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Health Care Providers Perceptions About Preconception Care in Ibadan, Southwest Nigeria: A Qualitative Study

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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 Using a qualitative case study design the perspectives of 26 health care providers—16 specialist physicians and nine nurses covering 10 specialties at the primary, secondary and tertiary health care levels was explored. 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 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.

Keywords Preconception care services · Maternal health care · Benefits of preconception care · Levels of health care · Health care seeking

Significance

What is already known on this subject? Health workers are an important source of preconception health information. In Nigeria awareness about preconception care is often a result of contact with health services through information received during antenatal care visits.

What this study adds? Health workers are aware that there is a need to provide preconception care services particularly for women with pre-existing medical conditions. Specific guidelines are required to direct preconception care provision at the different level of the health service. These guidelines are however not currently available.

Background

Strategies for improving reproductive health outcomes have gone through several paradigm changes over the years. One is the continuum of care approach, recognised as an effective means of delivering reproductive, maternal, newborn and child health (RMNCH) (Dean et al., 2012; Kerber et al., 2007). An effective continuum of care caters to the health needs of women and adolescents in two dimensions—(a)

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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) (Dean et al., 2012; Kerber et al., 2007). Preconception care (PCC) is a risk reduction strategy that fills the gap in the continuum of care by catering to the health needs of the adolescent girl and woman before and between pregnancies. PCC is "*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*" (World Health Organization, 2012). PCC recommended for both women and men in the childbearing ages as a strategy for optimising parental health and improving maternal and neonatal outcomes includes preventive (e.g. vaccinations and genetic screening), therapeutic (treatment for chronic medical conditions) and behavioural (e.g. alcohol reduction and smoking cessation) interventions (American Academy of Pediatrics & The American College of Obstetricians and Gynecologists, 2012; Bortolus et al., 2017; Goossens et al., 2018). 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 behaviour (American Academy of Pediatrics & The American College of Obstetricians and Gynecologists, 2012).

Thus, health care workers, irrespective of their specialty and level of healthcare, need to be aware of PCC and its components and understand the need among their clientele, providing counsel and referral as needed. 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 (Goossens et al., 2018; Marjolein Poels et al., 2016). Other quantitative studies in parts of Europe, Canada and the USA have also shown that confusion about who should provide PCC (Bortolus et al., 2017; Chuang et al., 2012; M. Poels, Koster, et al., 2017; Poels, van Stel, et al., 2017), perception of lack of opportunity to provide PCC (Fieldwick et al., 2017) and lack of motivation to provide PCC are barriers to provision by health care workers (Ojukwu et al., 2016). 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 (Chuang et al., 2012; Goossens et al., 2018; M. Poels, Koster, et al., 2017; Poels, van Stel, et al., 2017; Marjolein Poels, Koster, et al., 2017; Poels, van Stel, et al., 2017).

Globally, many maternal deaths are attributable to indirect causes including cardiovascular diseases and hypertension, endocrine disorders like diabetes, chronic respiratory diseases and cancers (Say et al., 2014). In sub-Saharan Africa, this proportion is 28.6% while HIV attributable maternal deaths are 6.4% (Say et al., 2014). Nigeria, with a maternal mortality ratio of 576/100,000 live births, accounts for almost 20% of global maternal deaths (National Population Commission [Nigeria] & ICF International, 2014; Souza, 2019). Pre-existing medical conditions are prevalent and increasing in magnitude among women of reproductive age in Nigeria (Adeloye et al., 2015; Federal Ministry of Health, 2015; Macaulay et al., 2014; Ogbera, 2014). PCC can provide an important link between services providing maternal care and those managing pre-existing medical conditions.

However, preconception care services are still evolving in Nigeria. Evidence from studies on the awareness and utilisation of PCC among women within health facilities show that health workers sometimes provide PCC services (Ezegwui et al., 2008; Idris et al., 2013; Olowokere et al., 2015; Onasoga et al., 2014). 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 visits (Olowokere et al., 2015). Moreover, participants who had some knowledge about PCC obtained information from antenatal clinics during their previous pregnancies (Idris et al., 2013; Lawal & Adeleye, 2014; Olowokere et al., 2015). 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 PCC (Adeoye et al., 2016). Literature shows that there is a possibility for health care workers' knowledge, attitudes and providing information on PCC to their patients to positively influence uptake of PCC services (Goossens et al., 2018). This study therefore explored the perceptions about PCC services and opinions about acceptability of PCC services in the Nigerian health system among health care workers whose clients are likely to require preconception care for management of pre-existing conditions.

