

Original Article

Uptake of Preconception Care and Its Determinants among Pregnant Women in Selected Secondary Health Facilities in Oyo State

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ABSTRACT

Preconception care (PCC) improves maternal and neonatal outcomes, yet its utilisation remains suboptimal. This study assessed the uptake of PCC and its determinants among pregnant women in selected secondary health facilities in Oyo State, Nigeria. A cross-sectional descriptive design was employed. One hundred and ninety (190) pregnant women attending antenatal clinics in the selected facilities were selected using proportional allocation. Semi-structured questionnaire was used to assess PCC uptake and determinants. Data were analysed using descriptive and inferential statistics (Chi-square test, binary and multivariate logistic regression). Statistical significance was determined at $p < 0.05$. Findings revealed that 185 respondents participated in this study. Slightly over half of them (99, 53.5%) reported uptake of PCC. The most commonly accessed component was micronutrient supplementation 95 (89.6%). Women with secondary education were less likely to uptake PCC than those with primary education (AOR=0.181, $p=0.001$). Higher uptake of PCC was associated with urban residence (AOR=3.018, $p=0.009$), history of family planning (AOR=2.438, $p=0.036$), pre-existing medical conditions (AOR=3.014, $p=0.026$), and adverse previous pregnancy outcomes (AOR=2.337, $p=0.039$). Good knowledge (COR=0.517, $p=0.028$) and positive attitude (COR=0.430, $p=0.005$) were significantly associated with uptake of PCC. Significant influencing factors included availability ($\chi^2=4.939$, $p=0.026$), affordability ($\chi^2=5.151$, $p=0.023$), accessibility ($\chi^2=6.386$, $p=0.011$), poor healthcare worker attitudes ($\chi^2=7.476$, $p=0.006$), insufficient time ($\chi^2=6.794$, $p=0.009$), and lack of awareness ($\chi^2=4.048$, $p=0.044$). The uptake of PCC was suboptimal, and it was influenced by individual, structural, and health system factors. Strengthening service availability, integrating PCC into routine maternal health services, and enhancing provider engagement may improve uptake and maternal-neonatal outcomes in Nigeria.

Keywords: Determinants, Preconception care, Pregnant Women, Secondary health facilities, uptake

INTRODUCTION

Globally, there has been an increasing interest in Preconception care (PCC), mainly due to its contribution to reducing adverse pregnancy outcomes, as well as maternal and foetal morbidity and mortality. ¹ Studies have shown that less than one-third of women of reproductive age discuss their health status or pre-existing medical conditions and its impact on pregnancy outcomes with a health professional, and about 40% of pregnancies miss the essential health interventions required before pregnancy, thereby, resulting in an unacceptably high risks of poor reproductive health outcomes in many countries. ^{2,3}

Despite the growing evidence that PCC improves maternal and child health and promotes safe outcomes of pregnancy

in women of reproductive age, it is not well known and optimally utilised. ⁴ Several studies conducted globally have found the level of PCC to be generally low, with the level of PCC in developed parts of the world, albeit low, is higher than in developing countries. ⁵ The utilisation of preconception care in China, Iran, Malaysia, and Sri Lanka was found to be 40.0%, 47%, 44%, and 27.2%, respectively. ⁶ In a study carried out in Australia, 68% received PCC before the pregnancy, ⁷ while only 45.8% of pregnant women received preconception care in Turkey. ⁸

In Africa, where the global indices of maternal and child health are relatively poor, the uptake of PCC is suboptimal. In a systematic review, it was found that the overall pooled prevalence of utilisation of preconception care among pregnant women in Africa was 18.72%, ⁹ while another study found a pooled utilisation of preconception care to be

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24.05%.⁴ A study in Kenya showed that only 25.8% of pregnant women utilised PCC,⁵ the utilisation of the preconception care services was inadequate in South Africa.¹⁰ Similarly, in Ethiopia, the uptake and utilisation of PCC was found to be unsatisfactory and low.^{6,11} This low rate of uptake and utilisation of PCC have been attributed to the poor level of knowledge, awareness, and attitude, as most women access care only after pregnancy has occurred, thereby missing critical opportunities to optimise health before conception.¹⁰

Studies conducted in Nigeria revealed a similar trend, as only 18.8% - 23.4% of women utilised PCC.^{12,13} The poor utilisations reported in these studies were attributed to various maternal socio-demographic-obstetrics factors. However, while previous studies in Nigeria focused on postnatal women¹² and attendees of tertiary health facilities¹³⁻¹⁵, there is a paucity of data on the uptake and utilisation of PCC, and how it is influenced by women's knowledge, awareness, attitudes, particularly in secondary health facilities where most maternal services are accessed.

