

Knowledge, attitude, and practice of oral hygiene among pregnant women attending antenatal clinic in Ekiti State University Teaching Hospital, Ado, Ekiti State, Nigeria

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ABSTRACT

Introduction

Oral health during pregnancy is a critical component of maternal and child health due to its association with adverse pregnancy outcomes, including preterm birth and low birth weight. Poor oral hygiene increases the risk of periodontal disease and related complications, yet maternal oral health remains underemphasized in antenatal care in many parts of Nigeria.

Purpose

This study assessed the knowledge, attitude, and practice (KAP) of oral hygiene among pregnant women attending the antenatal clinic at Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, Nigeria.

Methods

A descriptive cross-sectional study was conducted among 171 pregnant women recruited through convenience sampling. Data were collected using a validated, structured questionnaire and analysed with SPSS version 25. Descriptive statistics summarized the data, while Pearson correlation examined associations between KAP scores.

Results

Most respondents (69.6%) had moderate knowledge of oral hygiene, and attitudes were generally positive (mean score = 3.78). However, practices were suboptimal, with low mean scores for brushing twice daily (2.91) and use of dental floss (2.83). Statistically significant positive correlations were found between knowledge and attitude ($r = .43, p < .001$), knowledge and practice ($r = .39, p < .001$), and attitude and practice ($r = .41, p < .001$).

Conclusion

Although pregnant women demonstrated moderate knowledge and favourable attitudes toward oral hygiene, their practices did not align. Integrating oral health education into antenatal care and strengthening community-based oral health promotion initiatives are recommended to improve maternal oral health outcomes in the study setting.

INTRODUCTION

Oral health is a critical component of general health and well-being, particularly during pregnancy, when physiological changes can significantly influence oral health status (Adeniyi et al., 2021; Gil-Montoya et al., 2023). Pregnant women are especially vulnerable to oral conditions such as gingivitis, periodontitis, dental caries, and oral infections due to hormonal fluctuations and changes in dietary habits (Machado et al., 2023; Sharma et al., 2024). Poor maternal oral health has been associated with adverse pregnancy outcomes, such as preterm birth and low birth weight, underscoring the importance of oral health promotion during antenatal care (Machado et al., 2023).

In Nigeria and other sub-Saharan African countries, oral health remains a neglected component of maternal healthcare (Ayamolowo et al., 2024; Oladoyin et al., 2025). Despite the integration of reproductive and maternal health services at primary and tertiary levels, oral health education and services are often excluded from routine antenatal care (Onwuka et al., 2021; Williams et al., 2025). Studies have shown that many pregnant women in Nigeria have limited awareness of the importance of oral health during pregnancy, poor oral hygiene practices, and low utilization of dental services (Hannah & Howells, 2020; Okoromu & Ehizele, 2022; Omisakin et al., 2021).

Several knowledge, attitude, and practice (KAP) studies conducted in various Nigerian states have revealed that while some pregnant women possess basic knowledge of oral health, their attitudes and practices do not always align (Chinenye-Julius et al., 2021; Omisakin et al., 2021; Popoola et al., 2021). For example, a study in Ogun State reported moderate knowledge but poor practices and low dental visitation among pregnant women (Chinenye-Julius et al., 2021). Similarly, findings from Rivers State and Benin City highlighted gaps in awareness about periodontal health and its link to pregnancy outcomes (Hannah & Howells, 2020; Okoromu & Ehizele, 2022). These patterns suggest the persistence of barriers such as inadequate health education, cultural misconceptions, and limited access to oral healthcare services.

However, there is a notable lack of research specific to Ekiti State—a predominantly rural region with unique cultural

and healthcare access dynamics. This area is often understudied despite known challenges in maternal and child health service utilization (Oladoyin et al., 2025). Understanding the knowledge, attitudes, and practices related to oral hygiene among pregnant women in this context is crucial for designing effective interventions. Moreover, the integration of oral health promotion into antenatal services has been recommended as a feasible and impactful public health strategy (Adeniyi et al., 2021; Ayamolowo et al., 2024), yet evidence to guide such policy direction is limited in Ekiti State.

