft the policy, but I know there is a body that drafts policy, and they should involve experts from related fields. The Ministry of Health is very pertinent and then Women Affairs since this has to do with women, ... if the relevant bodies are carried along it will help. – State Level Policy Maker 4

8.4.3 Service integration and collaboration

The health workers described existing inter-specialty collaborations, teamwork and referral systems which are platforms through which PCC services can be incorporated into the health system. Further, they highlighted the possible roles of medical associations and health workers in training staff for the deployment of PCC services.

... what we normally do is we manage the cardiac problem, and the obstetrics doctors manage their own aspect until delivery. Most of the patients that we get here are referred patients. Young people can also come for routine screening, check their blood pressure, blood sugar, ECG, some of those basic tests to see if there are things that can cause problems in future. That will need a special preconception clinic or screening in the general outpatient. Once they detect any abnormality, they can refer, and we will manage if it is related to our own area. I know that the endocrinology unit runs a clinic for the pregnant women who have diabetes. The management is joint, with the obstetric unit. The same thing for people with HIV, we have done several times . – Tertiary Care Level Cardiologist

I expect that whatever government or policy makers are going to do, they would not do it in isolation without the medical association. For instance, in training and providing facilities; and then they call something training of trainers. So, we can train a set of people who can now go further and train other people. – Tertiary Care Level Ob/Gyn 1

8.4.4 Health system readiness

Regarding the state of readiness of the health system for the deployment of PCC services, the participants' opinions differed. Among the policy makers, some believed that the health system in its current state is prepared and even needs PCC services to address issues like unwanted

pregnancy and pre-existing health issues. Others however stated that the health system is not fully prepared particularly with respect to funds and human resources but as policies are developed and or expanded, the state of readiness should improve.

The health system will be ready, don't worry. We're working on all our policies. Like I said prevention, prevention, prevention is the way to go. That is the way out, prevention is the way to go and we're working towards it. – National Level Policy Maker 1

The society will be ready for it, because every young girl and every young man wants to have a child. If there are some issues that are there that they need to identify early, it [PCC] will help. – National Level Policy Maker 3

Yes, the health system is very ready. The only thing is that the health system may not have sufficient funds and then of course human resources may not be as much, but we are ready. – National Level Policy Maker 6

I think the health system is ready because of the issue of unwanted pregnancy. If something like preconception care is available, I think it will prevent it a little bit. – State Level Policy Maker 7

On the part of the health workers, the participants' opinions also differed. Most believed the health system is not in the right state to accommodate a new program like PCC. They cited the current challenges of inadequate personnel and resources for basic health care services. Others believed that the available resources are adequate and PCC service deployment would not be expensive and can be covered within the existing health framework.

The health system (laughing) I can say is already overwhelmed, inadequate funding, brain drain, the existing programs ... but if we are positive about it, we can attain it. If the political will is there for our government, we can achieve it. – Tertiary Care Level Clinical Nurse Ob/Gyn

As at now I am not sure because you know if we say the health system, too many things are involved. We have the personnel, (they are the doctors and the nurses), infrastructure also you have the government policy and then the funding is there. So, I can only talk for myself as a doctor because I know that I am ready, and I know that my colleagues are ready too. But then, the available infrastructures are not enough for the O & G care. Then of course in our environment preconception care will be good but I think there are other pressing demands. So, I am not sure right now that our health system is ready for such an integration process. – Secondary Care Level Ob/Gyn

As things are now, I will say no. ... we are struggling with other more rudimentary issues in providing health care to begin to talk about high level things like some of the services included in preconception care. Fine, of course the counselling can go on. There is not much required for that, but some of the other services like the testing and the treatments are things we are not prepared for at this time. There are still issues with other more basic things like providing universal health coverage, universal health insurance. Those are more immediate concerns. It appears that we are not prepared to take on all the screenings, testing and maybe treatment as part of preconception care for now. – Tertiary Care Level Neurologist

Well, I don't think so because people are finding it difficult to support basic things like malaria, hypertension, diabetes, they are struggling. The health system is not able to accommodate everybody because of dwindling funds, attitude of workers. So, preconception care like I told you is not a high priority now. – Tertiary Care Level Ob/Gyn 2

Would the health system be ever ready for anything? We have to make ourselves ready. The structure, the personnel, the professionals, and specialists that are needed should be there and of course, money should be there. If not, the policy makers will say they are not ready, those who are going to carry out the services too will say policy makers have not released funds, it becomes a vicious cycle. – Tertiary Care Level Public Health Nurse

... yes, the health system is ready. Why do I say it's ready? We have everything it takes. We have the manpower, the equipment it takes to do all these things they are always with us, they are available; in fact, it is not particularly expensive. So yes, we are ready. It's not going to be changing anything much, just that we need to go out, that's all. – Tertiary Care Level Paediatric Cardiologist

8.4.5 Challenges to PCC deployment

Under this theme, participants identified challenges to policy formulation and implementation, service provision and financial challenges.

8.4.5.1 Challenges to policy formulation

Timeline for policy review was identified as a possible challenge to the integration of PCC into existing policies. Some of the policy makers stated that there were health-related policies that had been reviewed shortly before the time of the study and reviews are only done once in four to five years. They noted that the review cycle may be affected by change in government particularly when the program is not in line with the new government's priorities. However, one of the

participants suggested the development of short-term plans and strategies in the interim while anticipating full inclusion at the next policy review.

Well, policies and strategies are revised every four years. The last revision of the Adolescent Health policy was about a year ago. So, we have to wait for four before any other revision which means that's when preconception care can be included. And if there is a change in government, it can reduce the chances because another leader may not believe in the strategy and feel that it's not a priority. So, leadership is key. – National Level Policy Maker 6

Unfortunately, we just finished the review of the National Youth Policy However, there is no crime in developing pre-policy strategy ... we can develop a strategy from the policy. ... We can have a preconception strategy for specific groups of people, just have a 2-year plan, 3-year plan. – National Level Policy Maker 5

Some of the policy makers expressed concerns over the appropriateness of inclusion of PCC in the FLHE curriculum. In their opinion, provision of PCC services at secondary school level may be seen as promoting sexual activity and thus lead to an increase in unwanted pregnancies which may be counterproductive.

Now we are saying they should incorporate it [PCC] into the FLHE curriculum. My fear is that it may be abused and seen as encouraging unwanted pregnancy among the secondary school students. All these reproductive things are not encouraged for that age. I think reproductive planning is for those who are married. – State Level Policy Maker 7

8.4.5.2 Challenges to service provision

The possible lack of equipment, infrastructure and adequate skills mix particularly at the PHC level was identified as likely to hinder deployment of PCC services. Mention of the PHC level was because it is at the grassroot level – closest to the community - where basic health care, including PCC should be available. However, the lack of an adequate skills mix due to absence of an enabling environment for health personnel hampers staff retention at the PHC level and the workload for the existing staff excessive. Furthermore, the possibility of misunderstanding the motives of PCC was highlighted and the need for improved awareness at population level to address this was mentioned.

One of the challenges is the availability of equipment and facilities. For instance, are there equipment for diagnosing sickle cell at the PHC level? Basic genotype without giving inconclusive results is something that should be done at that level. There is also the issue of additional workload for the nurse/midwives, health educators and others at the PHC level. Although it enriches the system which is a merit because of the preventive intervention that will reduce the workload of curative care. However, it may be seen as additional work for the health workers. – **National Level Policy Maker 1**

We would need to mobilize resources from every area, not just financial. We need technical support and the support of the beneficiaries of the service. Work must be done on health promotion, communicating the objectives of the program to the Nigerian public so that it will not be mistaken like they took polio vaccine for something else ... We also need skills for programming, skills for service delivery, like the skills mix you have in the primary health care. Most of the primary healthcare services are at the grass root level, at the community level but the skilled health workers run away because there are no facilities, social amenities to cater for their family needs. They need schools for their children, they need recreational centres around them, they need good roads, potable water, power.– **National Level Policy Maker 2**

The health workers also stated the need for staff training and improved awareness at the community level to ensure provision and uptake of the services.

Like I tell people policies are made. Nigeria has policies and guidelines. So many people have sat down with so many of these things ... and drawn up policies. We need to go back and train people, the workers and of course make the people aware that such services are available at the community level. – **Tertiary Level Ob/Gyn 1**

One main challenge cited by the health workers is the fact that pregnancies are often not planned. This and the fact that the proportion who use the existing maternal health services is low may affect uptake of PCC services.

I think the biggest challenge is the fact that most pregnancies in this part of the world are not planned. It takes planning for a pregnancy to realise the need for preconception care. But most people don't plan pregnancy like that. Pregnancy just happens and by the time they realise, the time for preconception care has passed. Besides that, uptake of maternal services is low. Up to 60% of women who claim to use antenatal care don't even see health workers, they see traditional birth attendants which is not optimal. We should improve that. – **Secondary Level Ob/Gyn**

8.4.5.3 Financial challenges

Describing the importance of ensuring an implementation strategy to drive the deployment of PCC in the country, the policy makers stated the need for budgetary allocations to ensure financial provisions to back the PCC policy when it is available.

Well sometimes the problem is not with policy, but with the implementation. There is often no accompanying implementation strategy or enabling environment for the policy to thrive. The government itself should realize the importance of this concept and put mechanisms on ground to make it thrive. There should be budgetary provision to drive the process. All these take time; anything that has to do with policy formulation, implementation will be gradual.— **State Level Policy Maker 6**

... with the new policy of government now, money that is meant for a specific activity cannot be moved to another activity. Everything must be covered in the budget before you can do it. It must be integrated into the budget first for you to have funding implementation. — **National Level Policy Maker 4**

Another thing that could hinder it will be poor implementation of the strategy due to lack of funds. ... if there is no budget line for those activities, then that will definitely hinder implementation, you just have it on paper there is nothing to start with. — **National Level Policy Maker 6**

Financial challenges including the cost of establishing the service were described. This according to the study participants would be the cost of formulating a guiding policy and the cost of deploying the service – staff recruitment and training and promoting the program to ensure uptake.

