



Comparison of oral health status among pregnant and non-pregnant women residing in Raichur district

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Key words

Gingival index, oral hygiene index, periodontal index, pregnancy, Raichur

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Abstract

Background: The physical alterations that happen throughout the pregnancy may amplify a woman's vulnerability to oral infections, including periodontal disease, and may damage the body's capability to uphold the soft tissues in the mouth.

Aims and Objectives: The aim of the present study is to consider the oral health status of pregnant women in the age group of 18–35 years in Raichur.

Materials and Methods: A total of 75 pregnant and 75 non-pregnant women in selected age group at the Outpatient Department of a Navodaya Medical Hospital, Raichur, over a period of 6 months were evaluated for oral health status by various indices including decayed, missing, and filled teeth, oral hygiene index-simplified (OHI-S), gingival index (GI), and Russell's periodontal index (PI). Inclusion and exclusion criteria are healthy pregnant women reporting for antenatal checkup were preferred for study. Study group with systemic diseases such as hypertension, severe anemia, and diabetes mellitus, were expelled. The results of different indices were tabulated and statistically analyzed using unpaired *t*-test.

Results: The occurrence of dental caries in pregnant women was slightly higher; OHI-S value was considerably superior in pregnant women than that of non-pregnant women. Likewise, PI was also extensively higher in pregnant women. GI showed mild-to-severe gingivitis in pregnant women. However, control group showed predominantly mild gingivitis.

Conclusion: In the current study, the oral hygiene among pregnant women was evident by oral hygiene index and PI, which was statistically noteworthy; however, there was a slight increase in dental caries in pregnant women than the control group. This suggests an inferior oral health of pregnant women, which in turn can reflect on the overall health of fetus. This might possibly affect the birth outcomes, and hence, a mother's oral health grade is essential to keep the general well-being of the child. Each pregnant woman must be specified with directions to stay up the oral hygiene and persuade their appointment to the dentist.

Introduction

Pregnancy is a distinctive moment in a woman's living. During pregnancy, lots of physiological changes occur in the body due to augmented making of progesterone and estrogen that may change the oral health status.^[1]

Hormonal changes during pregnancy have been suggested to predispose women to oral diseases. The occurrence rate of gingivitis throughout pregnancy ranges from 30% to 100%, even though, there are small data that pregnancy increase the threat of

dental caries. Several studies have recommended that raise in caries may possibly be a consequence of changes in oral hygiene and diet. Oral diseases as well can have a considerable impact on mental, physical, and social well-being throughout the pregnancy.^[1,2]

Pregnancy is mainly essential to access oral healthcare since the impact of deprived oral health can encompass a crash not merely on the woman but as well on the developing fetus.^[2,3]

Thus, the aim of the present study is to consider the oral health grade of pregnant women in the age cluster of 18–35 years in Raichur.

Materials and Methods

A total of 75 pregnant and 75 non-pregnant women in selected age group at the Outpatient Department of a Navodaya Medical Hospital, Raichur, over a period of 6 months were evaluated for oral health status. The study procedure was permitted by the Institutional Ethical Board. Voluntary informed written permission was obtained from the study participants after explanation of the nature of the study. The oral health status was evaluated by various indices which include were as follows:

- Decayed, missing, and filled teeth (DMFT).
- Oral hygiene index-simplified (OHI-S).
- Gingival index (GI).
- Russell’s periodontal index (PI).

Inclusion criteria

1. Healthy pregnant women reporting for antenatal checkup were chosen for study.
2. Patients in the first and second trimester were taken.
3. Non-pregnant females above the age group of 18–35 years were taken as control group.
4. The pregnancies were confirmed through a clinical examination of the pregnant women by the qualified doctor.

Exclusion criteria

1. Study group with systemic diseases such as hypertension, severe anemia, and diabetes mellitus, were expelled.
2. Previous pregnancies.
3. Usage of contraceptives (for control group).
4. Tobacco chewing and smoking.

Statistical analysis

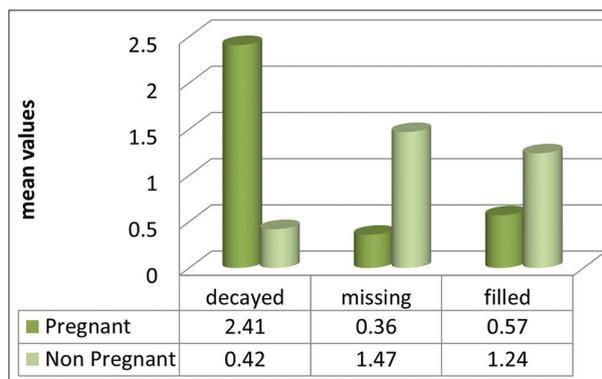
The data were collected over a period of 6 months from May to October 2016. Data were analyzed using SPSS v16.0 software package. Association was evaluated using unpaired *t*-test. Graphic statistics such as mean, standard deviation, and percentage were used. *P* < 0.05 was considered significant.