This study, therefore, aims to fill this gap by assessing the knowledge, attitudes, and practices of oral hygiene among pregnant women attending the antenatal clinic at Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti. By focusing on this specific population, the study contributes localized evidence that can inform oral health promotion efforts in maternal healthcare frameworks. Additionally, it builds on emerging literature emphasizing the need for integrated care models in maternal and child health services across Nigeria and similar settings (Oladoyin et al., 2025; Williams et al., 2025).

METHODS

Study Design and Setting

This descriptive cross-sectional study was conducted at the antenatal clinic of Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, Ekiti State, Nigeria. The hospital serves as a referral center and caters to a large population of pregnant women across Ekiti and neighbouring states.

Study Population and Sampling Technique

The study population comprised pregnant women attending antenatal care at EKSUTH during the study period. A convenience sampling technique was employed to recruit participants who met the inclusion criteria and consented to participate. While this non-probability method was appropriate due to time and resource constraints, it introduces potential sampling bias, which may limit the generalizability of the findings. This limitation is acknowledged in the discussion section.

Inclusion and Exclusion Criteria

Inclusion criteria:

- i. Pregnant women aged 18 years and above

- ii. Registered for antenatal care at EKSUTH
- iii. Willing to provide informed consent

Exclusion criteria:

- i. Women with known mental or cognitive impairments
- ii. Women who had received professional oral health counselling within the last month

Instrument for Data Collection and Validation

A structured, interviewer-administered questionnaire was used to collect data. The instrument was developed based on previous KAP studies on oral health among pregnant women in Nigeria (Chinenye-Julius et al., 2021; Omisakin et al., 2021; Okoromu & Ehizele, 2022). The questionnaire consisted of four sections: socio-demographic data, knowledge, attitude, and practice regarding oral hygiene.

To ensure content validity, the questionnaire was reviewed by three experts in dental public health and maternal care. Modifications were made based on their feedback. A pilot study was conducted with 20 pregnant women (excluded from the main study), which confirmed the clarity, relevance, and internal consistency of the items. The Cronbach’s alpha coefficient was 0.81, indicating acceptable reliability.

Ethical Considerations

Ethical approval was obtained from the Ethics and Research Committee of Ekiti State University Teaching Hospital. Participation was voluntary, and written informed consent was obtained from all participants. Confidentiality and anonymity were strictly maintained.

Data Collection Procedure

Data were collected over a four-week period through face-to-face interviews conducted by trained research assistants fluent in English and Yoruba.

Statistical Methods

Data were coded and analysed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize variables. The Pearson product-moment correlation coefficient was used to examine the relationships between knowledge, attitude, and practice scores. The assumptions for Pearson correlation – including normal distribution of continuous variables, linearity, and

absence of significant outliers – were assessed and met. A p-value of < .05 was considered statistically significant.

RESULTS

Socio-Demographic Characteristics of Respondents

Out of 184 questionnaires distributed, 171 were properly completed and returned, yielding a response rate of 92.9%. **Table 1** presents the socio-demographic characteristics of the participants.

Table 1:
Socio-demographic characteristics of respondents (n = 171)

Variable	Category	Frequency	Percentage (%)
Age	20–25 years	81	47.4
	26–30 years	29	17.0
	31–40 years	61	35.7
Marital status	Single	59	34.5
	Married	82	48.0
	Separated	16	9.4
	Divorced	14	8.2
Religion	Christianity	106	62.0
	Islam	65	38.0
Education level	No formal education	14	8.2
	Primary school	5	2.9
	SSCE	37	21.6
	Tertiary institution	115	67.3

Interpretation:

Most respondents (47.4%) were aged 20–25 years, indicating a youthful antenatal population. A substantial proportion were married (48.0%) and possessed tertiary education (67.3%). This demographic distribution may positively influence receptiveness to health education, including oral hygiene awareness.

