

Oral Health Awareness and Practices among Pregnant Women Receiving Antenatal Care in a Low Resource Setting: A Cross-sectional Study of Antenatal Attendees in Enugu, Southeastern Nigeria

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ABSTRACT

Introduction: Poor oral health status in pregnant women is known to be associated with poor outcomes in pregnancies. Despite this, the oral health status of pregnant women has been grossly overlooked during antenatal period.

Aim: To determine the awareness and practices of oral health among pregnant women in Enugu, Southeastern Nigeria.

Materials and Methods: This was a cross-sectional questionnaire based study of 413 women who attended the antenatal clinic of University of Nigeria Teaching Hospital (UNTH), Ituku/Ozalla from January 2018 to May 2018. An interviewer administered semi-structured questionnaire which was pretested before the commencement of the study was used. The information obtained was analysed using Statistical Package for the Social Sciences (SPSS) version 22.0. A p-value of <0.05 was considered statistically significant.

Results: A total of 350 (84.75%) of the respondents used toothbrush and toothpaste for oral cleaning, 229 (55.45%) brushed at least twice a day while 258 (62.5%) changed their brushes every three months. Only 161 (39%) of the respondents knew that pregnancy can affect oral health while 101 (24.5%) of the respondents knew that poor oral health in pregnancy could have adverse effects on the unborn child; of whom only 30 (29.70%) got the information from their Obstetricians.

Conclusion: There were knowledge gaps in the oral health of pregnant women in Enugu southeastern Nigeria. It is therefore important to provide oral health education for pregnant women during antenatal period in order to improve the health of the mother and her baby.

Keywords: Gingivitis, Obstetrician, Periodontal diseases, Pregnancy

INTRODUCTION

The oral health of pregnant women is important because several complex physiological changes occur in the mouth during pregnancy [1-3]. The gingiva is most commonly affected in pregnancy due to the increase in oestrogen level that is associated with pregnancy and this may lead to bleeding gums in pregnancy [2].

Periodontal disease caused by gram negative anaerobic organisms [4] are one of the most infectious diseases in human [2]. Pregnant women are more likely to develop periodontal diseases especially gingivitis [5] because of hormonal influences. Gingivitis is the inflammation of the tissues surrounding a tooth but there is no loss of periodontal attachment [6]. Periodontal disease may also present as periodontitis, which is the inflammation and destruction of supporting tissues around the teeth [6]. There could be a connection between periodontal disease and adverse pregnancy outcome like preterm births, intrauterine growth restriction and pre-eclampsia [1,2,4,5]. High level of cariogenic bacteria in mothers has been associated with an increase in dental caries in the infants [7]. Periodontal disease can be prevented as well as treated by controlling plaques through flossing, brushing and scaling and polishing [6].

Although, oral health is important, many pregnant women do not seek oral care; even those with obvious disease of the oral cavity [3]. In addition, many healthcare givers including obstetricians do not seem to take a keen interest in the oral health of pregnant women. This may probably be because they do not understand the importance of the oral health of the pregnant women or they

are being too cautious because of concerns for foetal safety during dental treatment [7]. This fear is unfounded because dental treatment can be safely carried out at any time during pregnancy [6].

Pregnancy, however, is important period in a woman's lifetime when the woman can be encouraged to adopt healthy changes to improve their oral health and extend it to her offspring [6]. In addition, health professionals need to encourage to take care of the maternal oral health in order to improve pregnancy outcomes and reduce the risk of childhood caries [6]. These can be achieved by the prevention of oral diseases, early diagnosis and referral to a dentist [6].

World Health Organisation (WHO) recognises the importance of oral health. Oral health disease is said to be a major burden on health programs on many countries [8]. WHO is committed to ensure oral health by shifting the focus from invasive dental treatment to prevention and more of minor treatment instead [8]. Pregnancy being a "teachable" time gives a good opportunity for prevention of oral diseases and also reduces the dental caries among the offsprings [9]. In Nigeria, until recently, there was no clear oral health policy despite the importance of oral health and WHO recommendation [10]. The national oral health policy which is aimed at seeking an improvement in the health status of the people by making oral healthcare part of the primary healthcare was recently adopted, but its full implementation has not started [10,11].

Very little is known about the oral health of pregnant women in Enugu, southeastern Nigeria, thus necessitating this study. The information generated will hopefully help in developing policies and programmes

that will help in improving the oral health of pregnant women in the region and by extension improve their obstetric outcome. The aim of this study was to assess the knowledge and practices of oral health among pregnant women in Enugu, Nigeria.