Nigeria as at now doesn't have a preconception care policy and to formulate the policy, we need funds, we need time. Funds to train the appropriate cadres, put some structures, drugs and consumables in place for preconception care, publicity, and health education. Money is the baseline for everything. — **Tertiary Level Public Health Physician 2**

The main challenge is finance – for the media to disseminate information, production of handbills and posters. Besides, the state is short staffed; some local government areas have only one nurse covering the whole area. There needs to be political will so the government can provide the needed funding for all these. — **State Level Policy Maker 1**

Other potential costs highlighted are the cost to clients. The participants wondered if the potential cost of the service to the clients would not discourage uptake.

And the socioeconomic impact on the women. What I mean is that is it going to be an extra burden to them? Is it going to be free? That may also affect implementation – the financial aspect. – **National Level Policy Maker 6**

Let me just say one final thing, financial implication of preconception care to these persons, who takes care of it? Will the tests be free to encourage people to come for preconception care? When you tell a random person on the street to go for preconception care, who takes up the responsibility of paying for the investigation? – **Tertiary Level Endocrinologist**

8.5 Discussion

Although there is existing literature shows that PCC services are provided in Nigeria, the services are poorly developed and not guided by any in-country standards^{48,175}. This study is novel in that it explored the opinion of policy makers and health care workers about the feasibility of structured preconception care (PCC) services in Nigeria which has not been done previously. Previous PCC studies have assessed knowledge, awareness, and utilisation of PCC services among health workers and women of reproductive age in the country^{46,48,92–94,211}. The findings in this study highlight existing opportunities for policy development and implementation, describe issues related to health system readiness for provision of services and identify possible challenges at policy and health system levels.

While acknowledging the absence of a PCC policy in the country, the study participants highlighted the importance of such policy and emphasised on the integration of PCC services into the existing health system. Both the policy makers and the health workers believed that a policy would provide a framework for proper implementation of PCC services. In addition, the policy makers identified some health-related policies into which PCC can be integrated. They also described existing collaborations between the government agencies that could be used to hasten the policy development process. Among the policies mentioned in the study are the reproductive health policy, adolescent health policy and the national health policy. A review of the health-related national policies in Nigeria shows that there are targets for various aspects of maternal and child health, but not for PCC. The National Reproductive Health Policy and Strategy to Achieve Quality Reproductive and Sexual Health for all Nigerians places emphasis on preventive and promotive measures for the reduction of maternal, perinatal, and neonatal morbidity and mortality.

These measures are integrated with treatment and rehabilitation in a multi-disciplinary and multi-sectoral manner²¹². Embedded in the 2016 National Health Policy is the Reproductive, Maternal, Neonatal, Child and Adolescent Health (RMNCAH) goal⁵⁷. This RMNCAH goal aims to integrate RMNCAH services into the continuum of care, reduce morbidity and mortality and promote universal access to comprehensive sexual and reproductive health services for adolescents and adults throughout the life cycle. In addition, as part of initiatives to combat non-communicable diseases (NCDs) in the country, the National Health Policy aims to institute universal screening and genetic counselling for the populace⁵⁷. Although PCC is not specifically stated, the framing of the RMNCAH goal and the plan to control NCDs intuitively provide room for adaptation and integration of PCC services. The Global Action Report on Preterm Birth recognises PCC as the weak link in the continuum of care and states the importance of the preconception period for improving the health and wellbeing of girls and women, as well as those of boys and men⁵⁴. If achieved, the integration of PCC into the continuum of care of the National Health Policy will address this weak link and aid progress towards improving health and wellbeing in adolescence and adulthood.

The National Adolescent Health Policy emphasises responsible sexual behaviour and positive attitudes to sexuality as a means of preventing unwanted pregnancy. The policy aims to facilitate the provision of effective, accessible information, guidance and services for the promotion of health and prevention of health problems through integration of these services into the school curricula and service provision in areas where adolescents can be found. This relates to the Family Life and HIV Education (FLHE) curriculum mentioned by the study participants. One of the objectives of the FLHE curriculum is to provide information and skills necessary for individuals to make rational decisions about their sexual health²¹³. The curriculum identifies six themes (human development; personal skills; sexual health; relationships; sexual behaviour; society and culture) which are incorporated into the different school subjects at the secondary school level²¹³. Various aspects of PCC can be integrated into these themes. For example, genetic issues may be absorbed into human development while reproductive life planning can be integrated into sexual health and sexual behaviour. Only the national guidelines for the prevention of mother-to-child transmission of HIV (PMTCT) includes preconception care as a primary prevention strategy

among women infected with HIV¹⁴⁷. What is missing is stating the mode of implementation of PCC as a prevention strategy and indicators for evaluation within the policy.

For PCC to be properly implemented in the country, there is a need to integrate the services within the existing health care system. The health workers in this study described collaborations between different specialities which can provide a foundation for integration of PCC. The Nigerian PHC system promotes the PHC-under-one-roof model where all services required by an individual are expected to be available at a single visit without any need for special clinics^{210,214}. Two-way referrals between the primary, secondary and tertiary care levels direct patients from higher to lower levels and vice versa depending on the need²¹⁴. Within the tertiary health care level, referrals may also be needed between specialties. As described by the health workers in this study, the specialties have their methods of referral and collaboration to provide care to patients who require multiple teams to address their health problems. This implies that deploying PCC services in an organised manner will not require developing new systems, although the existing services in the health system may need to be modified.

In terms of readiness for structured PCC services within the health system, the opinions differed among the study participants. Whereas some believed the health system as it exists is ready for deployment of PCC services stating the need to address issues like unintended pregnancy as justification. Other participants believed that some adjustments are needed including training of personnel and provision of funds to run the program. However, some of the participants argued that the challenges being faced with service provision may hamper integration of a new program. In keeping with the opinion that the health system can deploy PCC services, previous studies in Nigeria have shown that PCC services are being provided minimally in the country^{46,48,92,93,175,211}. Further, potential PCC users believe it is important and many are willing to use it if it is available^{94,215}. However, the opinion that the health system is not prepared for deployment of PCC services can be justified by studies among health workers which show that there is a need for increased awareness and training to improve provision of PCC services^{48,211}. In addition, as stated by the health workers in this study, uptake of maternal health services in the country is generally low. There is poor uptake of antenatal care (ANC), delivery, and postnatal care services^{69,155}. For instance, the 2018 Nigeria Demographic and Health Survey (NDHS) showed only 67% of women

aged 15-49 years received ANC, 43% had skilled attendance and delivery and 42% had postnatal check³. It has been shown however that using PCC services improves the use of ANC and other maternal health services. PCC may therefore be a solution to the problem of poor uptake of maternal and child health services.

In this study, the potential challenges to PCC service deployment in the country were discussed. These challenges ranged from policy formulation to implementation, service provision and finances. The description of the possible challenges may be understood in the context of maternal health services in the country. The services provided at the primary health care (PHC) level include ANC, delivery services and postnatal care. Complicated cases are referred to the secondary and tertiary levels as appropriate. In addition to maternal health services provided within the formal health system, which includes public and private providers, traditional healthcare providers are also involved in maternal healthcare¹⁵⁵. Access to health services is affected by educational and socioeconomic status and is often dependent on individuals' ability to pay out of pocket as health insurance systems are not fully developed in the country^{155,216}. In addition, the use of either the formal or traditional providers is influenced by educational and socioeconomic status. Given this context, the participants' description of the importance of political will and the impact of change in government is understandable. These factors must be considered in the formulation of policies and guidelines for PCC and will impact on the policy implementation.

8.6 Conclusion

Formal deployment of preconception care (PCC) services in the Nigerian health system is achievable given that there is some level of awareness and some uptake of the available services albeit provided in a haphazard manner. The road to the attainment of this aim may however be tortuous given the challenges currently experienced with provision and uptake of maternal health services in the country. Nevertheless, the foundation for integration of the services has been laid by the phrasing of several health-related policies in the country. The implementation and evaluation structures can also be easily developed using models from countries where the services already exist. There is willingness among the health workers to provide the services as they described existing systems that can be modified to embrace the provision of PCC. With advocacy,

it is possible to generate adequate political will to ensure funding for implementation and uptake of PCC in Nigeria.

Chapter 9

9 Discussion

9.1 Introduction

This chapter provides an integrating discussion of the results described in the preceding chapters. While not repeating the results, the chapter provides linkages between the segments based on the crosscutting themes. Section 9.2 provides a summary of the findings in tabular form; Section 9.3 gives an overview of the crosscutting themes and builds on them in line with previous literature.

9.2 Summary of findings

This PhD research set out to explore the awareness, perception, and practice of preconception care (PCC) in Nigeria. The study also explored the need for and feasibility of integrating PCC service within the existing reproductive health care framework in the country. In summary, the study shows the influence of multiple factors on perceptions and attitude towards provision and uptake of PCC services. These included the individual, family and community levels as well as health system and policy related factors. Chapter 4 (Paper 1) provides an overview of existing PCC practices and the provision of PCC within the health system. While some elements of PCC are available within the health system, the services provided are often at the discretion of the health workers and are dependent on the identification of previous or potential complications in the clients' health. Additionally, some programs offered by government and non-governmental agencies, religious bodies and as part of cultural practices can be formalised into a structured PCC program¹⁷⁵. Chapter 5 (Paper 2) describes the perception about PCC at the community level. The study participants noted potential benefits for women, men, children, families, and the community. However, there is a need to raise awareness about these benefits to ensure uptake of the services at the community level. The perception about PCC among health workers presented in Chapter 6 (Paper 3) is that while PCC is of importance for people with pre-existing medical conditions, all people within the reproductive age group would benefit from having the services which needs to be integrated into health services for people within this age bracket. In Chapter 7 (Paper 4), the missed opportunity for referral of women with pre-existing medical conditions was brought to the fore. Exploring the feasibility of deploying a PCC program in the country, Chapter 8 (Paper 5) highlights potential areas for integration into existing policies and within the health system. Further details of the above summary in relation to the objectives is provided in Table 9-1.