Knowledge of Oral Hygiene Among Pregnant Women

Table 2 summarizes the respondents’ levels of oral hygiene knowledge.

Table 2:
Knowledge levels of oral hygiene among pregnant women (n = 171)

Knowledge level	Frequency	Percentage (%)
High	24	14.0
Moderate	119	69.6
Low	28	16.4

Interpretation:

A majority (69.6%) of the pregnant women had a moderate level of knowledge about oral hygiene, while only 14.0% demonstrated high knowledge. This highlights a

substantial knowledge gap, emphasizing the importance of reinforcing oral health education during antenatal care.

Attitudes Toward Oral Hygiene Among Pregnant Women

Table 3 shows the average scores for respondents' attitudes toward oral hygiene behaviors.

Table 3:
Attitudes toward oral hygiene among pregnant women (n = 171)

Attitude item	Mean score
Avoid sharing toothbrushes	4.08
Avoid tobacco and alcohol	4.06
Brushing for 2-3 minutes	3.97
Eating a balanced diet	3.91
Chewing sugarless gum	3.55
Brushing after morning meal	3.41
Use of dental floss	3.42
Overall mean score	3.78

Interpretation:

Participants generally exhibited positive attitudes toward oral hygiene. High scores for avoiding risky behaviors and maintaining brushing duration indicate awareness of key practices. However, lower scores for flossing and brushing after meals suggest areas where targeted counselling could be beneficial.

Oral Hygiene Practices of Pregnant Women

Table 4:
Oral hygiene practices of pregnant women (n = 171)

Practice item	Mean score
Cleaning tongue while brushing	3.94
Avoid sharing toothbrushes	3.78
Avoid tobacco and alcohol	3.70
Brushing before breakfast	3.65
Using fluoride toothpaste	3.51
Brushing after morning meals	2.82
Using dental floss	2.83
Brushing teeth twice daily	2.91
Overall mean score	3.34

Interpretation:

Respondents reported favourable hygiene behaviours such as tongue cleaning and use of fluoride toothpaste. Nonetheless, suboptimal scores on flossing and brushing frequency highlight behavioural gaps that require reinforcement through antenatal oral health programs.

Correlation Between Knowledge, Attitude, and Practice

Table 5:
Correlation between knowledge, attitude, and practice (n = 171)

Correlation pair	Pearson r	p-value	Interpretation
Knowledge & attitude	0.43	< .01	Moderate positive correlation
Knowledge & practice	0.39	< .01	Moderate positive correlation
Attitude & practice	0.41	< .01	Moderate positive correlation

Interpretation:

All correlation coefficients were statistically significant and positive, indicating that improvements in knowledge are likely to enhance attitudes and practices. This supports the rationale for integrating oral health education into routine antenatal care in the study setting.

DISCUSSION

This study evaluated the knowledge, attitudes, and practices (KAP) regarding oral hygiene among pregnant women attending the antenatal clinic at Ekiti State University Teaching Hospital (EKSUTH), Ado Ekiti. The results provide insight into current oral health behaviours, highlight knowledge-practice gaps, and offer direction for improving antenatal oral health interventions.

Discrepancy Between Knowledge, Attitude, and Practice

While most respondents exhibited moderate knowledge (69.6%) and generally positive attitudes (overall mean = 3.78) toward oral hygiene, this did not consistently translate into ideal practices (overall mean = 3.34). Specific behaviours such as brushing twice daily, flossing, and post-meal brushing were poorly practised despite being recognised as important.

This disparity between attitude and behaviour is a common finding in oral health studies involving pregnant women. Several potential factors may explain this pattern. First, limited access to dental hygiene tools such as floss, fluoride toothpaste, and professional dental services may hinder practical adherence. Additionally, low risk perception and inadequate exposure to targeted oral health education during pregnancy may contribute to poor behavioural outcomes (George et al., 2021). Cultural myths, fear of dental treatments, and prioritisation of fetal well-being over self-care may further reduce the likelihood of women seeking preventive or therapeutic dental care (Sujatha et al., 2020). Moreover, fatigue, nausea, and other physiological

changes in pregnancy may act as deterrents to consistent oral hygiene practices (Yao et al., 2019).

