

Access this article online

Quick Response Code:



Website:
www.jehp.net

DOI:
10.4103/jehp.jehp_146_16

Oral health of pregnant females in central India: Knowledge, awareness, and present status

Saxena Payal, Gupta Saurabh Kumar, Yadav Sumitra¹, Jain Sandhya², Jain Deshraj³, Kamthan Shivam⁴, Saxena Parul⁴

Abstract:

BACKGROUND: The oral health of pregnant females needs attention, especially in developing countries like India where oral checkup and care is not considered to be a part of mandatory antenatal protocols.

OBJECTIVE: This study aimed to evaluate the oral health status of pregnant females in Central India including the assessment of their knowledge, attitude, and awareness about oral health.

MATERIALS AND METHODS: The study population comprised of 320 pregnant females, and a control group consisted of 103 age-matched nonpregnant females. A cross-sectional self-reported questionnaire-based survey and clinical examination was conducted.

RESULTS: Out of 320, 192 (60%) pregnant females had some dental problem during pregnancy. Community periodontal index (CPI) score for total pregnant females (2.16) was significantly higher in comparison to control group (1.29). Nearly 72.81% of pregnant females had never attended the dentist. Trimester-wise comparison showed time-dependent increase in CPI score. Low educational status, older age, earlier issues, poor hygiene habits, and tobacco use showed a direct effect on compromised oral health.

CONCLUSION: The study highlights the need of interaction between dental practitioners and gynecologists including routine dental checkup during antenatal visits of pregnant females as essential.

Keywords:

Awareness, community periodontal index score, India, oral health, pregnancy

Introduction

Pregnancy-related physiological variations have been considered to affect oral health. The most frequent and greatest alterations have been reported to affect the gingiva and periodontal tissues predisposing to their impairment.^[1] These changes are attributed to increased concentrations of sex hormones, oestrogen, and progesterone, which affects vasculature of periodontal tissue inducing hyperaemia, edema, bleeding, and increasing the risk of bacterial infections.^[2]

There are some contributory factors which worsen the oral health during pregnancy.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

Socioeconomic status, education, age, nutrition, lack of dental awareness, and hygiene habits should be taken into account.

At present, the oral condition of pregnant females has drawn attention due to the assumed association between periodontal impairment and adverse pregnancy outcomes such as premature birth, low birth weight, and pre-eclampsia.^[3-5] However, oral health, now being considered to be an essential part of routine antenatal care in some developed countries, is still undervalued in most developing countries including India.

The aim of the present study was to evaluate periodontal status of pregnant females

How to cite this article: Payal S, Kumar GS, Sumitra Y, Sandhya J, Deshraj J, Shivam K, *et al.* Oral health of pregnant females in central India: Knowledge, awareness, and present status. *J Edu Health Promot* 2017;6:102.

Departments of
Conservative Dentistry
and Endodontics,
²Orthodontics and
³Prosthodontics,
Government College of
Dentistry, ¹Department
of Obstretics and
Gynaecology, Mahatama
Gandhi Memorial
Medical College, Indore,
Madhya Pradesh,
⁴Resident, Hindu
Rao Hospital, Malka,
New Delhi, India

Address for correspondence:

Dr. Gupta Saurabh Kumar,
Department of
Conservative Dentistry
and Endodontics,
Government College
of Dentistry, Sardar
Patel Marg, Indore,
Madhya Pradesh, India.
E-mail: payal.endo@gmail.com

Received: 22-01-2017

Accepted: 11-08-2017

in Central India. Assessment of knowledge, attitude, and awareness about oral health was also done. The study highlights the need of interaction between dental practitioners and gynecologists/other antenatal care providers to include routine dental checkup as mandatory element during antenatal visits of pregnant females. The results of this study can provide the baseline data to plan various education programs for patients, gynecologists as well as dental practitioners to improve the oral health of pregnant females in developing countries.

Materials and Methods

Ethical clearance and informed consent

This study was conducted obtaining ethical clearance from the Ethical Committee and Institutional Review Board of the college. Informed written consent was obtained from all the participants in this study.

Sample selection

The study population comprised of 320 randomly selected pregnant females between 19 and 36 years of age (mean 23.95 years) visiting the various Government maternity centers of central India between July 2014 and February 2015. The control group consisted of 103 age-matched nonpregnant females randomly drawn from various camps organized in similar localities.

Inclusion criteria for both the study and the control group were females with at least 20 teeth present in the mouth. Pregnant females were categorized on the basis of stage of pregnancy as first (99), second (108), and third (113) trimesters.

