ORIGINAL RESEARCH PAPER

Volume-6 | Issue-10 | October-2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

"ASSESSMENT OF PERIODONTAL STATUS AMONG PREGNANT WOMEN ATTENDING BASAWESHWARA TEACHING AND GENERAL HOSPITAL, GULBARGA – A 2 WEEK STUDY "

Gynaecology

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ABSTRACT

Background:

Aim: To determine the knowledge on oral health and periodontal status of pregnant women.

Material and methods: A total of 60 pregnant women visiting the department of Obstetrics and Gynaecology at Basaveshwara Teaching and General Hospital, Gulbarga, Karnataka were studied. The dental knowledge were assessed by 10 close ended questionnaire. Clinical parameters were assessed using Plaque index, Gingival index and Periodontal probing depth.

Results: Majority, 51(85%) had no oral health problems during pregnancy. 52(87%) had mild gingivitis, 5(8%) had moderate gingivitis, 3(5%) had severe gingivitis. 54(90%) had good levels of plaque index scores, 4(7%) had fair levels of plaque index scores and 2(3%) had poor levels of plaque index scores. with only 20% having periodontal pocket depth.

Conclusion: Prevalence of periodontal disease among pregnant women in our study was low and the level of oral care was good.

KEYWORDS

Pregnant women, dental knowledge, oral hygiene, gingivitis, periodontal probing depth.

INTRODUCTION

Pregnancy is an important milestone in the life-course of a female with the dual factors of pregnancy affecting oral health and oral health affecting the pregnancy outcome. Pregnancy is accompanied by an increase in the levels of both progesterone and estrogen which, by the third trimester, reaches levels 10-30 times than seen during the typical menstrual cycle.[1]

In 1877, Pinard recorded the first case of 'Pregnancy gingivitis'. Changes in the gingival condition during pregnancy have been assessed by a number of researches. Some researches have found changes in the gingival appearance during pregnancy such as hyperemia, increased tendency for bleeding and edema. Periodontal disease is a common oral infection with prevalence ranging from 10-60%, and refers to gingivitis and periodontitis. [2]

The increase in estrogen and progesterone levels, results in changes in vascular permeability causing gingival swelling and increased crevicular fluid levels (Amar and Chung, 1994). [3] In addition, the production of prostaglandin is stimulated, possibly increasing gingival inflammation and loss of keratinization of gingival epithelium, proliferation of fibroblasts, chemotaxis and phagocytic capacity of neutophils (Zachariasen,1993; Mariotti,1994; Raber-Durlacher et al, 1994). [4],[5],[6]

Furthermore, high levels of progesterone during pregnancy affect the development of localized inflammation by down regulation of IL-6 production, rendering the gingival tissues less efficient in resisting the inflammatory challenges produced by bacteria (Lapp et al, 1995).[7]

Oral hygiene is a very important factor in order to establish a healthy gingival condition. During pregnancy there are alterations in the psychology and behavior with a tendency towards lack of personal care, which may have bearings on the state of the periodontal condition. [8],[9],[10],[11]

With these factors in mind, a study was done to determine the knowledge on oral health and periodontal status of pregnant women.

OBJECTIVES

- To assess the knowledge, attitude and practices of oral hygiene and health problems encountered in pregnant women.
- To measure the prevalence of gingivitis in pregnancy.
- To evaluate the periodontal status of the study sample.

MATERIALS AND METHODS

A cross sectional study was carried out among pregnant women attending the department of Obstetrics and Gynaecology at Basaveshwara Teaching and General Hospital, Gulbarga, Karnataka. Ethical clearance was taken from the ethical clearance committee at H.K.E Society's S. Nijalingappa Institute Of Dental Sciences And Research, Gulbarga, Karnataka. A brief introduction about the study was given to the concerned authority about the purpose and nature of the study and prior permission was obtained. All patients were informed of the purpose of this study and signed an informed consent form.

Study design

A minimum sample size of '60' was decided. The study was carried out for a period of 2 weeks. Random sampling methodology was used to select the study subjects from pregnant women attending the outpatient of the Obstetrics and Gynaecology Department. A specially designed questionnaire consisting of 10 close ended questions was distributed and guided to fill the questionnaire. A single examiner carried out the clinical examination.

All the subjects were examined using a dental mirror, explorer and Michigan O Periodontal Probe.

Clinical parameters were assessed using

a. Plaque index (Silness and Loe 1964).
b. Gingival index (Loe and Silness 1963).
c. Probing pocket depth (PPD): measured from the gingival margin to the most apical penetration of the probe at the six points per tooth (mesio, mid and disto buccal, mesio, mid and disto lingual).

