
An Assessment of Knowledge of Relationship Between Periodontal Disease with Pregnancy Outcome and Fertility among Some Pregnant Women in Nigeria

*Olanrewaju I. OPEODU (B.Ch.D, MDS, FWACS), **Ada OKECHUKWU(BDS), *Modupe O. AROWOJOLU (BDS, FWACS, FMCDS)

*Department of Periodontology & Community Dentistry, University of Ibadan and **University College Hospital, Ibadan, Nigeria., Nigeria.

ABSTRACT

Objective: There had been reports that link periodontal disease with complications associated with pregnancy outcomes such as preeclampsia, pre-term birth and low-birth weight, with individuals that have worse periodontal disease having worse pregnancy outcome. Similar relationship has also been reported between periodontal disease and sperm count, with worse periodontal disease associated with poorer periodontal health. The objective of the study was to assess the knowledge of pregnant women on the possibility of this relationship between pregnancy, fertility and periodontal disease.

Methods: A cross sectional questionnaire-based survey was conducted among 201 pregnant women at the antenatal clinic of the University College Hospital, Ibadan, Nigeria. Interviewer-administered questionnaire was used in assessing respondent's knowledge of the possible relationship between pregnancy outcome, sperm count and periodontal disease.

Results: a total of 201 pregnant women with mean age of 30.69 ± 4.04 years were interviewed. More of the respondents that have visited a dentist for treatment before the interview agreed that poor oral hygiene can affect sperm count in men, which was statistically significant ($p = .001$). Also, more respondents that have visited a dentist before agreed that gum disease can predispose to low-birth weight in women ($p = .008$).

Conclusion: although many of the respondents that agreed as to the possible relationship between periodontal disease and pregnancy outcome had been to a dentist for treatment before, many of them, including those that have been to a dentist before, are either not aware of the possibility of the relationship or they totally disagreed with the possibility of the relationship. This suggest that dental professionals need to do more in the area of possible relationship and means of preventing periodontal disease especially amidst women of child-bearing age.

Keywords: Periodontal disease, pregnancy outcome, fertility, knowledge, women

Citation: Opeodu OI, Okechuckwu A, Arowojolu MO. An assessment of knowledge of relationship between periodontal disease with pregnancy outcome and fertility among some pregnant women in Nigeria. *Nig J Dent Res* 2018; 3(1):18-22.

Correspondence

Dr. O.I. Opeodu
Department of Periodontology & Community
Dentistry, College of Medicine,
University of Ibadan, Nigeria.
Email: opeodulanre1971@gmail.com

INTRODUCTION

Periodontitis is a relatively common condition with a worldwide distribution, but tends to be worse among the blacks irrespective of the socioeconomic or educational status. Some studies have reported a prevalence of up to 46% among adults in the United States of America, with 8.9% having a more severe form of periodontitis. The prevalence was even higher among Hispanics (63.5%) and Non-Hispanic blacks (59.1%), which represented the highest prevalence among the different races considered.¹⁻³ Pregnant women have been

reported to be more susceptible to periodontal diseases especially gingivitis in areas of pre-existing disease.⁴⁻⁷ Periodontal changes in pregnancy include gingival erythema, increased tendency to gingival bleeding and gingival swelling, which may be marginal and generalized or localized and tumor-like. As much as there had been reported studies implicating pregnancy as a predisposing factor for increase prevalence of gingivitis, other studies have also reported the possibility of periodontal disease been a risk factor for poor pregnancy outcome, which suggest a bidirectional relationship.⁸ Studies have reported the possible existence of a relationship between periodontal disease in pregnant women and adverse pregnancy outcome in the form of pre-term birth, low birth weight, and pre-eclampsia⁹⁻¹³. The relationship is said to be in such a way that women with poorer periodontal disease tend to be more prone to giving birth to

preterm low birth weight children compared to those women with better periodontal health. The report was further confirmed by the fact that periodontal therapy had been linked with better pregnancy outcomes.¹⁴⁻¹⁶ Non-surgical periodontal therapy was reported to have had significant effect on the incidence of adverse pregnancy outcome such as preterm and low birth weight among women. These previous studies confirming the relationship notwithstanding, some other studies have equally reported that there is no relationship between periodontal disease and pregnancy outcome and that periodontal therapy does not have any significant effect on the pregnancy and its outcome.^{11,17} There is overwhelming number of literature on the topic of possible relationship between periodontal disease and pregnancy outcome, but little is reported as to the perception of pregnant women who are directly involved. How informed are these women? Therefore, this study was designed to assess perception of pregnant women on the possibility of the relationship between periodontal disease and pregnancy outcome. The result of the study may be useful in channeling resource towards enlightenment of women of child bearing age.

