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Research Article

Pattern of Oral Health Among a Population of Pregnant Women in Southwestern Nigeria

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Abstract

Oral health in pregnancy is important to the health of the pregnant woman; and good oral health plays a role in the outcome of pregnancy. However, many pregnant women and healthcare providers are either unaware of this or accord this less attention. The study was designed to describe pattern of oral health among a cohort of pregnant women. Seventy-seven pregnant women attending antenatal care at a secondary healthcare facility were evaluated in third trimester following written informed consent. Each participant had a structured data collection form administered and clinical examination conducted. Information on socio-demographic characteristics, dental and obstetric history and examination were obtained. Dental assessment involved the use of the oral hygiene, gingival, periodontal and caries indices. The data collected was entered and analysed using IBM SPSS Statistics version 20. The mean age of the participants was 29.90 (± 4.38) years and all women were in the third trimester of pregnancy. Only 6.5% of the participants had dental complaints, to 26% indicated brushing twice a day and 96.1% never had dental health check in the past. A good oral hygiene score was found in 40% of participants; 6.5% and 10.4% had a healthy periodontal and gingival status respectively and only 8 (10.4%) had caries. Less than half of the pregnant women had good oral health status. The antenatal care period may be an opportunity to identify oral diseases; counsel and introduce positive oral health behaviours and enhance improved personal oral hygiene.

Key Words: *Oral health pregnancy, oral hygiene, gingivitis, periodontitis*

INTRODUCTION

The oral system in pregnancy is an important but often neglected system. Oral health plays a role in the outcome of a pregnancy; however, many pregnant women and health care providers are either unaware of this fact or accord this less attention (Harris Janice, 2017).

The prevalence of oral disease in pregnancy is about 44.2% (Silk Hugh, *et al*, 2008; Jain and Kaur, 2015). Both cross-sectional and longitudinal clinical studies have reported increased prevalence and severity of gingival inflammation during pregnancy occurring more commonly in the 2nd and 3rd trimesters; and disappears in the postpartum period (Tilakaratne *et al*., 2000; Gürsoy *et al*., 2008).

The proportion of women with oral lesion increases from the first to the third trimester of pregnancy (Samant *et al*., 1976; Jain and Kaur, 2015). Gingivitis is the commonest oral lesion seen in pregnancy with a prevalence as high as 60-70% and will usually resolve spontaneously after delivery (Nuamah and Annan, 1998; Laine, 2002; Silk Hugh *et al*, 2008). Several studies have demonstrated good oral health in many pregnant women in pregnancy. A previous study found a good oral health prevalence of 55.8% among pregnant women (Jain and Kaur, 2015).

Pregnancy is associated with a variety of hormonal, physiologic and biochemical changes occurring in different body systems including the alimentary canal (Gursoy *et al*., 2013; Lasisi and Ugwuadu, 2014). There are several physiologic changes known to occur in the oral cavity and these include changes in salivary volume and composition, salivary flora microorganisms, connective tissue changes, gingival microbiologic flora, among others (Carrillo-De-Albornoz *et al*., 2012; Lasisi and Ugwuadu, 2014; Jain and Kaur, 2015). Moreover, these physiologic changes in saliva during pregnancy may affect oral health (Chaloupka *et al*., 2014; Naveen *et al*., 2014).

Some studies have documented reduced salivary flow rate (Karama and Nuaimy, 2003; Lasisi and Ugwuadu, 2014); and altered biochemical and electrolyte levels (Salvolini *et al*., 1998; Laine, 2002; Lasisi and Ugwuadu, 2014) in pregnant women which suggest impaired physiologic function of saliva that may predispose them to oral diseases.

Furthermore, several pathologic lesions of the oral cavity in pregnancy have been demonstrated and may be associated with poor pregnancy outcomes. These include periodontitis, gingivitis, pyogenic granuloma, and dental caries. (Nuamah and Annan, 1998; Laine, 2002; Silk Hugh, *et al*, 2008; Gursoy *et al*., 2013). Poor oral health as shown by previous studies is associated with pregnancy outcomes such as low birth weight, preterm delivery, high levels carcinogenic bacteria which may be associated dental caries in infant (Silk Hugh, *et al*, 2008; Hope *et al*., 2014; Reza Karimi *et al*., 2015).

