



**PRACTICE AND KNOWLEDGE OF PERIODONTAL HEALTH AMONG PREGNANT
WOMEN IN HASSAN, KARNATAKA: A CROSS SECTIONAL SURVEY**

^{1*}Dr. Sana Ambereen, ²Dr. Harsha Mysore Babu, ³Dr. Vivekananda M. R., ⁴Dr. Shivaprasad D. and
⁵Dr. S. Ravindra

¹BDS, Sri Hasanamba Dental College & Hospital, Hassan.
^{2,3,4}MDS, Sri Hasanamba Dental College & Hospital, Hassan.
⁵MDS, JSS Dental College and Hospital, Mysuru.

***Corresponding Author: Dr. Sana Ambereen**
BDS, Sri Hasanamba Dental College & Hospital, Hassan.
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ABSTRACT

Background: Pregnancy, puberty, menstrual cycle, menopause are physiological conditions which have high impact on oral health of women. The study aimed to assess oral health knowledge and practices among pregnant women in Hassan district, Karnataka. **Methods:** A cross-sectional study design was followed and structured interview questionnaire was used which comprised of questions on personal data and questions on assessment of knowledge of pregnant females about their oral health and various practices of oral health. **Results:** The study revealed that 35% study participant were educated up to Intermediate level, 27% of study participant were educated up to High School level. 14% were Graduates. 12% study participants were educated up to Diploma level and 12% were educated up to Primary level of education. Majority of study participants that is 90% were Homemakers, 3% of study participants were Teacher by profession. The overall interpretation was the surveyed population had low level of oral health knowledge and low oral health practice level. **Conclusion:** The study concluded that knowledge level of periodontal health and oral hygiene practice among pregnant women of Hassan district was low. Being educated certainly has positive effect on oral hygiene knowledge and practices among the interviewed pregnant women. Therefore, there is a need for educating and motivating pregnant females regarding oral health by several health promotion interventions.

KEYWORDS: Pregnant women, Oral health, Knowledge, Practice.

INTRODUCTION

Pregnancy is an important period in women's life with various physiological changes that may occur in the body and these changes have potential to negatively affect the oral health of the individual. During pregnancy there are changes in hormones level such as increased levels of circulating progesterone combined with neglected oral hygiene tend to increase the incidence of oral diseases like gingivitis and periodontitis which are exhibited by redness, edema and greater tendency toward bleeding. It has been shown that improper oral health care practices in pregnant females can lead to passing of cariogenic bacteria and infecting the newborn through poor feeding practices.^{[1][2]} Pregnancy induced gingivitis may occur without changes in plaque levels, which increases significantly from the first to the third trimester.^{[3][4]}

Periodontitis and numerous systemic conditions such as diabetes mellitus, respiratory diseases, osteoporosis, cardiovascular diseases, preeclampsia, infections, and preterm low birth weight, in humans and animal models, have been defined as a two-way relationship as

periodontitis can have a great influence on an individual's general health and general health may influence periodontal health as well.^[5] Many women experiences various symptoms like fatigue, nausea, nasal congestion, vomiting, food cravings and shortness of breath during pregnancy.

These symptoms are due to physiologic changes in respiratory system, cardiovascular system, musculoskeletal system, gastrointestinal system, endocrine and hematological systems, which successively cause changes in the oral cavity.^[6]

Despite evidences about known complications of periodontal infections for pregnant women and their newborns, this topic has received less than due attention. This study provides a small understanding into the current situation of oral healthcare practices among pregnant women and it will also help in raising awareness about the significance of good oral health care during pregnancy.

The study aimed to assess the practice and knowledge level of oral health among pregnant females in Hassan district, Karnataka. The objectives of the study was to determine the knowledge, oral hygiene practices and assess the awareness of oral health among pregnant women by using a set of questionnaire.

MATERIALS AND METHODS

Research design: A descriptive cross-sectional study.

Settings of the study: This cross-sectional study was conducted at Community Health Centre of Shanthigrama, Hassan. A total of 100 pregnant female patients were surveyed.

The data was collected using a set of close ended questionnaires. Participants who were pregnant and willing to participate in the study were selected. Participants who were uncooperative and having any systemic illness were excluded from the study. Participation of the subject in the survey was voluntary and anonymity was upheld about the personal record. Study protocol was approved by institution’s ethical committee.

A structured interview questionnaire was used which comprised of questions on personal data and questions on assessment of knowledge of pregnant females about

their oral health and various practices of oral health.(Table 1) The questionnaires were distributed to the subjects who approached the department of obstetrics and gynecology of Community Health Centre of Shanthigrama. It took the majority of the participants around ten minutes to complete the questionnaires. The filled responses were then shifted to the Microsoft excel sheet for appropriate statistical analysis.