Results

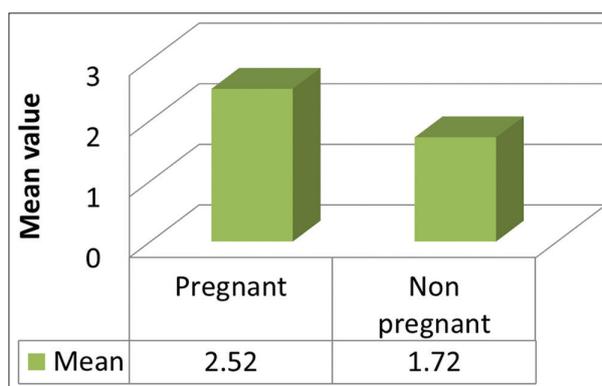
The frequency of occurrence of decayed was considerably elevated in pregnant women from that in non-pregnant women. However, the occurrence of missing teeth and fillings was appreciably elevated in non-pregnant women from that in pregnant women. In addition, DMFT together was also statistically significant in pregnant women (*P* = 0.002) [Table 1 and Graph 1].

The OHI-S value (2.52 ± 0.86) was notably superior (*P* < 0.001) in pregnant women than that (1.72 ± 0.71) in non-pregnant women [Table 2 and Graph 2].

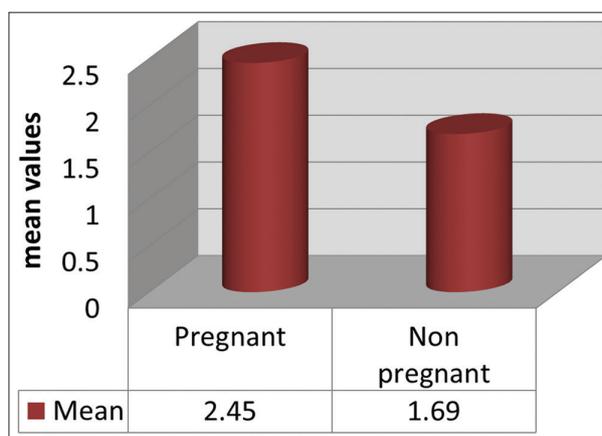
Similarly, the GI was also found to be drastically higher (*P* < 0.001) in pregnant women (2.45 ± 0.62) than that in non-pregnant women (1.69 ± 0.87) [Table 3 and Graph 3].



Graph 1: Diagram representing decayed, missing, and filled teeth showing frequency of occurrence of dental caries, incidence of missing, filled teeth in pregnant, and non-pregnant women



Graph 2: Diagram representing oral hygiene index-simplified showing significantly higher value in pregnant women than that in non-pregnant women



Graph 3: Diagram representing gingival index showing considerably elevated values in pregnant women than that in non-pregnant women

Russell’s PI showed a significantly higher difference (*P* < 0.001) in pregnant women (2.17 ± 0.38) than that in non-pregnant women (1.74 ± 1.05) [Table 4 and Graph 4].

Table 1: Descriptive statistics of DMFT shown between study and control group

Levels	Group	n	Mean±SD	χ ² value	P	Result
D	Pregnant	75	2.41±1.85	78.72	<0.001	HS
	Non-pregnant	75	0.42±0.79			
M	Pregnant	75	0.36±0.73	59.68	<0.001	HS
	Non-pregnant	75	1.47±1.74			
F	Pregnant	75	0.57±1.12	75.92	<0.001	HS
	Non-pregnant	75	1.24±1.59			
DMFT	Pregnant	75	3.39±2.00	23.027	0.002	S
	Non-pregnant	75	3.11±1.72			

DMFT: Decayed, missing, and filled teeth, SD: Standard deviation, HS: High significant

Table 2: Descriptive statistics of OHI-S shown between study and control group

Group	n	Mean±SD	χ ² value	P	Result
Pregnant	75	2.52±0.86	22.06	<0.001	HS
Non-pregnant	75	1.72±0.71			

OHI-S: Oral hygiene index- simplified, HS: High significant, OHI-S: Oral hygiene index-simplified, SD: Standard deviation

Table 3: Descriptive statistics of GI shown between study and control group

Group	n	Mean±SD	χ ² value	P	Result
Pregnant	75	2.45±0.62	19.16	<0.001	HS
Non-pregnant	75	1.69±0.87			

GI: Gingival index, SD: Standard deviation, HS: High significant

Table 4: Descriptive statistics of Russell's periodontal index shown between study and control group

Group	n	Mean±SD	χ ² value	P	Result
Pregnant	75	2.17±0.38	20.58	<0.001	HS
Non-pregnant	75	1.74±1.05			

