



RESEARCH ARTICLE

PERIODONTAL HEALTH AWARENESS IN ANTENATAL MOTHERS AT A
TERTIARY CARE TEACHING HOSPITAL IN SOUTH INDIA

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ABSTRACT

Background: Scientific evidence substantiates association between periodontal disease and its adverse effects on pregnancy outcomes like miscarriages, preeclampsia, preterm births and low birth weight. The study was designed to study the awareness of periodontal health in antenatal mothers.

Methods: Four hundred antenatal mothers attending the OP were recruited over a period of 5 months, after obtaining consent. An appropriately designed questionnaire in patient's language was given to the patient to answer. The questionnaire was subdivided into 5 sub scales and the data was analysed by calculating percentages.

Results: Overall health awareness was poor in our patients, 25% of the patients had poor awareness (100 patients scored 0 - 6.25/25). 224 patients (56%) scored 6.26 - 12.5/25 and were classified as considerable awareness. Patients scoring 12.6 - 18.75/25 were classified as appreciable awareness and accounted for 14.75% of all the patients (n =59). Only 4.25% patients (n = 17) scored more than 18.76 on a scale of 25.

Conclusions: Public health awareness programs are essential to increase patient awareness and further research is required to establish etiological relationships between periodontal health and pregnancy outcomes.

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INTRODUCTION

Periodontology involves the study of health and disease of soft and hard tissue that surrounds the teeth. Pregnancy is associated with several changes in the periodontal tissues specifically the gingiva. Gingivitis, dental caries, periodontitis and pregnancy granuloma are commonly encountered disorders among antenatal mothers [1].

Physiological changes occur in the periodontal structures during pregnancy which are attributed to increased circulating levels of oestrogen and progesterone. Such changes may set in inflammation in the gingival tissue and cause pregnancy gingivitis. Such physiological changes may not be associated with changes in plaque [2]. It has been recorded that pregnancy may also lead to the onset of new periodontal disease or lead to aggravation of the existing disease. It is hence essential that obstetricians, who act as the first point of contact, to these antenatal women pay attention to their oral health and refer the patient to a dentist when required.

Preterm birth defined as birth before 37⁺⁷ weeks of gestation is associated with neonatal morbidity and mortality [3]. Prematurity affects the neonate acutely and leaves sequelae that continue to haunt these babies for a lifetime. There is sufficient evidence which supports the occurrence of pre term births with periodontal infections or inflammations [4]. The infected periodontium could behave as a potential source of inflammatory mediators including cytokines and prostaglandins [2]. These mediators, specifically the prostaglandins are molecules with well established role in onset of labour. Treatment of these disorders has shown reduction in pre term births [5,6]. Immediate treatment of these ailments is essential to ensure a smooth trimester transition and uneventful course of pregnancy culminating in a healthy neonate. The role of dental care in obstetrics and the need of a dental physician to adjust dental care according to the individual patient and stage of life is hence highlighted [7, 8, 9].

The study was conducted with a primary aim to investigate the prevalence of awareness, of periodontal health in antenatal mothers who attend our antenatal clinic. Public health

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awareness is essential to educate these mothers on the potential benefits of good periodontal health on their pregnancy and to sensitise to them that periodontal health if neglected could potentially have adverse and undesirable perinatal outcomes.

MATERIALS AND METHODS

The study was conducted as a cross sectional study the Department of Obstetrics and Gynaecology at Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, Telangana. The study was taken up after approval from the Institutional Ethics Committee and patients were recruited after obtaining an informed consent. The study was conducted over a period of 5 months from August 2015 to December 2015, on patients attending the antenatal clinics at the hospital. Everyday only 10 patients were administered the questionnaire (the first 10 patients who present to the Antenatal OP).