STATISTICAL ANALYSIS

Chi square test was used to find the statistical significance of the oral health knowledge and practices, and to find the association between questions and with plaque index scores and with gingival index scores. Student t test was used to find the statistical significance differences between plaque index and gingival index with and without periodontal probing depth. The level of statistical significance was established at p=0.05.

RESULTS

Sample distribution:

A total of 60 pregnant women were examined, of which 29 (48.3%) were in the age group of 23-26yrs; 27(45%) were less than 22yrs(17-22yrs) and 4(6.7%) were in the age group of 27-30yrs. 8(13.3%) of the women were in the first trimester, 21(35%) of the women were in the second trimester and 31(51.7%) of the women were in the third

trimester. (Table I)

Table I: Distribution of sample according to age and trimester

VARIABLE	DISTRIBUTION	FREQUENCY	%
AGE	<=22	27	45
	23 TO 26	29	48.3
	27 TO 30	04	6.7
TRIMESTER	FIRST	08	13.3
	SECOND	21	35
	THIRD	31	51.7

Assessment of dental knowledge, practices and oral health problems encountered during pregnancy.

Majority, 51(85%) of the women had no oral health problems during pregnancy. 24(40%) of the women had visited dentist during pregnancy. 36(60%) of the women had never visited dentist for at least once a year.

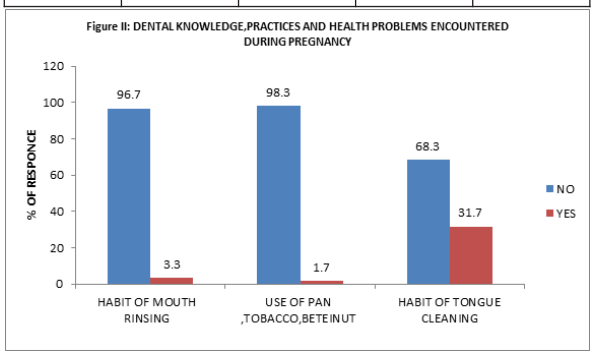
It was found that brushing their teeth was essential and better to clean the teeth with toothbrush rather than finger. 55(91.7%) of women used tooth brush to clean their teeth. 19(34.7%) of the women changed their tooth brush for every 2 months.

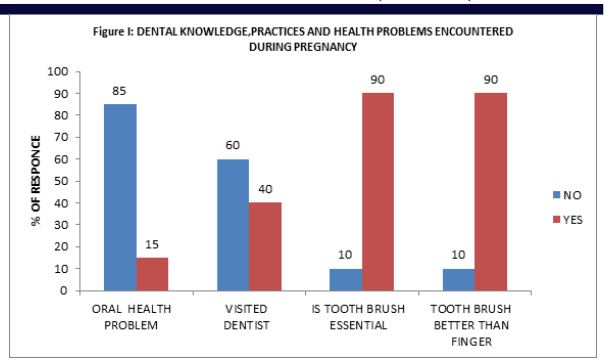
58(96.7%) of the women had no habit of mouth rinsing. 59(98.3%) of the women had no habit of pan chewing, betelnut, tobacco. 41(68.3%) of the women had no habit of tongue cleaning. (Table II, Figure I and II)

Table II: Assessment of dental knowledge, practices and oral health problems encountered during pregnancy

	ORAL HEALTH PROBLEM		VISITED DENTIST		IS TOOTH BRUSH ESSENTIAL		TOOTH BRUSH BETTER THAN FINGER		HABIT OF MOUTH RINSING	
	NUM	%	NUM	%	NUM	%	NUM	%	NUM	%
NO	51	85	36	60	6	10	6	10	58	96.7
YES	9	15	24	40	54	90	54	90	2	3.3

	USE OF PAN TOBACCO,BETEINUT		HABIT OF TONGUE CLEANING	
	NUM	%	NUM	%
NO	59	98.3	41	68.3
YES	1	1.7	19	31.7





Assessment of Plaque Index Score

Majority of the subjects, 54(90%) had a good levels of plaque index score followed by fair plaque level in 4(7%) and poor plaque level in 2(3%) of the subjects. (Figure III)

Assessment of gingival health

On assessing the gingival health, it was found that 52(87%) of the subjects had mild gingivitis, followed by 5(8%) moderate gingivitis and 3(5%) severe gingivitis of the women respectively. (Figure III)

