ORIGINAL RESEARCH ARTICLE

A Survey of the Oral Health Knowledge and Practices of Pregnant Women in a Nigerian Teaching Hospital

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Abstract

To describe the self-reported oral health knowledge, attitudes and oral hygiene habits, among pregnant women receiving antenatal care at the Lagos State University teaching Hospital (LASUTH). A cross-sectional questionnaire-based survey was conducted at the LASUTH antenatal clinic during the period January – June 2008. Most of the respondents demonstrated a reasonable level of oral health knowledge and positive attitudes towards oral health. However, there were gaps in the oral health knowledge of the women surveyed. The relationship between the level of oral health knowledge and ethnicity (p=0.856), level of education (p=0.079), age category (p= 0.166), and trimester of pregnancy (p=0.219) were not statistically significant. In addition, the women's knowledge and attitude towards oral health was not reflected in their oral hygiene practices. There is a need to provide oral health education for pregnant women during antenatal care in order to highlight the importance of good oral health in achieving good health for both the mother and her baby (*Afr J Reprod Health 2011; 15[4]:14-19*)

Résumé

Enquête sur la connaissance et les pratiques de l'hygiène buccodentaire chez les femmes enceintes dans un Centre Hospitalier Universitaire nigérian. Cette enquête a pour objectif d'étudier la connaissance, les attitudes de santé buccodentaire et les habitudes de l'hygiène buccodentaire auto-signalées par les femmes enceintes qui reçoivent les soins prénatals dans le Centre Hospitalier de l'Université de l'état de Lagos (LASUTH). Une enquête transversale, basée sur les questionnaires a été menée auprès de la clinique prénatale pendant la période entre janvier et juin 2008. La plupart des enquêtées ont fait preuve d'un bon niveau de connaissance de santé buccodentaire et des attitudes positives envers la santé buccodentaire. Néanmoins, il y avait des vides par rapport à la connaissance de santé buccodentaire des femmes enquêtées. Le rapport entre le niveau de connaissance de santé buccodentaire et l'ethnicité (p=0,856), le niveau d'instruction (p=0,079), la catégorie d'âge (p=0,166), et le trimestre de grossesse (p=0,219) ont été statistiquement significatif. De plus, la connaissance et l'attitude chez les femmes envers la santé buccodentaire n'étaient pas reflétés dans leurs pratiques de l'hygiène buccodentaire. Il est nécessaire d'assurer l'éducation de santé buccodentaire pour les femmes enceintes pendantr les soins prénatals afin de souligner l'importance d'une bonne santé buccodentaire dans l'accomplissement d'une bonne santé à l'égard de la mère et l'enfant (*Afr J Reprod Health 2011; 15[4]: 14-19*)

Introduction

Pregnancy is a special state for a woman which is associated with a myriad of physiological and emotional changes. In the oral cavity, various pathologies have been reported among pregnant women.[1] The exaggerated inflammatory response of the gums to bacterial plaque known as pregnancy gingivitis has been attributed to the increased secretion of gestational hormones (especially oestrogen and progesterone) during pregnancy.[2,3] Bacterial plaque is formed about an hour after tooth-brushing and it is the precursor of the two commonest dental diseases i.e. dental caries and periodontal diseases. Its formation can however be prevented by regular tooth-brushing, the use of dentifrices and dental education.

Proper nutrition and healthy lifestyle also play a vital role in the general well being of the mother to be.[2] The need to eat a balanced diet with a lot of fruits cannot be over-emphasised. Unfortunately the pregnant state may predispose to unhealthy habits. These habits may include a penchant for particular types of food groups to the detriment of other essential food groups and frequent unhealthy snacking habits such as licking sweets to curb nausea. The increased consumption of refined carbohydrate will provide a suitable substrate for cariogenic bacteria and may predispose to increased tooth decay in some individuals. The frequent vomiting associated with pregnancy in some women is also known to predispose to the development of dental erosion.[3] In addition to these physiological changes is the existence of cultural beliefs which may mitigate proper nutrition and the ability of these women to achieve good oral health.