In Oyo State, secondary health facilities often lack structured PCC services. As a result, many women begin antenatal care with existing risks that could have been prevented or managed earlier. Given these concerns, there is an urgent need to assess preconception care among pregnant women in secondary healthcare facilities. Hence, this study sought to assess the uptake of preconception care among pregnant women in selected secondary health facilities in Oyo State.

MATERIALS AND METHODS

Study Area

This study was conducted in selected secondary health facilities in the three senatorial districts in Oyo State. These include State Hospital, Ogbomoso, and State Hospital, Iseyin in Oyo North Senatorial District; Ring Road State Hospital, Ibadan, Jericho Nursing Home, Ibadan, in Oyo South Senatorial District; Moniya State Hospital, and State Hospital, Oyo, in Oyo Central Senatorial District.

Study Design

This study employed a cross-sectional descriptive design.

Study Population

The target population for this study comprised pregnant women in the selected secondary healthcare facilities during the study period. This study included pregnant women aged 16 years and above, currently attending antenatal clinics, who understood and responded to study questionnaires (written or verbal) in English or their native languages, who were willing to participate and provide informed consent. While pregnant women who were critically ill or unable to communicate, who could not understand and respond to study questionnaires (written or verbal), and were not willing to participate and provide informed consent were excluded from the study.

Sample Size Determination

The sample size was determined using Taro Yamane's formula.

$$n = \frac{N}{1 + N(e)^2}$$

Where, n = Sample size;

N = Population size (total population of all pregnant

women in the selected secondary healthcare facilities = 300, obtained from the antenatal clinic registers)

e = estimated level of precision or sampling error tolerated = 5% (0.05) at 95% Confidence Interval

$$n = \frac{300}{1 + 300(0.05)^2} = 171.43$$

$$n \approx 171$$

Attrition/Non-response rate: 10% of the sample size

$$\frac{10 \times 171}{100} = 17.1$$

Sample size = 171 + 17.1 = 188.1 (\approx 190)

Hence, the sample size for this study was 190 pregnant women.

Sampling Technique

A multistage sampling technique was employed to select study respondents from secondary health facilities in Oyo State to ensure a representative selection of participants across diverse geographical and healthcare settings.

Study Instrument

The data for this study was collected using adapted instruments from previous studies.^{2,13,16} The questionnaire primarily focused on gathering quantitative data on preconception care among pregnant women. The questionnaire was structured into three sections to elicit the objectives of the study and to test for association among variables, as follows;

Section I: Socio-demographic-obstetrics Characteristics – this section comprised 16 items to assess respondents' age, ethnicity, religion, marital status, education level, parity, previous obstetrics outcomes, pre-existing medical conditions, etc.

Section II: Uptake of Preconception Care – This section comprised items to assess the rate of preconception care uptake and the components of PCC received by the respondents. It is a 13-item questionnaire with “yes” and “no” responses. Each item received a score of 1 for a valid response (i.e., yes) and 0 for an incorrect response (i.e., “no”). The uptake of PCC was determined if the women received **at least one** type of PCC intervention either advice or treatment, and lifestyle modification care (screened for any disease and get treatment, folic acid supplementation, take vaccine, change their diet, cessation of alcohol drinking, cessation of smoking, or creating a healthy environment etc.) at least once before being pregnant was considered as uptake of PCC.

Section III: Determinants of Uptake of Preconception Care – this section comprised 11-items to assess determinants of the uptake of PCC, such as availability of the PCC services, affordability, spousal support, religious and cultural beliefs, attitudes of PCC providers etc., with “yes,” and “no” responses.