Methods

Study Design

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 (Creswell & Poth, 2018; Yin, 2014). The issue illustrated in this study is PCC services explored within the bounds of the Nigerian health system and viewed through the lenses of health care providers at the three levels of the health system.

Study Setting

The Nigerian health care system runs at three levels—tertiary, secondary and primary—managed in a concurrent manner by the federal, state and local government (Federal Ministry of Health Nigeria, 2016). A two-way referral method is operated, with patients referred to higher levels for more specialised services and stepped down to lower levels when the specialised services are no longer needed (Federal Ministry of Health Nigeria, 2016).

PCC includes primary prevention strategies through screening, vaccinations and behavioural modification (American Academy of Pediatrics & The American College of Obstetricians and Gynecologists, 2012; Bortolus et al., 2017; World Health Organization, 2012). These services are provided at the primary health care level and are also available at the secondary and tertiary levels. PCC also includes treatment of pre-existing medical conditions (American Academy of Pediatrics & The American College of Obstetricians and Gynecologists, 2012; Bortolus et al., 2017; World Health Organization, 2012) which are provided mainly at the secondary and tertiary levels. 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: the University College Hospital (UCH), which provides tertiary services for the state and most of the southwestern region of the country; 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; 10 Primary Health Centres (PHCs) provide primary health care services in the LGA's 10 political wards.

Participant Characteristics and Sampling

To achieve the study's aim, the selected participants were specialist physicians and nurses/midwives who cared for women and men within the childbearing years. Paediatricians were included because the health of newborn babies depends on their parents' health. These specialists are found more at the tertiary level. Based on the services available at each level of health care in the LGA we aimed to interview a minimum of 12 physicians and at least two nurses at each level of the health system. At the tertiary health facility, specialist physicians (fellows or senior registrars) in Cardiology, Endocrinology, Family Medicine, Haematology, Nephrology, Neurology, Obstetrics/Gynaecology, Paediatrics, Psychiatry and Public Health were interviewed. Public health nurses and clinical nurses (at least senior nursing officers) also participated. Selection of the more senior cadre of nurses was because nurses are often transferred between specialties and would thus have had the opportunity to work in some of the specialties of interest. At the secondary level of care, two Obstetrician/Gynaecologists were selected from Adeoyo Maternity Hospital, a government-owned hospital and a private hospital providing assisted reproductive services. One Paediatrician and one clinical nurse were selected form the Adeoyo Maternity Hospital. At the LGA level, a public health physician, the Director of Maternal Health Services in the LGA (a public health nurse) and one clinical nurse at the LGA headquarters PHC were interviewed.

Data Collection Process

Data collection was supervised by the first author, conducted by four Masters students from the Faculty of Public Health, University of Ibadan, Nigeria who were experienced in qualitative data collection and had been trained for the study. The researchers had no direct relationship with the participants prior to the study as contact was only made during the interviews. The first author set up the face-to-face interviews but was not directly involved in the conduct of the interviews to avoid desirability bias affecting the responses as she is a Community Physician and had worked with many of the participants. All the health workers approached agreed to participate and were interviewed at their convenience in their offices. The research assistants worked in pairs, one facilitating and the other taking field notes. Each interview, lasting an average of 30 mins, was digitally recorded in English. 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 after each interview. Issues that could have been probed further were discussed for inclusion in subsequent interviews.

In-depth interview guides containing open-ended questions with probes were used for data collection. The questions were developed for the study based on PCC literature. The guides were pre-tested prior to data collection and questions that led to ambiguous answers were modified for clarity. 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?

Data Management and Analysis

The interviews were transcribed verbatim by the research assistants. 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 (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006). 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 experienced in qualitative research but not co-authors on this article. The initial set of twenty-seven codes generated from recurring patterns in the data were merged into six themes. A third, more experienced qualitative researcher 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. The themes generated from the data are shown in Table 2. The Standards for Reporting Qualitative Research (SRQR) checklist guided the preparation of this article (O'Brien et al., 2014).