Many of these oral lesions are preventable by improved health education, personal oral hygiene practices and oral health care (Laine, 2002; Jain and Kaur, 2015) thus reducing adverse pregnancy outcomes which may be associated.

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Appropriate antenatal health education and dental check in the postnatal period may also play a role in the prevention of early childhood caries (Nakai, *et al*, 2016).

Some of the antenatal care packages and practices in many of the middle and low-income countries do not provide oral health care services. The World Health Organisation Focused antenatal care package checklist also failed to demonstrate the importance and need for oral health care in pregnancy (WHO, 2001). In some regions where the service is available, many of the pregnant women are unaware of it. A study by Hullah and colleagues, demonstrated good oral health practices, poor use of oral health service and about a third of the women were not aware of availability of free dental health service in pregnancy (Hullah *et al*., 2008). Other studies have also demonstrated poor use of dental care services among pregnant women receiving prenatal care services (Al-Swuailem, *et al*., 2014; Azofeifa *et al*., 2014). In Sub-Saharan Africa, many pregnant women are not aware of oral health care and availability of routine antenatal oral health care service for pregnant women is not a norm (Nuamah and Annan, 1998). Despite the importance of antenatal oral health care, little consideration is given to oral health care in pregnancy in this environment.

The aim of this study is to evaluate the oral health status of pregnant women in the third trimester of pregnancy. Hence, this study describes the prevalence and pattern of oral health among pregnant women in late pregnancy. The findings in this study will provide knowledge of oral health indices in the study environment and redirect attention to oral health care services in pregnancy.

MATERIALS AND METHODS

Ethical approval was obtained from the University of Ibadan/University College Hospital Ethics Committee (UI/EC/15/0256).

Study Setting/Site: The study was conducted in Ibadan; located in the south-western part of Nigeria. The study site was Adeoyo Maternity Hospital, Yemetu, Ibadan located in the metropolis. This is a secondary health care facility which offers maternal, neonatal/child health services in addition to emergency trauma/outpatient departments. It has a delivery rate of about 4,800 to 6,000 deliveries per annum. It serves as a referral hospital for primary care facilities, private hospital and maternity centers/faith-based maternity centers in the metropolis and its environs.

Study Design: This was a cohort study of pregnant women attending antenatal health care in a secondary health facility-Adeoyo Maternity Hospital, Ibadan.

Study Population: Pregnant women in the third trimester of pregnancy receiving antenatal care service at study site.

Eligibility Criteria:

Inclusion criteria: Clinically confirmed pregnancy in third trimester of pregnancy.

Exclusion criteria: Women with pregnancy complications like eclampsia, diabetes mellitus, anaemia, immunodeficiency and malaria; or women with a history of smoking were excluded.

Study Procedure: Participants in this study were counseled on the details of the study and a written informed consent obtained. A total of eighty-one participants were recruited for the study and examined but seventy-seven of these completed the study. The baseline data was collected; a data collection form was completed for the participants. Information on socio-demographic, obstetric characteristics and clinical history was collected. Thereafter, participants had obstetric examination; and oral examination to determine their oral health status.

Oral examination: Clinical examination was carried out on the participants by the investigator using dental mirror and periodontal probe. Oral changes were diagnosed based on the oral health status using the oral hygiene (Greene *et al*., 1964; Podshadley and Haley, 1968), gingival (Mehta, 2012), periodontal (Ramfjord, 1967; Ainamo *et al*., 1982) and caries (Marthaler *et al*., 2005) indices.

Oral hygiene index: Oral Hygiene Index-Simplified (OHI – S) developed by Greene and Vermilion (Greene *et al*., 1964). This involves debris index and calculus index (Greene *et al*., 1964; Greene, 1967). The debris index on OHI – S is graded as: 0 = no debris, 1 = debris is covering not more than a third of the tooth, 2 = debris is covering more than a third but not more than two thirds of the tooth and 3 = debris is covering more than two thirds of the tooth. The calculus index on OHI – S is graded as: 0 = no calculus present, 1 = supra-gingival calculus is covering not more than a third of the tooth, 2 = supra-gingival calculus is covering more than a third but not more than two thirds of the tooth or presence of flecks of sub-gingival calculus, 3 = supra-gingival calculus covering more than two thirds of the tooth or continuous heavy band of sub-gingival calculus.