PATIENTS AND METHODS

A cross-sectional questionnaire-based survey was conducted among pregnant women in the antenatal clinic of the University College Hospital, Ibadan Nigeria. A pretest involving ten pregnant women that were not eventually included in the study was done about two weeks before the commencement of the study and appropriate modifications were done to the questionnaire based on the outcome of the pretest.

The questionnaire included a biodata section, which assess age, occupation and highest academic qualification of respondents. The second section was used to assess the perception of the possible relationship between periodontal disease and pregnancy outcome. Variables such as respondents' perceptions about relationship between periodontal disease and eclampsia, time to conception, low-birth weight and sperm count were assessed.

Data collected was analyzed using IBM SPSS version 22.0. Frequency tables were generated for quantitative variables and comparison was done using the Chi-square test. Statistical significance was inferred at $p < 0.05$.

RESULTS

Two-hundred and one pregnant women were assessed for their knowledge of the possible relationship between periodontal disease and pregnancy outcome using an interviewer-administered questionnaire. The questionnaire was pre-tested on 10 pregnant women that were not eventually included in the study and the results of the pre-test was used to modify the questionnaire accordingly.

Age of respondents ranged from 20 to 41 years, with a mean of 30.69 ± 4.04 years. Ninety-one of the respondents have visited a dentist before the study, while the remaining 110 (54.7%) have never been to a dentist before. Majority of the respondents 82.6% (166/201) had tertiary education, while (31/201) 15.4% had secondary school education and one of them reported that she had no formal education.

Dental service utilization is a significant determinant of response of the women, as many of those that have visited a dentist prior to the study agreed that poor oral hygiene can predispose to low sperm count in males. Twenty-five of the respondents agreed that there is the possibility of poor oral hygiene predisposing to low sperm count out of which 25 of them have been to a dentist for treatment before the study. However, quite a number (32/91) of those that have been to a dentist prior to the study disagreed with the possibility of any relationship between oral hygiene and sperm count, while others despite their being to a dentist before claimed that they have no idea about such a relationship. This was found to be statistically significant ($p < 0.001$) (Table 1).

The same trend of dental service utilization influencing the respondents was also observed when their perceptions on the possible relationship between gingival disease and birth weight were compared. Twenty-one of the women agreed that there is the possibility of a relationship between gingival disease in a pregnant woman and birth weight of her child. Others who reported previous dental visit, either disagree (36/91) with the possibility of the relationship or claimed ignorance (34/91). There was a statistically significant relationship when the perception of the women was considered concerning the relationship between gingival disease and birth weight ($p < 0.008$) [Table 2].

Table 1: Comparison of previous dental service utilization with the perception of respondents on the relationship between poor oral hygiene and sperm count

Poor oral hygiene can affect sperm count in men	Dental service utilization (%)		Total (%)
	Yes	No	
Agreed	25 (71.4)	10 (28.6)	35 (100)
Disagreed	32 (44.4)	40 (55.6)	72 (100)
I don't know	34 (36.2)	60 (63.8)	94 (100)
Total	91 (45.3)	110 (54.7)	201 (100)

P<0.001

Table 2: Comparison of previous dental service utilization with perception of respondents on the relationship between gingivitis and birth weight

Gum disease can cause low-birth weight	Dental service utilization (%)		Total (%)
	Yes	No	
Agreed	21 (67.7)	10 (32.3)	31 (100)
Disagreed	36 (45.0)	44 (55.0)	80 (100)
I don't know	34 (38.2)	55 (61.8)	89 (100)
Total	91 (45.5)	109 (54.5)	200 (100)

P<0.008

When the perception of the respondents was assessed on the possible relationship between oral hygiene and pre-eclampsia in pregnant women, only 21 out of the 91 that had visited a dentist before the study agreed as to possible relationship, with majority of them (39/91) claiming ignorance of the possible relationship.

