

## Awareness And Practice Towards Oral Health and its Influences On General Health During Pregnancy Among The Gynecologists In The Chennai City

Research Article

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### Abstract

In a woman's life, during the phases of puberty, menstruation, pregnancy and menopause, there are changes in the body which lead to a decline in oral health. The poor oral health can become home to various microorganisms and source of complications. A pregnant woman is at high risk of developing various oral conditions such as oral tumor, oral lesions, gingivitis and periodontitis. This is due to their body responding differently to bacteria and plaque. Furthermore, poor oral health has been associated with pregnancy complications such as preeclampsia, preterm or low-birth-weight infant and gestational diabetes mellitus. The aim of this study is to determine the percentage of gynecologists aware of oral complications during pregnancy and also to identify the types of complications faced in pregnancy due to poor oral health. A sample population of 100 gynecologists residing in the Chennai city were given a questionnaire. The questionnaire consisted of 16 questions to test their awareness and practice towards oral health and its influences on general health during pregnancy.

The results showed that they had moderate knowledge but were unsure of the correlation between the oral health and its influence in the general health of pregnant women. With many studies proving that poor oral health is a reason for pregnancy complications, The questionnaire consisted of 16 become aware and involve general oral health checkup in their routine consultation to prevent pregnancy complications due to poor oral health.

**Keywords:** Awareness; Gynecologists, Oral Health; Pregnancy; Hormones.

### Introduction

Various studies have proven that there is a correlation between the general health and oral health. This knowledge is essentially significant by many folds for pregnant women as there are two lives at risk if the balance were to get distorted. In a woman's life, it is during the phase of puberty, menstruation, pregnancy and menopause where they are more prone to oral health risks due to the hormonal changes. Pregnancy being the most significant stage, it is imperative that the pregnant woman has two health care givers, the oral health provider and the gynecologist.

Hormones are specific regulatory molecules that modulate reproduction, growth, development and maintain homeostasis as well as energy production, utilization and storage [11]. Hormones can be classified into 4 different types based on their chemical

structure and of which the sex hormones, the subtype of steroid hormone, is the main cause of hormonal influence on periodontal health. The female sex hormones includes progesterone and estrogens.

The variation in the level of these female sex hormones, estrogen and progesterone, are responsible for various physiological changes in females at specific phases of their life. During such vulnerable phases, the estrogen and progesterone affects the gingival tissues and the subgingival microflora [3]. During pregnancy, the body responds differently to bacteria and plaque. During pregnancy there are many oral problems to look into; oral lesions, caries, mobile teeth, gingivitis, periodontitis and oral tumor.

Primarily, at the early pregnancy phase, the frequent occurrence of morning sickness, hyperemesis gravidarum, leads to a heavy gastric acid exposure in the oral cavity leading to the erosion of

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**Received:** January 12, 2021

**Accepted:** January 22, 2021

**Published:** January 28, 2021

**Citation:** Nikita Sivakumar, Sri Shakthi, Dhanraj Ganapathy. Awareness And Practice Towards Oral Health and its Influences On General Health During Pregnancy Among The Gynecologists In The Chennai City. *Int J Dentistry Oral Sci.* 2021;8(1):1430-1435. doi: <http://dx.doi.org/10.19070/2377-8075-21000285>

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dental enamel. In the later stage, there is acid reflux occurrence caused by lax esophageal sphincter and upward pressure from the gravid uterus. Next is the occurrence of caries in pregnancy, which is due to the oral bacteria's fermentation of dietary carbohydrate to acids. This leads to a demineralization of the enamel breaking down to brownish cavitation. In addition to this there can be presence of mobility in teeth which may occur regardless of any gum disease. This is because of the drastic increase in estrogen and progesterone affecting the periodontium. Another oral health problem occurring during this phase is oral tumor. The oral tumor appears in the inaccessible region in between teeth and it is indistinguishable with pyogenic granuloma. However this is a rare type of oral problem and it is caused by a combination act of increased progesterone, local irritants and bacteria. On the other hand, the most common oral disease faced in pregnancy is gingivitis. Gingivitis is the inflammation of the superficial gum tissue which is aggravated by fluctuations in estrogen and progesterone levels in combination with changes in oral flora and a decreased immune response. Lastly, periodontitis can be defined as the destructive inflammation affecting all the supporting structures of the tooth and extending up to the alveolar bone [14].