SD: Standard deviation, HS: High significant

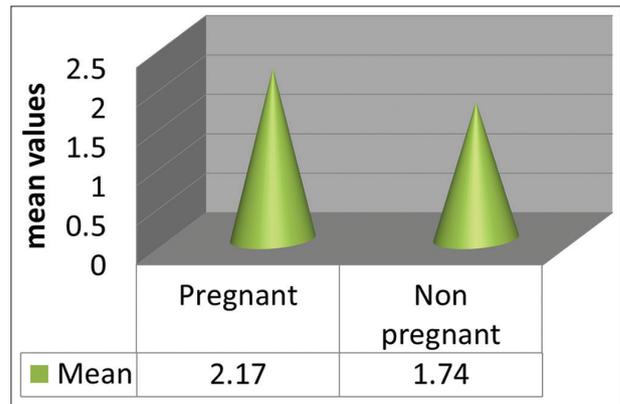
Discussion

The oral mucosa in pregnancy is susceptible to numerous systemic changes inside the body, which are chemical metabolic, physiological, or hormonal. These changes predispose women to pregnancy-induced benign oral gingival lesions, dental caries, gingivitis, tooth erosion, periodontitis, and tooth mobility.^[4]

Several epidemiological studies on the occurrence of oral lesions and oral health status of pregnant women have been studied worldwide.^[1,5,6] Similarly, the present study was also designed to consider oral health status between pregnant women and non-pregnant women in Raichur district.

DMFT index

The present study showed a statistically significant increase in dental caries of pregnant women as contrast to non-pregnant



Graph 4: Diagram representing Russell's periodontal index showing significantly higher value in pregnant women than that in non-pregnant women

women. Pregnant women are at an elevated danger of tooth decay for numerous causes. The possible causes of caries during pregnancy are as follows:

- Changes in saliva,
- Changes in oral flora,
- Vomiting,
- Neglected oral hygiene and nutritional changes,
- Nutritional alterations in early pregnancy, such as the habitual use of sugary snacks and drinks to gratify cravings or to avoid nausea, might reason a fall in salivary pH leading to dental caries.^[7]

Oral hygiene index

In the current study, oral hygiene in pregnant women was seen to worsen increasingly and steadily. The differences in OHI-S scores between the study group and the control group were seen to be statistically considerable. These differences in oral hygiene status might owe to diminish in oral hygiene practices as the pregnancy proceeds. This finding is supported by the observations of the studies on pregnant women by Amin and Shetty,^[1] Reddy *et al.*,^[7] and Gupta and Acharya.^[8]

GI

In the present study, pregnant women revealed elevated levels of gingivitis than non-pregnant women. Women are further expected to develop gingivitis during pregnancy. Gingivitis influences up to 70% of pregnant women.

Mutually raise in the pace of estrogen metabolism by the gingiva and in the production of prostaglandins were established to supply to the gingival changes seen during pregnancy. Change in progesterone and estrogen levels can affect the immune system and also can alter the rate and pattern of collagen production in gingiva. Thus, reducing the body's capacity to restore and preserve gingival tissues.^[9]

PI

In the current study, pregnant women revealed elevated levels of periodontal diseases than non-pregnant women.

As stated in previous studies, the probable cause for the augmented periodontal pocket depth is the loosening and swelling of the periodontal tissues in the region of the teeth due to inflammation, resulting the probe to enter deeper inside the tissues. Alternatively, it may be due to increased levels of microorganisms such as *Bacteroides*, *Prevotella*, and *Porphyromonas*. The subgingival microbial species are the main etiological factors for periodontal diseases during pregnancy.^[10]

Treatment

Alterations in gingiva frequently reduce in few months after delivery if local irritants are removed. Periodontal disease is avoidable and treatable. Controlling plaque by brushing, professional prophylaxis, and flossing with scaling and root planning, all these assists to attain superior oral health during pregnancy.^[1,2]

Adverse pregnancy outcomes

The result of maternal periodontal health lying on prematurity and small birth mass babies has been documented in previous studies. Periodontal diseases can cause preterm birth and/or low birth weight and also relates to the seeding of urinary tract infections with bacteria from periodontal disease in the mother.^[11]

Another proposed mechanism is the nature of the periodontal disease itself, where the inflamed periodontal tissues create major quantities of proinflammatory cytokines, mostly: Interleukin (IL) -6, prostaglandin E2, IL-1b, and tumor necrosis factor alpha, which are having systemic impact happening on the host leading to periodontal disease.^[12]

Pregnant women by means of periodontal disease may indicate preterm labor through prepared monocyte-macrophage commencement in the peripheral blood. Thus, a need arises to know the awareness of these patients regarding their motivation toward regular dental checkups during pregnancy. Therefore, education of women earlier to conception and in the antenatal period can avoid the majority of the dental troubles, in addition, good oral hygiene during and after pregnancy can be persistent.^[11,12]

Conclusion

Indices of oral health have a tendency to be elevated in pregnant women, suggesting a poor oral health in contrast to non-pregnant group. Each pregnant woman must be specified directions to remain with good oral hygiene and promote their

appointment to dentist, therefore creating a personal intellect of liability to achieve and uphold best possible dental health which in turn benefits her child. Hence, as always prevention is better than cure.

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