STATISTICAL ANALYSIS

The statistical analysis was done using Microsoft excel 2007 and SPSS 20 software. The data was analyzed using descriptive and inferential statistics, descriptive statistics include frequency & percentage, inference statistics include Chi square test and Pearson’s correlation.

RESULT

Socio demographic features of study participants

The maximum age group of the study participants was 21 to 25 years of age, with mean age as 23±64. Over all 35% study participant attained intermediate level of education, 27% of study participant attained high school level of education, 14% were graduates, 12% study participants attained diploma level of education and 12% received Primary level of education. Majority of study participants that is 90% were Homemakers, 3% of study participants were teacher by profession. (Table 2).

Table 2: Socio demographic features of study participants.

	Groups	Frequency	Percentage
Age	21-25	74	74.0
	26-30	26	26.0
Education	Graduate	14	14.0
	Diploma	12	12.0
	Intermediate	35	35.0
	High school	27	27.0
	Primary	12	12.0
Occupation	Farmer	3	3.0
	Housewife	90	1.0
	Lecturer	1	1.0
	Office worker	1	1.0
	Student	1	1.0
	Tailor	1	1.0
	Teacher	3	3.0

Practice and Knowledge based score

This survey revealed 21% of study population had good practice score with 79% of study population having poor practice score with mean value as 1.79. The overall interpretation showed that the surveyed population had

low practice level, results of the study stated 90% of the study population had poor knowledge score and 10% of the study population had high knowledge score with mean value as 1.84. The overall interpretation was, the surveyed population had low knowledge level. (Table.3).

Table.3: Practice and Knowledge based score.

		Frequency	Mean	HPS	%	Interpretation
TPS	Good Level Practice	21	1.79	5	35.800	Low
	Poor Level Practice	79				
	Total	100				
TKS	High Level Knowledge	10	1.84	6	30.666	Low
	Low Level Knowledge	90				
	Total	100				

*TPS –Total Practice Score, *TKS –Total Knowledge Score, *HPS-Highest Possible Score

Association of practice based questions with education level of the study population

The surveyed population were asked practice based questions about daily brushing of their teeth, using any interdental aids for teeth cleaning, use of any mouthwash and have they ever visited dentist in their pregnancy or

before their pregnancy and association of practice based question with their education level revealed statistical significant value. Study population with graduate level of education had better practice than others. Hence education has positive influence on practice levels of pregnant females about their oral health. (Table 4).

Table 4: Practice based questions and education level of the study population.

Practice question	Education					Practice	P
	Graduate	High School	Intermediate	Diploma	Primary		
Q1	14	27	35	12	12	YES	NA
	100.0%	100.0%	100.0%	100.0%	100.0%	% YES	
Q2	12	25	31	9	9	NO	0.496
	85.7%	92.6%	88.6%	75.0%	75.0%	% NO	
	2	2	4	3	3	YES	
	14.3%	7.4%	11.4%	25.0%	25.0%	% YES	
Q3	11	24	26	11	12	NO	0.195
	78.6%	88.9%	74.3%	91.7%	100.0%	% NO	
	3	3	9	1	0	YES	
	21.4%	11.1%	25.7%	8.3%	0.0%	% YES	
Q9	8	25	26	9	9	NO	0.135
	57.1%	92.6%	74.3%	75.0%	75.0%	% NO	
	6	2	9	3	3	YES	
	42.9%	7.4%	25.7%	25.0%	25.0%	% YES	
Q10	8	26	24	9	7	NO	0.025*
	57.1%	96.3%	68.6%	75.0%	58.3%	% NO	
	6	1	11	3	5	YES	
	42.9%	3.7%	31.4%	25.0%	41.7%	% YES	

*Statistical significant p value < 0.05

Association of knowledge based questions with education level of the study population

The surveyed population were asked knowledge based question that is if they knew pregnancy can cause their gums to bleed and swell and do they find it normal during pregnancy foul smell emanating from mouth during pregnancy and undergoing dental treatment is safe

during pregnancy as well mother’s poor oral health can cause pre term and low birth weight baby. The association of knowledge based questions with education showed statistical significant value. Hence education influence the Knowledge of pregnant females about their oral health.(Table 5)

Table 5: Knowledge based question and education level of the study population.