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).

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.

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 13.5 years) in the health system. Three interviews were held at the primary level, five at the secondary level and 18 at the tertiary level (Table 1). The study's main themes are shown in Table 2 and quotations shown numbered from Q1 through Q35 are presented in Table 3.

Table 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

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.

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 [*Q1 & Q2*]. Some participants described PCC in relation to the timing of conception as care provided at least three months before a woman gets pregnant [*Q3*]. Descriptions that included timing of PCC, implied beginning care as early as possible in a girl's life and emphasised preventive measures like vaccinations and HIV prevention during

Table 2 Themes generated from the data

Themes	Description/subthemes
Scope of preconception care	• Description of PCC
	• Components of PCC
	• Personnel who should be involved in provision of PCC
People who require PCC	• Participant's description of people who require PCC
Where PCC services can be provided	• Type of facility for provision of PCC services
	• Level of health care for PCC services
Acceptability of preconception care	• Participant's perceptions of the acceptability of PCC to community members
Relevance of PCC to specialties	• Opinions about the importance of PCC to clients seen in each participant's specialty
Possible benefits of PCC	• Descriptions of the potential benefits of PCC

adolescence [*Q4*]. Others described PCC as care provided for couples to address peculiar health problems that may affect pregnancy before pregnancy [*Q5*].

Components of PCC

Opinions on possible the components of PCC included health education and counselling on adoption of a healthy lifestyle through improved nutrition, use of folic acid and immunisation against diseases like tetanus; the need to determine haemoglobin genotype and rhesus compatibility, identify and treat diseases including STIs and HIV, as well as planning towards a desired number and spacing of children [*Q6 & Q7*].

Personnel who should be involved in provision of PCC

The participants' views varied regarding who should provide PCC services. Descriptions included the need for a multidisciplinary approach with primary responsibility allocated to family physicians being the first contact 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 [*Q8 & Q9*]. 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 [*Q10*]. With regards to providing preconception counselling to adolescents and youth, some of the public health specialists opined that teachers should provide PCC counselling and health education. [*Q11*].

People Who Require PCC

Most participants indicated that all women and men in their childbearing years should have PCC, including those planning their first pregnancy and those who have had children but desire more [*Q12 & Q13*]. 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 [*Q14*]. Further, they described circumstances where PCC may be crucial because of the possibility of negative pregnancy outcomes including instances when couples' health challenges may affect their ability to conceive or impact negatively on pregnancy outcomes [*Q15*]. 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) [*Q16*].

Where PCC Services Can Be Provided

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 appropriate for PCC services [*Q17 & Q18*]. The common opinion among the tertiary level specialists was a specialised clinic where people of reproductive age can be referred for preconception counselling since PCC is mainly for people who are otherwise healthy and may not want to use the regular health facilities [*Q19*]. Some of the participants highlighted a general reluctance to engage with health facilities in the community, stating that people in the community are hesitant about using health facilities. These participants suggested the provision of PCC through community outreaches, social media outlets and youth friendly health centres [*Q20*].

Level of health care for PCC services

Regarding the place of PCC in the Nigerian health system, some participants believed PCC should be provided at all three levels of health care with emphasis on the primary health care level as a health promoting/primary

Table 3 Themes, subthemes and quotations from the study data

Themes	Subthemes		Quotations
Scope of PCC	Description of PCC	Q1	"*Preconception care is care that is given to women of childbearing age before they get pregnant*".—**Tertiary care level, Public Health Nurse (Ob/Gyn)**
		Q2	"*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**
		Q3	"*… 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**
		Q4	"*Preconception care … should be given right from school. In the Nigerian setting, right from the secondary school, a woman should have tetanus toxoid vaccination… her nutrition, sexual and reproductive care and how she would not contract HIV are part of preconception care*".—**Tertiary care level, Cardiologist**
		Q5	"*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**
	Components of PCC	Q6	"*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**
		Q7	"*… preconception care may be primordial, primary or secondary. Primordial includes folic acid before conception to prevent neural tube defect in the baby. Primary includes tetanus toxoid, hepatitis screening and immunisation before pregnancy. 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**
	Personnel who should be involved in provision of PCC	Q8	"*… 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**

Table 3 (continued)