Pilot Study

The reliability of the instrument was tested through a pilot study of 10% of the respondents (pre-testing 19 pregnant women) at the State Hospital, Saki, to elicit the desired response, and the challenges observed were corrected. The Cronbach's Alpha test was used to test the internal consistency and reliability of the instrument, with an index

≥0.70 considered acceptable. The sections uptake of preconception care and factors influencing the uptake of preconception care had the reliability indices of 0.960, and 0.802, respectively.

Data Analysis

Data analysis was done using the Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics was used to answer research questions and was presented in frequency, percentage, and Mean ± Standard deviation, using tables. Chi-square test, bivariate and multivariate logistic regression analysis were used for inferential statistics to test the significant associations between independent and dependent variables. Independent variables with a p-value less than 0.25 in the bivariate logistic regression model were entered into the multivariate logistic regression model to control for confounder variables. Statistical significance was obtained at an adjusted odds ratio (AOR) with a 95% Confidence Interval (CI) and p-value less than 0.05 was considered statistically significant.

Ethical Consideration

Ethical approval with the assigned code – NHREC/OYOSHRIEC/10/11/22 was obtained from the Health Research and Ethical Committee of the Oyo State Ministry of Health before the commencement of the study. A letter of permission was obtained from the Head of each selected health facility. Informed consent was obtained from all respondents, and they were assured of their right to withdraw from the study at any time or refuse to answer the questionnaire during data collection without penalty. Confidentiality, privacy, and voluntary participation were strictly adhered to throughout the research process.

RESULTS

Questionnaires were administered to 190 respondents; however, 185 questionnaires were returned, and valid for analysis, representing 97.4% response rate.

Socio-demographic characteristics of the respondents

Table 1 shows that the mean age of the respondents was 28.84±6.45 years. The majority of respondents were aged 25–34 years 112(60.5%), of Yoruba ethnicity 146(78.9%), and practiced Christianity 109(58.9%). Most were living together 81(43.8%), had secondary education 80(43.2%), and were self-employed 100(54.1%). A majority earned more than ₦100,000 monthly 68(36.8%) and resided in urban areas 109(58.9%). Regarding obstetric characteristics, most respondents were multigravida 109(58.9%), multipara 122(65.9%), and 129 (69.7%) reported that the current pregnancy was planned. The majority had a history of antenatal care 123(66.5%), and approximately half had a history of family planning 93(50.3%). Pre-existing medical conditions were present in 69(37.3%) of respondents, and a majority 114(61.6%) reported an adverse outcome of previous pregnancy, with stillbirths being the most common type 22(11.9%).

Assessment of Respondents' Uptake of Preconception Care

Table 2 shows that 99(53.5%) went for preconception care before current pregnancy, while 86(46.5%) did not go for preconception care. Figure 1 shows that 99(53.5%) had uptake of preconception care, while 86(46.5%) did not uptake preconception care. Table 3 shows that

micronutrient supplementation 95(89.6%), family planning/spacing 90(84.9%), and screening/treatment of chronic illnesses 87(82.1%) were the most common components of preconception care among respondents.

Relationship between Socio-demographic-Obstetrics Characteristics and the Uptake of Preconception Care

Table 4 shows that age, marital status, educational level, employment status, monthly income level, place of residence, previous pregnancy, number of children, history of antenatal care, history of family planning, pre-existing medical condition, and adverse outcome of previous pregnancy were significantly associated with uptake of preconception care at $p < 0.25$. After adjusting for other variables, Table 5 shows that women with secondary education remained significantly less likely to take up preconception care compared with those with primary education (AOR=0.181, $p=0.001$). Urban residents were over three times significantly more likely to take up preconception care compared with rural residents (AOR=3.018, $p=0.009$). Women with a history of family planning were more than twice significantly likely to take up preconception care compared with those without such history (AOR=2.438, $p=0.036$).

Women with pre-existing medical conditions were three times significantly more likely to take up preconception care compared with women without such conditions (AOR=3.014, $p=0.026$), and women who had experienced adverse outcomes in previous pregnancies were over twice as likely to take up preconception care compared with those without such history (AOR=2.337, $p=0.039$).

