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Healthcare Providers' Views on the Provision of Preconception Care for Women with Diabetes in Nigeria

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ABSTRACT

Background: One of the 1989 goals declared by St. Vincent's, which focused on achieving good pregnancy outcomes for diabetic women that should be similar to those for non-diabetic women, has not been achieved among Nigerian childbearing women (CW) due to a lack of preconception care (PCC). Literature indicates an increased prevalence of diabetes, diabetes during pregnancy, and pregnancy-related complications across the country's geopolitical zones. The persistence of pregnancy complications can be catastrophic if PCC is not adequately established and integrated into the national healthcare sector. Healthcare providers (HCPs) offer diabetes care (DC) and PCC to CW to mitigate adverse pregnancy outcomes. This study aimed to explore HCPs' perceptions of PCC and strategies towards its provision for Nigerian diabetic CW. **Design:** This qualitative study used an exploratory approach. **Methods:** Data were collected using in-depth semi-structured interviews, transcribed verbatim, and thematically analyzed. Results: Four themes emerged from the data: relevance of PCC, redesign of DC practices, awareness creation, and necessity of diabetes PCC. **Conclusion:** The findings imply that there is an urgent need for upgraded obstetric care for pregnant women to accommodate PCC for diabetic CW to reduce pregnancy complications related to diabetes, improve glycemic control, augment folic acid intake, and ensure proper pregnancy planning. The findings of this research can serve as an evidence-based document to enhance HC policies that would accommodate PCC in existing obstetric care.

Keywords: Providers' Perceptions; Healthcare; Preconception care; Diabetes; Women

INTRODUCTION

Diabetes is a chronic public health issue involving a non-communicable metabolic disorder characterized by high levels of body glucose (International Diabetes Federation, 2021). In 2021, the prevalence of diabetes in adults between the ages of 20 and 79 was estimated to be 537 million, three times that of the 151 million adults detected a few decades ago (IDF, 2021). In the Nigerian context, over three million people aged 20–79 have diabetes, with a prevalence rate of 3.7%. This indicates that Nigeria is the second-leading sub-Saharan country affected by diabetes after South Africa (IDF, 2021). However, in childbearing women (CW), diabetes can be either pre-existing or gestational (ADA, 2014). A high blood glucose level in pregnancy causes adverse outcomes such as congenital disabilities (Tinker *et al.*, 2020), spontaneous abortion, preterm birth, macrosomia, small for gestational age infants, neonatal admission, and infant death (Wei *et al.*, 2019; Murphy *et al.*, 2021; Newman *et al.*, 2021). These effects occur during embryonic development due to maternal diabetes (Hod *et al.*, 2018). According to John, Alegbeleye & Otoide (2015), poor glycemic control is a risk factor for adverse pregnancy outcomes in Nigerian women with diabetes.

Skilled healthcare providers (HCPs) provide antenatal care (ANC) to pregnant women to ensure healthy conditions during pregnancy for both the mother and fetus. ANC components include risk identification, prevention and management of pregnancy-related diseases, and health education and promotion (WHO, 2016). The Nigerian Federal Ministry of Health (FMOH, 2021) proposed that the ANC model, which evolved in the early 1990s, should include approximately 12 clinical contacts for women who begin ANC in the first trimester. Later, another model

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called Focus ANC (FANC), a goal-oriented approach, was introduced in 2002 to deliver evidence-based intervention at four critical visits during pregnancy, which later gave rise to a new ANC model known as Positive Pregnancy Experience in 2016 because FANC lacked promotion of positive pregnancy experiences and reduction in desired perinatal deaths. Therefore, to achieve full life-saving potential, which is the mandate of ANC, the 2016 WHO ANC guidelines indicated that a minimum of eight contacts was essential to improve women's experience of care and reduce perinatal mortality (FMOH, 2021).