Socio demographic details were noted for patients who consented to participate in the study and were noted in the questionnaire. Socioeconomic class was evaluated by using revised Kuppuswamy classification [10] by online tools at (<http://scaleupdate.weebly.com/>)

The questionnaire was designed by Dr.CS, Professor of Periodontology and included 25 questions. The questionnaire was analysed and further sub divided into 5 subscales. Item 1, 2, 3, 4, 5 and 7 investigated general oral hygiene. Questions 8, 9, 10, 13 and 1 evaluated the general periodontal awareness. Item 6, 11, 12 and 22 were used to assess the dental self awareness of the mother. Questions 15, 16, 17 and 19 evaluated periodontal awareness in specific relation to pregnancy. Willingness for dental examination and dental health seeking behaviours were assessed using items 18, 20, 21, 23, 24 and 25. Table 1 shows the questionnaire used,

student to understand. The responses of these patients were recorded in yes or no 'or' aware/ unaware. Each 'yes', 'aware' or a 'positive response' was given 1(one) mark and every 'no', 'unaware' or 'negative response' was give 0 marks.

Questions were then segregated according to the subscales and the scores were noted. Total scores of each paper were evaluated on a scale with a maximum of 25 and minimum 0. Total scores were classified into 4 groups which represented the level of periodontal health awareness as,

The data hence collected was analysed by calculating percentages, and represented in tables, bar diagrams and pie charts.

RESULTS

Maximum number of patients (54.25%) belonged to the age group of 18 - 27 years followed by 26.75% who belonged to the age bracket of 28 - 37 years. Only 9% were less than 18 years and 11.5% were more than 38 years. Multipara (G2 - G4) constituted 51.5% whereas 38.25% were primis and 10.25% were grand multi. Most of the patients had completed school education (43.5%). Those with more than college education constituted only 16%. Most of our patients belonged to Class V of Kuppuswamy (38%) whereas class II, III and IV constituted 54.75%. Only 7.25% belonged to upper class. The same is illustrated in table 3

General oral hygiene and periodontal awareness, evaluated as below in table 4

Table 1 Questionnaire used in the study

S.No	Item number
1	Do you brush your teeth?
2	If no, then do you use any other oral hygiene method?
3	If yes, do you brush your teeth twice a day ?
4	Do you brush your teeth after every meal?
5	Do you use interdental cleaning aids?
6	Do you feel your teeth are loose or wobbly
7	Do you change your toothbrush every 3 months
8	Do you think poor oral hygiene is a cause of bad breath
9	Do you think that extra care of oral hygiene is needed during pregnancy?
10	Are you aware that dental disease and pregnancy are related ?
11	Do you find any area redder than it should be?
12	Do you have food impaction between your teeth?
13	Do you think vertical brushing is useful for your oral health
14	Do you know that Cavities (tooth decay) and gum disease are caused by infection in the mouth?
15	Do you know about Premature labour and low birth babies ?
16	Have you ever suffered from premature labor or low birth weight babies in the past?
17	Are you aware that gum disease are related with premature labor and low birth weight babies?
18	Have you ever visited a dentist before pregnancy
19	Do you know that Pregnancy makes your gums bleed, swell, become red
20	Will you visit a dentist during your pregnancy if you have bleeding gums or teeth?
21	Have you ever been told by a dentist/dental hygienist that you have gum disease
22	Do your gums bleed during tooth brushing after conception?
23	If you are found to have periodontal disease (gum disease) now during pregnancy ,will you undergo treatment for the same?
24	If you are diagnosed with periodontal disease (gum disease) after delivery ,will you undergo treatment ?
25	Did your gynaecologist recommended oral check up before or during pregnancy?

Questions framed were straight forward and were translated into hindi and telugu for the ease of understanding of the patient. The language used was sufficiently easy for a class 6

Dental self awareness and dental self examination were evaluated using items 6, 11, 12 and 22 and are shown below in figure 1

Table 2 Scoring system and Awareness

S.No.	Score / Marks Obtained	Level of awareness
1	0 – 6.25	Poor awareness
2	6.26 – 12.5	Considerable Awareness
3	12.6 – 18.75	Appreciable Awareness
4	18.76 – 25	Knowledgeable

