

# To Assess Knowledge and Attitude Related to Female Sex Hormones and Periodontal Health Awareness among Gynaecologists in Porbandar City - A Questionnaire Survey

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**Abstract:** ***Background:** Homeostasis of periodontium is a complex, multifactorial relationship that involves, at least in part the endocrine system. Different endocrinal events in the life cycle of women - puberty, menstruation, pregnancy, menopause or even use of oral contraceptives have a profound impact on periodontium. Since periodontal disease is both preventable and curable, early intervention may reduce the microbial challenge and improve periodontal health in hormonal sensitive tissue. The awareness regarding changes in the periodontium under the influence of the hormones will help the gynaecologists to diagnose and treat the related issues in a better way. **Aim:** The aim of this survey was to assess the knowledge and attitude regarding the female sex hormones and periodontal health among the gynaecologists in Porbandar City. **Material and Method:** Based on convenience sampling, 30 gynecologists were selected without any gender bias from Porbandar city. Study was conducted via questionnaire form sent to the participants after obtaining their informed consent containing 10 questions. Validation of the questionnaire was done beforehand. Results were tabulated and results were presented in percentage (%). **Results:** Majority of them were acquainted with enough knowledge and awareness regarding effects of female sex hormones on periodontium during various stages of life. However, the health professionals showed to have insufficient knowledge in terms of periodontal diseases being a risk factor for preterm low birth weight deliveries, which is a matter of concern. **Conclusion:** Our survey highlights sound knowledge among gynecologists relating to effects of hormones during various endocrinal stages in life of a female. But knowledge regarding effects during pregnancy, especially relating to pre term low birth weight deliveries is still a zone requiring more attention.*

**Keywords:** knowledge, attitude, gynecologists, dentists, puberty, menstruation, pregnancy, menopause, oral contraceptives, pre term low birth weight deliveries.

## 1. Introduction

Periodontal diseases are chronic infectious diseases in which the interplay between the pathogenic bacterial plaque and host immune response determines its prevalence, progression and severity.

Homeostasis of periodontium is a complex, multifactorial relationship that involves, at least in part the endocrine system (1). The 2017 World Workshop on the Classification of Periodontal and Peri Implant Diseases and Conditions mentions elevated sex steroid hormones to be one of the systemic risk factors exaggerating periodontal inflammation (2).

Localization of the female sex hormones - androgens, estrogen and progesterone via targeted receptors in the periodontal tissues makes oral cavity equally susceptible to physiological or pathological changes induced by hormonal fluctuations in the body (2). This hormone receptor complex leads to repercussions such as changes in specific

periodontal microbiota, alteration in vascular characteristics, immunoregulatory effects and modulation of specific population of fibroblasts and epithelial cells (3, 4, 5).

Henceforth, different endocrinal events in the life cycle of women - puberty, menstruation, pregnancy, menopause or even use of oral contraceptives have a profound impact on periodontium. Estrogen exerts its effects on cyto differentiation of stratified squamous epithelium as well as synthesis and maintenance of fibrous collagen (Eleni et al 2009) (6). Progesterone plays a pivotal role in coupling of bone formation and reabsorption (Mascarenhus et al 2003) (1).

Pooling of hormones during puberty results in altered subgingival microflora with increased bacterial counts and prevalence of *Prevotella intermedia* (7) and *Capnocytophaga* (8) leading to exaggerated gingival inflammation without subsequent increased plaque levels.

Periodic changes in the levels of female sex hormones during menstrual cycle may cause cyclic differences in the subgingival bacterial colonization pattern. Gingival bleeding prior to menstrual period is due to serum estradiol, which peaks and drops during ovulation and pre - menstruation (9).

Prominent increase in plasma hormone levels over 9 months have dramatic effect on periodontium during pregnancy, making overall prevalence of periodontitis 35% (Hasson et al 1966) to 100% (Lundgren et al 1973) (10). Pinard (1877) recorded the first case of pregnancy gingivitis.

Association between oral contraceptives and gingival inflammation in relation to high concentration of sex hormones was first described by Lindhe and Bjorn 1967 (11). Following medication with first generation oral contraceptives modifies inflammatory response. Modern oral contraceptive dosages have been known for reducing the response to bacterial plaque.

After menopause, women are at a greater risk for osteoporosis because of the rapidly declining estrogen levels leading to systemic bone loss (12) and American Association of Periodontology considers osteoporosis to be a risk factor for periodontal disease (13). Hence post - menopausal period is associated with increased oral symptoms such as xerostomia, burning sensation, metallic taste, dental caries, periodontitis and an osteoporotic jaw bone unsuitable for conventional dental devices and implants (14).