Akanbi and Oluwatosin (2019) highlighted the need to upgrade the Nigerian health system by integrating preconception care (PCC) into obstetric health practices, as it would augment maternal and child health initiatives and minimize maternal mortality and morbidity rates (SDG 3). Mitigating maternal mortality and morbidity rates among women with diabetes before pregnancy by providing effective PCC is crucial. The provision of PCC is the principal responsibility of HCPs. Researchers were motivated to investigate the provision of PCC for Nigerian CW with diabetes. Therefore, this study proposes the following hypotheses:

1. Explore healthcare providers' perceptions of the provision of PCC for Nigerian diabetic CW.
2. Investigate strategies that could be adopted to provide PCC for Nigerian diabetic with CW.

Literature Review

Relevancy of Preconception Care

The World Health Organization (WHO) (2013) defined PCC "as the provision of biomedical, behavioral, and social health interventions to women and couples before conception occurs." PCC entails preventive measures that address the health conditions, behaviors, and risk factors of women of reproductive age that could harm pregnancy outcomes (WHO, 2013). Preventive measures for PCC include screening for different chronic disease conditions, alcohol and substance use, nutrition and weight management, folic acid and iodine supplementation, family planning, dental care and referral, and smoking cessation (Royal Australian College of General Practitioners (RACGP, 2012).

However, in the context of this study, the provision of PCC measures is geared towards women's health needs and conditions. Maternal diabetes, either type 1 or type 2, is a risk factor for the mother's health and the fetus, owing to the effect of diabetes on pregnancy. Hence, PCC is recommended for all CW before they decide to become pregnant (Walker, Holowatuk & Dashner 2021). Meanwhile, the recommendation has been that all potentially diabetic CW should receive counseling about the risk of congenital disabilities and pregnancy-related risks associated with poor glucose control due to unplanned pregnancy, information on the use of an effective form of contraception to avoid unplanned pregnancies, and the importance of each pregnancy (American Diabetes Association, ADA, 2004. Arluck and Mayhew (2018) reported that excellent control of glucose levels prior to pregnancy is essential to reduce the risk of significant malformations because uncontrolled diabetes is a known risk factor for embryopathy. Therefore, glucose levels should be assessed and conceptually controlled. HCPs are positioned to offer PCC. HCPs include obstetricians and gynecologists, general practitioners, pediatricians, endocrinologists, surgeons, mental physicians, cardiologists, nurses, and midwives, to mention a few. In consultation sessions with reproductive-aged women, HCPs should ask about pregnancy planning. Thus, PCC should be offered to women aiming to become pregnant, and family planning services should also be rendered to women who are not ready for pregnancy (Atrash & Jack, 2020).

Redesigning Diabetes Care

Introducing PCC in Nigeria will augment the existing practice of diabetes care for CW. The PCC practice for CW has yet to be adequately developed in the Nigerian health system; it is only done casually for women who visit hospitals for other reasons (Akanbi & Oluwatosin, 2019). Thus, diabetes care that incorporates standardized PCC services must be redesigned and strengthened for Nigerian CW. This calls for the engagement of all health stakeholders and healthcare settings to modify the Nigerian healthcare policy on maternal and child health by shifting from routine ANC to PCC to reduce maternal and child mortality and morbidity (Akanbi & Oluwatosin, 2019). Additionally, Ojifinni and Ibisomi (2020) mentioned that neither pre-pregnancy care structures, guidelines, nor routine PCC services are available in the Nigerian healthcare system. HCPs only offer PCC services to patients whenever their needs arise (Ojifinni & Ibisomi, 2020). The authors further suggested the need for PCC structures

and guidelines in the country. These guidelines can be integrated with other practices, such as counseling before marriage, to reduce adverse obstetric outcomes and promote the health of mothers and pregnancy outcomes. According to Kassa, Human & Gemeda, (2019), PCC components, such as counseling on the cessation of alcohol intake, cigarette use and other substances, preconception of HbA1c monitoring for a diabetic patient, genetic screening and testing, preconception of folate consumption, counseling on environmental hazards and contaminants, as well as assessment of dental care and check-ups, were never practiced. This makes the practice of PCC substandard among Ethiopian HCPs. In China, HCPs revealed that the current PCC practice is suboptimal (Wang *et al.*, 2021). Likewise, in Uganda, the PCC policy is not well embedded in other existing health policies, which causes a lack of continuity in postnatal care and the conception of subsequent pregnancies (Nathan *et al.*, 2021). Thus, the care for women with diabetes should be redesigned in Nigeria and other parts of the world.