In recent times, the oral health of pregnant women has been gaining more interest because of the suspected association between periodontal diseases and adverse pregnancy outcomes such as premature birth, low birth weight and pre-eclampsia.[4-6] The provision of routine antenatal care is aimed at ensuring general maternal well- being and the subsequent delivery of healthy babies. However, while oral health is now accepted as an important component of general well being of pregnant women in developed countries it remains an underrated component in developing countries such as Nigeria.

The purpose of the present study was to assess the knowledge, attitude and practices concerning oral health among pregnant women receiving antenatal care at the Lagos State University Teaching Hospital (LASUTH). The results obtained would serve as baseline information for planning an oral health education programme aimed at improving the oral health of pregnant women receiving care in the hospital. Specifically it would identify areas of deficiency in the women's knowledge and this would be helpful in formulating the content of the oral health messages.

Methods

A self administered questionnaire based survey was conducted at the antenatal clinic of the Lagos State University Teaching Hospital (LASUTH) between January and June 2008. The questionnaire was developed and pre-tested on 25 pregnant women to allow for refinement of the questions in order to facilitate answering. The minimum sample size was computed using the formula $n = z^2pq/d^2$ where p (the prevalence of women with good knowledge) was set at 50%. Thus the computed minimum sample size was 384 subjects. This was increased by 20% to 460 subjects to accommodate attrition. Questionnaires were administered to all consecutive consenting pregnant women who attended the antenatal clinic during the study period. A total of 453 questionnaires were properly completed while 7 questionnaires had several uncompleted sections and were thus discarded.

The questionnaire contained four sections. The first section contained questions on the respondent's socio demographic characteristics such as age, ethnic group, and educational status. There were six questions in the second section evaluating the oral health knowledge of the respondents, four of these questions, had been used in an earlier study.[7] Two questions were on the understanding and causes of tooth decay, and the other 2 were on gum disease. We constructed a "dental knowledge score" by counting the total number of acceptable answers given by the subjects, excluding responses like "do not know" and "no answer". Thus, the dental knowledge score was in an interval scale and ranged from 0 to 6, with a higher dental knowledge score indicating better dental knowledge. The mean score for the respondent's dental knowledge was 3.0. Based on the mean score, the knowledge scores were regrouped into 2 categories: those with good oral health knowledge and those with poor oral health knowledge. Thus a score of 4 and above was graded as good knowledge, while 3 and below was graded as poor knowledge.

The third section contained ten statements concerning the importance of oral health during pregnancy, the importance of retaining natural teeth, dental service utilization, and dental health beliefs were set to explore the subject's attitudes toward oral health. The subjects were asked to indicate whether they agreed with, disagreed with, or had no comment on each of the statements. A dental attitude score was then computed for each respondent by counting the total number of statements to which the respondent displayed positive oral health attitude. The maximum achievable score was 10 with a higher score indicating a more positive attitude. Individuals with scores of 7 and above were graded as having positive attitude to oral health. The fourth section contained questions assessing the respondent's dietary and oral health practices.

The data was analysed using the SPSS for Windows (version 11.0; SPSS Inc. Chicago. IL) statistical software package and was validated visually. Measures of central tendency were generated for continuous variables and frequency tables generated for categorical variables. For the purpose of analysis the level of education was categorized as low (primary education only), middle (secondary education) and tertiary (post secondary education i.e. polytechnic and

university education). The chi-squared test of association, and ANOVA test were utilised where appropriate and associations and differences were considered significant when the p-values were less than 0.05. Logistic regression analysis was done to identify possible factors influencing the oral health knowledge and attitudes.

Results

Sociodemographic features of study participants

The mean age and standard deviation of our study population was 31.32 ± 4.318 years (range 20 - 44 years). Over half (53.5%) of the respondents were primigravida while the remaining women had between 1 and 5 children. Only eight women (1.8%) had primary school education, 49 (10.8%) secondary school education, 151 (33.3%) attained a polytechnic diploma and 243 (53.6%) attended university (Table 1). On the utilization of dental services, 285 (62.9%) respondents reported ever visiting a dental facility.

Table 1: Socio-demographic characteristics of study population.