MATERIALS AND METHODS

This was a cross-sectional questionnaire based study of consecutive women who attended the antenatal clinic of University of Nigeria Teaching Hospital (UNTH), Ituku/Ozalla, Enugu State, Nigeria from January 2018 to May 2018. UNTH is a Federal tertiary hospital situated in Ituku Ozalla which is at the outskirts of Enugu State. It offers antenatal care to pregnant women on a daily basis from Monday to Friday. Pregnant women are usually seen four weekly until 28 weeks, two weekly until 36 weeks, and then weekly until delivery. Ethical approval was obtained from the University of Nigeria Teaching Hospital Health Research Ethics Committee (Ref. UNTH/CSA/329/Vol.5). An informed consent was obtained from the respondents and they were reassured of the confidentiality of the information obtained.

Inclusion criteria: Pregnant women attending the antenatal clinic of the hospital within the study period who gave their consent were included in the study.

Exclusion criteria: However, pregnant women with dentures, oral malignancies and those who failed to give consent were excluded from the study.

The sample size was calculated using the formula $n = Z^2pq/d^2$ where p was set as 50%. The minimum sample size thus calculated was 384 participants. However, this was increased by 10% to 422 participants to cover for attrition. Convenient sampling method was used in selecting the participants.

The questionnaire which was adapted from previous studies [12,13] was interviewer administered questions which were divided into three sections. The first section contained questions pertaining to the socio-demographic characteristics of the respondents (age, address, occupation, marital status, religion, tribe, educational status and the number of children the respondent had). The second section contained five questions assessing the oral health knowledge of the respondents while the third section contained six questions assessing the oral health practices of the respondents. The questionnaire was pretested among antenatal clinic attendees at the Enugu State University Teaching Hospital, a state owned sister teaching hospital in Enugu to allow for adjustment of the questions in order to facilitate answering before the commencement of the study. The questionnaires were then consecutively administered to consenting women by trained interviewers until the sample size was reached.

Education was categorised as primary, secondary and tertiary (such as polytechnic and university education) [13]. Parity was categorised as primigravida, multiparous (1-4 deliveries) and grand multiparous (≥ 5). Women with good oral health practices were those who brushed at least twice daily with toothbrush and paste and changed their toothbrushes at least every three months. Oral health knowledge was categorised into yes and no response.

STATISTICAL ANALYSIS

The data was analysed using SPSS for windows version 22.0 (SPSS Inc. Chicago IL). Statistical analysis was both descriptive and cross tabulation of socio-demographic characteristics and inference determined by chi-square. A p -value < 0.05 was considered statistically significant.

RESULTS

A total of 413 questionnaires were properly completed and analysed. Majority of the respondents were Christians ($n=397$, 96.12%), 165 (39.95%) were salary earners while 232 (56.17%) were multiparous women. Further details of the socio-demographic characteristics of the respondents are shown in [Table/Fig-1].

Variables	Frequency	Percentage (%)
Age group (years)		
20-24	69	16.71
25-29	139	33.66
30-34	142	34.38
35-39	47	11.38
≥ 40	16	3.87
Residence		
Urban	349	84.50
Rural	64	15.50
Occupation		
Trader	83	20.10
Unemployed	75	18.16
Student	86	20.82
Employed	165	39.95
Farmer	4	0.97
Religion		
Christianity	397	96.12
Muslim	8	1.94
Traditional	4	0.97
Others	4	0.97
Educational status		
Primary	8	1.94
Secondary	81	19.61
Tertiary	324	78.45
Parity		
0	157	38.01
1-4	232	56.17
>4	24	5.82

[Table/Fig-1]: Socio-demographic characteristics of the respondents.

Only 30 (29.70%) of the women who knew that oral health in pregnancy could have adverse effects on the unborn child got the information from their obstetricians [Table/Fig-2]. Majority ($n=350$, 84.75) of the respondents used toothbrush and toothpaste for oral cleaning. Further details of the oral health pattern of the respondents are in [Table/Fig-3]. Although 83.8% ($n=346$) of the respondents agreed that women

Variables	Frequency	Percentage (%)
Awareness of effects of pregnancy on oral health (n=161)		
Swollen gum	43	26.71
Toothache	26	16.15
Bleeding gum	40	24.84
Mouth odour	52	32.30
Awareness of effects of poor oral health on the unborn child (n=101)		
Stillbirth	15	14.85
Premature delivery	17	16.84
Miscarriage	50	49.50
Abnormal baby	19	18.81
Source of information about the effects of poor oral health on the unborn child (n=101)		
Dentist	4	3.96
Obstetrician	30	29.70
Nurse/midwife	4	3.96
Other health workers	12	11.88
Books/journal	8	7.92
Internet	22	21.78
Family/friend	21	20.80

[Table/Fig-2]: Oral health awareness of the respondents.

should have dental checkup during pregnancy, only 36 (8.7%) actually had dental checkup while the majority (n=377, 91.3%) did not.

