



Research Article

A Pilot Study on Periodontal Health of Pregnant Women in Agbowo, Lagos, Nigeria: Awareness, Practices and Present Status

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ABSTRACT

Objectives: Background: Pregnancy is a natural process characterized by physiological changes, including fluctuating hormones. These changes increase susceptibility to oral diseases such as pregnancy gingivitis, periodontitis and oral pyogenic granuloma.

Aim: To determine the prevalence of periodontal disease and the awareness and practice of periodontal health among pregnant women in rural areas of Lagos.

Method: This was a cross-sectional study. A sample of 55 pregnant women attending the prenatal clinic at a primary health center were interviewed and examined for oral hygiene and periodontal disease. Data were analyzed using SPSS version 20.

Results: Results: Participants awareness and practice of periodontal diseases was limited. All participants (100%) practiced tooth brushing, though only 38.5% brushed twice daily; while only 5.4% used dental floss. Only 23.6% were aware of what periodontal disease was and 18.2% were aware of its cause. On clinical examination, gingivitis was the most prevalent oral presentation (87.3%).

Conclusion: Most of the pregnant women had limited awareness on oral hygiene, periodontal disease and its effects on pregnancy. All participants performed tooth cleaning; however, majority is oblivious of appropriate practices. Majority of the pregnant women had gingivitis. It would be desirable to implement training activities on the knowledge of periodontal diseases, causes and prevention. Also, implementation of periodontal therapy to pregnant women who are high risk is recommended.

INTRODUCTION

The importance of oral health during pregnancy has attracted the attention of those responsible for caring for pregnant women and infants (foundations, agencies, health care providers, etc.) in the last decade.[1] Furthermore, the World Health Organization (WHO)[2] has recognized that oral health is part of the preventive measures in health care for pregnant women and infants. Researches have demonstrated that poor periodontal condition during pregnancy is significantly associated with adverse pregnancy outcomes such as preterm birth, low birth weight, preeclampsia, etc.[3-4] Women during pregnancy are particularly susceptible to periodontal disease. Periodontal disease (PD) includes gingivitis, an inflammation of the gums, and periodontitis, a more serious inflammation with breakdown of teeth's supporting tissues.[5]

Studies have reported that the frequency of periodontal disease among pregnant women ranges from 35% to 100%.[6,7] The most frequent changes produced in the oral cavity during pregnancy are pregnancy gingivitis and has been reported to occur anywhere from 30% to 100%.[8] although it most frequently ranges from 60% to 75%.[9] Others are benign gingival lesions, pregnancy epulis, tooth

mobility, tooth erosion and dental caries.[10]

Gingival changes usually occur in association with poor oral hygiene and local irritants such as calculus, plaque, and food debris. The bacterial flora of dental plaque is noted to be the main etiological factor in the causation of gingival and periodontal diseases.[11,12] However, the hormonal and vascular changes that accompany pregnancy often exaggerate the inflammatory response to the local irritants. The gingiva without preexisting inflammation remains unaffected.[11]

Good oral hygiene measurements including individual care as; tooth brushing regularly, flossing and mouth washes utilization properly and professional measures like, oral prophylaxis may decrease the burden of gingivitis.[13] Oral health care is often a neglected area in low- and middle-income countries, particularly in rural areas due to the limited human resources and poor infrastructure. Also, the oral health care during prenatal care has not been universally provided for, especially in underdeveloped rural areas. There is also very few information about oral health conditions among rural pregnant women of Lagos. To determine the prevalence of periodontal disease and the risk factors among pregnant women in rural areas of Lagos, a baseline survey of a rural area of was Lagos was carried out.

MATERIAL AND METHODS

A descriptive cross-sectional study was conducted at the community/ primary health centre of Agbowo to assess periodontal health status, awareness, practices and treatment needs of pregnant women in Agbowo, Lagos, Nigeria. Agbowo-Ikosi, a rural community at Agbowo Local Government Area of Lagos State, lies 35 kilometer north of Epe Division, on the south bank of a creek that extends parallel to the sea from Lagos to Ikorodu. Its geographical coordinates are 6° 39' 0" North, 3° 43' 0" East. It has a population of approximately 107, 800, with a mixture of indigenes and non-indigenes whose main occupations are farming, fishing and commercial activities.