Relationship between Knowledge and the Uptake of Preconception Care

Figure 2 shows that there was a significant association between knowledge level and uptake of preconception care ($p = 0.028$). Respondents with good knowledge were more likely to uptake preconception care than those with poor knowledge (COR=0.517).

Relationship between the Attitude Level and the Uptake of Preconception Care

Figure 3 shows that there was a significant association was found between attitude and uptake of preconception care ($p = 0.005$). Respondents with positive attitudes were more likely to uptake preconception care than those with a negative attitude (COR=0.430).

Relationship between Factors Influencing Uptake of Preconception Care and the Uptake of Preconception Care

Table 6 shows that availability of preconception care ($\chi^2 = 4.939$, $p = 0.026$), affordability ($\chi^2 = 5.151$, $p = 0.023$), accessibility of services ($\chi^2 = 6.386$, $p = 0.011$), good attitudes of healthcare workers ($\chi^2 = 7.476$, $p = 0.006$), sufficient time for care ($\chi^2 = 6.794$, $p = 0.009$), and awareness of preconception care ($\chi^2 = 4.048$, $p = 0.044$) were significant factors associated with uptake of preconception care.

Table 1: Socio-demographic-Obstetric Characteristics of Respondents (n=185)

Parameter	Description	Frequency	Percent
Age	16-24 years	41	22.2
	25-34 years	112	60.5
	35-44 years	32	17.3
Ethnicity	Yoruba	146	78.9
	Igbo	19	10.3
	Hausa/Fulani	15	8.1
Religion	Others	5	2.7
	Christianity	109	58.9
Marital Status	Islam	76	41.1
	Single	33	17.8
Education Level	Married	71	38.4
	Living together	81	43.8
	Primary	51	27.6
Employment Status	Secondary	80	43.2
	Tertiary	54	29.2
	Unemployed	35	18.9
Monthly Income Level	Self-employed	100	54.1
	Civil servant	50	27.0
	< ₦50,000	58	31.4
Place of Residence	₦50,000-₦100,000	59	31.9
	> ₦100,000	68	36.8
	Urban	109	58.9
Previous pregnancy	Rural	76	41.1
	Primigravid	76	41.1
Number of Children	Multigravid	109	58.9
	Primipara	63	34.1
Current pregnancy status	Multipara	122	65.9
	Planned	129	69.7
History of antenatal care	Unplanned	56	30.3
	Yes	123	66.5
History of family planning	No	62	33.5
	Yes	93	50.3
Pre-existing medical condition	No	92	49.7
	Yes	69	37.3
Adverse outcome of previous pregnancy	No	116	62.7
	Yes	114	61.6
Type of outcome	No	71	38.4
	Abortion	13	7.0
	Low birth weight	9	4.9
	Stillbirth	22	11.9
	Preterm birth	14	7.6
	Neonatal death	5	2.7
	Congenital anomaly	1	0.5

Table 2: Preconception Care among Pregnant Women (n=185)

Did you go for preconception care before this current pregnancy?	Yes		No	
	Frequency	Percent	Frequency	Percent
	99	53.5	86	46.5

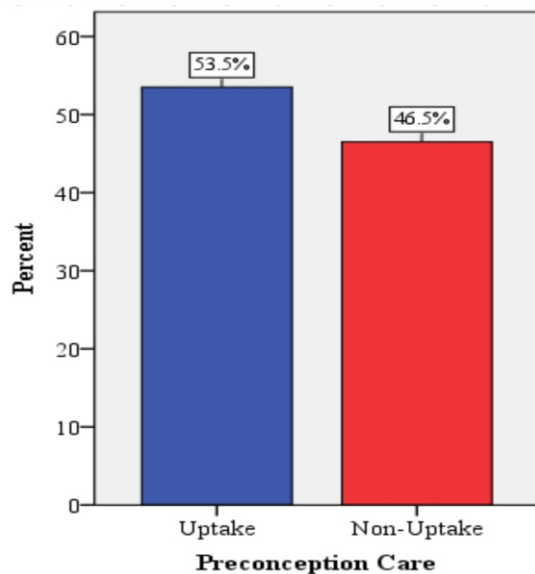


Figure 1: Uptake of Preconception Care

Table 3: Components of Preconception Care Received by Respondents (n=99)