Periodontal Index (PI): The PI assesses periodontal diseases; that is the presence of bleeding, calculus and periodontal pockets. This will be assessed using the WHO recommended Community Periodontal Index (CPI). Based on the CPI, periodontal diseases are coded as: 0 = Healthy, 1 = Bleeding observed, directly or by using a mouth mirror, after probing; 2 = Calculus detected during probing, but pocket 3mm or under and 3 = Pocket 4-5 mm.

Caries index: Also known as the DMFT index. DMFT connotes D = Number of decayed teeth, M = Number of missing teeth, F = Number of filled teeth. The Caries index or DMFT index is thus will be total number of teeth (T) affected.

Data Management: The data obtained was entered into the computer and analysed using IBM SPSS STATISTICS version 20 and a univariate analysis was done using descriptive statistics

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RESULTS

A total of eighty-one participants were enrolled; only seventy-seven questionnaires were completed. The mean age of respondent is 29.90 (± 4.38) years. The respondents were all married (100%) and mostly of the Yoruba tribe (98.7%) (Table 1). All respondents were in the third trimester of pregnancy. Only 11.7% of the respondents had symptoms or complaints in the index pregnancy and the complaints in pregnancy included bleeding per vagina in early pregnancy, haematuria, cervical incompetence and malaria infection. All of these

occurred in early pregnancy and had been managed accordingly. (Table 2)

In Table 3, 96.1% never had dental checkup and only 3.9% of participants ever had previous dental checkup. Five (6.5%) of the respondents had dental complaints and the dental complaints elicited included tongue blisters, swollen gums, tooth decay and toothache.

The oral health status of the respondents is shown in Table 4. The tongue, palate, buccal mucosa status was normal in 77 (100%) of the participants. The oral hygiene, periodontal, gingival indices scores are as shown. Good oral hygiene score and calculus were observed in 31 (40.3%) and 67 (87.0%) of the participants respectively. A healthy gingival status was observed in only 8 (10.4%) while caries was seen in 8 (10.4%) of study participants.

Table 1
Sociodemographic characteristics of the respondents

Variables	Frequency (N)	Proportion (%)
AGE (years):		
Less than 25	9	11.7
25-29	26	33.8
30-34	30	39.0
35 and greater	12	15.6
LEVEL OF EDUCATION:		
Qura'nic/Primary	5	6.5
Secondary	38	49.4
Tertiary	34	44.2
OCCUPATION:		
Unemployed	9	11.7
Unskilled	33	42.9
Skilled	22	28.6
Professional	13	16.9
RELIGION:		
Christianity	25	32.5
Islam	52	67.5
ETHNICITY:		
Yoruba	76	98.7
Edo	1	1.3

Table 2
Obstetric Characteristics of Respondents

VARIABLES	MEAN (n)	STANDARD DEVIATION (SD)
Gestational Age at Booking (weeks)	19.82	5.26
VARIABLES	**FREQUENCY (N)**	**PROPORTION (%)**
Parity:		
Nulliparous	25	32.5
Para 1- 2	37	48.1
Para 3- 4	13	16.9
5 and above	2	2.6
Symptoms/Complaints in Pregnancy:		
Yes	9	11.7
No	68	88.3
Excessive Salivation:		
Yes	23	29.9
No	54	70.1
VOMITTING:		
Yes	22	28.6
No	55	71.4

Table 3
Dental characteristics/dental complaint of respondents

VARIABLES	FREQUENCY (n)	PROPORTION (%)
Ever Had Dental Check		
Yes	3	3.9
No	74	96.1
Dental complaints:		
Yes	5	6.5
No	72	93.5
Mode of Cleaning the Teeth		
Toothbrush	76	98.7
Chewing stick	1	1.3
Frequency of Teeth Brushing:		
Once	55	71.4
Twice	20	26.0
More than twice	2	2.6
Gum Bleed		
Yes	9	11.7
No	68	88.3
Pain in the Mouth		
Yes	10	13.0
No	67	87.0