Table 9-1 Summary of key findings

Result chapter	PhD Objectives	Key findings
Chapter 4	1. Explore and document the existing preconception care practices in Southwest Nigeria	<p>There are some existing practices aimed towards improving pregnancy outcomes in the country. However, there is a need to provide a structured PCC program with guidelines to streamline the practices, harness the existing programs and integrate them into the health system. Highlights of the findings are:</p> <ul style="list-style-type: none"> ▪ Elements of PCC are found in existing programs and services within the health system including government-sponsored and NGO-based outreaches ▪ Within the health system, services are often opportunistic, usually depending on the health worker's ability to discern a need or demand-driven ▪ The Family Life/HIV education (FLHE) provides some reproductive health information that is related to PCC ▪ Religious bodies usually provide premarital counselling; some of the content aims at ensuring optimal maternal health before pregnancy. This includes requiring couples to have medical check-up ahead of their wedding ▪ Some cultural practices such as the fattening room teach women how to optimise their health ahead of pregnancy (the fattening room is a traditional practice in south-eastern Nigeria where young girls are prepared for marriage, taught about marital etiquette and fed with a fattening diet.)
Chapter 5	<p>2.1 Explore the awareness and perceptions about utilization of preconception care services among adult women and men in Southwest Nigeria</p> <p>3.1 Describe the perceptions of adult women and men about the need for PCC services</p> <p>3.3 Explore the willingness of adult women and men to use and support the use of PCC services</p>	<p>At the community level, awareness of PCC was generally high, and the services are believed to be important with potential benefits for ensuring positive pregnancy outcomes. Key findings included:</p> <ul style="list-style-type: none"> ▪ PCC can be described as including medical and non-medical preparations for pregnancy which are beneficial for women, men, and children ▪ PCC is particularly important for some specific health problems like genetic diseases (e.g., sickle cell disease), chronic diseases (e.g., hypertension and diabetes) and for people who have challenges achieving conception ▪ Although PCC appears to be skewed towards women, men can also benefit ▪ Potential barriers to the uptake of PCC services include the possible cost of services, cultural views about the need for the services and cumbersome hospital protocols such as delay in being attended to and need for investigations ▪ There is a general perception of willingness within the community to take up PCC services due to potential benefits for families and the community ▪ To ensure adequate uptake, there is a need to raise awareness about the need for PCC services

Result chapter	PhD Objectives	Key findings
Chapter 6	<p>2.2 Explore the awareness and perceptions about utilization and delivery of PCC services among health care workers in Southwest Nigeria</p> <p>3.2 Describe the perception of health care workers about the need for PCC services</p> <p>3.5 Describe the willingness of healthcare workers to provide PCC services</p>	<p>There was a high level of awareness of PCC among the health workers and the descriptions given were consistent with the WHO and CDC recommendations for PCC services. Highlights of the findings included:</p> <ul style="list-style-type: none"> ▪ PCC holds benefits for all people within the reproductive age bracket but is particularly relevant for those with specific health problems like hypertension, sickle cell disease, diabetes, and infertility ▪ Access to PCC services provides an opportunity for pregnancy planning and the potential to improve outcomes ▪ PCC services should be recommended in an age-appropriate manner at the secondary school level and for newlywed or about to wed couples ▪ Every specialty that provides health services to people in the reproductive age bracket needs to integrate PCC into its practice ▪ PCC services should be provided at the three levels of health care (primary, secondary, and tertiary) with referrals for more specialised care where needed ▪ Acceptability and uptake of PCC services will be influenced by delay in health care seeking which is prevalent at the community level ▪ Out-of-pocket payment for health services may also hinder uptake of PCC if the costs are not minimised
Chapter 7	3.4 Explore the pregnancy and post-childbirth experiences of women who could have benefitted from PCC services	<p>Despite having regular contact with the health system for management of their chronic health conditions, the women in this study had no awareness of PCC. Key findings included:</p> <ul style="list-style-type: none"> ▪ Although the women desired to be pregnant, there was no active preparation in terms of notifying their health care providers of their intention so their medications could be optimised or changed as needed ▪ Most of the women believed they could have benefitted from PCC had they been aware and used the services ▪ Health care providers need to be proactive in enquiring about pregnancy intentions and referring women of reproductive age for PCC services
Chapter 8	4. Explore the feasibility of PCC service provision within the reproductive health care framework in Nigeria	<p>Although there are no specific PCC guidelines in the country, there are opportunities within the existing health-related policies to allow for integration within the health system. Highlights included:</p> <ul style="list-style-type: none"> ▪ A structure for PCC can be introduced into health-related policies like the adolescent health policy, reproductive health policy and the national health policy ▪ Intersectoral collaboration is important to ensure widespread deployment and uptake of PCC services

9.3 Crosscutting themes

Five main themes emerged across the research as shown in Table 9-2 which provides a matrix of the themes as found in the five papers. The themes that emerged are:

1. Existing PCC services – description of religious, cultural and traditional practices aimed at improving health in the preconception period and PCC services provided within the health system
2. Perceptions of and attitudes towards PCC – health workers’ and community members’ perceptions and attitudes towards provision and uptake of PCC services
3. Types and location of PCC services – opinions on services that fit into PCC and where PCC services should be provided within the health system and at the community level
4. Integration of PCC in the health system – how PCC services can be deployed with consideration for existing services and collaboration between different specialties in the health system
5. Challenges to PCC service provision – possible challenges that could impede the deployment of PCC services in the country

These themes are discussed further in sections 9.3.1 through 9.3.5.

Table 9-2 Crosscutting themes

Themes	Paper I (Chapter 4)	Paper II (Chapter 5)	Paper III (Chapter 6)	Paper IV (Chapter 7)	Paper V (Chapter 8)
Existing PCC services	Some PCC services are provided within the health system, albeit in an opportunistic manner; cultural and religious practices exist however, there is a need to streamline and provide structure		Existing services include care given to women and couples with specific health problems.	Lack of awareness among women with chronic medical conditions	No guidelines or policy for PCC in existence.
Perceptions of and attitudes towards PCC		Positive attitude: PCC viewed as beneficial in managing potential health problems that can impact negatively on pregnancy i.e. maternal and neonatal health; also important for improving men's health	Opportunity to prepare for pregnancy; emphasis on preventive measures to ensure positive outcomes	All but one participant believed they would have benefitted from using PCC; despite their perception of potential benefit, the women believe PCC is more appropriate for those with challenges in conception	
Types and location of PCC services	Services include education, information, counselling, and screening	Medical check-up to identify and treat pre-existing conditions	PCC services should be available at the three levels of health care and in facilities where care for women of reproductive age is routinely provided		
Integration of PCC in the health system	Existing services, cultural and religious practices and school-based programs should be integrated	PCC services should be made available at facilities close to the community	PCC relevant for most specialties that care for people of reproductive age; need for referral between services	Need to integrate into routine care for women with pre-existing health conditions	Room for integration in existing policies; intersectoral collaboration important
Challenges to PCC service provision	Establishing structure and guidelines	Uptake may be impeded by cultural views about hospitals, lack of awareness of potential benefits, cost of service	Attitude towards preventive health services at the community level, avoidance of health services, delayed health care seeking and the practice of out-of-pocket payment for health services may hamper the uptake of PCC	Lack of awareness leading to missed opportunities for uptake	Lengthy process of policy development may hamper deployment of services. This may be mitigated by the evidence of room in existing policies for integration

9.3.1 Theme 1: Existing PCC services

This study has identified some existing PCC practices in Nigeria. Some services are provided within the health system often in an opportunistic manner – as demanded by clients or at the discretion of the health worker when previous complications in pregnancy provide an indication. In addition to this there are cultural and religious practices that aim to improve the health status of women or couples before conception (Chapters 4 and 6). The fact that there are no policies or guidelines for PCC implies that there are no standard operating procedures in place. Hence, when PCC services are provided, the services provided are limited to whatever potential complications have been identified. Thus, while a woman who had previous pregnancy losses of unknown cause may have a gamut of tests recommended, another who has diabetes may be offered only an adjustment of medications in the preconception period. These recommendations will often depend on whether the woman has made her pregnancy intention known to the health worker. To combat this, social avenues for intervention such as through the religious and cultural bodies and the educational system may be incorporated to raise awareness about the need for PCC. Some of these avenues have existing systems like the Family Life and HIV Education (FLHE) curriculum, premarital counselling and the fattening rooms which only need to have their content expanded to include PCC. In addition, every clinic visit by anyone (women or men) within the reproductive age bracket should be an opportunity to discuss reproductive life plans. This is because although many pregnancies may be described as wanted or intended, they are often not expected at the time they occur and by the time the woman is aware, the opportunity for lifestyle modifications, medication adjustment and counselling has been lost^{8,217}. This came to fore in the case studies with women who had pre-existing medical conditions (Chapter 7). Whereas these women had been in regular contact with the health system for follow up for their pre-existing conditions, most were unaware of PCC or their need for it. None had their medications changed or adjusted prior to pregnancy and some only had their pre-existing conditions diagnosed during antenatal screening sessions. Furthermore, previous PCC studies in the country have shown varying levels of awareness, knowledge, and uptake of PCC services among women of reproductive age in various parts of the country^{45,46,92–94}. Although PCC studies among health workers have shown good knowledge of the components, the studies demonstrate poor provision of PCC services^{48,211}. There is therefore a need to integrate the cultural, religious, and educational practices and streamline

them with the health system for improved awareness and increase the chances of uptake of PCC services. This would require development of a policy or integration of PCC into existing health-related policies to provide guidance for the services (Chapter 8).