Component of PCC	Yes		No	
	N	Percent	N	Percent
Health education on pregnancy planning	77	72.6%	108	68.8%
Micronutrient supplementation	95	89.6%	90	57.3%
Screening and treatment for chronic illnesses (e.g., diabetes, hypertension)	87	82.1%	98	62.4%
Screening and treatment for infectious disease (e.g. HIV, gonorrhoea, syphilis)	73	68.9%	112	71.3%
Vaccinations (e.g., tetanus, rubella)	77	72.6%	108	68.8%
Nutrition and dietary advice	76	71.7%	109	69.4%
Genetic or hereditary disorder screening and counselling	75	70.8%	110	70.1%
Weight reduction/ Counselling on Exercise	83	78.3%	102	65.0%
Advice on stopping harmful habits (e.g., smoking, alcohol, and illicit drugs)	78	73.6%	107	68.2%
Mental health screening and counselling	77	72.6%	108	68.8%
Family planning or spacing advice	90	84.9%	95	60.5%
Environmental screening (e.g. exposure to chemicals and radiations)	71	67.0%	114	72.6%

Table 4: Bivariate Logistic Regression of Respondents' Characteristics and Uptake of PCC

Variable	Category	Preconception Care		COR	p-value
		Uptake	Non-uptake		
Age	16-24 years (ref)	16 (39.0)	25 (61.0)	1	
	25-34 years	63 (56.3)	49 (43.8)	2.009	0.061*
	35-44 years	20 (62.5)	12 (37.5)	2.604	0.049*
Ethnicity	Yoruba (ref)	78 (53.4)	68 (46.6)	1	
	Igbo	11 (57.9)	8 (42.1)	1.199	0.731
	Hausa/Fulani	8 (53.3)	7 (46.7)	0.996	0.995
	Others	2 (40.0)	3 (60.0)	0.581	0.559
Religion	Christianity (ref)	57 (52.3)	52 (47.3)	1	
	Islam	42 (55.3)	34 (44.7)	1.127	0.690
Marital Status	Single (ref)	14 (42.4)	19 (57.6)	1	
	Married	43 (60.6)	28 (39.4)	2.084	0.086*
Education Level	Living together	42 (51.9)	39 (48.1)	1.462	0.362
	Primary (ref)	34 (66.7)	17 (33.3)	1	
	Secondary	33 (41.3)	47 (58.8)	0.357	0.005*
Employment Status	Tertiary	32 (59.3)	22 (40.7)	0.727	0.433
	Unemployed (ref)	13 (37.1)	22 (62.9)	1	
	Self-employed	56 (56.0)	44 (44.0)	2.154	0.057*
Monthly Income Level	Civil servant	30 (60.0)	20 (40.0)	2.538	0.040*
	< ₦50,000 (ref)	21 (36.2)	37 (63.8)	1	
	₦50,000-₦100,000	33 (55.9)	26 (44.1)	2.236	0.034*
Place of Residence	> ₦100,000	45 (66.2)	23 (33.8)	3.447	0.001*
	Urban	68 (62.4)	41 (37.6)	2.348	0.026*
Previous pregnancy	Rural (ref)	31 (40.8)	45 (59.2)	1	
	Primigravid (ref)	32 (42.1)	44 (57.9)	1	
Number of Children	Multigravid	67 (61.5)	42 (38.7)	2.193	0.010*
	Primipara (ref)	24 (38.1)	39 (61.9)	1	
Current pregnancy status	Multipara	75 (61.5)	47 (38.5)	2.593	0.003*
	Planned	72 (55.8)	57 (44.2)	1.357	0.342
History of antenatal care	Unplanned (ref)	27 (48.2)	29 (51.8)	1	
	Yes	78 (63.4)	45 (36.6)	3.384	0.000*
History of family planning	No (ref)	21 (33.9)	41 (66.1)	1	
	Yes	66 (71.0)	27 (29.0)	4.370	0.000*
Pre-existing medical condition	No (ref)	33 (35.9)	59 (64.1)	1	
	Yes	31 (64.6)	17 (35.4)	1.850	0.076*
Adverse outcome of previous pregnancy	No (ref)	68 (49.6)	69 (50.4)	1	
	Yes	75 (65.8)	39 (34.2)	3.766	0.000*
	No (ref)	24 (33.8)	47 (66.2)	1	