Source of Data

A total sample of 55 pregnant women who visited the Community/Primary Health Centre of Agbowo Ikosi was included in the study. The pregnant women were selected using the convenience sampling technique.

The inclusion criteria were women aged >18 years old and willingness to participate in the study.

The exclusion criteria were pregnant women aged < 18 years old and unwilling to participate in the study. All patients available in the Clinic when the researcher was present were approached and informed verbally about the study. Those who agreed to participate were included in the study after giving written informed consent.

Questionnaire

A self-administered questionnaire was utilized. All relevant information: socio demographic data (age, educational level, ethnicity and occupation), obstetric record (duration of pregnancy, no of current pregnancy), oral health practices (tooth-brushing, use of oral hygiene aids (floss, mouth wash, toothpick), frequency of tooth brushing (once, twice daily) and dental visits). Awareness of what gum disease is, the cause and how it can be prevented was recorded.

Clinical Examination

Oral hygiene was assessed using Oral Hygiene Index-Simplified and was recorded according to the criteria given by Greene and Vermillion in 1964.[14] The periodontal assessment of the pregnant women was done using CPITN score and the probe was also used to determine the periodontal care needs of the pregnant women. The WHO CPITN [15] scores are: 0 (healthy), 1 (bleeding), 2 (calculus), 3 (periodontal pocket 4-5mm), and 4 (periodontal pocket ≥ 6 mm).

According to community periodontal index, the participants were categorized, thus, code 0 = healthy periodontium, codes 1 and 2 =gingivitis and codes 3 and 4 =

periodontitis.[15]

Using the Treatment Need (TN) of CPITN, the participants treatment needs was determined as follows:[15]

TN 0 = no treatment (code 0);

TN 1 = improvement in personal oral hygiene (code 1);

Tn2 = oral hygiene + scaling (codes 2 and 3);

TN3 = oral hygiene+ scaling + complex treatment (code 4).

Ethical Clearance

Ethical approval for the study protocol was obtained from the Research and Ethics Committee of Lagos State University Teaching Hospital, Ikeja.

Statistical Analysis

Data was entered into the statistical package SPSS 20 for windows (IBM Corporation, Armonk, NY, USA). Descriptive statistics in the form of frequency distribution were performed for all study variables. A chi-squared test was calculated to detect significant associations among categorical variables. Statistical significance was set at $P < 0.05$.

RESULTS

The age range of the participants was 20–40 years with a mean and standard deviation of (28.9 ± 5.4) years. Of the 55 participants, 18(32.7%) had up to primary-school education and 14(25.5%) had tertiary education. Majority of them 28(50.9%) were in the second trimester. For 10(18.2%) of the women, this was their first pregnancy. Table 1 shows the socio-demographic characteristics of the pregnant women.

Only 13 (23.6%) of participants were aware of what periodontal disease was while 10(18.2%) were aware of its aetiology; 10(18.2%) were aware that proper tooth brushing could prevent periodontal diseases; 7(12.7%) experienced gum problem in pregnancy and 10(18.2%) responded that dental visits were important in pregnancy (Table 2).

All 55(100%) participants use toothbrush, but only 21(38.2%) brush twice a day. The use of dental floss was by 3(5.4%), while toothpick was used by 25(45.5%). Only 8(14.5%) of participants had ever visited the dentist (Table 3). A total of 22 (40.0%) subjects had good OHI-S and 4(7.3%) had poor OHI-S. The average value of OHI-S in this study was 1.58 (fair). The CPI scores indicated that 6 (10.9%) of the study sample had healthy gingiva, 31 (56.4%) had calculus and 1(1.8%) had pockets. The prevalence of periodontal disease in the study sample was 49(89.1%) and it was mainly (code 1 + 2), 48(87.3%) had gingivitis while 1(1.8%) had moderate periodontitis.

The TN 1, that is, oral hygiene instructions was required by 17(30.9%) of the pregnant women and TN 2, was required by 32(58.2%) of pregnant women. Table 4.

Table 1. The socio-demographic characteristics of the study participants.