9.3.2 Theme 2: Perception of and attitudes towards PCC

At the community level, there was a positive attitude towards PCC with most of the participants identifying PCC as potentially beneficial for managing health problems that can impact negatively on pregnancy outcomes (Chapter 5). The effect of attitude on uptake of PCC services has been shown in studies where negative perception and poor attitude towards PCC affected intention to use and uptake of the services negatively^{218,219}. The importance of PCC for improving men's general health was also highlighted by the community members. Men do not often receive PCC, nor are they provided with preconception health information even in settings where PCC programs are fully developed. This has been attributed to the assumption that fertility is a female issue or associated with health workers' lack of adequate information about men's preconception health^{162,220}. In this study, while some of the men supported PCC for men, others believed that men have no need for such services. Studies have shown however that men's lifestyle choices like alcohol and tobacco use, and medical conditions like obesity, diabetes and sexually transmitted infections may affect sperm quality negatively^{165,221}. Men who understand the importance of their contribution to conception have been shown to make positive lifestyle choices including losing weight, stopping alcohol and tobacco use in the preconception period^{222,223}. There is therefore a need to raise awareness about the importance of men's need for PCC at the community level in Nigeria.

In addition to expressing similar views as those found at the community level, the health workers viewed PCC as an opportunity to prepare for pregnancy not just with respect to physical health, but financially and psychologically (Chapter 6). The health workers described PCC as important and beneficial for pregnancy planning and preparation as well as to improve pregnancy outcomes. Many of the health workers also expressed willingness to offer PCC or refer their patients to a designated PCC facility if one is available. They laid emphasis on the importance of PCC as a preventive measure against complications especially among women who have pre-existing illness like hypertension and diabetes. Previous studies have also shown that health workers believe PCC

is important for women with high risk conditions like hypertension, seizure disorder, depression and diabetes^{92,183,211}. The perception of PCC among health workers is important as they are an important source of preconception health information for women and couples^{73,83,224}. Lack of awareness among health workers has been shown to translate into poor information provided to women²²⁵, while negative attitude towards providing PCC services deters the uptake of the service by potential clients²¹⁸. Studies on PCC in Nigeria have shown that awareness of PCC is higher among women who received information while accessing other maternal health services like antenatal care or family planning services^{45,46,92,94}. Women who were unaware of PCC in some of these studies stated that they had not been informed about the service by their health care providers^{92,94}. Other studies have also shown that contact with the health system either through antenatal care, institutional delivery, postnatal care, use of modern contraceptives or follow-up for pre-existing illness enhances PCC knowledge^{224,226}. In this study however, the contact with the health system afforded by the routine care for pre-existing medical illnesses among the women in the case studies did not translate into improved awareness or uptake of PCC services (Chapter 7). Given the positive attitude shown by the health workers in this study, it is possible that other factors are responsible for the lack of PCC information among the women case studies. Barriers to provision of PCC services by health workers identified in literature include lack of clarity on who should provide PCC; lack of provider understanding of their role in PCC provision, the belief that clients should request if they need PCC; time constraints; inadequate resources and lack of PCC guidelines or standard operating procedures^{85,130,183,225,227}. By implication, there is a need for awareness of the need for PCC to be raised among health workers, particularly those who provide routine care for women of reproductive age who have pre-existing illnesses.

Among the women who had pre-existing medical conditions, all the participants except one stated that they could have benefitted from PCC. The one with the dissenting voice opined that people who have challenges achieving conception are in greater need of PCC (Chapter 7). This was the voice of the participant with sickle cell disease, a condition that is associated with complications in pregnancy and at delivery^{203,228}. Having PCC including genetic counselling, reproductive life planning and optimising health prior to conception has been shown to be beneficial for women with sickle cell disease^{149,229}. Negative perceptions and beliefs about maternal health services are associated with poor uptake of the services. These negative beliefs include a perceived absence of personal health risk and lack of belief in the benefits of PCC⁷³. Women who hold this opinion

often believe pregnancy to be “socially risky but physiologically healthy” and wish for secrecy and normality, viewing the use of maternal health services including PCC and antenatal care as medicalising pregnancy and unnecessary^{73,230}. Others believe that conversations on PCC should be initiated by the health provider without their needing to make a formal request²²⁷. It is possible that women who hold these opinions or similar ones, as shown by the dissenting voice among the women case studies, will be even less likely to appreciate the need for PCC unless they are aware of a health problem that may hinder their desire for pregnancy. It is thus important to address this and similar beliefs while promoting awareness about the importance of PCC for early detection and treatment of pre-existing medical conditions.

9.3.3 Theme 3: Types and location of PCC services

PCC service provision can be demand-driven when requested by clients or supply-driven when it is provider-initiated. Provider-initiated services are often provided opportunistically when health workers identify a need in their clients⁷³. The services described as fitting into PCC by the participants in this study include health information and education, counselling and screening or medical check-up to identify and treat pre-existing conditions (Chapters 4 and 5). Studies on PCC among women of reproductive age in Nigeria have reported that some women who used PCC requested health information or counselling from health workers when they were planning for pregnancy^{46,92,94}. Concerning the location of PCC services, the health workers in this study believed that PCC services should be offered at the three levels of health care service delivery in the country (Chapter 6). Although there were variations in opinion, many of the health workers opined that all facilities that provide maternal health services should be able to provide PCC. In previous PCC studies among health workers in the country, opportunistic delivery of PCC services was cited as being an appropriate option until the services are fully integrated into the health system^{48,92}. Opportunistic delivery has been encouraged in the literature, particularly within the primary health care setting⁷⁵. Every contact of women of reproductive age with the health system is an opportunity for active PCC screening and discussions about their reproductive health plans^{75,231}. However, in some settings, an opportunistic offering of PCC may be viewed as meddlesome unless it occurs within specific contexts where the consultation automatically leads to the discussion of PCC. Examples of such settings are during family planning visits, lifestyle

risks assessments, or drug prescriptions¹⁴⁵. Nevertheless, there are communities where although pregnancy may not be strictly planned, the cultural expectation of pregnancy after marriage provides a context for discussion around PCC as described in a study among South Asian women participants¹⁷¹. Considering that the Nigerian setting similarly has an expectation of pregnancy shortly after marriage, PCC may also be opportunistically offered to newly married couples or people who are preparing for marriage. This was highlighted in this study at the community level where participants placed their descriptions of PCC within the context of courtship and marriage (Chapter 5).

9.3.4 Theme 4: Integration of PCC in the health system

Deploying a structured PCC service in Nigeria does not require the health system to commence a new program. The existing services and social avenues described in Theme 1 (section 9.3.1) can be incorporated into the health system. Health information, education and counselling can be provided through the school system, premarital counselling programs organised by religious bodies and traditional organisations. These social avenues can be constituted into a signposting system that directs women and men within the reproductive age group into the health system where they receive more specific medical check-up for screening, identification of health conditions and appropriate treatment. Specific guidelines for these can be integrated into the National Health Policy, Adolescent Health Policy, School Health Policy, Family Life and HIV Education curriculum and other documents that can provide guidance.

At the community level, the study participants recommended PCC services to be provided in facilities close to the community (Chapter 5). This tallies with the health workers recommendation of PCC services at all three levels of the health system (Chapter 6) – the primary health care (PHC) level is the grassroots level and is closest to the community. Within the three-tiered structure of the health system, the PHC level provides mainly health promotive and preventive services although there is some level of curative with the treatment of minor ailments and management of chronic diseases^{210,214}. PCC fits into the promotive and preventive aspects of health care and can therefore be provided at the PHC level. Anyone who requires more specialised care based on the findings at the PHC level can be referred to the secondary or tertiary level as appropriate. The health workers in this study described existing collaborations and referral systems between

specialties into which referral for PCC can be incorporated (Chapters 6 and 8). Rather than creating a separate facility for PCC as suggested by some of the study participants, streamlining the existing services would be less costly and time-consuming.

9.3.5 Theme 5: Challenges to PCC service provision

The key challenge to deploying PCC services in Nigeria is the need to establish structure and guidelines for the program. Availability of a policy provides a standard of care and encourages the provision of PCC services²²⁵. Although the process of policy development may be lengthy, the policymakers stated that without policy backing; provision of funds for staff training, procurement of equipment needed for screening services and program promotion at community level may be impossible (Chapter 8). Existence of a policy also allows for the development of algorithms for referral between the three levels of the health care system and will ensure that services provided at different facilities across the nation are similar. However, many of the health-related policies are framed in a way that would allow for the integration of PCC into them. For instance, the National Adolescent Health policy aims to prevent unwanted pregnancy²¹². PCC can be introduced as a means of prevention through reproductive life planning. The national guidelines for prevention of mother-to-child transmission of HIV mentions PCC as a primary prevention strategy¹⁴⁷. Counselling on lifestyle modifications, screening and treatment are possible implementation strategies that are part of PCC and can be integrated into the guidelines. Having identified policies that have room for PCC integration, the next step would be to identify a team of experts to develop the framework for the implementation.

At the level of PCC service provision and uptake, possible barriers include cultural views that impede the use of preventive services (Chapters 5 and 6). The community members and health workers described the tendency to delay the use of health services due to the perception of absence of personal risk. It has been documented that women often use reproductive health services only when there is a complication such as delay in childbearing^{73,232}. A systematic review of PCC studies in LMICs found that women may not use PCC due to a lack of belief in its benefits or because they have had previous pregnancy experiences and feel they know enough about PCC issues⁷³. Other barriers documented in literature which were also described in this study include cost of the service, time constraints, lack of awareness, not planning for pregnancy and lack of

resources for facilities to provide PCC services^{73,130,224,233}. The cost of service is important in the Nigerian context because health services are often paid for out-of-pocket. The health workers also stated that the national health insurance scheme does not cover preventive services under which PCC falls. Lack of health insurance coverage has been associated with poor access to maternal health services in Nigeria²¹⁶. Furthermore, previous PCC studies among women in Nigeria have shown that women in the lower socioeconomic groups have lower levels of knowledge about PCC and are less likely to use the services^{45,46,92,94}.