Considering all the above stated consequences owing to fluctuations of female sex hormones, it can be stated that gynecologists can play a pivotal role in assessing women over different span of their lives regarding their periodontal health. Since periodontal diseases are preventable and so are the adverse outcomes, proper awareness and knowledge of this health group is of utmost importance for the oral and overall health of women (15). The need of the hour is to assess awareness and knowledge and even the referral patterns of gynecologists in the smaller cities where women experience difficulty in getting access to health services and so dental and medical practitioners can contribute in providing oral health as a part of prenatal and antenatal care. Hence this survey was conducted with the aim of assessing knowledge and attitude regarding effects of female sex hormones on periodontium among gynecologists in Porbandar city.

## 2. Materials and Method

After obtaining approval from the Dean of AMC Dental College and the Head of Department of Periodontology, the proposed cross - sectional study was conducted in Porbandar City to assess knowledge and attitude of gynecologists regarding effects of female sex hormones on periodontium. Based on convenience sampling, 30 gynecologists were selected without any gender bias who agreed to participate in the study. Study was conducted from December 2020 to March 2021 via questionnaire form sent to the participants after obtaining their informed consent. Validation of the questionnaire was done beforehand. Results were tabulated and results were presented in percentage (%).

## Questionnaire Design

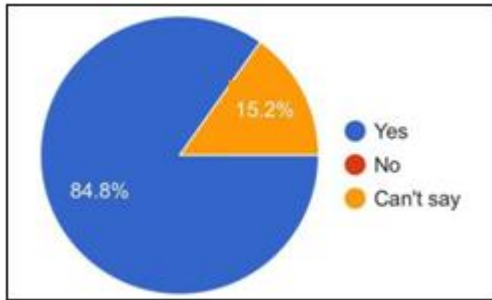
Questionnaire consisting of 10 close ended questions was prepared. Questionnaire contained questions pertaining to effects of hormones during puberty, menstruation, pregnancy, menopause and use of oral contraception divided mainly to 2 categories - knowledge and attitude of the gynecologists. Participant information sheet was prepared for providing a quick periodontal reference prior to going for the questionnaire.

## 3. Results

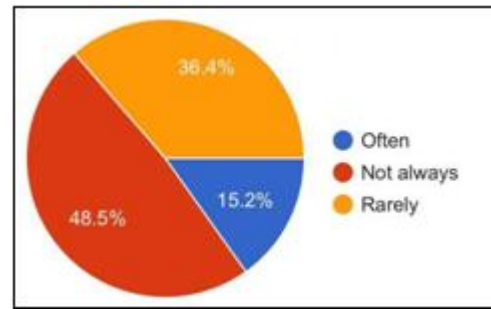
All 30 gynecologists attempted all the questions and none was left unanswered. Majority of them were acquainted with enough knowledge and awareness regarding effects of female sex hormones on periodontium during various stages of life. They had sound understanding regarding importance of referral of the female patients to the dentists when needed and of pregnant patients as a part of their prenatal care.

Here 6 questions were asked pertaining to the knowledge of the gynecologists regarding effects of female sex hormones on periodontium. 84.8% of the participants were aware of the puberty induced gingival changes. 97% had the knowledge of second trimester of pregnancy being safest for carrying out dental procedure; only 3% opted for third trimester while none for first trimester. Participants were not updated regarding periodontitis being a risk factor for preterm low birth weight deliveries. Only 30.3% were aware, 21.2% completely not and 48.5% were unsure regarding the same. Inflammation of the gums due to use of oral contraceptives was known by 75.8% while 21.2% believed bone density changes to be occurring due to oral contraceptives. Only 36.4% rarely noticed the effects of menopause on oral soft tissues changes, with 48.5% not being aware about the same. On the contrary, 63.6% were aware about the bone density changes occurring due to menopause which affecting the prognosis of dental treatment; only 3.1% were unaware of the same.

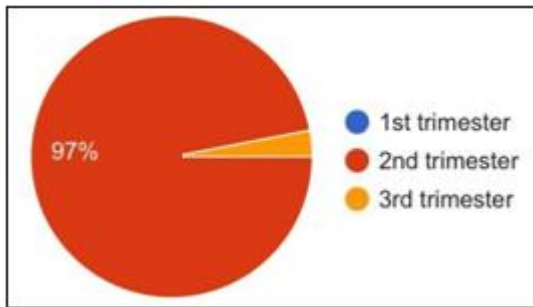
In our study 4 questions were asked relating to the attitude of the gynecologists pertaining to the referral of female patients to the dentists. A positive attitude was noted among majority of the gynecologists. 72.7% of the gynecologists referred female patients with gum problems to the dentists; 24.2% referred as and when needed, not necessarily every time. First line of treatment by 66.7% was referral of the patients to dentists. 24.2% preferred prescribing mouthwash and antiseptic gel while 9.1% prescribed antibiotics and analgesics along with. For pregnant patients, 48.5% of the participants were positive in referring to the dentists while 51.5% did not find it necessary to refer every case to the dentist; referral was done only in some cases. But for pregnant patient having gingival enlargement, 75.8% referred the patients to dentist and 24.2% preferred to keep them on follow up first.