Variables	Freq	%
Age Group		
20-30	36	65.5
31-40	19	34.5
Educational level		
Primary	18	32.7
Secondary	23	41.8
Tertiary	14	25.5
Trimesters		
1st	12	21.8
2nd	28	50.9
3rd	15	27.3
1st Pregnancy		
Yes	10	18.2
No	45	81.8
No of Pregnancy		
0	10	18.2
<2	29	52.7
>3	16	29.1
Total	55	100

Table 2 : Responses of participants on awareness about periodontal diseases.

Variable	Freq	%
Have you heard of gum disease		
Yes	13	23.6
No	42	76.4
What is Gum disease		
Pain in teeth	8	14.5
Red/Swollen gum	5	9.1
I don't know	42	76.4
What causes gum disease		
Bacteria	10	18.2
Tartar	2	3.6
I don't know	43	78.2
How do you avoid gum disease		
Brush regularly	10	18.2
See dentist regularly	5	9.1
Avoid surgery food	2	3.6
I don't know	38	69.1
There is a connection between oral health and pregnancy.		
Yes	9	16.4
No	46	83.6
Did you experience gum problem in Pregnancy		
Yes	7	12.7
No	48	87.3
Dental visit is important in pregnancy		
Yes	10	18.2
No	45	81.8

Table 3: Practices of study participants on periodontal health

Variable	Freq	%
Frequency of tooth brushing		
Once	34	61.8
Twice	21	38.2
Cleaning tools		
Toothbrushes	44	80.0
Tooth brushes +Chewing Sticks	11	20.0
Cleaning aids		
Floss	3	5.4
Mouthwash	2	3.6
Toothpicks	25	45.5
Nothing	25	45.5
Dental visits		
Yes	8	14.5
No	47	85.5

Table 4: Clinical variables of study participants

Variables	Freq	%
Oral hygiene Status		
Good	22	40.0
Fair	29	52.7
Poor	4	7.3
CPI Score		
Healthy (0)	6	10.9
Bleeding (1)	17	30.9
Calculus (2)	31	56.4
Pocket>4-5mm (3)	1	1.8
Treatment Need		
TN(0)	6	10.9
TN(1)	17	30.9
TN(2)	32	58.2

DISCUSSION

Regarding awareness of the pregnant women about oral health; only 23.0% of the study participants had ever heard of gum or periodontal diseases. This was in contrast to (66.3%) reported by Kabali *et al.* Only 9.1% are aware that gum or periodontal diseases could present as gingival swelling or gingival redness. This was also contrary to 82.9% reported from Zambia. [16] This study agrees with Kabali *et al* that the possible explanation for the difference might be the differences in the availability of oral health education and health promotion programs in these populations.[16]

About 24% of the participants in this present study, are aware of what gingivitis is, this is in contrast to 74.8% of pregnant women who were aware of what gingivitis is from a primary health care center in Spain.[9] The difference in results could be due to the difference in the level of knowledge of oral health in the two populations. Only 21.4% of the participants knew about the causes of gum diseases while 30.0% knew about basic preventive measures that were

proposed for preventing it and this is consistent with the findings by Llena *et al.*[9] The level of knowledge in prevention of periodontal diseases of these participants was low and educational talk on prevention of oral diseases will influence the level of knowledge of pregnant women in oral diseases prevention. Similarly, majority of the participants (83.6%) were not aware of the connection between oral health and pregnancy; similar to the (87.5%) reported by Singh *et al.*[17] This could mean that the women were not educated regarding the impact of oral health on pregnancy during their antenatal care.

In general, the pregnant women in our study were not knowledgeable about periodontal diseases; only a minority was aware of the causative factors of periodontal diseases and the proposed preventive measures. This may point to an urgent need for proper oral health education for the pregnant women in the studied rural population.

The clinical examination results indicated that about (30.9%) of these women had gingival diseases while only (12.7%) of the participants reported that they experienced gingival diseases during pregnancy. This result suggests that about 18% of the respondents with gingival diseases did not recognize that they had it. This is consistent with the report of Ibrahim *et al.*[18] from the study in Sudan, where 15% of the pregnant women had gingival diseases but did not recognize it. This indicated that majority of these pregnant women could not identify the features of periodontal diseases that are modified by the presence of high levels of circulating hormones during pregnancy.