Table 4
Oral Health Status

VARIABLES	FREQUENCY (n)	PROPORTION (%)
Tongue Status:		
Normal	77	100.0
Palate Status:		
Normal	77	100.0
Buccal Mucosa:		
Normal	77	100.0
Oral Hygiene Score:		
Good	31	40.3
Fair	46	59.7
Poor	0	0.0
Periodontal Score:		
Code 0-Healthy	5	6.5
Code 1- Bleeding	4	5.2
Code 2- Calculus, < 3mm pockets	67	87.0
Code 3- >3mm pockets	1	1.3
GINGIVAL SCORE:		
Healthy	8	10.4
Mild	42	54.5
Moderate	26	33.8
Severe	1	1.3
CARIES:		
No Caries	69	89.6
Caries	8	10.4

DISCUSSION

This study describes the pattern of oral health among a group of pregnant women receiving antenatal care services at a secondary heath care facility. The main finding of this study

suggests that majority of the respondents in this study had good oral hygiene practices and only about half had good oral health status.

The participants constituted women in the reproductive age group and currently pregnant with an average age of 29.90 years; married and mostly Yoruba. The major tribe of the participants is the Yoruba tribe as this study was conducted in Southwest Nigeria where the Yoruba are predominant. About half of the respondents have secondary level of education, and majority of these women are unskilled. Majority of the women booked for antenatal care in the second trimester at a mean gestational age of about 19 weeks which is similar to the findings of previous study in Northern Nigeria (Ifenne and Utoo, 2012).

Only about a quarter of the respondents brushed teeth more than once a day while three-quarters of the respondents cleaned teeth at least once a day. And majority of these women used toothbrush for oral cleaning. This possibly demonstrates good oral hygiene practice among the women.

Majority of the women had no dental complaints and had never visited the clinic for a dental health check in the past. This should not be misconstrued as respondents not having previous oral health challenges requiring oral health check, as previous oral/dental health status of the respondents and history could not be verified. However, the tongue, palate and buccal mucosa status were all normal. This is consistent with good and fair oral hygiene scores recorded in majority of the respondents. Although, almost about two-third of the respondents had fair oral hygiene score.

Only a few had healthy periodontal and gingival health status. Most of the participants had mild to moderate gingival and periodontal diseases that will require interventions. Despite good oral hygiene in pregnancy, there may be gingival or periodontal inflammation suggestive of disease as demonstrated by this study. In the assessment of treatment need, some of the participants will require improved personal oral hygiene counselling and practices for the mild periodontal disease. However, majority of the participants will need professional cleaning and plaque removal in addition to improved personal oral hygiene practices. Only a few of the participants had caries with majority having no evidence of caries on oral examination. There is a documented increase in the prevalence of gingival disease in pregnancy due to the effects of pregnancy sex hormones such as oestrogen and progesterone on the oral cavity (Zaki *et al*., 1984; Wu, *et al*., 2015).

Furthermore, oral health diseases have been shown to share common risk factors with other non-communicable diseases (WHO, 2003). Poor oral health is also associated with poor pregnancy outcomes. (Silk Hugh, *et al*., 2008; Hope *et al*., 2014) Therefore, the role of good oral health cannot be overemphasized. As demonstrated by a previous study, antenatal care plays a role in improving oral health care and practices (Azofeifa *et al*., 2014). In the absence of appropriate oral health care services during pregnancy, the antenatal period will be a missed period to introduce beneficial oral health education, counselling, encourage positive oral health practices and institute appropriate oral health interventions. The limitation of this study is that it is a hospital-based study thus limiting the cohort of pregnant women available for evaluation. Also, the recruitment of pregnant women in the third trimester of pregnancy limits the evaluation of oral changes in pregnancy across all the trimesters of pregnancy.

In conclusion, despite good oral health generally, there were clinically significant periodontal and gingival diseases in the pregnant women. There is a need to institute antenatal oral health care package provide preventive measures to reduce the prevalence of gingival and periodontal disease; and to ensure appropriate care for pregnant women in order to prevent associated perinatal morbidities. A goal-oriented antenatal care package with consideration for oral health is needed; enabling access to a comprehensive oral health package and interventions which will be beneficial in our setting where many women do not access or sparingly access preventive or therapeutic oral health services. Therefore, oral health disease prevention and health promotion will be useful interventions to reduce the burden of disease. There is also a need to develop a national oral health care policy in Nigeria especially for pregnant women and children.

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