Questionnaire

A self-administered questionnaire was constructed. All relevant information regarding demographic details relating socioeconomic status (age, education, income, and address), obstetric record (last menstrual period, duration of pregnancy, previous issues/miscarriage), awareness about oral hygiene (visit to dentist, importance of cleaning of teeth, its effect on developing fetus), oral hygiene aids used (finger, stick, tooth brush, tooth paste, tooth powder, and tongue cleaner), frequency of tooth brushing (once, twice daily), tobacco use, awareness of cancer due to tobacco use, details of oral problem (if present), and any other medical condition were recorded.

Clinical assessment

Clinical examination of the oral cavity was done by experienced dentists (SKG and PS) for oral hygiene status, any ulcer or other finding. The periodontal status assessment was performed with the WHO recommended community periodontal index (CPI) probe

(Hu-Freidy, Chicago, IL, USA) using standard criteria for its assessment. In short, CPI score is represented as: 0-no periodontal disease, 1-bleeding on probing, 2-calculus with plaque seen or felt by probing, 3-pathological pocket 4–5 mm, and 4-pathological pocket 6 mm or more. That means higher the CPI score, the periodontal condition is worse. Teeth were divided in sextants as right upper, anterior six upper and left upper, then right lower, anterior lower six, and left lower teeth. The highest score relating to each sextant was selected. The CPI score was recorded for the study and the control group.

Statistical analysis

MSTAT-C and SPSS software (SPSS version 21.0, IBM Corp, Armonk, NY) were used for statistical analysis. Statistical significance was accepted for $P < 0.05$. Student *t*-test and z-tests were used for analysis.

Results

Out of 320, 192 (60%) pregnant females complaint of some type of dental problem during pregnancy. Among them, bleeding gum (49.5%) was the most common chief complaint followed by tooth pain (31.25%), sensitivity (13.02%), combined problems of tooth pain, bleeding gums (4.16%), and food impaction (2.08%).

CPI score for total pregnant females was 2.16 in comparison to 1.29 of the control group. This difference was statistically highly significant ($P < 0.01$), [Table 1]. Interestingly, the trimester-wise comparison showed a time-dependent increase in CPI score with duration of pregnancy. Females in their first trimester had average CPI score of 1.91 which increased to 2.25 during the second trimester and 2.28 in the third trimester [Table 1 and Figure 1]. This difference was also statistically highly significant ($P < 0.01$).

Table 2 shows results based on demographic details and other habits. Considering the age of the pregnant females, CPI score was significantly higher ($P < 0.05$) for subjects with age below 25 years (2.07) in comparison to older age group (2.27). Education status also showed the direct effect as the illiterate group has significantly higher ($P < 0.01$) CPI score of 2.26 in comparison to the educated group (2.03). On basis of presence of

Table 1: Trimester-wise distribution and comparative analysis of periodontal health status of pregnant women

Distribution	Total number (n)	CPI score	P
First trimester	99	1.91	0.0004**
Second trimester	108	2.25	
Third trimester	113	2.28	
Total pregnant females	320	2.16	0.000**
Control	103	1.29	

** $P < 0.001$ - Highly significant. CPI=Community periodontal index

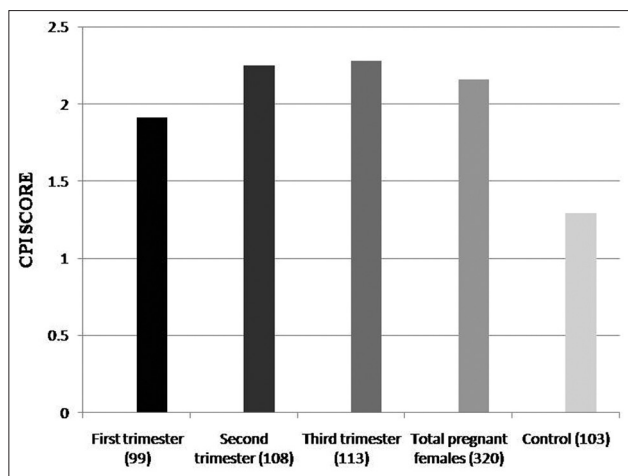


Figure 1: Graph shows comparison between mean community periodontal index score of pregnant females (total and trimester-wise) and control group

Table 2: Periodontal health status on basis of demographic details, obstetric history and habits

Distribution	n (%)	CPI score	P
Age (years)			
<25	193 (60.31)	2.07	0.010*
25 and >25	127 (39.69)	2.27	
Education status			
Illiterate or primary	171 (53.44)	2.26	0.003**
Higher	149 (46.56)	2.03	
Previous issues			
None	184 (57.50)	2.10	0.067*
1 or more	136 (42.50)	2.23	
Brushing frequency			
Twice (24.38)	78 (24.38)	2.07	0.157*
Once 242 (75.63)	242 (75.63)	2.18	
Tobacco use			
Yes	38 (11.87)	2.26	0.169*
No	282 (88.13)	2.14	

**Highly significant ($P < 0.01$), *Significant ($P < 0.05$), #Nonsignificant ($P > 0.05$).
CPI=Community periodontal index

earlier issues, primi gravida had lower CPI score of 2.10 in comparison to 2.23 of those who had one or more issues although this difference was statistically insignificant ($P > 0.05$).