The frequency of cleaning on daily basis was found to be once daily in 61.8% of subjects and twice daily in 38.2% of pregnant subjects which is similar to the study conducted by Ligali *et al.*[19,20] This suggests that these pregnant women were not aware of the recommendation of brushing of teeth to be twice daily.[16] A minority of the participants use dental floss. This is in accordance with the study by Chaitra *et al.*[10] This showed that they do not have the understanding that inter dental cleaning aids would help prevent periodontal disease, and were limited to the use of toothbrushes and toothpicks as cleaning aids. These participants like those from the study in rural Zambia[16] on pregnant women had insufficient knowledge on interdental space cleaning.

About (86%) of participants had never consulted a dentist. This result is similar to the report from the study by Ligali *et al.*[19] and Kiran *et al.*[21] This showed that majority of these pregnant women never had a professional dental examination. Their main reason for not visiting and having dental examination during pregnancy was because there were no dental complaints, similar to the report of Gupta *et al.*[7] and Suwargiani *et al.*[22] A woman's lack of routine dental care when not pregnant is the most significant predictor of not receiving dental care during pregnancy.[10] In this study, the majority of the pregnant women did not visit the dental clinic during pregnancy for periodic checkup. The reason for not visiting dentist during pregnancy was their perception that dental checkup is not important during pregnancy. This was consistent with the reports of the studies of Khalaf *et al.*[23] This could be due to lack of knowledge about the importance of oral health in pregnancy.

In the present study, gingivitis was the commonest oral presentation and it was found in 89.1% of the women. This is consistent with the report from other studies and gingivitis

range from 62.6% to 84.1%.[7, 13, 20, 24] The increased prevalence of gingivitis could be due to the poor oral hygiene status of the pregnant women that might have aggravated the influence of hormones on the periodontium.[7] This could be due to lack of knowledge about the competent practices of good oral hygiene measures as in the present study.

It is also possible that pregnancy gingivitis may make brushing and routine dental care uncomfortable and may hasten deposition of local irritants such as debris and calculus.[8] Good oral hygiene measurements including individual care such as regular tooth brushing, flossing and proper mouth washes utilization, as well as professional measures like oral prophylaxis, may decrease the burden of gingivitis.[13]

Presently, 30.9 % pregnant women require TN 1 (oral hygiene instructions), 58.2% of pregnant women required TN 2 (oral prophylaxis) and none of the pregnant women required TN 3 (complex treatment). This result is similar to the result recorded from the study by Rikawarastuti *et al.*[24] where none of the women required TN3 advanced periodontal treatment and majority 73.2% required TN 2(oral prophylaxis).

This study is limited by the small sample size which is due to the limited number of pregnant women that attended the primary health clinic in the area, making it a pilot study for further studies in rural areas. Nonetheless, our study points to the need for preventive programs in rural areas, including oral health education during prenatal care, so as to increase awareness of oral health among pregnant women and improve oral health practices.

CONCLUSION

Most of the pregnant women had limited awareness on oral hygiene, periodontal disease and its effects on pregnancy. All participants performed tooth cleaning; however, majority is oblivious of appropriate practices. Majority of the pregnant women had gingivitis. It would be desirable to implement training activities on the knowledge of periodontal diseases, causes and prevention. Also, implementation of periodontal therapy to pregnant women who are high risk is recommended

Conflicts of Interest

The authors explicitly state that there are no conflicts of interest related to this article.

REFERENCES

1. Hartnett E, Haber J, Krainovich-Miller B, Bella A, Vasilyeva A, Kessler JL. Oral Health in Pregnancy. *J. Obstet. Gynecol. Neonatal Nurs* 2016; 45: 565–573.
2. Petersen, P.E. World Health Organization global policy for improvement of oral health—World Health Assembly 2007. *Int. Dent. J* 2008; 58: 115–121
3. Corbella S, Taschieri S, Del FM, Francetti L, Weinstein R, Ferrazzi E: Adverse pregnancy outcomes and periodontitis: A systematic review and meta-analysis exploring potential association. *Quintessence international* (Berlin, Germany: 1985) 2015; 47(3):185-187.
4. Teshome A, Yitayeh A: Relationship between periodontal disease and preterm low birth weight: systematic review. *Pan African Medical Journal*