Knowledge	Education					Knowledge	p
	Graduate	High School	Intermediate	Diploma	Primary		
Q4	13	26	29	11	12	NO	0.215
	92.9%	96.3%	82.9%	91.7%	100.0%	% NO	
	1	1	6	1	0	YES	
	7.1%	3.7%	17.1%	8.3%	0.0%	% YES	
Q5	10	24	27	11	3	NO	<0.001*
	71.4%	88.9%	77.1%	91.7%	25.0%	% NO	
	4	3	8	1	9	YES	
	28.6%	11.1%	22.9%	8.3%	75.0%	% YES	
Q6	11	23	30	12	9	NO	0.474
	78.6%	85.2%	85.7%	100.0%	75.0%	% NO	
	3	4	5	0	3	YES	
	21.4%	14.8%	14.3%	0.0%	25.0%	% YES	
Q7	7	18	18	7	12	NO	0.037*
	50.0%	66.7%	51.4%	58.3%	100.0%	% NO	
	7	9	17	5	0	YES	

	50.0%	33.3%	48.6%	41.7%	0.0%	% YES	
Q8	7	19	17	8	12	NO	0.018*
	50.0%	70.4%	48.6%	66.7%	100.0%	% NO	
	7	8	18	4	0	YES	
	50.0%	29.6%	51.4%	33.3%	0.0%	% YES	
Q11	1	14	12	3	10	NO	0.001*
	7.1%	51.9%	34.3%	25.0%	83.3%	% NO	
	13	13	23	9	2	YES	
	92.9%	48.1%	65.7%	75.0%	16.7%	% YES	

*Statistical significant p value < 0.05

Association of practice based questions with occupation of the study population.

The association of practice based questions with occupation level of study population showed no statistical significant value. (Table 6).

Table 6: Practice based question and occupation of the study population.

Practice	Occupation							Practice	
	Farmer	House wife	Lecturer	Office worker	Student	Tailor	Teacher		
Q1	3	90	1	1	1	1	3	YES	NA
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	% YES	
Q2	3	76	1	1	1	1	3	NO	0.784
	100.0%	84.4%	100.0%	100.0%	100.0%	100.0%	100.0%	%NO	
	0	14	0	0	0	0	0	YES	
	0.0%	15.6%	0.0%	0.0%	0.0%	0.0%	0.0%	% YES	
Q3	3	75	1	0	1	1	3	NO	0.337
	100.0%	83.3%	100.0%	0.0%	100.0%	100.0%	100.0%	%NO	
	0	15	0	1	0	0	0	YES	
	0.0%	16.7%	0.0%	100.0%	0.0%	0.0%	0.0%	% YES	
Q9	2	71	1	0	1	1	1	NO	0.282
	66.7%	78.9%	100.0%	0.0%	100.0%	100.0%	33.3%	%NO	
	1	19	0	1	0	0	2	YES	
	33.3%	21.1%	0.0%	100.0%	0.0%	0.0%	66.7%	% YES	
Q10	2	70	0	1	0	0	1	NO	0.071
	66.7%	77.8%	0.0%	100.0%	0.0%	0.0%	33.3%	%NO	
	1	20	1	0	1	1	2	YES	
	33.3%	22.2%	100.0%	0.0%	100.0%	100.0%	66.7%	% YES	

*Statistical significant p value < 0.05

Association of knowledge based questions with occupation of the study population.

The association of knowledge based questions with occupation level of study population showed no statistical significant value. (Table 7).

Table 7: Knowledge based question and occupation of the study population.

Knowledge	Occupation							Knowledge	P
	Farmer	House wife	Lecturer	Office worker	Student	Tailor	Teacher		
Q4	3	83	0	1	1	1	2	NO	0.278
	100.0%	92.2%	0.0%	100.0%	100.0%	100.0%	66.7%	%NO	
	0	7	1	0	0	0	1	YES	
	0.0%	7.8%	100.0%	0.0%	0.0%	0.0%	33.3%	%YES	
Q5	3	68	1	1	0	0	2	NO	0.201
	100.0%	75.6%	100.0%	100.0%	0.0%	0.0%	66.7%	%NO	
	0	22	0	0	1	1	1	YES	
	0.0%	24.4%	0.0%	0.0%	100.0%	100.0%	33.3%	%YES	
Q6	2	77	1	1	1	0	3	NO	0.381
	66.7%	85.6%	100.0%	100.0%	100.0%	0.0%	100.0%	%NO	
	1	13	0	0	0	1	0	YES	
	33.3%	14.4%	0.0%	0.0%	0.0%	100.0%	0.0%	%YES	
Q7	1	57	0	0	0	1	3	NO	0.098
	33.3%	63.3%	0.0%	0.0%	0.0%	100.0%	100.0%	%NO	
	2	33	1	1	1	0	0	YES	
	66.7%	36.7%	100.0%	100.0%	100.0%	0.0%	0.0%	%YES	
Q8	2	57	0	0	0	1	3	NO	0.139
	66.7%	63.3%	0.0%	0.0%	0.0%	100.0%	100.0%	%NO	
	1	33	1	1	1	0	0	YES	
	33.3%	36.7%	100.0%	100.0%	100.0%	0.0%	0.0%	%YES	
Q11	2	36	0	0	0	1	1	NO	0.443
	66.7%	40.0%	0.0%	0.0%	0.0%	100.0%	33.3%	%NO	
	1	54	1	1	1	0	2	YES	
	33.3%	60.0%	100.0%	100.0%	100.0%	0.0%	66.7%	%YES	