I: reference category; COR: Crude odd ratio; *p<0.25

Table 5: Multivariate Logistic Regression of Socio-demographic-Obstetrics Characteristics and the Uptake of Preconception Care

Variable	Category	Preconception Care		Multivariate Logistic Regression AOR (95% CI)	P-value
		Uptake N (%)	Non-uptake N (%)		
Age	16-24 years (ref)	16 (39.0)	25 (61.0)	1	
	25-34 years	63 (56.3)	49 (43.8)	0.556 (0.117-2.629)	0.459
	35-44 years	20 (62.5)	12 (37.5)	0.267 (0.032-2.253)	0.225
Marital Status	Single (ref)	14 (42.4)	19 (57.6)	1	
	Married	43 (60.6)	28 (39.4)	1.814 (0.467-7.048)	0.390
Education Level	Living together	42 (51.9)	39 (48.1)	1.876 (0.566-6.219)	0.303
	Primary (ref)	34 (66.7)	17 (33.3)	1	
	Secondary	33 (41.3)	47 (58.8)	0.181 (0.066-0.498)	0.001**
Employment Status	Tertiary	32 (59.3)	22 (40.7)	0.353 (0.116-1.070)	0.066
	Unemployed (ref)	13 (37.1)	22 (62.9)	1	
	Self-employed	56 (56.0)	44 (44.0)	1.253 (0.256-6.121)	0.781
Monthly Income Level	Civil servant	30 (60.0)	20 (40.0)	1.530 (0.257-9.108)	0.640
	ref	21 (36.2)	37 (63.8)	1	
	NS0,000- N100,000	33 (55.9)	26 (44.1)	1.479 (0.516-4.240)	0.466
Place of Residence	> N100,000	45 (66.2)	23 (33.8)	2.366 (0.651-8.599)	0.191
	Urban	68 (62.4)	41 (37.6)	3.018 (1.318-6.910)	0.009*
Previous pregnancy	Rural (ref)	31 (40.8)	45 (59.2)	1	
	Primigravid (ref)	32 (42.1)	44 (57.9)	1	
Number of Children	Multigravid	67 (61.5)	42 (38.7)	1.173 (0.316-4.363)	0.812
	Primipara (ref)	24 (38.1)	39 (61.9)	1	
History of antenatal care	Multipara	75 (61.5)	47 (38.5)	0.682 (0.169-2.760)	0.592
	Yes	78 (63.4)	45 (36.6)	1.639 (0.631-4.256)	0.310
History of family planning	No (ref)	21 (33.9)	41 (66.1)	1	
	Yes	66 (71.0)	27 (29.0)	2.438 (1.058-5.616)	0.036**
Pre-existing medical condition	No (ref)	33 (35.9)	59 (64.1)	1	
	Yes	31 (64.6)	17 (35.4)	3.014 (1.143-7.945)	0.026**
Adverse outcome of previous pregnancy	No (ref)	68 (49.6)	69 (50.4)	1	
	Yes	75 (65.8)	39 (34.2)	2.337 (1.046-5.223)	0.039**
	No (ref)	24 (33.8)	47 (66.2)	1	

I: reference category; AOR: Adjusted odd ratio; CI: Confidence Interval; **p<0.05

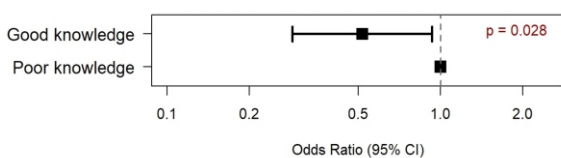


Figure 2: Forest plot of bivariate logistic regression showing the association between knowledge level and uptake of preconception care. Squares represent odds ratios; horizontal lines represent 95% confidence intervals. The dashed vertical line at OR = 1.0 indicates no effect. Poor knowledge is the reference category.