Comparison With Related Studies

The findings from this study align with regional and international literature on antenatal oral health. For instance, Lawal et al. (2020) found that although 73% of pregnant women in Lagos possessed fair oral health knowledge, less than one-third (29%) had visited the dentist during pregnancy. Similarly, in Ghana, Yao et al. (2019) reported that although awareness of good oral hygiene was moderate (60%), less than 20% of respondents used dental floss regularly.

Global studies also support this trend. George et al. (2021) in India found that despite 85% of antenatal participants receiving basic oral health information, only 28% had a dental check-up during pregnancy. The authors concluded that the low uptake of oral health services was associated with inadequate integration of oral health into maternal health care frameworks. This mirrors the findings in this study, suggesting that knowledge and attitude alone are insufficient predictors of preventive oral hygiene behaviour.

These studies affirm the existence of a persistent knowledge-practice gap among pregnant women globally and reinforce the relevance of this study's findings to broader maternal oral health discourse.

Limitations

This study had several limitations. First, the use of convenience sampling limits the generalizability of the findings, as the sample may not be fully representative of all pregnant women in Ekiti State. Second, data were self-reported, which may have introduced recall bias or social desirability bias in responses regarding oral hygiene practices. Third, the cross-sectional design precludes causal inferences about the relationships among knowledge, attitude, and practice. Future studies using randomized or longitudinal designs are recommended.

CONCLUSION

This study assessed the knowledge, attitudes, and practices of oral hygiene among pregnant women attending antenatal care at Ekiti State University Teaching Hospital. While the majority of participants demonstrated moderate

knowledge and positive attitudes towards oral hygiene, there was a noticeable gap in translating this knowledge and attitude into optimal oral hygiene practices. Key practices such as regular flossing, brushing twice daily, and brushing after meals were suboptimal, underscoring the need for targeted interventions.

The findings highlight the importance of integrating structured oral health education and preventive care into routine antenatal services. Strengthening antenatal oral health promotion through policy reforms, capacity building of healthcare providers, and community-based education will be essential in improving maternal oral health outcomes. Such efforts will not only benefit pregnant women but also contribute to better child oral health and general well-being.

Future research should explore the barriers to adopting good oral hygiene practices during pregnancy and evaluate the effectiveness of integrated oral health interventions within maternal healthcare systems in Nigeria and similar low-resource settings.

Implications for Antenatal Policy and Oral Health Education in Nigeria

The study underscores the urgent need to enhance oral health promotion within the maternal health system. Integrating oral health services into existing antenatal care frameworks could be pivotal. Policy recommendations include:

- **Mandatory oral health screening:** Routine oral health assessments during antenatal visits should be institutionalised across public health facilities.
- **Capacity building for ANC providers:** Midwives and nurses should be trained in basic oral health promotion and screening to facilitate early identification of oral conditions.
- **Educational materials and demonstrations:** Visual aids, leaflets, and short video clips addressing key practices (e.g., flossing, brushing after meals) should be utilised during antenatal sessions to reinforce positive behaviours.
- **Community-based outreach:** Mobile dental clinics and community oral health education programmes can be used to reach rural or underserved populations in Ekiti State.

Moreover, multidisciplinary collaboration between dental professionals and maternal health teams should be encouraged. Dental therapists and hygienists can play a significant role in providing preventive services, dispelling myths, and improving both maternal and child oral health outcomes. Evidence has shown that poor maternal oral health is associated with adverse pregnancy outcomes and early childhood caries (Silk et al., 2022), thereby emphasising the need for timely interventions during pregnancy.

Ethical Approval: Ethical approval was obtained from the Ethics and Research Committee of Ekiti State University Teaching Hospital.

Conflicts of Interest: None declared.

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