Socio-demographic characteristics	Frequency	Percentage
Age category		
Unspecified	37	8.6
Less than 25 years	39	69.5
26 - 35 years	315	13.7
36 years and above	62	8.2
Total	453	100.0
Level of education		
Unspecified	2	0.4
Primary	8	1.8
Secondary	49	10.8
Polytechnic	151	33.3
University	243	53.6
Total	453	100.0
Ethnic group		
Hausa	7	1.6
Ibo	98	21.6
Yoruba	283	62.5
Others	65	14.3
Total	453	100.0

Oral health knowledge and attitudes

A total of 145(32.0%) reported having heard the term dental caries while 88(19.4%) of the respondents understood the term to mean tooth decay. A smaller proportion of the respondents 34(7.5%) had heard of the term periodontal disease but only 15 of these women knew the term refers to gum disease. A large proportion of the respondents 137(30.2%) consider sugar to be the cause of both tooth decay and gum disease. Table 2 displays the perceived causes of tooth decay and gum disease among the respondents. Some of the other causes identified by the respondents include cold drinks, cigarette smoking and genetic factors. While they viewed vitamin c deficiency and incessant tooth-picking as probable causes of gum disease.

Table 2: Perceived causes of dental caries and gum disease.

Variable	N	%
Perceived cause of dental caries		
Sugar/sweet foods	340	75.1
Drinking alcohol	16	3.5
Poor oral hygiene	28	6.2
Others	47	11.4
Do not know	12	2.6
Perceived cause of gum disease		
Sugar/sweet foods	137	30.2
Eating hard foods	21	4.6
Drinking alcohol	9	2.0
Bacterial Plaque	23	5.1
Calculus/tartar	15	3.3
Poor oral hygiene	4	0.9
Do not know	105	25.4

A sizeable proportion of the respondents (186 or 41.1%) could not identify one constituent of toothpaste although 115(25.4%) correctly identified fluoride as a constituent of toothpaste. Most of the respondents (67%) believe that toothpastes are useful mainly for fresh breath while 62% opine that the mouth should be cleaned at least twice daily for optimal oral health (Table 3). Table 4 provides a summary of the women's views on statements about oral health during pregnancy.

Table 3: Respondents views on some oral hygiene practices

Variable	N	%
Perceived benefits of using toothpaste		
Makes the mouth clean and fresh	307	67.8
Prevents Dental decay	126	27.8
Prevents oral cancer	4	0.9
Others	16	3.5
Appropriate number of times one should clean daily to prevent dental diseases		
Three times a week	19	4.2
Once a day	67	14.8
Twice a day	281	62.0
More than twice a day	86	19.0

Table 4: Responses to some of the statements on oral health during pregnancy.

Statement	Agree (%)	Disagree (%)	Uncertain (%)
1. Pregnancy is a cause of gum problems	67 (14.8)	359 (79.2)	27 (6.0)
2. Dental visits are unnecessary during pregnancy	106 (23.4)	323 (71.3)	24 (5.3)
3. Pregnancy predisposes to tooth loss.	43 (9.5)	388 (85.7)	22 (4.9)
4. Keeping the natural dentition is unimportant	52 (11.5)	376 (83.0)	25 (5.5)
5. Every painful tooth should be removed	145 (32.0)	285 (62.9)	23 (5.1)
6. Visits to the dentist are always unpleasant	41 (9.1)	386 (85.2)	26 (5.7)
7. Fruits and vegetables have no effect on the teeth and gums	142 (31.3)	289 (63.8)	22 (4.9)

Dietary and oral hygiene habits

A total of 326 women reported consuming fruits four or more times every week, 170 (37.5%) reported consuming vegetables at least four times a week. Conversely, 358 or 85.7% reported consuming confectionery once a week while only 24(5.3%) ingest confectionery more than four times weekly. Regarding their oral hygiene practices, almost all the women (427 or 94.2%) use toothbrush for oral cleaning and 65.1% or 295 clean their mouths once daily while 34.2% clean their mouths two or more times daily (Table 5).