Awareness of Preconception Care

Improving PCC can be achieved through health education by publicizing PCC awareness among HCPs and reproductive-aged women with diabetes. Technological devices such as mobile applications and other technological devices have been proven to be valuable means of creating the necessary awareness among diabetic women, and these technological innovations will help them decide on their reproductive life plan and achieve the targeted goals of their glycemic level (Forde *et al.*, 2021). Additionally, Ringholm, Damm & Mathiesen, (2019) also identified an online smartphone application as a new effective technological tool that is evidence-based for sharing the latest clinical recommendations on diabetes and pregnancy with healthcare providers and patients with diabetes. According to Murphy *et al.* (2018), mobile health technology can be adopted as a strategy to promote PCC uptake. Improving awareness of PCC and its engagement are the other potential implications. Another facilitator enhancing awareness of PCC was revealed by Maas *et al.* (2022), who mentioned that introducing PCC in schools would help spread messages about PCC to a wider population. Promoting awareness of PCC through various methods, forms, and times would contribute to its uptake and, eventually, improve PCC awareness (Sijpkens *et al.*, 2019).

Diabetes Preconception Care Necessity

To reduce the burden of diabetes treatment, Nang *et al.* (2019) proposed that diabetes care be a national priority, similar to tuberculosis and HIV infections. A meaningful financial health package, such as health insurance coverage, should be provided to lessen individual financial hardships and encourage medical practitioners to provide adequate treatment to patients with diabetes. Facility improvement in diabetes clinics by building new health centers with many rooms will assist HCPs in attaining work efficiency by providing appropriate care for diabetic women (Al-Alawi, Al Mandhari & Johansson, 2019).

METHODOLOGY

Research Design and Methods

This study adopted an exploratory qualitative design to explore HCPs' perceptions of the provision of PCC for diabetic CW and the strategies required to facilitate and promote care in the Nigerian health system. The exploratory approach elicited holistic and in-depth information about the topic and made sense of the participants' raw data. According to Polit and Beck (2012) and Hunter, Mc callum & Howes, (2019), exploratory research design illuminates how a phenomenon is manifested and is used to unveil the nature of the studied phenomenon. Six medical doctors who met these inclusion criteria (working in medical, endocrine, obstetrics, and gynecology units, with five years or more working experience, with proper communication, and with meaningful insight on the phenomenon studied) were purposefully selected and interrogated using an in-depth semi-structured interview. Purposive sampling involves the selection of an individual or group with specific knowledge or experience of the phenomenon being studied (Creswell & Plano, 2011). The medical providers interviewed were from the internal medicine, obstetrics, and gynecological departments of the Federal Teaching Hospital in Lagos State, Nigeria. Informed consent was obtained from the participants, who voluntarily agreed to provide the information needed for the study. Participants were informed of their right to withdraw from the study at any time, briefed about the purpose of the study, and assured of the confidentiality of their data.

Data Collection

The participants were interviewed using a hybrid method, and preferences were given to them in choosing

convenient locations and times for the interview sessions. During the data collection sessions, the participants were questioned based on the interview guide, and further probing of the issue was provided for a thick description. According to Sayrs (1996), an interview guide presented the topics and their sequences in the interview. Each interview question had to be evaluated thematically to ensure that the questions were related to the topic of the interview, theoretically to the investigation, and subsequently to the analysis of the study. Dynamically, the questions had to stimulate positive interaction, facilitate an easy flow of conversation, and motivate the participants to narrate their experiences and feelings on the topic. Each interview session lasted 40–60 minutes and was audio-recorded, along with daily notes and a reflective diary. During the data collection period, interview transcriptions and recordings were reviewed to ensure consistency (Ritchie *et al.*, 2014). Participant recruitment for the interview sessions continued until the data reached saturation.