*Statistical significant p value < 0.05

DISCUSSION

The present study showed inadequate knowledge and awareness among majority (90%) of the study population. The results of the present study were similar to the study conducted by HA Alwaeli et al and Shilpi et al. who concluded that knowledge and awareness for pregnant women about their teeth and gingival condition is generally poor.^{[7][8]}

In our present study, the graduate level educated study participants are found to have better knowledge and good practice levels of oral hygiene, concluding education have a positive influence on the knowledge and practice levels of pregnant females. Gupta et al in his study observed that less than half of pregnant females received secondary education.^[9] While Ramamurthy and Irfana reported that three thirds of the pregnant women had university education in their study.^[10]

A study conducted by Boggess et al. concluded that oral health knowledge can vary according to maternal race or ethnicity in pregnant women.^[11] This may be due to the low educational level of the patients. Overall oral hygiene practice among the pregnant women was found to be poor. Their beliefs differed according to their education levels.

Regarding employment status, the majority of pregnant women in the present study were home makers(90%); the finding of our study is in accordance with a study by Ibrahim et al who reported that the vast majority of the women were housewives.^[12]

Pregnancy does not cause gingivitis, but it can aggravate preexisting disease. During pregnancy hormonal changes can cause exacerbation of periodontal or gingival clinical characteristics especially swelling and bleeding. In present study only 21% of them had good oral hygiene practices and 79% of them had poor oral hygiene practices. Overall oral hygiene practice among the pregnant women was found to be very poor. Inaccessibility to dental clinics, poor socio-economic status and ignorance of oral hygiene practices may be a reason for negligence of oral health.

Periodontitis is the most prevalent infection of the oral cavity, and there are many evidences suggesting periodontal disease as a risk factor for preterm deliveries. Pregnancy can be affected by inflammatory periodontal disease which may lead to premature labor or a low-birth weight infant Estimates suggest that about 18.2% of all preterm low birth weight cases may be attributable to periodontal disease. The study conducted by Offenbacher

S *et al.* has agreed that periodontal disease in expectant mothers may lead to preterm low birth weight babies.^[13]

The limitation of this study was its reliance on self-reported data, which can lead to biases.

CONCLUSION

Good oral health of mother during pregnancy can not only improve the health of the pregnant mother, but also potentially the health of her child. Oral health knowledge and practices among pregnant women and that of their children can be improved by oral health education as a part of prenatal care. Hence as Periodontist, it's very important on our part to spread awareness about periodontal health in every pregnant female.

Table 1: Questionnaire used in the study

Questionnaire	
Name: Age:	
Education: Occupation:	
Address: Monthly Income:	
1) Do You Brush Your Teeth?	A)Yes B)No
2) Do You Use Salt, Charcoal Or Any Other Material To Keep Teeth Clean?	A)Yes B)No
3) Do You Use Any Interdental Cleaning Aids?	A)Yes B)No
4) If You Are Diagnosed With Periodontal Disease (Gum Disease) During Pregnancy, Will You Undergo Treatment For It ?	A)Yes B)No
5) Do You Know About The Relationship Between Periodontal Disease (Gum Disease) And Pregnancy?	A)Yes B)No
6) Do You Know Pregnancy Can Cause Your Gums To Bleed, Swell And Make It Red?	A)Yes B)No
7) Do You Know There Will Be Any Foul Smell From Mouth During Your Pregnancy?	A)Yes B)No
8) Do You Feel Pain And Bleeding From Gums Is Normal During Pregnancy?	A)Yes B)No
9) Do you use any mouthwash regularly?	A)Yes B)No
10) Have You Ever Visited Dentist During Or Before Your Pregnancy?	A)Yes B)No
11) Do You Know Undergoing Dental Treatment Is Safe During Pregnancy?	A)Yes B)No

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