Variables	Frequency	Percentage (%)
Oral cleaning items used		
Toothbrush + toothpaste	350	84.75
Toothbrush + toothpaste + chewing stick	63	15.25
Dental floss	0	0
Frequency of daily brushing		
Twice daily	229	55.45
Once daily	184	44.55
Frequency of changing toothbrush		
3 monthly	258	62.47
>3 monthly	155	37.53

[Table/Fig-3]: Oral health pattern of the respondents.

Age, occupation, religion and educational status showed significant association with awareness of effects of pregnancy on oral health whereas place of residence did not [Table/Fig-4]. Age, occupation, religion and educational status showed significant association with awareness of effects of poor oral health on the unborn child whereas place of residence did not [Table/Fig-5].

Aware of effects of pregnancy on oral health				
Variables	Yes n (%)	No n (%)	χ^2	p-value
Age group				
20-24	31 (44.9)	38 (55.1)	34	<0.001
25-29	47 (33.8)	92 (66.2)		
30-34	56 (39.4)	86 (60.6)		
35-39	23 (48.9)	24 (51.1)		
≥40	4 (25)	12 (75)		
Residence				
Urban	137 (39.3)	212 (60.7)	0.620	0.733
Rural	24 (37.5)	40 (62.5)		
Occupation				
Trader	27 (32.5)	56 (67.5)	54.662	<0.001
Unemployed	20 (26.7)	55 (73.3)		
Student	28 (32.6)	58 (67.4)		
Salary earner	82 (49.7)	83 (50.3)		
Farmer	4 (100)	0 (0)		
Religion				
Christianity	153 (38.5)	244 (61.5)	42.592	<0.001
Muslim	0 (0)	8 (100)		
Traditional	4 (100)	0 (0)		
Others	4 (100)	0 (0)		
Educational status				
Primary	0 (0)	8 (100)	15.241	0.004
Secondary	31 (38.3)	50 (61.7)		
Tertiary	130 (40.1)	194 (59.9)		

[Table/Fig-4]: Association between socio-demographic characteristics and awareness of the effects of pregnancy on oral health (chi-square).

Aware of effects of poor oral health on unborn baby				
Variables	Yes n (%)	No n (%)	χ^2	p-value
Age group (years)				
20-24	27 (39.1)	42 (60.9)	27.462	<0.001
25-29	35 (25.2)	104 (74.8)		
30-34	23 (16.2)	119 (83.8)		
35-39	12 (25.5)	35 (74.5)		
≥40	4 (25)	12 (75)		

Residence				
Urban	189 (54.15)	160 (45.85)	3.449	0.178
Rural	12 (18.8)	52 (81.2)		
Occupation				
Trader	11 (13.3)	72 (86.7)	35.406	<0.001
Unemployed	23 (30.7)	52 (69.3)		
Student	28 (32.6)	58 (67.4)		
Salary earner	39 (23.6)	126 (76.4)		
Farmer	0 (0)	4 (100)		
Religion				
Christianity	89 (22.4)	308 (77.6)	48.170	<0.001
Muslim	8 (100)	0 (0)		
Traditional	4 (100)	0 (0)		
Others	0 (0)	4 (100)		
Educational status				
Primary	0 (0)	8 (100)	33.206	<0.001
Secondary	35 (43.2)	46 (56.8)		
Tertiary	66 (20.4)	258 (79.6)		

[Table/Fig-5]: Association between socio-demographic characteristics and awareness of the effects of poor oral health on unborn baby (chi-square).

DISCUSSION

It has been established that good oral health during pregnancy is important in achieving favorable pregnancy outcome [13]. Periodontal disease which is the most common oral disease in pregnancy can be prevented by good oral care including flossing and regular brushing [13]. Good oral care practices can be influenced by an individual's oral health knowledge [13]. However, there were gaps in the oral health knowledge among pregnant women in Enugu as observed in the index study which was a cross-sectional study. Only 39% and 24.5% were aware that pregnancy has effects on oral health and that poor oral health could have adverse effects on pregnancy outcome unlike in previous study where the participants displayed average/good oral health knowledge [6,13]. Even though majority of the participants were highly educated like in previous study carried out in the South-south of Nigeria [12], it would have been expected that the participants would have above average oral health knowledge but this was not the case in present study.

Oral health awareness showed significant association with age, educational status, occupation and religion. Just like in previous studies; the more educated a woman is the better the knowledge [6,13]. However, a similar study showed that though majority of the respondents were educated, half of them were not aware of oral health problems [12].