Themes	Subthemes	Quotations
		Q9 "*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**
		Q10 "*… 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**
		Q11 "*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…*".—**Tertiary care level, Public Health Nurse**
People who require PCC		Q12 *"Women of reproductive age group will benefit more from preconception care, … single or married because it is not everybody who gets married that 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**
		Q13 "*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".*—**Tertiary care level, Ob/Gyn**
		Q14 "*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**
		Q15 "*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".*—**Tertiary care level, Neurologist**
		Q16 "*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…*".—**Tertiary care level, Clinical Nurse**

Table 3 (continued)

Themes	Subthemes		Quotations
Where PCC services can be provided	Type of health facility for provision of PCC services	Q17	"*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 that offers antenatal services, obstetric and gynaecologic services, family planning, mother and childcare…*".—**Secondary care level, Ob/Gyn**
		Q18	"*Preconception care can be provided in youth friendly centres or clinics where youth, teenagers and adolescents can walk in for counselling, screening and PCC information. On the social media, awareness can be created on reasons why women need to check themselves before pregnancy*".—**Tertiary care level, Clinical Nurse**
		Q19	"*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 offered preconception care*".—**Tertiary care level, Family Physician**
		Q20	"*Well, it would have been a good idea for preconception care to be rendered in 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 may not come to the hospital until they have problem trying to get pregnant*".—**Tertiary care level, Public Health Nurse**
	Level of health care for PCC services	Q21	"*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 should be available at the three levels*".—**Primary care level, Public Health Nurse**
		Q22	"*Preconception care should ideally be provided in primary health care just like antenatal care service … because it is closer to the public. But the primary health care providers should be able to tell if someone needs to be referred …*".—**Secondary care level, Ob/Gyn and Tertiary care level, Public Health Nurse**
		Q23	"*Preconception care can't be approached in primary health centres; I think it is best handled in tertiary health centres*".—**Tertiary care level, Haematologist**
		Q24	"*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 … nurses, genetic counsellors, social workers–an outreach team … lab facilities for medical screening, and doctors, obstetricians who will take most of the decisions… but not in primary health centres*".—**Tertiary care level, Ob/Gyn**

Table 3 (continued)

Themes	Subthemes		Quotations
Acceptability of PCC		Q25	"*Preconception care on its own is not popular. … our people don't believe that there is something wrong until they have some pain or discomfort…. Even hypertensives will not go to the clinic unless they have a problem…. So, women may not come for preconception care …*".—**Tertiary care level, Public Health Nurse**
		Q26	"*Acceptance may be an issue … especially when they need to pay for the services. The services are not covered by health insurance … NHIS* {National Health Insurance Scheme} *covers antenatal but not preconception care. Many people are not well informed, … they see hospital as a place they only go when complication has arisen. But preconception care is a preventive measure … 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**
Relevance of PCC to specialties		Q27	"*Some of our patients have hypertension, migraine and other chronic illnesses that require medications …which may be teratogenic and contraindicated in pregnancy. ….we provide information about the drug and tell them 'If you want to get pregnant, let us know so that we can change this medication'.*"—**Tertiary care level, Neurologist**
		Q28	"*…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*".—**Tertiary care level, Paediatrician**
		Q29	"*…preconception care is part of our job. We provide counselling, health promotion and health education to our patients; educate women of reproductive age to take folic acid before pregnancy to prevent congenital abnormalities especially spina bifida*".—**Tertiary care level, Family Physician**
Possible benefits of PCC		Q30	"*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".*—**Tertiary care level, Public Health Physician**
		Q31	"*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**
		Q32	"*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**

Table 3 (continued)

Themes	Subthemes	Quotations
		Q33 "*…It improves the health outcome for the baby and the mother. It also helps to prepare them financially for pregnancy and the baby".*— **Secondary care level, Ob/Gyn**
		Q34 "*It is all about dodging a bullet really, anticipating what can potentially happen and taking proactive steps to avoid or mitigate the issues. 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 can potentially have sons who develop the disease. With adequate preconception care, testing and counselling it's possible to avoid this*".— **Tertiary care level, Neurologist**
		Q35 "*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".*—**Tertiary care level, Ob/Gyn**

prevention service. Public health specialists, primary and secondary care level health workers stated that laboratory facilities and equipment for medical screenings are either already present or can be provided at the primary health level and referral made to higher levels as needed [*Q21 & Q22*]. 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 [*Q23 & Q24*].