9.4 Scholarly contribution of the PhD

9.4.1 Academic impact

The study provides documentation of cultural and religious practices that have an impact on reproductive health outcomes which had previously been reported anecdotally. Paper 1 (Chapter 4) gives a description of these practises and shows the need to harness them when PCC services are formally deployed in the country. The information generated also forms a background for future potential studies, for instance, to assess the possible impact of these practices. Papers 3 and 4 (Chapter 5 and 6) document the perception of PCC at community and health service level. These provide information on the type of services that are required and how PCC service provision can be tailored to the needs of the people. The experience of women with pre-existing medical illnesses explored in Paper 4 (Chapter 7) reveals the training needs of health workers who should recommend PCC to their patients. Health care workers and policymakers provide an overview of the policy and service needs and challenges that ought to be addressed for the successful provision and uptake of PCC services.

9.4.2 Methodological innovation

Previous studies on PCC in the country have been hospital-based quantitative studies among women often recruited at antenatal care clinics. These studies have determined awareness and knowledge about PCC. Some studies have also reviewed the uptake of single preconception interventions like folic acid supplementation. This PhD work on the other hand has taken a broader approach to the topic, providing the perspectives of both pregnant and non-pregnant women, men,

health care providers and policymakers. The voices of men on the topic of PCC had been previously unheard in most studies within sub-Saharan Africa. The qualitative nature of the study allowed for exploration of the different perspectives provided thus providing robust information about the need for PCC services in Nigeria.

9.4.3 Policy impact

The desk review of national health policies and the perspectives of the policy makers provides information that is fundamental as a foundation for the development of guidelines for PCC in the country.

9.5 Revisiting the conceptual framework

The conceptual framework that guided this PhD was based on the socioecological model which describes the interplay between factors at the individual, community, institutional and policy factors in relation to the use of health services (Figure 2-1). The effect of this interplay on the feasibility of PCC service deployment was highlighted by the findings of the study as shown in Figure 9-1 which depicts the range of factors that can potentially influence PCC service deployment by impacting on provision and uptake. The framework shows that structured PCC service can be deployed successfully in Nigeria if the factors depicted are fully considered. At the intrapersonal level, the influence of the felt need for PCC on possible utilisation was displayed in Paper 4 (Chapter 7). Women who had pre-existing conditions believed they could have benefitted from PCC if they had been aware of it prior to their pregnancy. However, the perception of absence of personal need may prevent use of PCC services even if there is awareness. At the community level (Paper 2; Chapter 5), evidence of social support for PCC deployment and uptake was shown by the participants stating their willingness to support and use the service. They also stated their belief that the community would support PCC once there is improved awareness about its benefits. The influence of institutional factors was demonstrated by the health workers' perspectives in Paper 3 (Chapter 6) where the participants stated their willingness to provide PCC once the needed structures are in place. Going further in Paper 5, the health workers described opportunities within the health system where PCC services can be incorporated. Policy level factors came to the fore in Papers 1 (Chapter 4) and 5 (Chapter 8). In Paper 1, the lack of PCC guidelines was shown in the

opportunistic provision of PCC within the health system and the absence of standards to streamline existing services. The importance of a guiding policy was further emphasised in Paper 5 which described policies into which PCC can be incorporated.

Overall, this PhD has shown that the feasibility of PCC deployment in the Nigerian health system will be influenced by factors within the different domains described by the conceptual framework. Thus, policy level factors, health system-related issues, community and individual-level factors all have a role to play in ensuring the successful deployment of PCC services within the health system.

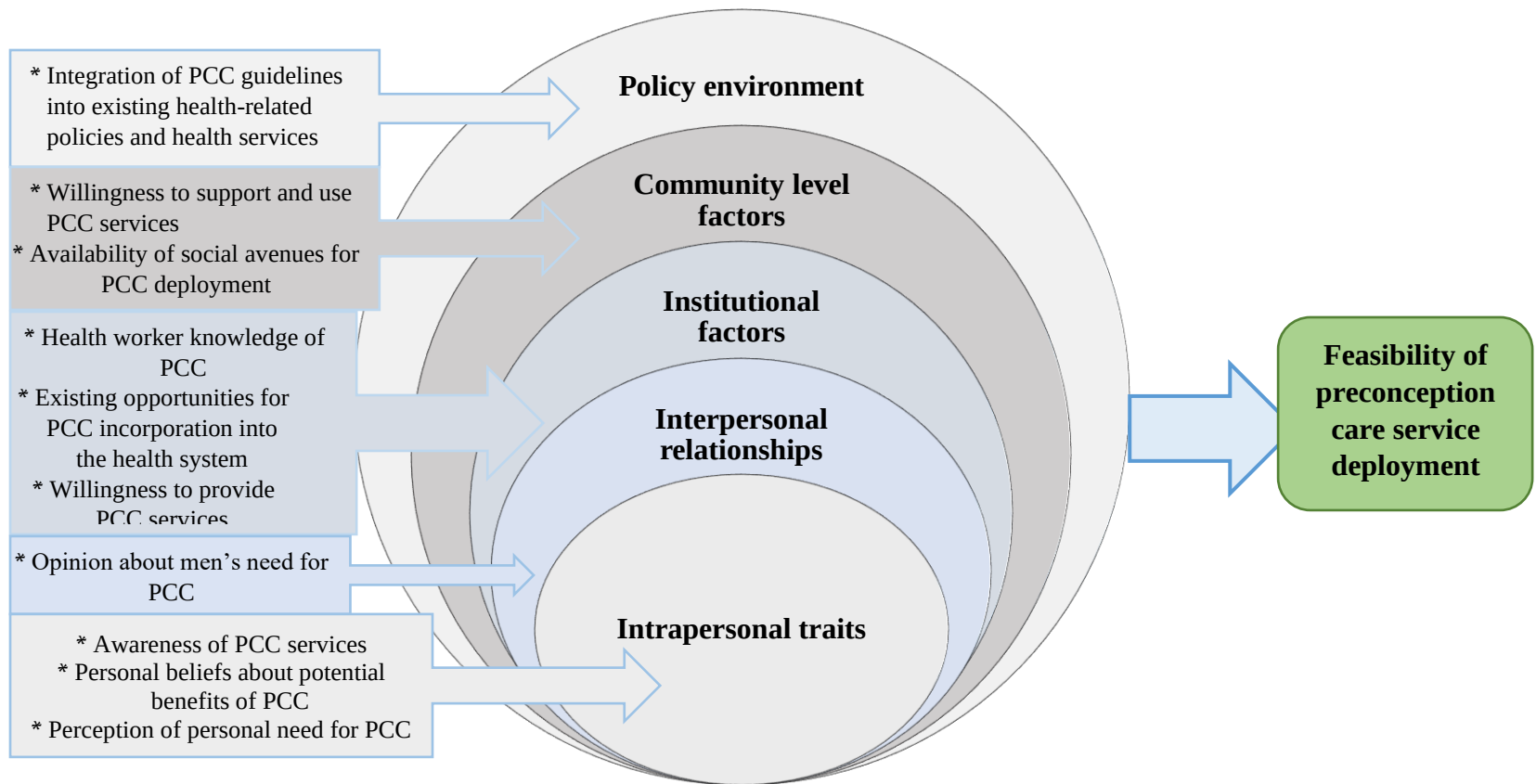


Figure 9-1 Conceptual Framework for the Factors Influencing the Feasibility of Preconception Care Service Deployment

Chapter 10

10 Conclusion and Recommendations

10.1 Conclusion

This PhD has shown that preconception care (PCC) services exist in Nigeria albeit without a well-defined structure. Additionally, social avenues for improving preconception health abound within religious organisations. Traditional and cultural practices can also be found, while non-governmental organisations and some government agencies provide services that are similar to PCC services. Awareness about PCC was high among the study participants both at the community level and within the health system. However, women who had pre-existing medical conditions were largely unaware of PCC and despite planning their pregnancies, they did not benefit from interventions in the preconception period that could have improved their pregnancy outcomes. The attitude towards the provision and use of PCC services was positive among the study participants as they described potential benefits to the health of women, men, and children within the community. Even though the study participants acknowledged the need for PCC and believed that its use has great promise for improving reproductive health outcomes, it was apparent that many women and men do not use the services and health care workers neither recommend nor provide the services as often as they should. While this may be attributed to the absence of specific PCC guidelines for health workers to follow, it is also a pointer to the need to provide training and improve awareness among health workers as well as raise awareness about PCC at community level. Opinions about the feasibility of PCC service deployment and the readiness of the health system for the services differed among the health workers and policy makers. While highlighting existing health-related policies and health programs and services into which PCC can be incorporated, the participants also described potential challenges that may hinder the provision and uptake. Potential barriers to the provision and uptake of PCC highlighted in the study include lack of awareness of the benefits of PCC, perceived absence of personal risk, financial implications to the potential users and challenges with ensuring policy backing for the program. All these factors need to be considered in planning for PCC service deployment in Nigeria.

10.2 Recommendations

10.2.1 *Recommendations for policy and practice*

10.2.1.1 Recommendations for policy

The importance of policy to the provision of PCC cannot be overemphasised. Having a policy in place provides structure to the service and ensures that services are streamlined and not provided in a haphazard manner. The policy also gives guidelines that ensures uniformity in the services provided in different health facilities and different regions of the country. Provision of a policy backing for PCC has been shown to improve awareness among health workers^{25,85}. Guidelines for PCC programming can be provided in a policy document along with algorithms for referral, stepwise direction on what should be done in different contexts and the inclusion of social avenues for delivery of PCC services. This policy does not need to be a stand-alone document but can be integrated into the existing health-related policies that are framed to provide an opportunity for PCC like the National Health Policy and the Adolescent Health Policy. Working documents can be developed from these that will be used in practice.

Funding mechanisms for PCC service should be included in the policy guiding PCC service provision. This can provide a foundation for the inclusion of PCC in the National Health Insurance and Community-Based Health Insurance schemes. This will reduce the need for out-of-pocket payment and improve the uptake of PCC services. Funding considerations in the policy should also include the provision of adequate infrastructure for service delivery, health worker training and improving awareness at the community level through the incorporation of mass media, online services, nongovernmental organisations, faith-based organisations, and civil societies.