As dentists we are always highly cautioned about the treatment procedures and medications for a pregnant woman. However, are the gynecologists aware of the oral health significance in a pregnant woman? This has been answered through the past few studies [20] done on this proving that the gynecologists have a limited knowledge on the correlation of oral health and general health. As this study has never been carried out in the Chennai city of Tamil Nadu, we aim to assess the awareness and practice towards oral health and its influences on general health during pregnancy among the gynecologists in the Chennai city.

## Materials And Method

### The Study Design

A descriptive questionnaire survey.

### Study Area

The study area for this descriptive questionnaire survey is Chennai, India, a country with one of the largest populations of 1.324million (based on statistics from 2016) and contributes to 17.74% of the total world population [18]. It has a large number of 29 states. Chennai is the capital of the Indian state, Tamil Nadu. It is the fourth largest metropolitan city of India with the population of about 9.88 million people. India has a fertility rate of 2.04 in general (2015) with the lowest total fertility rate being Chennai with a sum of 1.7. For a big and populated country like India, every state has to take individual responsibilities and measures to ensure health care [16].

### Study Population

There is an average total of 505 Gynecologists of the Chennai city.

### Inclusion Criteria

The gynecologists who were available during the time of visit.

The gynecologists who were willing to take part in the survey. The gynecologist who did not participate in any previous such surveys.

### Exclusion Criteria

The gynecologists who were unavailable even after three consecutive visits to their clinic.

### Approval and Informed Consent

Prior to the start of the study, ethical approval was obtained from the Institutional Review Board, Saveetha University. An approval and written informed consent was obtained from the study participants, the gynecologists, and prior to the survey.

### Scheduling

Data collection was scheduled in the month of January 2018.

### Sample Size

The population sample size was kept as  $n = 100$  based on the result of the study done by Satyanarayana et al., (2015).

### Survey Instrument

The present study was a questionnaire-based survey which was conducted in January 2018. The survey was conducted in English language and with a composition of 16 questions. The questions were formulated after reviewing many published articles related to the hormonal influence in the oral health for pregnant women. The demographic detail of the participating gynecologists was obtained through the first 4 questions of the questionnaire; name, age, gender and hospital name. The other 16 questions were based on the awareness of the hormonal influences on the periodontal health problems among gynecologists.

### Survey Methodology

After a brief introduction on the purpose and intention of the study, the questionnaires were distributed to the available and keen gynecologists. The filled questionnaires were collected and only fully filled questionnaires were considered for analysis.

### Statistical Analysis

The raw data was entered in Microsoft Excel spreadsheet and analyzed using SPSS software (version 20). Using help of tables and figure illustrations such as bar charts and pie charts the data was differentiated. Descriptive analysis was used.

## Results

Figures.

## Discussion

The results have shown that the gynecologists do have rather moderate knowledge on the awareness of hormonal influences on the periodontal health problems among gynecologists. Figure

Figure 1. Definition of plaque.

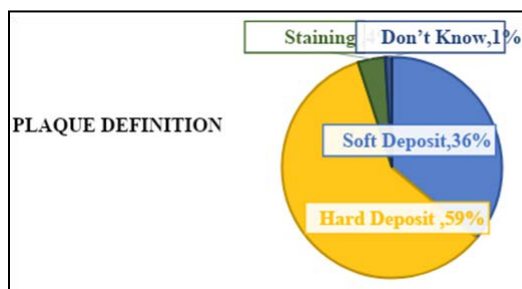


Figure 2. Dental plaque causes.