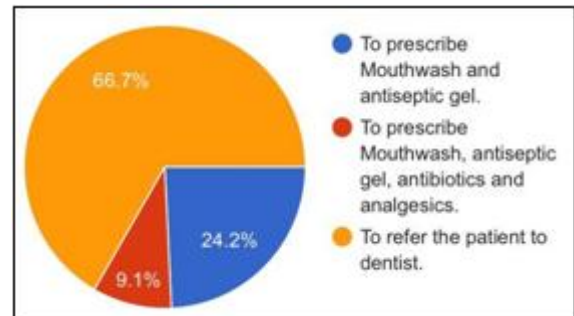
**Chart 1:** Puberty is associated with periodontal changes such as: increased bleeding tendency and inflammation without any local etiologic factor



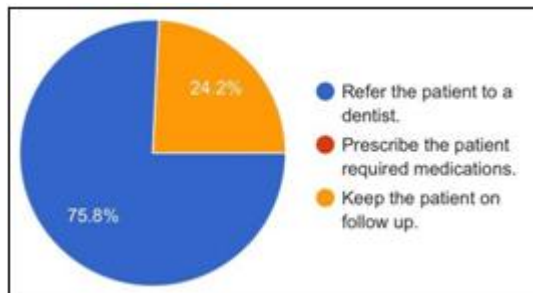
**Chart 6:** Female patients aged 45 - 60 years visiting your clinic have burning sensation in the mouth along with excessive dryness and altered taste sensation



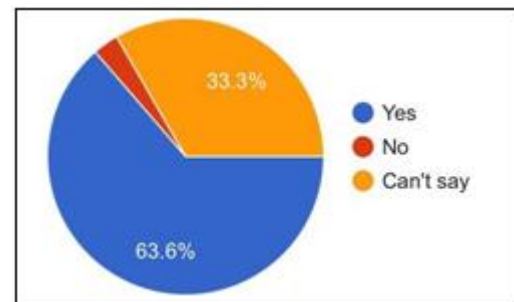
**Chart 2:** Trimester of pregnancy safest for carrying out periodontal procedure in a pregnant woman



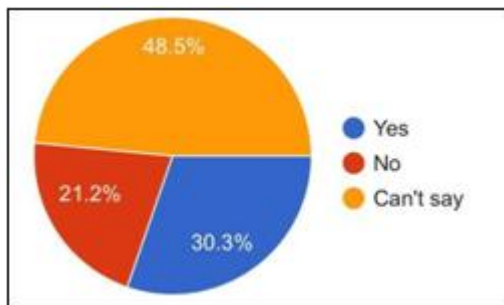
**Chart 7:** Line of treatment followed by you for your female patients with dental problems.



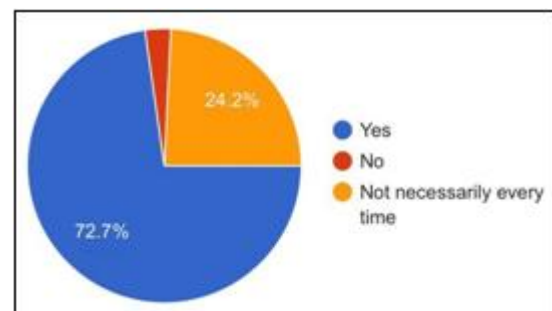
**Chart 3:** Line of treatment followed by you for a pregnant patient having conditioned gingival enlargement



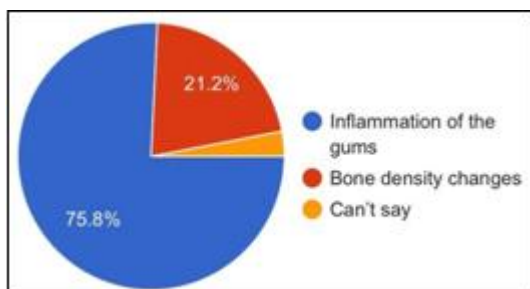
**Chart 8:** Bone density changes occur in postmenopausal women significantly affect the prognosis of the dental treatment