10.2.1.2 Recommendations for practice within the health system

There is a need to improve awareness about the need for PCC services among health workers. Health workers are a major source of PCC information as revealed in studies among women in Nigeria and Ethiopia^{46,83,92}. This study revealed missed opportunities to provide PCC to women with pre-existing medical conditions who would have benefited from the service. Health worker awareness can be improved through training, provision of guidelines for PCC service and online access to PCC information. The training and information provided to health workers should

include the need for PCC among women of reproductive age, the needs of women with pre-existing medical illnesses and PCC for men. Health workers also need to be enlightened on the importance of using every contact they have with women and men in the reproductive age group within the health facility to raise questions on reproductive life planning. This is an important strategy for determining whether to provide PCC counselling including genetic counselling and lifestyle modifications, family planning services or referral for screening and treatment of pre-existing conditions^{112,169}.

A community-based approach to the delivery of PCC services may be used to encourage uptake¹⁰⁹. This may be deployed through the primary health care system which is at the grassroots level. Existing referral systems between the three levels of health care can be used as needed when specialised care is required. Furthermore, religious organisations, civil societies and associations at the community level can be integrated as social avenues for delivery of PCC information for program promotion and improved awareness.

School-based interventions can also be included among the strategies to increase awareness about PCC. There is evidence in literature that this strategy has been successfully deployed in promoting PCC services^{25,109}. The Family Life and HIV Education curriculum provides an avenue for integrating PCC into the secondary school system in the country.

10.2.2 Recommendations for future research

PCC in Nigeria is a developing program and as the services are deployed, research into the required content and the most effective delivery strategies will provide understanding on how to improve the service. PCC for men is an area that is often neglected, however men's contribution to healthy pregnancy outcomes has been documented. This includes the need for lifestyle modifications such as tobacco cessation avoidance of toxic environmental exposures and improved activity to reduce obesity in the preconception period¹⁶. Further exploration of men's need for PCC and health worker perceptions about men's PCC needs in the Nigerian context is therefore needed. Other areas of research that may be considered include the use of reproductive life plans to improve preconception health and reduce unwanted pregnancies and the use of media to raise PCC awareness at the community level.

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12 Appendices

12.1 Appendix 1: Information sheet

INFORMATION DOCUMENT

Study title: An exploration of the knowledge, utilization and need for preconception care services in the Nigerian health care system

Good day sir/madam.

Introduction: I am Dr. Oludoyinmola Ojifinni doing research on preconception care knowledge and practice in Nigeria. Research is just the process to learn the answer to a question or gain more understanding about a concept. In this study, I want to learn about people's understanding of preconception health and preconception care services as well as how to provide preconception care services in a manner that will be acceptable to the people who it is meant to serve.

Invitation to participate: I am inviting you to take part in this research study.

What is involved in the study – This is a qualitative study involving adult men and women, community and religious leaders, health workers and government officials in Oyo State, Nigeria and at the federal level. I will be holding discussions with people either one on one or in a group setting. The interviews and discussions are expected to take about one and a half (1½) hours. Your knowledge about the existence of preconception care services, knowledge, and awareness of what it means, use of (or willingness to use) the service and opinion about the need for the service will be sought in the discussion. Voice recording of the discussion will be done to ensure that no information provided is lost. All recordings will be transcribed after the discussion is over. If it is necessary, I may have to return to ask you more questions about any unclear information after reading the transcript.

Risks: There is no anticipated risk as a result of your participation in this study.

Benefits: There is a possibility of your opinion influencing policy formulation for the improvement of the health of women and children in the country.

Participation is voluntary, your refusal to participate will involve no penalty or loss of benefits and you may discontinue participation at any time without penalty.

Reimbursements – refreshments will be provided at the end of the discussion.

Confidentiality: No personal information will be documented during the discussion. The recordings will be made available only to the research team and saved in a password coded format. The recording will be kept for three years if the data is published after which it will be destroyed. All transcripts will be depersonalized.

Organizations that may inspect and/or copy the research records for quality assurance and data analysis include groups such as the Research Ethics Committee. If results are published, may lead to individual / cohort identification.

Contact details of researcher – For further information you may contact

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Contact details of REC administrator and chair – for reporting of complaints / problems.

If you have any concern over the way the study is being conducted, please contact is Professor Clement Penny, the Chairperson of this Committee on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

12.2 Appendix 2: Consent form

I have read and understood the purpose of this research as well as my rights regarding participation. I voluntarily consent to participate in the discussion. I also consent to having the discussion recorded on tape.

Signature/Date

12.3 Appendix 3: Consent form (for participants who are unable to read)

The purpose of this research as well as my rights regarding participation have been read and explained to me. I have understood and voluntarily consent to participate in the discussion. I also consent to having the discussion recorded on tape.

Signature/Date

12.4 Appendix 4: FGD Guide – Adult women and men

Introduction: Good day Sir/Ma. This study is being carried out by Dr Doyinmola Ojifinni. It is a study to examine how the care women receive before and around the time of pregnancy can help in improving the health of mothers and children. I will like us to discuss your understanding of these concepts and seek your opinion about the need for them in our communities.

Questions

1. What are the things you think are important for the health of women who are trying to have a baby? Are there also things that are important for the health of men who are trying to get their wife pregnant?
 - a. For instance, are there things they need to do or not do?
2. Can you tell me what you understand by the term “preconception care” (*i.e., the care women receive before and around the time of pregnancy*)?
 - a. What are the components?
3. To what extent would you say preconception care is important for the health of
 - a. Men?
 - b. Women?
 - c. and children?... tell me more – why is this this important (or why not)?

Before we continue, I will like to provide you with the description of preconception care. *Preconception care is a special type of care provided for women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. Preconception care for men is also important as their health also affects their biologic and genetic contributions to pregnancy outcomes. The goal of preconception care is to ensure that the parents are in an optimal state of health before pregnancy occurs. It includes screening, counselling, and treatment of pre-existing medical conditions as well as reproductive life planning.*

4. Having heard the description of preconception care, do you know a place where preconception care services are offered?
 - a. Can you please describe the place and the type of services provided?

- b. Who provides the services?
 - c. Who are the people that use these services?
 - d. When are such services needed?
5. Do you believe it is necessary to have preconception health and care as part of the maternal and child health services in your community?
- a. Who do you think the services should be aimed at?
 - b. Would you be willing to use or support the use of such a service?
 - c. In your opinion, would women and men in the community be willing to use such a service?
 - d. Do you think your community would be willing to support the use of such a service?
 - e. What are the likely benefits of the service?
 - f. What challenges do you foresee in having such a service?
 - g. How do you think such a service should be set up?
 - i. What would be required? Who should run it?
6. As we round up this discussion, would you kindly share any concluding thoughts or comments on the issues that we have discussed?

Thank you for your time.

12.5 Appendix 5: Interview Guide – Case Studies

Introduction: This study is being carried out by Dr Doyinmola Ojifinni, a PhD student. I am doing a study to examine how the care women receive before and around the time of pregnancy can help in improving the health of mothers and children. I am here to ask you a few questions about your pregnancy experience to identify intervention strategies that will help other women with similar situations.

SN	Sociodemographic information	Response
1.	Age (as at last birthday)	
2.	Number of previous pregnancies	
3.	Number of living children	
4.	Birth interval	
5.	Index pregnancy for this interview (<i>if not currently pregnant and is talking about a past pregnancy</i>)	

Questions

The preconception period refers to the time when a woman of reproductive age has the potential to become pregnant or a man has the potential to impregnate his female partner. Our discussion is aimed at understanding how your actions and health during this period affected your pregnancy and delivery.

6. Can you please describe your experiences during pregnancy to me? (*interviewer to specify the pregnancy identified in no. 5 above if the respondent is not currently pregnant*)

Probe: How old were you at the time of the pregnancy?

When did you realise you were pregnant?

What was the situation around the pregnancy? – were you healthy or ill? Did you want to be pregnant at that time or would you have preferred to delay it a little?

What type of care did you take of yourself **before** the pregnancy? Were you on medications that needed to be adjusted (if hypertensive, diabetic etc)? If you were, were you aware of the need to adjust your medications?

What type of care did you take of yourself **during** the pregnancy?

7. What is your understanding of “preconception care” (*i.e., the care women receive before and around the time of pregnancy*)?

Probe: In your opinion, what does the term mean? Who requires such care or under what conditions would such care be needed? Where should it be provided and by who?

Before we continue, I will like to provide you with the description of preconception care. *Preconception care is a special type of care provided for women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. Preconception care for men is also important as their health also affects their biologic and genetic contributions to pregnancy outcomes. The goal of preconception care is to ensure that the parents are in an optimal state of health before pregnancy occurs. It includes screening, counselling, and treatment of pre-existing medical conditions as well as reproductive life planning.*

8. Were you aware of this concept at the time of this pregnancy (*the index pregnancy under discussion*)?
- In what way do you think an understanding of these concepts helped or could have helped you at the time, if at all? Would you say it could have helped your preparation for pregnancy in any way? Could your attitude to your treatment (*for health condition identified – hypertension, diabetes etc.*) have been different in any way?
 - Are there any consequences you have experienced after delivery that could have been avoided if you knew about and used preconception care? Please provide details. (*This is applicable if the pregnancy being discussed is not the current one*)
9. Are there any additional comments you would like to make regarding our discussion so far?

Thank you for your time.

12.6 Appendix 6: Interview Guide – Community and Religious Leaders

Introduction: Good day Sir/Ma. This study is being carried out by Dr Doyinmola Ojifinni. It is a study to examine how the care women receive before and around the time of pregnancy can help in improving the health of mothers and children. I am here to ask you a few questions about your understanding of these concepts and seek your opinion about the need for them in our communities.

Questions

1. What is your understanding of “preconception care” (*i.e., the care women receive before and around the time of pregnancy*)?
2. To what extent would you say that an understanding of preconception care is important for the health of men, women, and children?