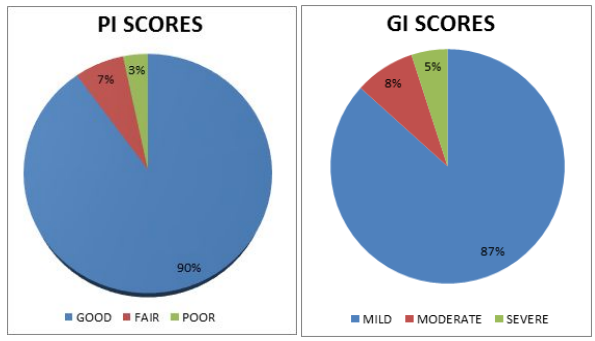


Figure III: Distribution of plaque index scores and gingival index scores among women Association between Plaque index score and dental knowledge and Practices

54(90%) of the subjects used toothbrush for cleaning the teeth, out of which 50(83.3%) subjects had good level of plaque index score and 2(3.33%) had fair and poor level of plaque index scores. These results were found to be statistically significant. (Table III)

Association between gingival index score and dental knowledge and Practices

Among the 54(90%) women who felt that tooth brushing their teeth using a tooth brush was essential, had 49(81%) mild gingivitis and 2 (3.3%) had moderate gingivitis and 3(5%) had severe gingivitis. This was found to be statistically significant. (Table III)

Correlation between plaque index score and gingival index score.

There exists a statistically significant positive correlation between plaque index score and gingival index scores. Where the co-relation co-efficient r=0.65.

Table III: Association between dental knowledge and practices with plaque index scores and with gingival index score

QUESTION	RESPONSE	PLAQUE INDEX SCORE			GINGIVAL INDEX SCORE		
		GOOD	FAIR	POOR	MILD	MODERATE	SEVERE
ORAL HEALTH PROBLEM	NO	46	3	2	44	5	2
	YES	8	1	0	8	0	1
	CHI SQUARE VALUE	**0.67(<5.99) ****			**1.68(<5.99) ****		
VISITED DENTIST	NO	33	3	0	29	4	0
	YES	21	1	2	20	1	3
	CHI SQUARE VALUE	**3.4(<5.99) ****			**5.58(<5.99) ****		
FREQUENCY OF DENTIST VISITED	1MONTH	2	0	0	2	0	0
	3MONTH	3	0	1	3	0	1
	4MONTH	1	0	0	1	0	0

	8MONTH	1	0	0	1	0	0
	1 YEAR	8	1	1	7	1	2
	2 YEARS	6	0	0	6	0	0
	CHI SQUARE VALUE	**3.91(<18.31) ****			**4.18(<18.31) ****		
IS TOOTH BRUSH ESSENTIAL	NO YES	4 50	2 2	0 2	3 49	3 2	0 3
	CHI SQUARE VALUE	7.34(>5.99)*	15.26(>5.99)*				
TOOTH BRUSH BETTER THAN FINGER	NO YES	4 50	2 2	0 2	3 49	3 2	0 3
	CHI SQUARE VALUE	7.34(>5.99)*	15.26(>5.99)*				
HABIT OF MOUTH RINSING	NO YES	54 0	3 1	1 1	51 1	5 0	2 1
	CHI SQUARE VALUE	21.21(>5.99)*	8.87(>5.99)*				
USE OF PAN ,TOBACCO,BETEI NUT	NO YES	53 1	4 0	2 0	51 1	5 0	3 0
	CHI SQUARE VALUE	0.11(<5.99) **	0.16(<5.99) **`				
HABIT OF TONGUE CLEANING	NO YES	36 18	3 1	2 0	35 17	4 1	2 1
	CHI SQUARE VALUE	**1.08(<5.99) ****			**0.34(<5.99) ****		
AIDS USED FOR CLENING TEETH	TOOTH BRUSH FINGER NEEM STICK	51 3 0	2 1 1	2 0 0	49 3 0	3 1 1	3 0 0
	CHI SQUARE VALUE	**17.07(>9.49)***			**13.2(>9.49)***		
FREQUENCY OF CHANGING BRUSH	15 DAYS	1	0	0	1	0	0
	1 MONTH	17	0	0	14	3	0
	2 MONTH	16	2	1	17	0	2
	3 MONTH	10		0	1	10	0 1
	4 MONTH	2		0	0	2	0 0
	5 MONTH	2	0	0	2	0	0
	6 MONTH	2	0	0	2	0	0
	1 YEAR	1	0	0	1	0	0
	CHI SQUARE VALUE	**6.03(<23.69)****			**9.43(<23.69) ****		

*** shows there is association between questions with plaque index score and with gingival index score.**
**** shows no association with other dental knowledge and practices.**

Percent distribution of pregnant women according to the periodontal status based on periodontal probing depth (Table IV)

Among 60 pregnant women, 48(80%) of them were classified as without pocket depth and 12 (20%) of them were classified as with pocket depth. Of which 9 (15%) of them had PPD of 4-6mm (p1), 3(5%) of them had PPD of 7-8mm (p2). And none of women had PPD = 10mm.