Table 3 Socio-Demographic characteristics of the population studied

S.No.	Demographic Parameter	Characteristic	No.of Patients (n)	Percentage (%)
1.	Age	< 18 years	36	9%
		18 – 27 years	217	54.25%
		28 – 37 years	107	26.75%
		>38 years	46	11.5%
2.	Parity	Primigravida	153	38.25%
		Multiparous	206	51.5%
		Grand multiparous	41	10.25%
3.	Education	Uneducated	56	14%
		School	174	43.5%
		College	106	26.5%
		Undergraduate	58	14.5%
		Postgraduate	6	1.5%
4.	Socioeconomic class	Upper class	29	7.25%
		Upper middle & lower middle class	97	24.25%
		Upper lower class	122	30.5%
		Lower class	152	38%

Table 4 General oral hygiene habits and periodontal awareness

S.NO	Item number	Item tested	Aware	Unaware
General oral hygiene habits				
1.	1	Do you brush your teeth? (n = 400)	304(76%)	(96)24%
2.	2	If no, then do you use any other oral hygiene method? (n = 96)	54(56.25%)	42(43.75%)
3.	3	If yes, do you brush your teeth twice a day? (n = 304)	274(90.13%)	30(9.86%)
4.	4	Do you brush your teeth after every meal?	26(6.5%)	374(93.5%)
5.	5	Do you use interdental cleaning aids?	21(5.25%)	379(94.75%)
6.	7	Do you change your toothbrush every 3 months	126(31.5%)	274(68.5)
GENERAL PERIODONTAL AWARENESS				
1.	8	Do you think poor oral hygiene is a cause of bad breath	226(56.5%)	174(43.5%)
2.	9	Do you think that extra care of oral hygiene is needed during pregnancy?	163(40.75%)	237(59.25%)
3.	10	Are you aware that dental disease and pregnancy are related?	29(7.25%)	371(92.75%)
4.	13	Do you think vertical brushing is useful for your oral health	69(17.25%)	331(82.75%)
5.	14	Do you know that Cavities (tooth decay) and gum disease are caused by infection in the mouth?	279(69.75%)	121(30.25%)

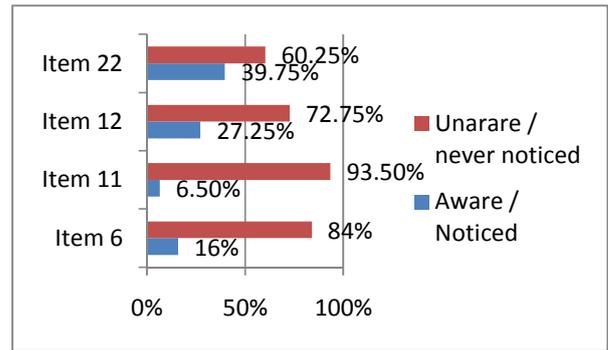


Fig 1 Dental self awareness

Using items 15, 16, 17 and 19 the periodontal awareness specific to pregnancy was evaluated and is tabulated below in Table 5

Table 5 Pregnancy specific periodontal awareness

S.NO	Item number	Item tested	Aware	Unaware
1.	15	Do you know about Premature labour and low birth babies?	73(18.25%)	327(81.75%)
2.	16	Have you ever suffered from premature labor or low birth weight babies in the past?	54(13.5%)	346(86.5%)
3.	17	Are you aware that gum disease are related with premature labor and low birth weight babies?	17(4.25%)	383(95.75%)
4.	19	Do you know that Pregnancy makes your gums bleed, swell, become red	82(20.5%)	318(79.5%)

The willingness to seek dental help either before, during or after pregnancy has been evaluated and represented in Figure 2