Table 6: Chi-square Test of Factors and Uptake of Preconception Care

Factor	Response	Preconception Care		χ^2	p-value
		Uptake N (%)	Non-uptake N (%)		
Availability at nearby health facility	Yes	53 (62.4)	32 (37.6)	4.939	0.026**
	No	46 (46.0)	54 (54.0)		
Affordability of PCC	Yes	58 (61.7)	36 (38.3)	5.151	0.023**
	No	41 (45.1)	50 (54.9)		
Accessibility of PCC	Yes	61 (62.2)	37 (37.8)	6.386	0.011**
	No	38 (43.7)	49 (56.3)		
Poor attitudes of healthcare workers	Yes	47 (44.8)	58 (55.2)	7.476	0.006**
	No	52 (65.0)	28 (35.0)		
Spousal/partner supports PCC	Yes	84 (55.6)	67 (44.4)	1.478	0.224
	No	15 (44.1)	19 (55.9)		
Long distance to health facility	Yes	75 (55.6)	50 (44.4)	0.837	0.360
	No	24 (48.0)	26 (52.0)		
Cultural beliefs against PCC	Yes	70 (53.0)	62 (47.0)	0.043	0.835
	No	29 (54.7)	24 (45.3)		
Religious beliefs against PCC	Yes	64 (52.5)	58 (47.5)	0.160	0.689
	No	35 (55.6)	28 (44.4)		
No enough time for PCC	Yes	42 (44.2)	53 (55.8)	6.794	0.009**
	No	57 (63.3)	33 (36.7)		
Lack of awareness of PCC	Yes	35 (44.9)	43 (55.1)	4.048	0.044**
	No	64 (59.8)	43 (40.2)		
Language barrier with PCC providers	Yes	30 (60.0)	20 (40.0)	1.159	0.282
	No	69 (51.1)	66 (48.9)		

**p<0.05

DISCUSSION

This study revealed that slightly over half of respondents had uptake of preconception care (PCC), a rate higher than the low uptake documented across numerous studies in low- and middle-income countries. For instance, studies in Ethiopia reported PCC utilisation rates of 6.3%, 22.3% and 40%.^{3,6,17} Similarly, studies in Kenya⁵ and Uganda¹⁸ reported poor uptake. In Nigeria, a study reported 23.4% uptake among mothers in the South-East,¹² another study observed that only 41.8% had benefited from any PCC component.¹⁴ The higher uptake in this study may be attributed to relatively good knowledge and positive attitudes toward PCC among participants.

The most frequently utilised components of PCC were folic acid supplementation (89.6%), family planning/spacing advice (84.9%), and screening/treatment of chronic illnesses (82.1%). This aligns with previous studies where folic acid supplementation was the most common item received.^{11,19} Conversely, more comprehensive components such as genetic counselling or environmental screening were less utilised, reflecting systemic gaps in provider training and service protocols in many LMIC settings.

The bivariate and multivariate analyses of socio-demographic and obstetric characteristics revealed important determinants of preconception care (PCC) uptake among pregnant women. In the bivariate logistic regression, age, marital status, educational level, employment status, monthly income level, place of residence, previous pregnancy, number of children, history of antenatal care, history of family planning, pre-existing medical condition, and adverse outcome of previous pregnancy were significantly associated with uptake of preconception care.

In multivariate logistic regression, several factors remained significantly associated with PCC uptake. Women with secondary education were significantly less likely to utilise PCC compared to those with primary education. While previous studies found that higher education is typically associated with better knowledge,^{20,21} the relationship with actual utilisation may be non-linear,

possibly due to competing priorities or lack of targeted services that resonate with specific needs.¹² Urban residents were over three times more likely to utilise PCC than rural residents. This disparity likely reflects compounded advantages in urban settings, including better physical access to health facilities, greater availability of specialized services, and higher exposure to health information campaigns. This urban-rural disparity is one of the most consistent findings in previous studies.^{5,17} A history of family planning use, pre-existing medical conditions, and adverse pregnancy outcomes were also significant predictors, suggesting that prior engagement with reproductive health services, perceived risk, and negative reproductive experiences can heighten risk perception and motivate women to seek preventive care in subsequent pregnancies,^{2,6,16,17,22} although the protective effect of PCC in such cases deserves further attention.²³