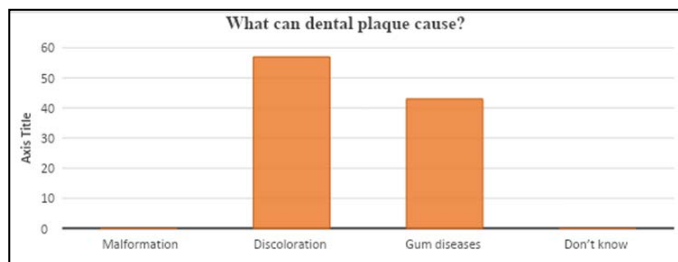


Figure 3. Define gingivitis and periodontitis.

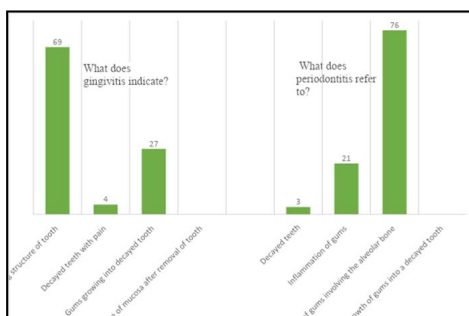


Figure 4. Bleeding gums indicate.

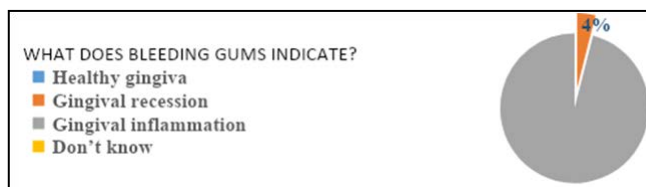


Figure 5. The choice of toothbrush to be recommended.

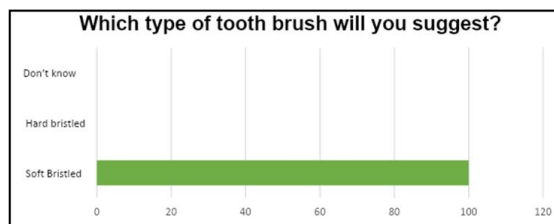


Figure 6. Relation between healthy teeth and gum with pregnancy.

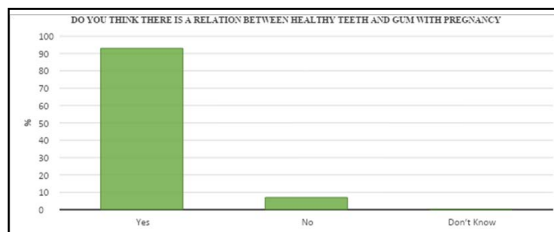


Figure 7. How many gynecologist do oral health checkups for their pregnant patients.

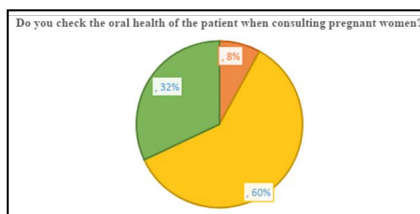


Figure 8. Can dental treatment be carried out during pregnancy.

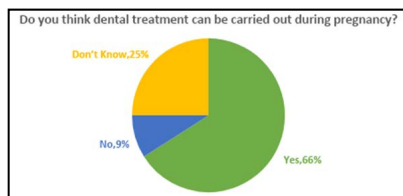


Figure 9. Correlation between oral health and general health.

