Perceptions about preconception care among health care providers in Ibadan, southwest Nigeria - A qualitative study

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Abstract

Background: Preconception care (PCC) is a recognised strategy for optimising maternal health and improving maternal and neonatal outcomes. Research has shown that PCC services are minimally available and yet to be fully integrated into maternal health services in Nigeria. This study explored the perceptions about PCC services among health care providers in Ibadan, Nigeria. **Methods:** This was a case study research among 26 health care providers – 16 specialist physicians and nine nurses covering 10 specialties: Obstetrics/Gynaecology, Cardiology, Endocrinology among others 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:** Six main themes were identified from the data – scope of PCC, people who require PCC, where PCC services can be provided, acceptability of PCC services, relevance of PCC to different specialties including gynaecologists, cardiologists, nephrologists, psychiatrists and possible benefits of PCC. PCC was viewed as care for women, men and couples before pregnancy to optimise health status and ensure positive pregnancy outcomes. Almost all participants stated that PCC services should be offered at all three levels of health care with referral when needed from the lower to higher levels. The prevailing opinion on the circumstances when PCC is required was that although all people of reproductive age would benefit, those who had medical problems such as 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 and identified potential benefits of PCC. The potential benefits outlined included opportunity to plan and prepare for pregnancy to ensure positive pregnancy outcomes. **Conclusion:** 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 however require establishment of guidelines and its uptake will depend on acceptability to people with known medical problems who will benefit from the service.

Background

Preconception care (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 outcomes [1]. 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*” [2]. 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 [3,4].

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)[5,6]. 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) [5,6]. 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. Although advocacy for PCC to improve reproductive health outcomes has been on for more than three decades, the attention of the research community, health providers and policy makers to the concept is more recent. The shift in focus followed the 2006 establishment of the Preconception Care Work Group and the Select Panel on Preconception Care by the United States Centres for Disease Control and Prevention (CDC) [7]. Subsequently, promotion of the PCC strategy has gained strength in the United States and globally. The WHO identified the place of PCC in the prevention of preterm births and subsequently convened a meeting of experts who developed a global consensus on PCC to reduce maternal and child morbidity and mortality [2,7,8].

For PCC to be effective, the services must cover the entire reproductive period which spans about four decades of a woman's lifetime. This implies a need for counselling on appropriate medical care and healthy behaviour at every encounter a woman has with the health system [4]. Health care workers, irrespective of their specialty and level of healthcare, need to be aware of PCC and its components. They also need to have some understanding of the need among their clientele in order to be able to provide counselling and referral if necessary. Previous 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 [1,9]. 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 [1,9]. Other studies have also shown that confusion about who should provide PCC [3,10,11], perception of lack of opportunity to provide PCC [12] and lack of motivation to provide PCC are barriers to provision by health care workers [13]. 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 [1,10,11,14].

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 cancers [15]. In sub-Saharan Africa, this proportion is 28.6% while HIV attributable maternal deaths are 6.4% [15]. Nigeria, with a maternal mortality ratio of 576/100,000 live births, accounts for almost 20% of global maternal deaths [16,17]. 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 [18–21]. In addition, hypertensive disorders of pregnancy constitute a substantial proportion of maternal deaths and near-misses in the country[22]. 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 [23–26]. In one of these studies, participants attributed their lack of awareness to the fact that health care workers do not talk about PCC during routine health visits [26]. On the other hand, participants who had some knowledge about PCC had obtained information from antenatal clinics during their previous pregnancies [23,26,27]. The only study found among health workers was a cross-sectional study among doctors and nurses in a teaching hospital in northern Nigeria which reported 83.3% awareness and 23% with knowledge of up to three-quarters ($\frac{3}{4}$) of the components of PCC [28]. Given that the likelihood of using PCC services is dependent on health care workers' knowledge, attitudes and providing information on PCC to their patients [1], 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.

Methods

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 [29,30]. 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 grassroot level [35]. 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 needed [35].

From its definition and identified components, PCC includes primary prevention strategies through screening, vaccinations and behavioural modification [2–4]. 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 [2–4] which are provided mainly at the tertiary and secondary level although with the two-way referral system, such services can 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 thus 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.

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 is a function of the health of their parents. 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 of the 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. 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. All the participants were purposively selected because of the relevance of their specialties to the care of women and men in the childbearing ages.

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 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. All the health workers approached for the study agreed to participate and were interviewed at their convenience. The research assistants worked in pairs with one facilitating and the other taking field notes. Debriefing sessions were held with the first author to discuss the interviews, highlighting any issues raised with the questions and making decisions on subsequent interviews. Each interview, lasting an average of 30 minutes, was digitally recorded in English language, and conducted in the offices of the participants. 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?

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. A hybrid of inductive and deductive coding were used by the first author in the development of the codebook for thematic data analysis [36,37]. 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 of codes 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 on MAXQDA 2018. The themes generated from the data are shown in Table 2. The Standards for Reporting Qualitative Research (SRQR) checklist was used in developing this article [38].

Ethical considerations

Information sheets containing the details of the study were provided to all participants and consent obtained before each interview. 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 ethics committee of the University College Hospital (UCH), Ibadan, Nigeria and the Wits Human Research Ethics Committee.

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 1.

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

The main themes generated from the data are shown in Table 2 and described thereafter.

Table 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	· 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	· 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

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.

"Preconception care is care that is given to women of child bearing 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**

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**

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**

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. At the end of the day you want to have a healthy child and a healthy mother during pregnancy." – **Tertiary care level, Ob/Gyn**

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

"In cases of genotype incompatibility (the AS, SS) you want to provide preconception care to tell them the kind of person that will suit them. 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."