A significant association between respondents' level of knowledge and the uptake of preconception care, indicates that women with good knowledge were more likely to uptake PCC services compared to those with poor knowledge. This finding reinforces the fundamental role of knowledge as an enabler of preventive health behaviour. The observed association in this study aligns with previous studies that found good knowledge of PCC significantly associated with its uptake.^{2,3,6,17} This consistency across multiple studies suggests that knowledge acts as a critical facilitator, likely by increasing perceived risk, clarifying benefits, and enhancing self-efficacy to seek services. Similarly, a significant association between respondents' attitudes toward PCC and their uptake of the service, with women demonstrating positive attitudes being more likely to uptake PCC compared to those with negative attitudes. This finding suggests that attitudinal disposition is a meaningful factor in the decision to engage with preventive reproductive health services. This result is consistent with previous studies where a positive attitude is frequently identified as a significant predictor.^{3,15}

Structural factors such as availability, affordability, and accessibility of PCC services significantly influenced PCC uptake among pregnant women. This finding highlights the significance of structural factors in shaping preventive health behaviour. Women who reported that PCC services were available at nearby facilities, affordable and accessible were more likely to utilize them, as such proximity reduces practical and economic burdens, making engagement with preventive services more feasible. This aligns with studies that explicitly identify availability, affordability, and accessibility as significant predictors of practice of PCC.^{10,11} However, limited accessibility may be influenced by financial constraints, geographical location, and spousal involvement or support.²⁴

Also, respondents who did not experience poor attitudes from healthcare workers were more likely to utilize PCC. This points to the quality of clinical interactions as a critical facilitator or barrier. While few studies in the review directly measure attitude, the importance of supportive provider engagement is implicit in the consistent finding that preconception counselling is a strong predictor of positive outcomes.^{16,20} Conversely, a lack of detailed PCC knowledge among health workers themselves suggests that provider competency, an indicator of positive engagement

can be a system-level constraint.²⁵ Adequate time for receiving care was another significant factor. This findings corroborates logistic constraints that hinder uptake of preconception care. In Nigeria, it was found that working-class mothers were significantly less likely to utilize PCC, likely due to competing time demands.¹² This factor interconnects with service design, suggesting that PCC services need to be convenient and respectful of women's schedules to be effective. Also, awareness of PCC remained a pivotal factor significantly increasing the likelihood of uptake. Studies have identified good PCC awareness as a key factor associated with utilization.^{2,3,6} In the context of health systems, this highlights the necessary role of ongoing, integrated health education efforts to create demand and inform potential users.

CONCLUSION

This study revealed a suboptimal level of uptake of preconception care among pregnant women in selected secondary healthcare facilities in Oyo state. Knowledge, and attitudes were significantly associated with the uptake of preconception care. Also, secondary education, urban residence, history of family planning, pre-existing medical condition, and adverse outcome of previous pregnancy were significantly associated with the uptake of PCC. In addition, availability, affordability, accessibility of PCC, poor attitudes of healthcare workers, insufficient time, and lack of awareness significantly influenced the uptake of PCC.

RECOMMENDATIONS

Preconception counselling should be integrated and institutionalized within primary and secondary routine healthcare services, particularly during family planning visits, antenatal visits, child immunization clinics, and chronic disease management. Government and health administrators should ensure that preconception care services are available, affordable, and accessible in health facilities, especially underserved rural communities, and strengthen referral mechanisms for comprehensive care. Women with pre-existing medical conditions, previous adverse pregnancy outcomes, or family planning history should be systematically prioritized, screened and referred for preconception care using structured follow-up systems. Continuous professional training programs should be implemented to improve providers' competence, attitudes, and communication skills, ensuring client-centred, respectful, and evidence-based service delivery.

LIMITATION OF THE STUDY

First, the cross-sectional design limits the ability to infer causal relationships between the identified factors and uptake of preconception care. Second, data were self-reported, which may have introduced social desirability or recall bias. Third, the study was conducted in secondary healthcare facilities across the three senatorial districts in Oyo State, which may limit the generalizability of the findings to other healthcare levels or regions.

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Competing Interests

No conflict of interest declared.

Data Availability

The datasets for this study are available upon reasonable requests from the corresponding author.

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