Considering hygiene habits, 93.12% were aware that cleaning is essential for teeth. Still only 24.38% (78/320) the total subjects used to brush twice daily which in turn affected CPI score. Those who used to brush twice had CPI score of 2.07 in contrast to 2.14 of the group with a habit of brushing only once. Nearly 54.06% reported frequent mouth rinsing with a marginal difference in CPI score (2.19) to the other group who rarely or never used to rinse their mouth (2.10) [Table 2].

Only 19.38% (62/320) of pregnant females were aware of the fact that oral hygiene can affect their growing baby. Nearly 14.38% (46/320) of pregnant females accepted

that their poor tooth condition affects eating habit which in turn can negatively affect the child.

11.87% of pregnant female used to consume some form of tobacco. Their CPI score was higher (2.26) than the nonuser pregnant females (2.14) [Table 2]. 63.16% (24/38) of tobacco users were even aware of the fact that it is injurious to health and may lead to cancer.

72.81% of pregnant females never visited to the dentist, whereas 17.81% attended dental clinic whenever a problem occurred. None of the pregnant female had visited the dentist for regular checkup during her pregnancy.

Discussion

In this survey, 72.81% of pregnant females accepted that they never attended the dentist while more than half of this percentage reported some present dental problem. None of the pregnant females sought routine dental checkup during pregnancy. This number is much greater than the previous studies in the USA,^[6,7] Australia,^[8] and England.^[9] This raises serious concerns about dental awareness and care of pregnant females during 9-month of the period in developing countries like India. Most problems related to oral health can be simply prevented by regular dental checkups, especially during pregnancy.

Our findings suggest a high prevalence of periodontal disease (60%) among pregnant females in comparison to the control group which is higher than previous studies in Brazilian (47%) and Chilean (29.85%) population.^[5,10] This condition usually starts appearing in the first trimester of pregnancy reported to be resulting from increased levels of progesterone and estrogen and causing an exaggerated gingival inflammatory reaction leading to severe periodontal diseases. The gingiva usually becomes erythematous, edematous and bleeds easily even on simple trauma.^[10] In the present study, the most common complaint of pregnant females was bleeding from gum. In agreement with previous data in literature,^[10-13] this study showed an increase in CPI score reflecting worsening of periodontal status as the pregnancy progresses.

Some studies have shown an association between periodontal disease and adverse pregnancy outcomes such as preterm labour and low birth weight,^[3-5] whereas other studies have shown no relation among the same.^[14] Even as the research continues to conclude some cause-and-effect relation between oral health and pregnancy outcomes; it is prudent to keep the pregnant females free from any periodontal disease.

The study suggests a positive relation between periodontal disease and low literacy level as reported

in previous studies.^[2,3,8,15] Older age group and earlier issues were also observed to be directly related to the pregnant females' oral health status.

Nearly 93.12% of total pregnant females agreed that cleaning is of teeth essential as results of earlier surveys^[8,16] only 24.38% used to brush twice. This showed their poor attitude towards maintaining dental hygiene. Lack of awareness about the relation between oral hygiene and the pregnancy was revealed by the fact that only 19.38% of the females were aware of the fact that it can adversely affect their baby. Health negligence of pregnant females was noticed by the information gathered that 63.16% of tobacco users were even aware of the fact that it is injurious to health and may lead to cancer.