Data Analysis

The researcher read the interview transcripts several times and carefully listened to the audio recordings to ensure accuracy. Reflective field notes and daily diaries were used for clarification. Data analysis was conducted inductively using six phases of thematic analysis (Braun & Clarke, 2006). The phases are described as follows:

- Familiarization with the data: Interview recordings were reviewed repeatedly, and transcripts were re-read several times by the researcher to familiarize them with the data and simultaneously maintain a clear meaning of the sentences across the data set. Daily notes and reflective diaries were also used to establish data connectivity and clarify doubtful statements during the data analysis.
- Coding: The researcher coded important statements and words of the participants in the dataset. The relevant coded excerpts provided answers to the research questions. Excerpts that fell under the same ideas were merged in the same color. Subsequently, similarly coded colors were grouped into categories.
- Search for themes: After the coding phase, the researcher assembled and grouped the related categories to create a theme.
- Review themes: A review of preliminary themes was conducted to further reduce the data. This formed the fourth phase of the analysis.
- Define theme: The researcher merged related themes, retained some as independent themes, and discarded others owing to redundancy after a thorough perusal by the research team.
- Reporting: The final generated themes were reviewed and labeled appropriately.

Trustworthiness of the Study

According to , many researchers agree that data trustworthiness, whether collected from direct observations, focus groups, or interviews, is evidenced by four concepts that determine the rigor of a qualitative study: credibility, transferability, dependability, and conformability. Credibility was achieved by returning the results of the interviews to the participants for a member check, and the participants confirmed the results. Transferability was observed by conveying the findings to the HCPs using the same criteria and practicing at another health institution for authentication. Dependability and confirmability were determined by taking the results to the interrater for a reliability check.

Ethical Consideration

Ethical approval for this study was obtained from the Health Research Ethics Committee (NHREC: 19/12/2008a) of International Islamic University Malaysia with number ADM/DCST/HREC/APP/3504 dated February 17, 2020.

RESULTS

A total of six HCPs participated in the study. The participants were mainly medical doctors (male = 5, female = 1) with the same educational background, albeit with different professional ranks. The participants were experts in the fields of endocrinology and obstetrics and gynecology (O&G) (Consultant Endocrinologist, n = 1; Consultant O&G, n = 2; SR O&G, n = 2; JR O&G, n = 1). Table 1 summarizes the demographic profiles of the participants.

Table 1: Demographic Profiles of the Participants

No	Gender	Educational Background	Position	Services Duration	Pseudonym
1	Male	MBBS, SL	Consultant	17	P1
2	Male	MBBS	SR	6	P2
3	Male	MBBS, WACS O&G, PG O&G, RC O&G	SR	12	P3
4	Male	MBBS	Consultant	11	P4
5	Male	MBBS, O&G	Consultant	16	P5
6	Female	MBBS	JR	10	P6

6FemaleMBBSJR10 P6MBBS: Bachelor of Medicine & Surgery; SL: Senior Lecturer; WACS O&G: West African College of Surgeons (Obstetrics & Gynecology); RC O&G: Royal College (Obstetrics & Gynecology); PG O&G: Postgraduate (Obstetrics & Gynecology); SR: Senior Registrar; JR: Junior Registrar

Healthcare Providers' Perceptions of the Provision of Preconception Care

Four themes emerged from the data: ***Relevancy of PCC provision and redesigning diabetes care practice*** were identified as HCPs' perceptions of PCC, whereas ***awareness creation and diabetes PCC*** necessity were provided by the HCPs as the strategies needed for the facilitation and promotion of PCC provision for Nigerian diabetic CW. The emerging themes were validated by inter-rater experts in endocrinology before being used for discussion.

Relevancy of Preconception Care Provision (RPCCP)

All participants agreed that PCC was germane for all CW with diabetes to identify risk factors, reduce them, and optimize their glucose levels. They stated that fasting plasma glucose, random plasma glucose, and HbA1c levels must be well monitored and optimized before a woman becomes pregnant to mitigate adverse outcomes. The participants' verbatim expressions supported the relevance of the PCC provision:

"My understanding about it is that (emm) when women come, especially those that are already diabetic even prior to pregnancy, they need preconception care, those that have had diabetes in their previous pregnancies require preconception care, those with the unexplained death of their fetus or bad obstetric history, some of these things will just be unrecognized diabetes in pregnancy, so all these people require preconceptional care…" P2

"…the glucose control must be optimal in terms of the fasting plasma glucose, random plasma glucose, and the HBA1C; all women aspiring or (emm) desirous of getting pregnant must be well controlled before they achieve pregnancy and that is what the standard is…" P1

HCPs further mentioned that PCC promotes pregnancy planning, safe motherhood, and consumption of folic acid supplements and encourages the cessation of unhealthy habits such as smoking and alcohol intake. The following verbatim statements support these findings.