Please explain your answer: why is it important or not important to understand preconception care

3. To what extent have you incorporated your understanding of preconception health and care into the counselling of young people who are about to get married or are newly married?
 - a. If you have, can you please describe how?
 - b. If you have not, please tell me more about what you discuss with them regarding childbearing
4. In what way would you say the knowledge of preconception health and care has been used among people in your community or religious group?

Before we continue, I will like to provide you with the description of preconception care.

Preconception care is a special type of care provided for women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. Preconception care for men is also important as their health also affects their biologic and genetic contributions to pregnancy outcomes. The goal of preconception care is to ensure that the parents are in an optimal state of health before pregnancy occurs. It includes screening, counselling, and treatment of pre-existing medical conditions as well as reproductive life planning.

5. Considering the description, I have given, would you say these concepts are similar or different from your opinion of preconception care?
 - a. In what way are they similar or different? *(asking about similarity or difference will depend on the response of the interviewee)*
6. In your opinion, is it necessary to integrate preconception health and care into the maternal and child health services in the community? Why/Why not?
 - a. Would you be willing to add these concepts into your counselling sessions?
Why/Why not?
7. As we complete this interview, would you like to make any other comments regarding the issues raised?

Thank you for your time.

12.7 Appendix 7: Interview Guide – Health Care Workers

Introduction: Good day Sir/Ma. This study is being carried out by Dr Doyinmola Ojifinni, a PhD student at the School of Public Health, University of the Witwatersrand, Johannesburg, South Africa. It is a research on Preconception Health and Preconception Care Services for improving maternal and child health outcomes. I am here to ask you a few questions about your understanding of these concepts and seek your opinion about the need for them in the care of women of reproductive age.

Questions

1. Please state your area of specialty for the record.
2. How often do you see women of childbearing age (between 15 and 49 years) in your practice?
3. Would you say your specialty is important to the health and well-being of women of childbearing age? In what way?
4. In your opinion, do women of childbearing age require care that is different in any way from other patients who are seen in your practice?
 - a. How about men between ages 15 to 59 years?
5. What do you understand by the term preconception care?

Probe: What do you think it is composed of? Who is it for? Where is it/should it be provided?

Is there any such program/service that you are aware of? If there is, what services are available there?

Before we continue, I will like to provide you with the description of preconception care.

Preconception care is care provided for women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. Preconception care for men is also important as their health also affects their biologic and genetic contributions to pregnancy outcomes. The goal of preconception care is to ensure that the parents are in an optimal state of health before pregnancy occurs. It includes screening, counselling, and treatment of pre-existing medical conditions as well as reproductive life planning.

6. Given the description I have just provided; what role is there for preconception care services in your practice?
Probe: Which category of people among your patients would require such a service? How would it help their childbearing plans?
7. How would you go about integrating preconception care services into your practice?
 - a. Who would provide the service?
 - b. Would you refer your patients? Under what conditions?
 - c. What level of health care should such a service be in? Primary, secondary, or tertiary? Why? *Tell me more about your response.*
8. What challenges do you foresee that may affect integrating preconception care into your practice?
 - a. What solutions can you proffer to these challenges?
 - b. In your opinion, is the health system ready for such an integration process to take place? Why/why not? *Tell me more.*
9. Are there any concluding thoughts you would like to share concerning the issues discussed?

Thank you for your time.

12.8 Appendix 8: Interview Guide – Policy Makers

Introduction: Good day Sir/Ma. This study is being carried out by Dr Doyinmola Ojifinni, a PhD student at the School of Public Health, University of the Witwatersrand, Johannesburg, South Africa. It is a research on Preconception Health and Preconception Care Services for improving maternal and child health outcomes. I am here to ask you a few questions about your understanding of these concepts and seek your opinion about the need for them in Oyo state and Nigeria as a whole.

Questions

1. What do you understand by preconception health?
 - a. Can you please describe what you think are the components of preconception care services?
 - b. Please describe any preconception service you are aware of at any level of the health system

If the interviewee appears stuck or stops talking you can probe – “tell me more” “would you like to add anything?”

2. Would you say preconception health and/or preconception care services are covered by any of the national or state health policies?
 - a. If they are, which policies?
 - b. In what way?
 - c. If there are none, which ones do you think should cover such services? Going further, would you say there is a need for policy guidelines for preconception care?

Before we continue, I will like to provide you with the description of preconception care.

Preconception care is a special type of care provided for women of reproductive age before pregnancy to detect, treat or counsel them about pre-existing medical and social conditions that can endanger pregnancy. Preconception care for men is also important as their health also affects their biologic and genetic contributions to pregnancy outcomes. The goal of preconception care is to ensure that the parents are in an optimal state of health before pregnancy occurs. It includes screening, counselling, and treatment of pre-existing medical conditions as well as reproductive life planning.

3. Considering this description, in your opinion, what role can preconception care services play in ensuring optimal reproductive health outcomes?
 - a. Is there a need to have preconception care?
 - b. Who would require such services?
 - c. Where should such services be provided?
 - d. Who should provide the services?
4. What opportunities exist for integrating preconception care service into the existing maternal and child health system? Please explain your answer.
 - a. What policy opportunities or gaps can you identify as likely to catalyse integration of preconception care into existing services?
 - b. In what way would these policy opportunities or gaps influence such an integration process?
 - c. What challenges do you anticipate?
5. What role would/could you (considering your office/position) or your parastatal (ministry at state or national level) play in establishing policies guiding preconception care as part of the maternal and child health services at the national/state level?
 - a. How willing are you to get involved in this process?
 - b. In your opinion, is the health system ready for such policies or guidelines to be set up? *Tell me more please.*
6. As we round up this discussion, please share any concluding thoughts on the issues raised

Thank you for your time.

12.9 Appendix 9: Codebook for Data Analysis

Introduction

This research on preconception care (PCC) in the Nigerian health system aimed to describe and explore the awareness, perception, and practice of preconception care as well as the need for and feasibility of integrating preconception care service within the existing reproductive health care framework in Nigeria. Qualitative methods including focus group discussions, key-informant and in-depth interviews were used to collect data from multiple sources at the federal, state, and local government levels. These data were then transcribed and where necessary, translated into English. The transcripts were prepared and stored for analysis and reporting. Prior to analysing the data, a codebook was developed as described below.

The codebook or coding scheme is a list of code names with their descriptions generated after reading through the data and identifying the key themes that are recurrent in the data ^{134,135}. The codes in this codebook were developed inductively primarily from reading and identifying codes from four of the transcripts from the project.

Codebook development

The codebook development involved a team of three coders including the principal investigator. The steps taken in developing the codebook are shown in Figure 1 below. After data collection, four of the transcripts were selected for first reading and coding. The team discussed initial codes following which the transcripts were imported into MAXQDA 2018 and coded independently by two of the team members. A team discussion was held after the coding and an agreement reached on codes and definitions. A fourth coder applied the agreed-on codes independently to the same set of transcripts and intercoder agreement was determined. We achieved an intercoder agreement of 94.92% with a Kappa statistic of 0.95. An intercoder agreement of 80 to 90% is recommended depending on the size of the codebook ^{134,144}. An experienced qualitative researcher independently reviewed the themes and codes before the final code list was agreed on.

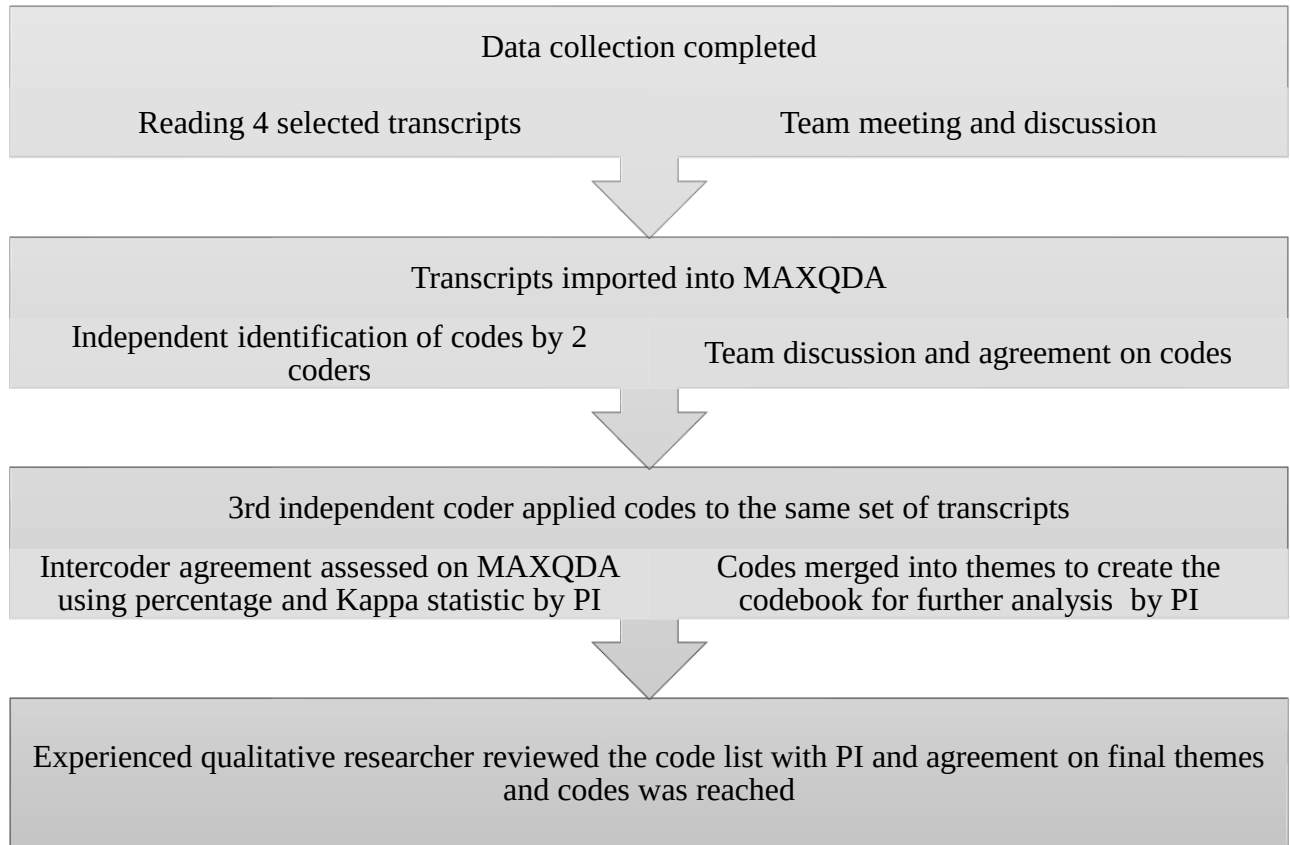


Figure 12-1 The codebook development process

Codebook

At the end of the code review, we produced five main themes for the study. A sixth theme was added during the analysis of the transcripts of the women case studies. The themes and their descriptions are shown in Table 11-1. These themes were applied to the transcripts. During the coding process, new themes emerged that were added to the existing ones while modifications and adjustments were made along the line, as necessary.