Conclusion

Under the limitation of the present study, that was mainly to rely on self-reported data which can be subjected to biases inherent to this method, it can be concluded that educating and motivating pregnant females to maintain good oral hygiene and providing affordable dental health care is fundamental in reducing dental disease during the 9 months period. For the same purpose, there is need of interaction between dental practitioners and gynecologists/other antenatal care providers to include routine dental checkup as a mandatory element during antenatal visits of pregnant females.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Laine MA. Effect of pregnancy on periodontal and dental health. *Acta Odontol Scand* 2002;60:257-64.
2. Taani DQ, Habashneh R, Hammad MM, Batieha A. The periodontal status of pregnant women and its relationship with socio-demographic and clinical variables. *J Oral Rehabil* 2003;30:440-5.
3. Xiong X, Buekens P, Fraser WD, Beck J, Offenbacher S. Periodontal disease and adverse pregnancy outcomes: A systematic review. *BJOG* 2006;113:135-43.
4. Offenbacher S, Lief S, Boggess KA, Murtha AP, Madianos PN, Champagne CM, *et al.* Maternal periodontitis and prematurity. Part I: Obstetric outcome of prematurity and growth restriction. *Ann Periodontol* 2001;6:164-74.
5. López NJ, Smith PC, Gutierrez J. Higher risk of preterm birth and low birth weight in women with periodontal disease. *J Dent Res* 2002;81:58-63.
6. Gaffield ML, Gilbert BJ, Malvitz DM, Romaguera R. Oral health during pregnancy: An analysis of information collected by the pregnancy risk assessment monitoring system. *J Am Dent Assoc* 2001;132:1009-16.
7. Lydon-Rochelle MT, Krakowiak P, Hujoel PP, Peters RM. Dental care use and self-reported dental problems in relation to pregnancy. *Am J Public Health* 2004;94:765-71.
8. Thomas NJ, Middleton PF, Crowther CA. Oral and dental health care practices in pregnant women in Australia: A postnatal survey. *BMC Pregnancy Childbirth* 2008;8:13.
9. Hullah E, Turok Y, Nauta M, Yoong W. Self-reported oral hygiene habits, dental attendance and attitudes to dentistry during pregnancy in a sample of immigrant women in north london. *Arch Gynecol Obstet* 2008;277:405-9.
10. Vogt M, Sallum AW, Cecatti JG, Morais SS. Factors associated with the prevalence of periodontal disease in low-risk pregnant women. *Reprod Health* 2012;9:3.
11. Giglio JA, Lanni SM, Laskin DM, Giglio NW. Oral health care for the pregnant patient. *J Can Dent Assoc* 2009;75:43-8.
12. Carrillo-de-Albornoz A, Figuero E, Herrera D, Bascones-Martínez A. Gingival changes during pregnancy: II. Influence of hormonal variations on the subgingival biofilm. *J Clin Periodontol* 2010;37:230-40.
13. Tilakaratne A, Soory M, Ranasinghe AW, Corea SM, Ekanayake SL, de Silva M, *et al.* Periodontal disease status during pregnancy and 3 months post-partum, in a rural population of Sri-Lankan women. *J Clin Periodontol* 2000;27:787-92.
14. Michalowicz BS, Hodges JS, DiAngelis AJ, Lupo VR, Novak MJ, Ferguson JE, *et al.* Treatment of periodontal disease and the risk of preterm birth. *N Engl J Med* 2006;355:1885-94.
15. Abiola A, Olayinka A, Mathilda B, Ogunbiyi O, Modupe S, Olubunmi O, *et al.* A survey of the oral health knowledge and practices of pregnant women in a Nigerian teaching hospital. *Afr J Reprod Health* 2011;15:14-9.
16. Mansour KA, Khalid M. A survey of dental knowledge in Al Jubail Antenatal Clinic Population. *Saudi Dent J* 1993;5:13-6.

Questionnaire

Name: _____ Age: _____ Phone no.: _____

Address

LMP: _____ Month/Trimester: _____ Earlier issues: _____ Earlier miscarriage: _____

Educational qualification

(a) Illiterate: _____ (b) Primary: _____ (c) High School: _____ (d) HS: _____ (e) Degree: _____

Assessment of Dental Knowledge, Practices and Health Problems Encountered During Pregnancy

1. Did you encounter Oral health problems during pregnancy?

Yes No

If yes then what problem you are facing

Bleeding gums swollen gums painful gums teeth sensitivity food impaction painful teeth

Any other (specify)

2. Is cleaning your teeth essential?

Yes No

If yes then, which is better, tooth brush, datun or finger?

Tooth brush Datun Finger

3. You use tooth paste or powder:

tooth paste powder

4. If using tooth brush then, frequency of changing it- 1mo 3mo 6mo yearly

5. Medical condition during pregnancy

None Diabetes Hypertension Anemia Others (specify)

6. When did you visit dentist?

Never Regularly When Problem Arises During Pregnancy

7. Do you use tobacco-

Yes No

8. Awareness of tobacco chewing and cancer:

Yes No

9. Frequency of mouth rinsing:

Never Rarely Frequently After Every Meal

10. Frequency of cleaning teeth:

Never Once Daily Twice Daily After Every Meal

11. Habit of tongue cleaning;

Never Rarely Daily With Brushing

12. Does poor oral hygiene negatively affect your child

Yes No

13. Does your oral condition affect your eating habit?

Yes No

Oral health examination

Chart for Cpitn

17/16	11/21	26/27
47/46	41/31	36/37

Chart for DMFT

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38