Although there were gaps in oral health knowledge of the participants, a good number had good oral health practices. Above average number of the participants in present study brushed at least twice daily while the majority of them used toothpaste and brush for oral care as well as changed their toothbrushes once in three months. A similar result was obtained in a study carried out in Calabar where 94.4% used toothbrush and toothpaste for oral cleaning and 89.9% in North eastern Nigeria [2,12]. However, in previous studies, majority of the women believed that brushing should be done twice daily but only few of them actually brushed twice daily [9,14,15]. This may be attributed to the cultural beliefs and practices of the different population.

The majority of women in present study believed that women should have dental checkup during pregnancy, only 8.7% actually had dental checkup. Similar report of low dental service utilisation has been reported [6,12]. These low dental services may be attributed to poor exposure of pregnant women to oral healthcare knowledge by the obstetricians and even the dentists. In present study, only 29.7% of

the women got information about oral health from their obstetricians. Further studies on the determinants of dental consultation between pregnant women in Enugu and the obstetricians' knowledge and attitude regarding oral health would be worthwhile.

Limitation(s)

This study had some limitations therefore the results should be reported with caution. The study was based on self-reported data so there may be elements of biases and may not have reflected the opinions of the respondents. Another limitation was that convenient sampling method was used to select the participants. The study was carried out in a tertiary institution with majority of the women being educated and living in urban areas of Enugu and therefore the results may not be generalised.

CONCLUSION(S)

There were knowledge gaps in the oral health of pregnant women in Enugu southeastern Nigeria. It is therefore important to provide oral health education for pregnant women during antenatal period in order to improve the health of the mother and her baby.

REFERENCES

- [1] Dias MS, Pimentel M, Vasconcellos A, Ribeiro A. Oral health awareness-- related to behavior, knowledge, attitudes among Brazilian pregnant. Conference paper (General section). IADR. 2010;4631.
- [2] Bukar M, Audu BM, Adesina OA, Marupa JY. Oral health practices among pregnant women in North Eastern Nigeria. Niger J Clin Pract. 2012;15:302-05.
- [3] Oral health care during pregnancy expert workshop. Oral healthcare during pregnancy: A national consensus statement. Washington, DC. National maternal and child oral health Resource Center. 2012. Available at: <https://www.mchoralhealth.org/PDFs/OralHealthPregnancyConsensus.pdf>.
- [4] Offenbacher S, Katz V, Fertik G, Collins J, Boyd D, Maynor G. Periodontal infection as a possible risk factor for preterm low birth weight. J Periodontol. 1996;67(10 suppl):1103-13.
- [5] Bamanikar S, Kee LK. Knowledge, attitude and practice of oral and dental healthcare in pregnant women. Oman Med J. 2013;28(4):288-91.
- [6] Thomas NJ, Middleton PF, Crowther CA. Oral and dental health care practices in pregnant women in Australia: A postnatal survey. BMC Pregnancy and Childbirth. 2008;8:13.
- [7] Silk H, Douglass AB, Douglass JM, Silk L. Oral health during pregnancy. Am Fam Physician. 2008;77(8):1139-44.
- [8] Oral health-WHO. 2020. Available at: <https://www.who.int/news-room/fact-sheets/detail/oral-health>.
- [9] Oral health care during pregnancy and through the lifespan. Committee Opinion No. 569. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2013;122:417-22.
- [10] Adeniyi AA, Sofola OO, Kalliecharan RV. An appraisal of the oral health care system in Nigeria. Int Dent J. 2012;62(6):292-300.
- [11] Uguru N, Onwujekwe O, Ogu UU, Uguru C. Access to oral health care: A focus on dental caries treatment provision in Enugu Nigeria. BMC Oral Health. 2020;20(1):145.
- [12] Bassey GO, Anyanaechi CE, Ekabua KJ, Ekabua JE. Oral health among antenatal care attendees in Calabar, Nigeria. J Obstet Gynaecol. 2010;30(2):143-46.
- [13] Adeniyi A, Agbaje O, Braimoh M, Ogunbanjo O, Modupe S, Olubunmi O. A survey of the oral health knowledge and practices of pregnant women in a Nigerian teaching hospital. Afr J Reprod Health. 2011;15(4):14-19.
- [14] Agbelusi GA, Sofola OO, Jeboda SO. Oral health knowledge, attitude and practices of pregnant women in Lagos University Teaching Hospital. Nig Qt J Hosp Med. 1999;9(2):116-20.
- [15] Ogunbodede EO, Olusile AO, Ogunniyi SO, Faleyimu BL. Socio-economic factors and dental health in an obstetric population. West Afr J Med. 1996;5(1):158-60.

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