Same applies to those who are AS, they should at least marry AA so they don't have children who are Sicklers." – **Tertiary care level, Clinical Nurse**

WHERE PCC SERVICES CAN BE PROVIDED

Type of health facility for provision of PCC services

In expressing their views about the most appropriate location for provision of PCC services, participants mentioned facilities that already provide maternal health 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. This opinion was more common among the secondary level service providers and the public health specialists.

"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**

A few of the participants, particularly the tertiary level specialists, advocated for a specialised clinic where people of reproductive age can be referred for preconception counselling. The proponents of this idea believe that PCC is a specialised care and since it is for people who are otherwise healthy, the 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 for a briefing, 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 it seems our culture here has not imbibed that. So, we may have to go out to the schools or community since people most likely will not come until they have problem trying to get pregnant. There can be community outreaches to discuss a number of things like blood group, blood level, genetic counselling which many of them need" – **Tertiary care level, Public Health Nurse**

"Preconception care can also 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**

Level of health care for PCC services

The participants discussed 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. In their opinion, the 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. This opinion was proffered more by the health workers at the primary and secondary levels of care and the public health specialists.

"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 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

Some participants, mainly 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, basically, 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 to do some medical screening, and doctors, obstetricians who will take most of the decisions. So, it should be in a facility like a secondary health centre where you can always take decisions prior to the woman getting pregnant and of course in tertiary health centres but not in primary health centres." –

Tertiary care level, Ob/Gyn

ACCEPTABILITY OF PCC

The participants expressed the opinion that PCC may not be accepted generally by the people who should use the service. They believed the concept of PCC is new to the prevailing culture, therefore the likelihood of using the service may be low. They further indicated that the general attitude towards health issues is that many people tend to avoid going to health facilities unless there is a problem. They stated that even those who have known illnesses such as hypertension which require regular follow up clinic visits, often miss their appointments when they feel well. Thus, they felt that the chances of such people going to a preconception clinic to determine if they are healthy is slim 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**

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 specialties 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**

POSSIBLE BENEFITS OF PCC

Participants described possible benefits of PCC services to potential users. They perceived that PCC provides an opportunity 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 was mentioned. 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**

Reduction in the chances of transmitting genetic diseases from parents to children was also mentioned as a possible benefit. The example of diseases which do not manifest in the parents but can be carried over to the children was given. Such diseases may be identified through genetic screening in the preconception period.

"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**

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 [23–26]. In addition, a previous study among health workers in northern Nigeria used quantitative methods to assess the awareness and knowledge about PCC [28]. One other study among health workers in Africa was a cross-sectional study in Ethiopia [39]. This limits the extent to which the findings from this study can be compared with previous literature. 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 country [28]. 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 [23,26,27].

Whereas previous studies show a low knowledge and awareness of PCC among health workers in other countries such as Australia [40], New Zealand [12], Iran [41], and Ethiopia [39], 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 [2–4]. 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 [2]. Furthermore, in Nigeria, maternal anaemia [42,43], hypertension [19,44], sickle cell disease [20,21], diabetes and unplanned pregnancies [43,45] 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 [2,46]; guidelines for PCC in Nigeria can be developed to mitigate these prevalent reproductive health problems.

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 [40], London [47] and Netherlands [11] 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 PCC [13]. 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 [48,49]. Providing PCC at every contact with the health system is referred to as opportunistic PCC and ensures that women's awareness about their health is raised at every opportunity [50–52]. It also serves to improve their health status irrespective of pregnancy intention [52,53]. 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 services [54]. 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 [43,45,55]. 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 [2]. 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.

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 others [52].

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 preconception care services in the maternal, new born and child health services in the country as it is seen as an important service for improving maternal and child health outcomes. For preconception care 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.

LIMITATIONS

There were some limitations in the course of the study. The first author who supervised the data collection opted not to conduct the interviews to avoid desirability bias affecting the responses being a Community Physician who had worked with some of the participants. hence, research assistants were trained to conduct the interviews. The younger age and lower qualification status of the interviewers with respect to the participants may have influenced their ability to probe further on some of the points raised by the participants. Also, the fact that member checking was not done due to some logistic constraints may have affected the trustworthiness of the data.

List Of Abbreviations

ACOG – American College of Obstetricians and Gynaecologists

CDC – Centre for Disease Control

COREQ – Consolidated Criteria for Reporting Qualitative Research

HIV – Human Immunodeficiency Virus

LGA – Local Government Authority

MOH – Medical Officer of Health

Ob/Gyn – Obstetrician/Gynaecologist

PCC – Preconception care

PHC – Primary Health Centre

RMNCH – Reproductive, Maternal, Newborn and Child Health

UCH – University College Hospital

UI/UCH – University of Ibadan/University College Hospital

WHO – World Health Organisation

Declarations

Ethical approval and consent to participate

Ethical approval for the study was obtained on February 6, 2018 from the University of Ibadan/University College Hospital (UI/UCH) Institution Review Board– Clearance number UI/EC/17/0390 and on March 3, 2018 from the Wits Human Research Ethics Committee (Medical)– Clearance number M171054. 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 to publish

Not applicable.

Availability of data and materials

For confidentiality purposes, the data generated in this study are not publicly available due to the qualitative nature of the study. Further information about the data is available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Study concept and design: OOO and LI. Acquisition of data: OOO. Analysis and interpretation of data: OOO and LI. Drafting of the manuscript: OOO. Critical revision of the manuscript for important intellectual content: OOO and LI. Final approval of the manuscript: OOO and LI.

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