Table 5: Oral hygiene habits of study population

	n = 453	%
Tools used for tooth cleaning		
Toothbrush	426	94.0
Chewing stick	11	2.4
Others	16	3.6
Frequency of mouth cleaning		
Once daily	295	65.6
Twice daily	148	32.9
More than twice daily	7	1.5
Weekly confectionery consumption		
>4 times	27	6.0
2 – 3 times	38	8.4
Less than once a weekly	388	85.7

Factors associated with oral health knowledge and attitude

Table 6 displays the relationship between the respondents' oral health knowledge and their socio-demographic characteristics. The relationship between level of oral health knowledge and ethnicity (p=0.856), level of education (p=0.079), age category (p= 0.166), and trimester of pregnancy (p=0.219) using proportional test (chi-square) were not statistically significant. However when comparing the mean knowledge scores using ANOVA the respondents level of education (p= 0.000) was significantly related to the respondents oral health knowledge. The more educated women appeared

to have better knowledge than the less educated women. The relationship between the oral health attitude levels, and level of education (p = 0.000), ethnicity (p=0.006) were also observed to be statistically significant using the chi-square test. The more educated women displayed more positive attitudes than the less educated women. Women from the Hausa ethnic group also appeared to have more negative attitudes that the other tribes. The relationship between mean attitudinal scores and ethnicity (p = 0.761) age category (p = 0.458), trimester of pregnancy (p = 0.608) and parity (p = 0.463) were not statistically significant using ANOVA. Following logistic regression analysis, educational status of the respondent was observed to be the most important predictor of oral health attitude (β= 0.174 p=0.001). Thus for every unit increase in educational status the odds for having poor oral health knowledge reduces by 83%. None of the socio-demographic variables were significantly related to oral health knowledge.

Discussion

There is no gainsaying the fact that good oral health during pregnancy is important especially in view of the recent suggestions that poor oral health may result in unfavourable pregnancy outcomes. This is important in Nigeria because of the high maternal mortality rates. The commonest oral disease during pregnancy (i.e. periodontal disease) is preventable by the institution of simple measures such as regular tooth-brushing and flossing. However such positive behaviour would be influenced by the individual's oral health knowledge and attitudes. While studies have been conducted on this topic in Nigeria in the past the most recent survey was conducted over a decade ago. Thus, this study was designed to provide a snapshot view of the oral health knowledge attitude and practices of a sample of pregnant women in a Nigerian tertiary health facility.

Overall, the respondents in the present survey displayed average oral health knowledge and positive

Table 6: relationship between socio-demographic characteristics of respondents an their oral health knowledge and practices

Socio-demographic characteristics	Knowledge				Mean knowledge scores	Attitude				Mean attitude scores
	Good		Poor			Positive		Negative		
	No	%	No	%		No	%	No	%	
Age category Less than 25 years	12	30.8	27	69.2	3.05	33	84.6	6	15.4	8.08
26 - 35 years	77	24.4	238	75.6	2.95	277	87.9	38	12.1	8.52
36 years and above	22	35.5	40	64.5	3.21	53	85.5	9	14.5	8.50
Total*										
	111	26.7	305	73.3	3.00	363	87.3	53	12.7	8.48
	$\chi^2 = 3.59$ p = 0.166				F=1.771 p=0.180	$\chi^2 = 0.55$ p = 0.759				F=0.781 p=0.458
Level of education Primary	0	0.0	8	100.0	2.63	6	75.0	2	25.0	7.88
Secondary	8	16.3	41	83.7	2.69	34	69.4	15	30.6	7.69
Polytechnic	40	26.5	111	73.5	2.97	133	88.1	18	11.9	8.48
University	75	30.9	168	69.1	3.13	221	90.9	22	9.1	8.67
Total*	123	27.2	328	72.8	3.01	394	87.0	57	13.0	8.45
	$\chi^2 = 8.36$ p = 0.079				F=6.789 p=0.00**	$\chi^2 = 31.29$ p = 0.000**				F=11.101 p=0.000**
Ethnic group Hausa	2	28.6	5	71.4	3.40	5	71.4	2	28.6	9.40
Ibo	28	28.6	70	71.4	3.16	85	86.7	13	13.3	8.37
Yoruba	75	26.5	208	73.5	2.99	246	86.9	37	13.1	8.54
Others	18	27.7	47	72.3	2.91	58	89.2	7	10.8	8.34
Total*	123	27.2	330	72.8	3.01	394	87.0	59	13.0	8.45
	$\chi^2 = 1.33$ p = 0.856				F=1.197 p=0.319	$\chi^2 = 14.40$ p = 0.006**				F= 8.897 p=0.000**
Trimester First	1	20.0	2	80.0	2.80	4	80.0	1	20.0	8.00
Second	42	33.1	85	66.9	3.15	112	88.2	15	11.8	8.45
Third	73	25.0	219	75.0	3.00	259	88.7	33	11.3	8.61
Total*	116	27.4	308	72.6	3.04	375	88.4	49	11.6	8.56
	$\chi^2 = 3.04$ p = 0.219				F=1.114 p=0.319	$\chi^2 = 0.38$ p = 0.829				F=1.977 p=0.608