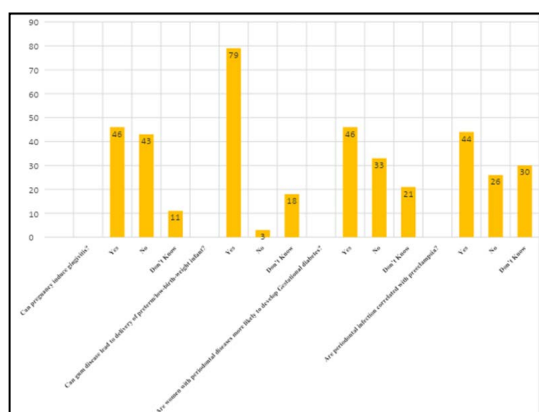


Figure 10. Percentage of gynecologist who attended oral health care related conference/seminar.

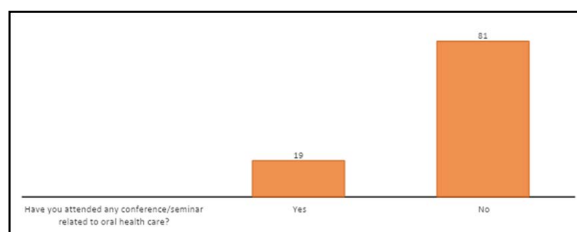
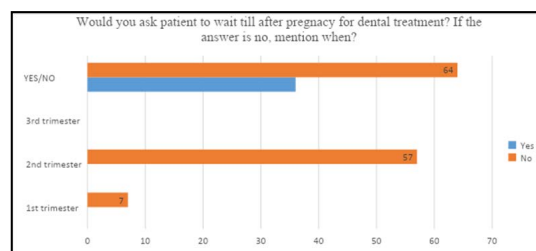


Figure 11. When the pregnant women are recommended to undergo dental treatment.



1 shows that the majority knew that plaque was a kind of deposit but were unsure if it was hard (59%) or soft deposit (36%). Dental plaque can be defined as a soft deposit which forms a biofilm adhering to the tooth surfaces or other hard surfaces such as removable and fixed prosthesis in the oral cavity. It contains organic, inorganic materials derived from saliva, gingival crevicular fluid & bacterial products [7].

In addition to this, there were only 43% of gynecologists who knew that dental plaques cause gum diseases (figure 2). Plaque contains 400 types of microorganisms which when left untreated causes the gum to stretch away from teeth, forming pockets in

which more bacteria can collect [17]. Thus, leading to many oral problems kicking off with gum diseases.

However, from figure 3, we can see that the gynecologists showed a respectable knowledge in understanding what gingivitis (69%) and periodontitis (76%) meant. While gingivitis can be defined as the inflammation of gum, periodontitis is the disease affecting the supporting structure as far as the alveolar bone. Gingivitis can either be plaque induced or non-plaque induced such as due to hormonal imbalance during pregnancy or due to some contraceptive pills. If the gingivitis is left untreated, it may advance to become periodontitis, an irreversible damage. The gynecologists

(96%) were also aware that bleeding gums indicate inflammation (figure 4) of the gingiva and they knew that during pregnancy phase where the gums are more irritable, swollen and sensitive it is better to take preventive measures such as by opting for a soft bristled toothbrush (figure 5).

When the gynecologists were asked whether they thought that there was a correlation between healthy teeth and gums with pregnancy a countless gynecologists (93%) believed so (figure 6). This is true because of the hormonal imbalance during pregnancy where the progesterone and estrogen level increases drastically. Progesterone in particular has been known for promoting bacterial growth in the mouth. Progesterone is known as the vital component during pregnancy as it keeps the uterine lining healthy, balances blood sugar level and lowers psychological problems like anxiety and sleep disorder [20]. However, they have been known to have the ability to suppress the innate immune responses. (8;15;13;12). Furthermore, the high level of progesterone during the second trimester of pregnancy is correlated with reduced activity of regulatory T cells. [6]. Thus, leading to the body overreacting to bacterial plaque and causing pregnancy gingivitis. These changes cause the dilation of the blood vessels in the gums and consequently increases blood flow.