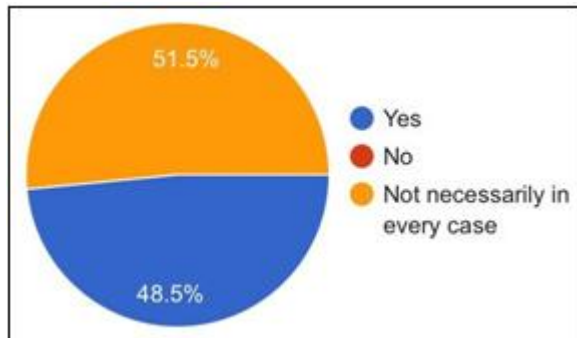
**Chart 4:** Periodontal diseases are a risk factor in "Preterm low birth weight deliveries"



**Chart 9:** Female patients having gum problems are referred to dentist by you.



**Chart 5:** Female patients on Oral Contraceptives have periodontal problems such as



**Chart 10:** The pregnant patients have increased gum problems and are needed to be referred to dentists.

#### 4. Discussion

To the best of our knowledge, till now no study has been conducted to assess the knowledge and attitude of gynecologists regarding the effects of female sex hormones on periodontium in Porbandar city. Since gynecologists are the frontiers providing care to women throughout their life, their knowledge regarding the subsequent oral health status with fluctuating hormones and their positive attitude of referral of needed patients to dentists would have a sound impact on the decrease in the oral and overall sufferings of the women in the city.

From the results obtained from our survey, we can infer that most of the gynecologists were aware of the overall changes occurring in the oral cavity during puberty, pregnancy, menstruation and menopause. 84.8% gynecologists were acquainted with knowledge of pubertal changes such as increased bleeding tendency and inflammation without subsequent plaque accumulation. This was quite contrary to survey carried out by Maybodi et al (16) in which only 10% of the gynecologists were aware of the pubertal changes and he mentioned a need for further awareness of the topic among the gynecologists.

In our study, the health professionals proved to have insufficient knowledge in terms of periodontal diseases being a risk factor for preterm low birth weight deliveries, which is a matter of concern. Only 30.3% were aware of this fact; 48.5% being unsure about it. These findings are in line with study done by Nagarakanti et al in which only 10.5% of the participants were aware of the adverse pregnancy outcomes (17); contrasting to Patil et al (18) who showed most of the participants being aware of the periodontal risk factors.

Though being ignorant about PTLBW deliveries, gynecologists showed enough knowledge relating to the trimester of pregnancy safer for carrying out dental procedure, the conditioned enlargements seen in pregnancy and even referral of pregnant patients to dentists. 97% of them were in favor of carrying out dental procedures during second trimester of pregnancy as similar to survey conducted by Sree et al (19) where in 90% of the gynecologists opted for second trimester being safe; contradictory to Sinha et al, (20) less than 50% of the participants thought second trimester to be safe. In our study, 75.8% of the participants preferred to refer patients with conditioned gingival enlargements to dentist while

24.2% believed to keep them on regular follow ups. 48.5% showed a positive response in referring pregnant patients with any type of gum problem to a dentist whereas 51.5% felt this referral wasn't necessary for every case.

Women health during prenatal and antenatal period is a matter of prime concern in the smaller cities. If gynecologists are thoroughly acquainted with the knowledge of effects of female sex hormones on periodontium, their concomitant efforts along with periodontists can make a huge difference in the present scenario by early diagnosis and treatment of the diseases. There are several government strategies for providing better health to women and children; but making oral health check up a part of prenatal and antenatal check - up would prove to be highly beneficial. But for this, proper awareness regarding the co relating effects of female hormones on oral and overall health is of prime importance. Our survey highlights sound knowledge among gynecologists relating to effects of hormones during puberty, menstruation, menopause and after use of contraception; knowledge regarding effects during pregnancy, especially relating to pre term low birth weight deliveries is still a zone requiring more attention.

#### Scope for the gynecologists:

The purpose of the study might be implemented by conducting awareness programs for health workers in Public Health Centers and Community Health Centers. The knowledge gained will be helpful in educating women the importance of healthy mouth; encouraging them for regular dental check - ups and even referring them to the dentists as and when needed.

#### Scope for the dentists:

Our survey highlights the pivotal role played by a dentist along with a gynecologist in maintaining oral and overall health of women and children. Dentist's collaborative efforts with gynecologists can for sure make a difference in spreading awareness and provide preventive as well as therapeutic measures to improve the oral and systemic health of women during various stages of their lives.

#### Ethical Statement:

No ethical issue regarding this study.

#### Conflict of Interest:

No conflict of interest declared.

#### Acknowledgement:

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