- 2016;24:215.
5. Rosanna F Hess. Prevalence and Predictors of Periodontal Disease among Pregnant Women in Mali, West Africa. *Ann Med Health Sci Res* 2017; 7: 263-270
6. Onigbinde OO, Sorunke ME, Braimoh MO, Adeniyi AO. Periodontal status and some variables among pregnant women in Nigeria tertiary institution. *Ann Med Health Sci Res* 2014; 4:852-857
7. Gupta R, Acharya AK. Oral Health Status and Treatment Needs among Pregnant Women of Raichur District, India: A Population Based Cross-Sectional Study. *Scientifica* 2016:1-8.
8. Kashetty M, Kumbhar S, Patil S, Patil P. Oral hygiene status, gingival status, periodontal status, and treatment needs among pregnant and non-pregnant women: A comparative study. *J Indian Soc Periodontol* 2018; 22:164-170.
9. Llena C, Nakdali T, Luis Sanz J, Forner L. Oral Health Knowledge and Related Factors among Pregnant Women Attending to a Primary Care Center in Spain. *Int. J. Environ. Res. Public Health* 2019; 16(24): 5049.
10. Chaitra TR, Wagh S, Sultan S, Chaudhary S, Manuja N, Sinha AA. Knowledge, attitude, and practice of oral health and adverse pregnancy outcomes among rural and urban pregnant women of Moradabad, Uttar Pradesh, India. *J Interdiscip Dentistry* 2018; 8:5-12.
11. Laine M A. "Effect of pregnancy on periodontal and dental health," *Acta Odontologica Scandinavica* 2002; 60(5): 257-264.
12. Ojanotko-Harri AO, Harri MP, Hurttia H M, Sewon LA. "Altered tissue metabolism of progesterone in pregnancy gingivitis and granuloma," *Journal of Clinical Periodontology* 1991; 18(4): 262-266.
13. Maryam A, Khawaja W, Khawaja M Determination The Oral Health Status Among Pregnant Women *Ann. Pak. Inst. Med. Sci* 2017:330-334
14. Greene JC, Vermillion JR. The simplified oral hygiene index. *J Am Dent Assoc* 1964; 68:7-13.
15. World Health Organization. Oral Health Surveys: Basic Methods. WHO 5th ed. Geneva 2013. Assessed January 30th, 2021
16. Kabali TM, Mumghamba EG. Knowledge of Periodontal Diseases, Oral Hygiene Practices, and Self-Reported Periodontal Problems among Pregnant Women and Postnatal Mothers Attending Reproductive and Child Health Clinics in Rural Zambia. *International Journal of Dentistry* 2018(1):1-9.
17. Singh D, Prakash B. Oral health of pregnant females in rural Ajmer, Rajasthan: awareness and practice. *Int J Health Sci Res* 2020; 10(7):109-111.
18. Ibrahim HM, Mudawi AM, Ghandour IA. Oral health status, knowledge, attitudes and practice among pregnant women attending Omdurman maternity hospital, Sudan. *East Mediterr Health J* 2017; 22(11):802-809.
19. Ligali TO, Uti OG, Sofola OO. A survey of self-reported oral health practices, behaviour and oral health status of pregnant women attending TBA antenatal clinics in a Nigerian rural community. *African Journal of Oral Health* 2017:17-23
20. Sharma D, Mishra A, Kushwah B, Saxena M. A study on awareness and attitude towards maintenance of oral health and hygiene in women of reproductive age group of Rewa (M.P.). *Int J Med Res Rev* 2015; 3(6):554-560.
21. Sherpa M, Raj Awasthi K, Saud B. Knowledge and Practice Regarding Maintaining Oral Hygiene among Pregnant Women in Lalitpur, Nepal. *JMCRR* 2020;3(2):477-492
22. Suwargiani AA, Arif EM, Aripin D, Widyaputra S, Susilawati S. Oral health care practice of women with pregnancy Experience. *Padjadjaran Journal of Dentistry*. 2020;32(3):197-206.
23. Khalaf SA, Osman SR, Abbas AM, Ismail AMAM. Knowledge, attitude and practice of oral healthcare among pregnant women in Assiut, Egypt. *Int J Community Med Public Health* 2018; 5:890-900.
24. Rikawarastuti R, Ngatemi N, Harahap NN. Periodontal Disease on Pregnant Women (Case Study: Pondok Labu Village, South Jakarta, Indonesia) *IJPHS* 2016;5(2): 170-175.