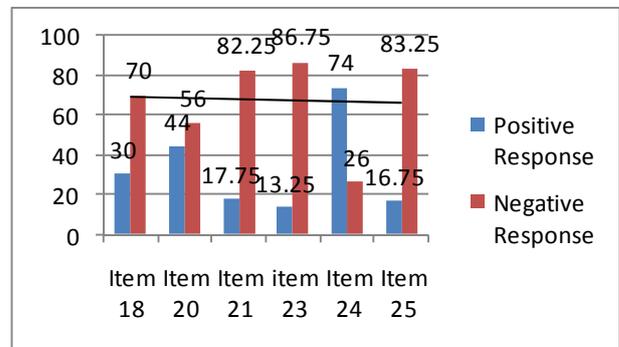


Fig 2 Willingness to seek dental help

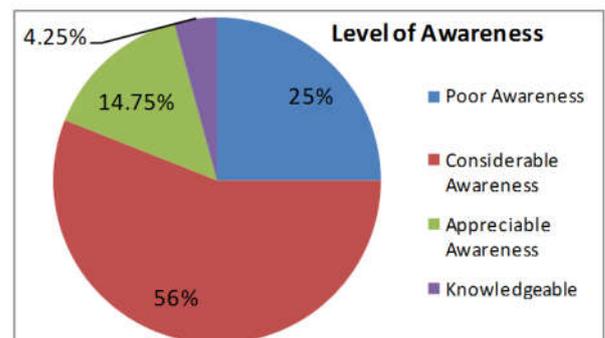


Fig 3 Total Periodontal health awareness

The total periodontal awareness calculated by the questionnaire has been classified into 4 levels of awareness and is illustrated in Fig 2

DISCUSSION

Several periodontal changes occur during pregnancy due to increased levels of oestrogen and progesterone. These include gingivitis, gingival hyperplasia, pyogenic granuloma, salivary changes and dental caries [11]. These effects are first noticeable in the second month of pregnancy and peak during the eighth month [1]. Maintenance of good oral health is essential for the maintenance of systemic health, this is more so important during pregnancy as there is sufficient data that substantiates periodontal disease to poor perinatal outcomes.

Neglect of oral hygiene during pregnancy can couple pathological inflammatory processes on a background of physiological changes and causes diseases like gingivitis [12,13]. Jensen *et al* and Ferris *et al* in separate studies have reported the incidence of gingival inflammation about 36% to 100% [7,9]. Studies by Amporn *et al* and Cuco *et al* reported the prevalence of gingivitis in pregnancy about 86.2% - 98.8% and a 74% prevalence of dental caries and a 0.9% - 6% incidence of pyogenic granuloma [14, 15]. Zachariassen *et al* reported increased susceptibility of gingiva to bacterial plaque due to hormonal and vascular changes [12].

Honkala *et al* [16] have reported a higher incidence of periodontal disease in pregnant women with poor oral hygiene and low educational status, this is in line with our findings as most of our patients have low educational status and have reported low awareness. Offenbacher *et al* [17] in their case control study and Jeffcoat *et al* [18] in their cohort study have reported periodontal disease as an independent risk factor for pre term and low birth weight. Jeffcoat *et al* also reported that pregnant women with periodontal disease have are 7.5 times more likely to develop pregnancy related complications [18]. Boggess *et al* have reported a higher risk of development of pre eclampsia in women with periodontal disease [19]. The impact of such diseases in pregnancy is largely undesirable. Prematurity and low birth weight, represent a spectrum of under development of several organ and organ systems which could pose serious threats in the immediate and long run.

Bhavana *et al* reported that women with poor oral hygiene had 2.5 times more chance to develop dental caries and 20 times more chance to develop gingivitis [1]. Periodontal disease is easily preventable by regular brushing and flossing. Pregnancy represents a state in women's life when her health habits can be easily changed. Health education can help improve oral hygiene practices and hence prevent and treat periodontal diseases. Manjushavaradan *et al* in their study described the lack of oral health information to most pregnant women [20]. To this end, Honkala *et al* have described pregnant women as a prime target for oral health education [16]. Our findings are in close agreement with these studies as most of our patients were unaware of the effects of periodontal health on their pregnancy.

CONCLUSION

Awareness about maintenance of good oral hygiene and the effects of periodontal health on pregnancy is very poor among

the masses. In face of such prevailing conditions it is possible that women are adversely affected due to the undesirable effects of periodontal disease on pregnancy, specifically in terms of perinatal outcomes. Since the obstetrician is the primary incharge of an antenatal mother, it becomes the responsibility of the obstetrician to ensure an oral examination to rule out periodontal disease. It is also required that women in general be educated about oral hygiene and its effect on pregnancy.

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