There were 12 (20%) diagnosed cases with PPD, of which the majority of them 9(15%) with 4-6mm of attachment loss.

Table IV: Percent distribution of pregnant women according to the periodontal status based on periodontal probing depth

Periodontal category	N	%
Without PPD	48	80
With PPD	12	20
P1(4-6mm)	9	15
P2(7-9mm)	3	5
P3(≥10mm)	0	0
Total	60	100

Table V: Mean values of plaque index and gingival index determined by examination, according to periodontal probing depth

	With periodontal pocket(n=48)		Without periodontal pocket(n=12)		T value
	mean	Sd	Mean	Sd	
PLAQUE INDEX SCORE	0.34	0.24	0.94	0.79	2.61
GINGIVAL INDEX SCORE	0.29	0.24	1.37	0.71	5.21

t value (>1.96 for p=0.05) shows significant difference in both the index between with and without periodontal probing depth.

DISCUSSION

Estrogen and Progesterone have significant biological actions that can effect other organ systems including the oral cavity. [12],[13],[14] Receptors for estrogen and progesterone have been demonstrated in the gingival, in which the gingival can be thought of as a target organ for progesterone and estrogen. Estrogen receptors are also found on periosteal fibroblasts, scattered fibroblasts of the lamina propria, and also PDL fibroblasts and osteoblasts. [15],[16]

Increased edema, erythema, gingival crevicular exudates and hemorrhagic gingival tissues may also be observed due to the effects of estrogen and progesterone on the gingival vasculature. [8],[17]

The result from the current study found that 85% of the women had no oral health problem during pregnancy. Where in a study done by Akila Ganesh et al 2011 [18] found that 86.1% of the women were not aware of oral health problems during pregnancy. They also found that 96.6% of the women felt that brushing their teeth were essential. Natalie JT, Phillipe FM, Caroline AC 2008 [19] did a study on the oral health

practices of pregnant Australian women and reported that 99% of the subjects felt that brushing their teeth was essential. In our study 90% pregnant women felt that brushing their teeth were essential.

Hormonal changes during pregnancy are believed to influence susceptibility to gingivitis. However, the presence of plaque and gingival inflammation seem to be necessary for the sub-clinical hormonal changes to be manifested as overt gingivitis [20], as the plasma levels of estrogen and progesterone increase progressively during pregnancy. [21]

Najwa Nassrawin 2012 [22] found that 74% of women had moderate to severe grades of gingival condition, 75% had moderate to heavy grades of supragingival plaque and 63% had moderate to severe grades of pocket depth scores. Akila Ganesh et al 2011 [18] found 49.5% mild gingivitis, 46.6% moderate gingivitis and 3.8% severe gingivitis.

In our study we found 52(87%) had mild gingivitis, 5(8%) had moderate gingivitis, 3(5%) had severe gingivitis. 54(90%) had good levels of plaque index scores, 4(7%) had fair levels of plaque index scores and 2(3%) had poor levels of plaque index scores.

Marianna Vog et al 2012 [23] found that the prevalence of periodontal disease was 47% and significantly associated with higher gestational age. Yalcin et al 2002[24] followed up women during pregnancy and observed constant increases in the indexes of plaque, BOP and PPD, although counseling on oral hygiene was provided throughout the study. Moss et al 2005 [25] reported risks for the occurrence and progression of gingivitis/periodontitis during pregnancy and observed that sites with PPD $\geq$ 4mm and BOP had a greater probability of suffering an increase in PPD and CAL during pregnancy.

In the current study, shows low prevalence of periodontal disease, with only 20% of the sample population having pocket depth, 90% of the sample population having good plaque index levels and 87% of the sample population having mild gingivitis.

Even if new periodontal pockets appear and revert after pregnancy [25], it is important to take into consideration that preventing inflammation during pregnancy should be a therapeutic objective. Therefore, it is of clinical interest to evaluate individual risks of changes in periodontal disease during pregnancy so that adequate planning of periodontal therapy may be implemented. [26]

CONCLUSION

From this study, we can conclude that majority of the pregnant women had a good scores of plaque level with mild gingivitis and 20 % of the population having periodontal pocket. So the prevalence of periodontal disease among pregnant women in our study was low and the level of oral care was good. This implies that the pregnant women were well aware of good oral health knowledge.

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