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. 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 people with health insurance. Even then, the health insurance schemes often exclude preventive services, catering more for curative ones.

Relevance of PCC to Specialties

Expressing their views on the importance of PCC to their clients, the paediatricians stated 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 any issues detected. Others [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 [*Q27, Q28 & Q29*].

Possible Benefits of PCC

Participants saw PCC as an opportunity for parents to plan for childbearing—number/spacing of children and to prepare financially for the baby [*Q30*]. In addition, they stated that PCC improves health status of parents and increases the likelihood of positive pregnancy outcomes [*Q31, Q32 & Q33*]. 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 [*Q34*]. In addition, the possibility of unmarried couples checking their HIV status and deciding whether to continue their relationship was mentioned [*Q35*].

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 (Ezegwui et al., 2008; Idris et al., 2013; Olowokere et al., 2015; Onasoga et al., 2014) or quantitatively assessed awareness and knowledge about PCC among health workers (Adeoye et al., 2016). The provision of PCC in Nigeria is relatively new and gradually developing in different parts of the country (Adeoye et al., 2016). 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 when they desire pregnancy (Idris et al., 2013; Lawal & Adeleye, 2014; Olowokere et al., 2015).

Whereas previous studies show low PCC knowledge and awareness among health workers in other countries such as Australia (Kizirian et al., 2019), New Zealand (Fieldwick et al., 2017), Iran (Bayrami et al., 2013), and Ethiopia (Andargachew et al., 2018), our study shows that health workers at all levels are knowledgeable about PCC and aware of its primary components in line with those described by the WHO and CDC (American Academy of Pediatrics & The American College of Obstetricians and Gynecologists, 2012; Bortolus et al., 2017; World Health Organization, 2012). 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 adolescents (World Health Organization, 2012). Furthermore, in Nigeria, maternal anaemia (Dim & Onah, 2007; Izugbara et al., 2016), hypertension (Adeloye et al., 2015; Akinlua et al., 2015), sickle cell disease (Macaulay et al., 2014; Ogbera, 2014), diabetes and unplanned pregnancies (Izugbara et al., 2016; Ute, 2014) 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 (World Health Organization, 2012, 2013); 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 Australia (Kizirian et al., 2019), London (Mortagy et al., 2010) and Netherlands (M. Poels, Koster, et al., 2017; Poels, van Stel, et al., 2017) have also shown that family physicians and general practitioners believe they should oversee PCC services. Another study among general practitioners in London found that the participants believed that public health specialists should be the primary providers of PCC (Ojukwu et al., 2016). Some of our study participants also 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 (Farahi & Zolotor, 2013; Frayne, 2017). 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 (Coffey & Shorten, 2014; Freda et al., 2006; Moos et al., 2008). It also serves to improve their health status irrespective of pregnancy intention (Moos, 2002; Moos et al., 2008). Thus, every health care provider has the obligation to ask their patients about reproductive health plans at every contact and 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 services (Best Start Resource Centre, 2009). 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 (Dean et al., 2014; Izugbara et al., 2016; Ute, 2014). 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 services (World Health Organization, 2012). These outlets have the advantage of being available to people in their comfort zones and can be used to provide information, education and counselling regarding preconception health and the need for PCC.

The need to pay out of pocket for health services is 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 ensure costs are kept at a minimum to encourage uptake of the services.

That PCC is beneficial to both individuals and couples 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 for providing 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 among others (Moos et al., 2008).

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 were knowledgeable and positive about PCC services. This suggests a potential for including PCC services in the maternal, newborn and child health services in the country. For PCC services to be provided however, there is a need for guidelines 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.

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Data Availability The data generated for this study are not publicly available due to the qualitative nature. However, further information about the data can be obtained from the corresponding author upon reasonable request.

Code Availability Not applicable.

Declarations

Competing interests The authors declare that they have no competing interests.

Ethical Approval 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) from the Wits Human Research Ethics Committee (Medical) (Clearance Number M171054).

Consent to Participate All participants were informed that their participation was voluntarily and that they could withdraw from the study at any time. All participants provided written consent to participate in the study.

Consent for Publication Not applicable.

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