*For the purposes of analysis those who did not complete the information were excluded hence the difference in total;
**statistically significant result*

attitudes to oral health as observed in similar studies[8-10] conducted in developed countries. This may be attributed to the fact that the study participants were highly educated. This is not surprising because the study was conducted in a health facility located in the economic nerve centre of the country.

A good number correctly identified the cause of dental decay but only a small percentage knew the cause of periodontal disease. Many respondents erroneously selected sugar or sweet foods as the cause of periodontal disease. This misconception needs to be addressed particularly because studies indicate that periodontal disease is the commonest dental disease affecting pregnant women in Nigeria.[11,12] In general, there is still room for improvement in the oral health knowledge of the respondents. Although there was a

significant relationship between mean knowledge scores and the level of education this result should be viewed with caution because of the small number of respondents who reported having no education or attending only primary school.

The respondents expressed some interesting views about oral health. For instance, a third of the respondents agreed that every painful tooth should be removed and that fruits and vegetable have no impact on the dental tissues. These views are contrary to the principles of achieving good oral health and may be related to cultural beliefs about oral health in the Nigerian society. There is a need to inform pregnant women on the role of good nutrition on oral health as well as the available treatment options for painful gums and teeth in future oral health education sessions.

Overall, most of the women included displayed positive attitudes to oral health which was not surprising considering the fairly good oral health knowledge displayed. Ethnic group and level of education were observed to be significantly related to the women's oral health attitudes. The small proportion of Hausa women in the present study could be a source of bias. Thus to validate this result further studies using an evenly distributed population in terms of ethnic grouping and level of education is suggested.

Interestingly however, the good knowledge and attitudes displayed were not fully reflected in the women's oral health practices. While a good proportion of the respondents believe that the mouth should be cleaned twice daily to prevent dental diseases less than a third of the respondents actually clean their mouths twice daily. This pattern has been reported in earlier studies in Nigeria.[7,11,12] It is generally accepted that good oral health knowledge is one of the important precursors of good oral health behavior. Other factors include the cultural values and beliefs in the society, thus it may be worthwhile to conduct further research on the role of culture in the development of good oral health behavior.

This study is not without limitations. One limitation is its reliance on self-reported data, which is often subject to biases inherent to questions being asked such as recall bias. Another limitation is the use of non-probability method in the selection of study participants. In addition, the high proportion of highly educated women in this survey is not a reflection of the general population where most women are uneducated. This limits the ability to generalize the results obtained to the larger population. Nonetheless, the results would serve as a veritable tool for designing and specifying appropriate oral health education message(s) for pregnant women receiving antenatal care.

Conclusion

Although the women surveyed displayed acceptable levels of oral health knowledge and attitudes, the results highlighted important gaps in their oral health knowledge and practices. The provision of oral health education during antenatal care to educate women on the importance of maintaining good oral health is essential. Apart from the benefit to the health of the women, mothers play a crucial role in transferring and demonstrating health habits to their children[2,13] therefore pregnant women should be a target group for oral health education. Specific messages to be provided should include information on the causes and prevention of dental caries and periodontal disease. The effect of dental diseases on their pregnancy outcomes and the oral health of their offspring should also be highlighted. The role of fluoride, an important component of many types of toothpaste in the prevention of dental caries should be emphasized.

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