However, the hormones alone don't cause the problem, it is a combination act with irritants such as the plaque. Thus proper oral hygiene and awareness is important amongst the pregnant women. When asked how often do the gynecologists check the oral health condition of their patients, 32% agreed to regular checkup while the majority (60%) checked up only when the patient complained about it (figure 7). It is necessary that the gynecologist take the initiative to have the pregnant woman's oral cavity checked or refer her to dentists for regular checkup or clean up. This is a necessary initiative to do thorough oral examination during all her gynecological visits as she might not be aware of the relation of it to her pregnancy and might lead to complications due to negligence.

64% of the gynecologists agreed to not procrastinating dental treatments and out of which 57 of the gynecologists chose the second trimester as the most recommended phase for dental treatment (figure 11). Dental treatments are possible and non-harmful during pregnancy phase thus it should not be postponed until after pregnancy because after pregnancy the mothers tend to be busy with healing and taking care of their baby. It is preferably recommended during the second trimester of pregnancy. The third trimester is generally not recommended as there are concerns of positional discomfort and the risk of vena cava compression. However, in case of an urgent dental complication, the dental care can be performed at any gestational age [22].

Though 93% of the participating gynecologists believed that there is correlation between healthy teeth and gum with pregnancy, they didn't have the in depth knowledge of that correlation. The statistics showed that they were unsure with 43% disagreeing and 11% of them not knowing whether the pregnancy can induce gingivitis. Though they did agree correctly that women with periodontal diseases are more likely to develop Gestational diabetes (46%) and that periodontal infection is correlated with preeclampsia (44%). The value was not as great as the total percentage of gynecologists who disagreed or didn't know is greater than 50%. However, a promising result of 79% gynecologists were cer-

tain of the concept that gum disease would lead to the delivery of a preterm or low-birth-weight infant.

Studies have shown that during pregnancy, periodontal diseases are so highly associated with gestational diabetes mellitus that they have been called as the 6th complication of diabetes (21;10). Gestational diabetes mellitus (GDM) can be defined as glucose intolerance with onset or first recognition during pregnancy. After pregnancy these women are at a high risk of developing diabetes, commonly type 2. Furthermore, offspring of these women are also at high risk of obesity, glucose intolerance, and diabetes in late adolescence and young adulthood [9]. Periodontitis has been known to contribute to poor metabolic control in people with diabetes.

It is still common that women still suffer from the delivery of preterm or low-birth-weight infant. Though there are many other complications related to it, the maternal infection and inflammation in the oral cavity still play a significant role. Infections with periodontal bacteria and the ensuing cascade of immuno-inflammatory mediators, including IL-1, IL-6, TNF- $\alpha$  and prostaglandins, especially PGE2, may be implicating factors [4].

Following, preeclampsia is a unique maternal disorder and is one of the leading causes of maternal morbidity and mortality [2]. It is a multi-organ disease which appears in the second half of pregnancy along with hypertension and proteinuria [1]. Though the actual etiology couldn't be found but it is hypothesized that periodontal disease may provide a chronic burden of endotoxin and inflammatory cytokines which could have burdened the placenta in pregnant women who develop preeclampsia [19]. However, studies are still going on regarding the correlation between the periodontal pathogens and the various pregnancy complications. [5].

## Conclusion

Thus, we can conclude that the result has shown a moderate awareness amongst the gynecologists which can be due to the lack of oral health care information amongst the gynecologists. Since 81% of gynecologists had never attended any oral health care related conferences or seminars, it would be more effective to include such informative and necessary conferences or seminars once in a while to keep them updated.

It is sad that often oral health care in pregnancy is avoided and misunderstood by the gynecologists and patients. Thus, with the help of this survey based study, a clear answer will be given to show when and why it is important to visit the dentist during the most fragile phase, pregnancy. It is better to have the patient treated during her pregnancy than have her advance to an irreversible stage of oral complications.

It is of utmost importance that the gynecologist be knowledgeable and be able to educate their patients on oral health care and prevention instructions.

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