Table 12-1 Study themes

Theme	Description
Preconception care services on the ground	<ul style="list-style-type: none"> Occurs when respondents describe preconception care services that they offer on a case-by-case basis (available structure or clinic for preconception care, experiences with the services provided, how clients are identified or referred, programs with similarity to preconception care) Contents of the services provided by respondents (need for antenatal care during pregnancy, child spacing, best age for women to have children, the importance of childbearing, need for spousal care and support, discussion of health issues and referral for medical tests)
Attitudes towards preconception care	<ul style="list-style-type: none"> Appears when respondents talk about their perceptions of preconception care Opinions about community knowledge about preconception care What they think preconception care is and who requires it The roles of different stakeholders in providing preconception care View about benefits of preconception care Opinion about the need for special care among women and men of reproductive age Describing need for preconception care services Willingness to use and support the use of preconception care services
Location and the type of services that should be offered for preconception care	<ul style="list-style-type: none"> Appears when types of health care facilities that should be providing preconception care are mentioned (primary health care centres, clinics, or hospital, including the level of health care – primary secondary or tertiary) Contents of preconception care services Personnel required to provide preconception care How to go about providing preconception care
Integration of preconception care in the health system	<ul style="list-style-type: none"> How to and requirements for integrating PCC in the health system (technical and financial support) Human resources for health and training Promotion of the programme and appropriate structures Monitoring and evaluation plan Referral system Policies related to preconception care services Solutions to challenges identified to integrating preconception care Gaps in policy and issues on developing policies/guidelines Health system readiness for preconception care services
Challenges to preconception care	<ul style="list-style-type: none"> Occurs when respondents complain or report challenges relating to preconception care (suboptimal antenatal care use, lack of pregnancy planning, lack of acceptance of new concept, lack of awareness about preconception care, sociocultural barriers, cost implications for clients, readiness of the health system)
Experiences before and around pregnancy	<ul style="list-style-type: none"> Refers to instances when participants (women) mention their age at pregnancy, whether the pregnancy was wanted and expected or not Complications or illnesses/health challenges experienced that affected their pregnancy Their use of antenatal services, medications, and investigations

Appendix 10: Ethics clearance – UI/UCH Ethics Committee



INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)

College of Medicine, University of Ibadan, Ibadan, Nigeria.

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UI/UCH EC Registration Number: **NHREC/05/01/2008a**

NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: An Exploration of the Knowledge, Utilization and Perceived need for Preconception Care Services in the Nigerian Healthcare System

UI/UCH Ethics Committee assigned number: UI/EC/17/0390

Name of Principal Investigator: **Dr. Oludoyinmola O. Ojifinni**

Address of Principal Investigator: Department of Community Medicine
University College Hospital, Ibadan

Date of receipt of valid application: 24/08/2017

Date of meeting when final determination on ethical approval was made: N/A

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee*.

This approval dates from **16/02/2018 to 15/02/2019**. If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC at least four weeks before the expiration of this approval in order to avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.



Professor Catherine O. Falade

Director, IAMRAT

Chairperson, UI/UCH Ethics Committee

E-mail: uiuchec@gmail.com

Research Units • Genetics & Bioethics • Malaria • Environmental Sciences • Epidemiology Research & Service
• Behavioural & Social Sciences • Pharmaceutical Sciences • Cancer Research & Services • HIV/AIDS

12.10 Appendix 10: Ethics clearance – Oyo State Ethics Committee

TELEGRAMS.....

TELEPHONE.....



MINISTRY OF HEALTH
DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION
PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No.

All communications should be addressed to
the Honorable Commissioner quoting

Our Ref. No. AD 13/479/ SAS

12th October, 2017

The Principal Investigator,
University of the Witwatersrand,
Wits School of Public Health,
Johannesburg,
South Africa.

Attention: Ojifinni Oludoyinmola

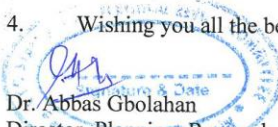
**ETHICAL APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE**

This is to acknowledge that your Research Proposal titled: "An Exploration of the Knowledge, Utilization and Need for Preconception Care Services in the Nigerian Health Care System" has been reviewed by the Oyo State Ethical Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, the Committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of findings as this will help in policy making in the health sector.

4. Wishing you all the best.


Dr. Abbas Gbolahan

Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethical Review Committee

12.11 Appendix 11: Ethics clearance – National Ethics Committee



National Health Research Ethics Committee of Nigeria (NHREC)

Promoting Highest Ethical and Scientific Standards
for Health Research in Nigeria



Federal Ministry of Health

NHREC Protocol Number NHREC/01/01/2007-27/10/2017

NHREC Approval Number NHREC/01/01/2007-14/12/2017

Date: 14 December 2017

Re: An Exploration of the knowledge, Utilization and need for Preconception care services in Nigeria Health care system

Health Research Committee assigned number: NHREC/01/01/2007

Name of Student Investigator:

Dr Oludoyinmola Ojifinni

Address of Student Investigator:

Community Medicine Department

University College Hospital, Ibadan, Nigeria

Email: oludoyinmola@gmail.com

Tel: +2348034739283; +27787001937

Date of receipt of valid application: 27/10/2017

Date when final determination of research was made: 14-12-2017

Notice of Expedited Committee Review and Approval

This is to inform you that the research described in the submitted protocol, the consent forms, advertisements and other participant information materials have been reviewed and *given expedited committee approval by the National Health Research Ethics Committee.*

This approval dates from 14/12/2017 to 13/12/2018. If there is delay in starting the research, please inform the HREC so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study.* In multiyear research, endeavour to submit your annual report to the HREC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the HREC. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification.

Signed

Professor Zubairu Iliyasu MBBS (UniMaid), MPH (Glasg.), PhD (Shef.), FWACP, FMCPH
Chairman, National Health Research Ethics Committee of Nigeria (NHREC)

12.12 Appendix 12: Ethics clearance – Wits Human Research Ethics Committee (Medical)



R14/49 Dr O Ojifinni

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) CLEARANCE CERTIFICATE NO. M171054

NAME: Dr O Ojifinni
(Principal Investigator)
DEPARTMENT: School of Public Health
Medical School
University

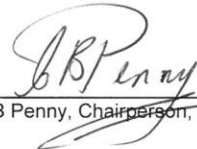
PROJECT TITLE: An exploration of the knowledge, utilization and need for preconception care services in the Nigerian health care system

DATE CONSIDERED: 27/10/2017

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Dr L Ibisomi

APPROVED BY: 
Professor CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 20/03/2018

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and ONE COPY returned to the Research Office Secretary on 3rd floor, Phillip V Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.
I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to resubmit to the Committee. I agree to submit a yearly progress report. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in October and will therefore be due in the month of October each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

12.13 Appendix 13: Confirmation of submission and acceptance of manuscript for publication

12.13.1 Paper 3 – Confirmation of submission

Dear Dr Ojifinni,

Thank you for submitting your manuscript, Health care providers perceptions about preconception care in Ibadan, southwest Nigeria – A qualitative study, to Maternal and Child Health Journal. The submission id is: MACI-D-20-00366. Please refer to this number in any future correspondence.

During the review process, you can keep track of the status of your manuscript by accessing the Journal's website. Should you require any further assistance please feel free to e-mail the Editorial Office by clicking on "Contact Us" in the menu bar at the top of the screen. Thank you very much.

With kind regards,
Springer Journals' Editorial Office
Maternal and Child Health Journal

12.13.2 Paper 4 – Confirmation of acceptance

Dear Dr Oludoyinmola O. Ojifinni,

I am pleased to inform you that your revised manuscript "*Exploring the need for preconception care: the pregnancy experiences of women with pre-existing medical conditions in Ibadan, Nigeria*" has been reviewed by the Board of Editors of the African Journal of Reproductive Health (AJRH) and has been accepted for publication. AJRH is a Peer-Reviewed Journal and member Committee on Publication Ethics (COPE) UK.

As soon as your article is published, you will be sent an Electronic copy (PDF Format) of your article. Should you be interested in ordering print copies or for a subscription to the journal, kindly

complete the attached ORDER FORM and return with the appropriate payment. All cheques should be issued in favour of the African Journal of Reproductive Health.

I thank you most sincerely for your interest in the African Journal of Reproductive Health.

Yours sincerely,
Editor in Chief, African Journal of Reproductive Health

12.13.3 Paper 5 – Confirmation of submission

Dear Dr Ojifinni,

Thank you for submitting your manuscript “‘Is the health system ready?’” – a qualitative exploration of stakeholders’ opinion about the feasibility of preconception care services in the Nigerian health system’ to Reproductive Health. The submission id is: REPH-D-21-00086. Please refer to this number in any future correspondence. During the review process, you can keep track of the status of your manuscript by accessing the following website:
<https://www.editorialmanager.com/reph/>

If you have forgotten your username or password, please use the "Send Login Details" link to get your login information. For security reasons, your password will be reset.

Best wishes,
Editorial Office Reproductive Health
<https://reproductive-health-journal.biomedcentral.com/>