"…So, you have to get them to plan their pregnancy; you offer them …an effective method of contraception that will keep them off pregnancy until their condition has been optimized…" P2

"…before they even embark on the pregnancy. And then other health promotion activities, smoking and alcohol that can affect their pregnancy and even worsen their prognosis in terms of diabetic care. Do you understand? So, you try and counsel them against all that so that they can put a stop to it…" P2

"…they may have to do (emm) iron supplementation, folic acid supplementation, calcium supplementation, and all that…" P3

Redesigning of Diabetes Care Practice

The participants mentioned that the recommended practice of PCC for CW with diabetes has not been well established in Nigerian society, as there is no established clinic for it. Hence, diabetes care for CW must be redesigned to accommodate PCC services within the national health system. This would also enhance women's pregnancy planning because it is uncommon for women to visit hospitals for pregnancy planning. They are also used in clinics for ANC. These findings were indicated in the verbatim statements of the participants.

"…it is poorly developed in this part of the world, …preconceptional care is generally poorly developed…, the problem is that most of the pregnancies in this part of the world are not planned, …most time pregnant women come to you with pregnancy rather than come to you before they get pregnant…" P5

"…most hospitals; it may not be available in most hospitals, but in practical terms, but the thing is, how many of these women avail themselves of going to the hospital to receive these preconceptional care…mostly when they get pregnant, they come for antenatal care…" P3

Awareness Creation on Preconception Care

All participants agreed that the key strategy for disseminating diabetes literacy to the population was creating awareness. They added that awareness promoted the use of PCC services. The supporting verbatim statements are as follows:

"…good health awareness creation, people should actually know what their status is, whether they are diabetic or not, so that when the ones that are diabetic will be the ones that will now know that they have to seek preconceptional care when they are pregnant. First of all, …check their blood sugar level, and know whether they are diabetic or not before they even get pregnant…" P3

However, one participant mentioned that CW with diabetes may see care as a new idea or concept and that it may take a long time for them to understand; therefore, continuous public enlightenment is required.

"…it has to be repetitive We have to go there on the radio, the jingle. The jingle must be repeated continually until it sinks into them, just like this immunization of a thing…" P1

Participants highlighted various methods of creating awareness, including the use of technology services and school health teaching, as well as the use of flyers, pamphlets, and banners to disseminate information about PCC services.

"…we can also adopt technology, especially in this era of social media. Also reach out to some of these women, especially those that are in hard-to-reach areas, … to even do this preconceptional care clinic that we are talking about so that women in the comfort of their own can be educated without necessary travel… because they want to attend preconceptional care. You will agree with me that a lot of educational activities are going on Zoom and another platform…" P2

"…wherever they are and talk to them, then we can have flyers, give them flyers in their language assuming they can read; for those who cannot read we do flyers with pictorial, pictures of okay, this woman (emm) why you need to know that you have diabetes, what are the symptoms you may see if you get pregnant what are the, in a pictorial form, so that they can even do they cannot read, but they can look at the pictures in sequence and look at the okay,…, so it could be pictorial…" P1

"…it starts with, I mean, health education, you know, to catch people when they are a little younger in school, the health workers go there to create awareness, inform them on the importance of the condition…" P4

"...as part of our curriculum in school, I think there should be health education, that is going to be universal for *everybody right from primary school down to tertiary institutions because there are a lot of things in terms of health that we need to know but unfortunately we don't know… I think health education should be part of our academic curriculum too…..., some of these issues, other important issues like contraception, sex education, and all that can be taken care of…" P2*

Diabetes Preconception Care Necessity (DPCCN)

The participants established the necessity for DPCC, which would enhance the provision of PCC. This necessity includes good healthcare policies and government health financing. The verbatim statements below strengthened the participants' perspectives:

"…will that be a policy in place by the government? Yeah what will this policy be for us to say that … (emm) every woman or every woman who aspires or every woman in a childbearing age who presents …at any facility at all should be offered screening for diabetes, or the risk for diabetes should be assessed in that kind of woman, whether she is aspiring to get pregnant or not. …they need to be checked…" P1

"…government can improve our health budget, it shows more willingness to help this group of women…, come to their rescue, provide universal health coverage. Insurance coverage for all Nigerians. So, (emm) those are things we can do…" P2

DISCUSSION

This study explored healthcare providers' perceptions of PCC for Nigerian CW with diabetes who are at risk of developing adverse pregnancy outcomes.

First, the findings of this study revealed that all participants agreed that PCC is essential for women with diabetes to identify risk factors, reduce risk factors, and optimize glucose levels to reduce adverse obstetric outcomes. These findings are similar to those of international organizations (ACOG & Practice, 2018, 2019; ADA, 2004) and are consistent with the empirical findings of Arluck and Mayhew (2018), Tinker *et al.* (2020), Wei *et al*. (2019), and Murphy *et al*. (2021), which indicate the importance of PCC for women with diabetes. In addition, this study's findings further identified that PCC services promote pregnancy planning, safe motherhood, the intake of folic acid supplements, and the cessation of unhealthy habits such as smoking and alcohol intake. These findings concur with those of studies conducted by Arluck and Mayhew (2018) and ACOG (2017, 2019), which indicated that offering PCC services to CW promoted good pregnancy outcomes.

Second, this study's findings also revealed that the practice of PCC for diabetic CW has not been well established in the health centers of Lagos State, Nigeria. Therefore, diabetes care should be redesigned to accommodate PCC services for diabetic CW. Wahabi *et al*. (2020) and Yamamoto *et al*. (2018), in their findings, highlighted the significance of PCC services if they were meaningfully practiced and optimally offered to diabetic CW. Hence, there is an urgent need for a diabetes care center PCC to be redesigned in Lagos State health centers and extended to the remaining health centers in other geopolitical zones of the country.

Third, the findings also established that awareness creation is needed to promote and facilitate PCC provision among Nigerian women with diabetes to improve pregnancy outcomes. This awareness could be promoted through public enlightenment via technological services, school health teaching, and the use of flyers, pamphlets, and banners to disseminate information about PCC services. These findings correspond to those of Luo *et al.* (2022), who recommended online smartphone applications to assess educational material for promoting PCC awareness among women with diabetes. Additionally, patient-facing educational materials provided in the hospital waiting area (Marshall & Britton, 2020) and school curricula (Stephenson *et al*., 2021; Bhatta, Upreti & Kalikotay, 2021) can be adopted to promote PCC awareness.

Finally, this study's findings revealed that the government should create a good policy to enhance the provision of PCC among diabetic CW and provide the necessary health budget to cater to PCC services. All these are considered diabetic PCC necessities. These findings agree with those of Nang *et al*. (2019), who recommended that diabetes care requires national attention, similar to other infectious diseases such as HIV and tuberculosis, and needs adequate financial protection to improve its quality.

CONCLUSION

This study establishes that the relevance of PCC and redesigning diabetes care practices need to be given the necessary attention in the Nigerian healthcare system. These observations were made by HCPs interviewed during the study. The results also disclosed that awareness creation on PCC is important and that a good policy and adequate healthcare financing (DPCCN) need to be formulated and offered to provide PCC for Nigerian women with diabetes. However, this study was limited to one federal health institution, whereas in terms of participants, it was limited to medical doctors. Thus, future research should include other health institutions and consider other HCPs, such as nurses, who can provide information on PCC. Future research could also adopt a quantitative design or mixed-methods approach and investigate whether there would be new findings on PCC provision compared to the results of this study. Consequently, this study contributes to the extant literature on the generation of HCPs' perceptions and strategies to provide PCC for Nigerian CW. It also assists the government in recognizing the need for good policy and adequate budgeting that would provide meaningful obstetric care for women with diabetes. Health institutions may utilize these results to encourage HCPs to engage in future pregnancies.

Conflicts of Interest

The authors declare that they have no conflict of interests.

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