Some of those that have never been to a dentist prior to the study also agreed that there is the possibility of the relationship (11/110), while some (31/91) that have been to a dentist before disagreed that such a possible relationship exist. There was a slight statistically significant relationship ($p<0.022$) (Table 3).

Table 3: Comparison of previous dental service utilization with the perception of respondents on the relationship between Poor oral hygiene and the incidence of pre-eclampsia

Poor oral hygiene can cause pre-eclampsia	Dental service utilization (%)		Total (%)
	Yes	No	
Agreed	21 (65.6)	11 (34.4)	32 (100)
Disagreed	31 (43.7)	40 (56.3)	71 (100)
I don't know	39 (39.8)	59 (60.2)	98 (100)
Total	91 (100)	110 (54.7)	201 (100)

Table 4: Comparison of highest level of education with the perception of respondents on the relationship between Poor oral hygiene and time to conception

Poor oral hygiene can affect time to conception	Highest level of education (%)		Total (%)
	No Tertiary	Tertiary	
Agreed	5 (11.6)	38 (88.4)	43 (100)
Disagreed	9 (12.7)	62 (87.3)	71 (100)
I don't know	21 (24.1)	66 (75.9)	87 (100)
Total	35 (100)	166 (54.7)	201 (100)

Though more of those that had at least a university degree tend to agree with the fact that there is a possibility of a relationship between oral hygiene and time to conception than those that had lower academic qualification and agreed to the fact, majority of those with higher educational qualifications either disagreed (62/166) or claimed ignorance (66/166) [Table 4]. This is the trend for all the other parameters that were assessed based on the highest academic

qualifications of respondents, with more of those with higher academic qualification either disagreeing with the possibility of a relationship between periodontal disease and pregnancy outcome or claiming ignorance. Comparison based on the highest academic qualification of respondents shows no statistically significant relationship between any of the parameters that were compared.

DISCUSSION

The objective of this study was to assess the perception of pregnant women concerning the possible relationship between periodontal disease and pregnancy outcome and fertility. Despite the widespread report that there is the possibility of a relationship between periodontal disease and poor pregnancy outcome⁸⁻¹³, many of the respondents were either ignorant of the possibility or denied the existence of such a relationship. This could have been due to the fact that majority of them have never being to a dentist for any form of treatment before, which could have been responsible for their ignorance. However, even among those that have been to a dentist before the study, many of them still hold the same view as with those that have never been to a dentist before. The same trend was noticed the perception of respondents was considered based on their previous dental service utilisation and this was found to be statistically significant. This suggest that it is possible that the topic is not discussed with patients by dentist during dental visit, which could have been a good source of such information for the women. Therefore, the authors wish to suggest an alternative approach of the use of antenatal clinic in disseminating such information. Dental health information can be incorporated into the already existing information given to pregnant women in our various antenatal clinics, which can be done by public health nurses that are presently giving such information in some of our centers or dental nurses can be utilized in this respect. Another alternative is to incorporate such information in the pre-existing public dental health program to school, markets and other public places.

There was no statistically significant relationship when the perception of respondents was compared based on their highest academic achievement and the trend was similar for all the parameters that was assessed. This suggest that academic qualification alone may not be enough to confer adequate knowledge about the relationship between periodontal disease and pregnancy and pregnancy outcome. This may also be true for all aspect of dental health, especially in this environment, where it has been reported that socioeconomic status does not necessarily have any appreciable effect on the prevalent of periodontal disease¹⁸, which is contrary to reports from other parts of the world.¹⁹⁻²¹ One may want to assume that due to higher academic achievement, with exposure to technological advancement such as internet, that the more learned individuals will be better enlightened about their health including oral health. The authors therefore are of the

opinion that there is the need to go beyond the literacy and socioeconomic status and reach out to everybody with the message of the need for preventive dental care utilization, and the attendant advantage(s) to the general health of individuals.

CONCLUSION

There is the need for each dentist to take up the responsibility of educating their individual patient as to the possibility of an inverse relationship between periodontal diseases and their general health, with the sole aim of preventing complications where possible.

REFERENCES

1. Eke PI, Dye BA, Wei L, Thornton-Evans GO, Genco RJ. Prevalence of periodontitis in adults in the United States: 2009 and 2010. *J Dent Res* 2012; 91:914-20.
2. Thornton-Evans G, Eke PI, Wei L, Palmer A, Moeti R, Hutchins S, Borrell LN. periodontitis among adults aged ≥30 years – United States, 2009 – 2010. *CDC Morbidity and Mortality Weekly Report* 2013; 62: 129-35.
3. Eke PI, Dye BA, Wei L, Slade GD, Thornton-Evans GO, Borgnakke WS, Taylor GW, Page RC, Beck JD, Genco RJ. Update on prevalence of periodontitis in adults in the United States: 2009 – 2012. *J Periodontol* 2015; 86:611-622.
4. Opeodu OI, Dosumu EB, Arowojolu MO. A Longitudinal Study of the Prevalence of Gingival Bleeding Among selected Nigerian pregnant Women. *Nig Dent J* 2012; 20(2): 23-26.
5. Tellapragada C, Eshwara VK, Acharya S, Bhat P, Kamath A, Vishwanath S, Mukhopadhyay C. Prevalence of clinical periodontitis and putative periodontal pathogens among South Indian pregnant women. *Int J Microbiol* 2014 available at <http://dx.doi.org/10.1155/2014/420149> (Accessed on 18/11/2017).
6. Opeodu OI, Dosumu EB, Arowojolu MO. Periodontal condition and treatment needs of pregnant women in Ibadan, Nigeria. *Ann Med Health Sci Res* 2015; 5:213-217.
7. Hess RF, Gililand CS, Dembélé J.

- Prevalence and predictor of periodontal disease among pregnant women in Mali, West Africa. *Ann Med Health Sci Res* 2017; 7:263-270.
8. Armitage GC. Bi-directional relationship between pregnancy and periodontal disease. *Periodontol 2000*, 2013; 61:160-76.
 9. Offenbacher S, Katz V, Fertik G, Collins J, Boyd D, Maynor G, Beck J. periodontal infection as a possible risk factor for preterm low birth weight. *J Periodontol* 1999; 67(S):1103-1113.
 10. Marin C, Sequra-Egea JJ, Martinez-Sahuguillo A, Bullón P. Correlation between infant birth weight and mother's periodontal status. *J Clin Periodontol* 2005; 32:299-304.
 11. Sánchez AR, Bagniewski S, Weaver AL, Vallejos N. Correlations between maternal periodontal conditions and preterm low birth weight infants. *J Int Acad Periodontol* 2007; 9:34-41.
 12. Wang YL, Liou JD, Pan WL. Association between maternal periodontal disease and preterm delivery and low birth weight. *Taiwan J Obstet Gynecol* 2013; 52:71-76.
 13. Soucy-Giguère L, Tétu A, Gauthier S, Morand M, Chandad F, Giguère Y, Bujold E. Periodontal disease and adverse pregnancy outcomes: A prospective study in a low-risk population. *J Obstet Gynecol Can* 2016; 38:346-350.
 14. López NJ, Smith PC, Gutiérrez J. Periodontal therapy may reduce the risk of preterm low birth weight in women with periodontal disease: a randomized control trial. *J Periodontol* 2002; 73:911-924.
 15. López NJ, Da Silva I, Ipinza J, Gutiérrez J. Periodontal therapy reduces the rate of preterm low birth weight in women with pregnancy-associated gingivitis. *J Periodontol* 2005; 76:2144-2153.
 16. Tarannum F, Faizuddin M. Effect of periodontal therapy on pregnancy outcome in women affected by periodontitis. *J Periodontol* 2007; 78:2095-2103.
 17. Yaghini J, Mostajeran F, Afshari E, Naghsh N. Is periodontal disease related to preeclampsia? *Dent Res J (Isfahan)* 2012; 9:770-773.
 18. Opeodu OI, Arowojolu MO. Effect of social class on the prevalence and severity of periodontal disease. *Ann Ib Pg Med* 2007; 5:9-11.
 19. Sogi GM, Bhaskar DJ. Dental caries and oral hygiene status of school children in Davengere related to their socio-economic levels: an epidemiological study. *J Ind Soc Pedod Prev Dent* 2002; 20:152-157.
 20. Stephen LI, Steven AS. Class – The ignored determinant of the nation's health. *N Engl J Med* 2004; 351:1137-1142.
 21. Hobdell MH, Oliveira ER, Bautista R, Myburgh NG, Lalloo R, Narendran S, Johnson NW. An international comparison of socio-economic status and oral health. *Br Dent J* 2003; 194:91-96.