ORIGINAL ARTICLE

ANNALS OF PUNJAB MEDICAL COLLEGE

Assessment of Knowledge about Pregnancy Gingivitis amongst Fresh Medical & Dental Graduates in Lahore – A Cross Sectional Survey

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Submitted for Publication: 18-07-2021
Accepted for Publication 30-12-2021

How to Cite: Malik A, Asghar A, Sadiq MS, Anwaar A, Ahmed F, Iftikhar A. Assessment of Knowledge about Pregnancy Gingivitis amongst Fresh Medical & Dental Graduates in Lahore – A Cross Sectional Survey. APMC 2021;15(4):231-235. **DOI: 10.29054/APMC/2021.1265**

ABSTRACT

Background: Pregnancy gingivitis defined as the gingival inflammation initiated by plaque and exacerbated by endogenous sex steroid hormones. The level of progesterone can rise to 10 times than normal during pregnancy. **Objective:** To assess the knowledge of fresh medical and dental graduates about pregnancy gingivitis and to compare the level of awareness about pregnancy gingivitis among the fresh medical and dental graduates. **Study Design:** Cross-sectional observational study. **Settings:** The Dental Outpatient Department Institute of Dentistry CMH-Lahore Medical College Lahore Pakistan. **Duration:** July 2021 to December 2021. **Methods:** A Close ended Questionnaire constructed after comprehensive literature review and assessing questionnaire of different studies. Questionnaire is in English language and will be kept anonymous. **Results:** The individuals depicted in the study revealed 52.4% candidates were associated with public sector hospital/clinics whilst 47.6 % were attached with private sector. Maximum percentage of 33% never advised routine dental check-up to their patients. Surprisingly 43% of the study never referred their patient for dental evaluation or care to a dentist. **Conclusion:** Intensive oral health education during pregnancy leads to drastic improvement in knowledge and attitude. Practice, gingival health, and the number of filled teeth also improved to some extent.

Keywords: Gingivitis, Pregnancy gingivitis, Periodontal health, Fresh medical graduates, Awareness, Education, Dentists.

INTRODUCTION

Pregnancy gingivitis defined as the gingival inflammation initiated by plaque and exacerbated by endogenous sex steroid hormones.[1] The hormonal changes in pregnancy[1,2] increases the risk of gingivitis (inflammation of the gingiva) and if left untreated for a longer period can lead to periodontitis (inflammation of the tooth supporting tissues). The level of progesterone can rise to 10 times than normal during pregnancy,[3] a situation that gives rise to anaerobic to aerobic sub gingival bacterial plaque composition that enhances the growth of certain pathogenic bacteria implicated in gingivitis.[4,5]

The prevalence of gingivitis is higher in pregnant women, affecting 60% - 75% of them. Gingival inflammation is commonly seen in the second or third month of pregnancy and remains the same or aggravates during the second trimester and reduces in the last month of pregnancy, eventually abates post-partum.[6]

The link between pregnancy and periodontal inflammation has been known for many years. Recent studies have also indicated a direct relationship of periodontal disease to systemic health. Most reported oral diseases have been toothache, gingival hyperplasia, and pyogenic granuloma. However, 36–100% of pregnant women are affected by gingivitis.[7]

Cases that have been reported range from mild to severe inflammation characterized by the erythema of the gingiva, edema, hyperplasia, and increased bleeding.[4] Young graduates who often encounter patients with high prevalence of gingivitis, significantly encounter patients with spontaneous bleeding on probing. Majority of medical physicians avoid initiating any kind of dental treatment in pregnant women due to certain anticipated risks as there have been reported cases of increased risk of delivering preterm low birth weight infant.[8]

Therefore, treatment of periodontal condition is of clinical significance and many times have had a positive impact upon fetal development and delivery. In our region, prevalence of pregnancy gingivitis is high. Study is aimed to bring its awareness to help community and health professionals; so that both medical and dental graduates be able to diagnose the etiological factors of gingivitis to provide immediate cure and maintenance therapy to the patients.

METHODS

The study protocol was approved by the Ethical Committee at the Institute of Dentistry, CMH Lahore Medical College. After ethical approval, the questionnaire was created on Google survey form. A Close ended Questionnaire constructed after comprehensive literature review and assessing questionnaire of different studies. The Dental Outpatient Department at the Institute of Dentistry CMH-Lahore Medical College Lahore July 2021 to December 2021. Both male and female graduates having age 18-35 years from public and private medical colleges of Lahore were included in the study. Post graduate trainees, fresh medical and dental graduates outside of Lahore and fresh medical and dental graduates out of Pakistan were excluded from the study. Questionnaire is in English language and will be kept anonymous. Informed consent will be taken. Questionnaire is divided into three components. All questions will be close ended. First component (Section 1) will gather information about demographic data. Second component (Section II) will include visual analogue (Likert-type) scale from 0-3 proceeding from never-sometimes-often-always. Third component (Section III) include multiple questions regarding clinical knowledge and its practice about pregnancy gingivitis. Scoring and knowledge assessment criteria is given in tables below. Cronbach's alpha will be used to assess the reliability of questionnaire. One question is also repeated to assess the reliability. It is calculated by using items 1-13 with Cronbach's alpha value of 0.724.

Response to questionnaire will be assessed by SPSS-23. Outcome data will be of quantitative type. Descriptive statistics will be used to summarize the responses to the questionnaire, with the results being presented as frequencies and percentages. Chi-square is performed be used to compare the awareness of knowledge among fresh medical and dental graduates. The level of significance will be set at $P \leq 0.05$.

Table 1.1: Scoring Criteria

Section	Questions	Score per question	Total score
II (Attitude and practice)	5	0-3	0-5
III (Attitude and practice)	8	0-1	0-8

Table 1.2: Knowledge criteria

Knowledge level	Scoring Criteria
High knowledge	80% and above
Intermediate knowledge	60 %-80%
Low knowledge	Less than 60%

RESULTS

The individuals depicted in the study revealed 52.4% candidates were associated with public sector hospital/clinics whilst 47.6 % were attached with private sector. The percentages of the age category, practice and institute of graduation are given in Table 2.

Table 2: Socio-demographics of different parameters

Parameter	Category	Frequency	Percentage
Age	18-26	334	92.27
	26-45	36	9.72
Gender	Male	182	49.2
	Female	188	50.8
Practice	Private	194	52.4
	Public	176	47.6
Education	BDS	203	54.9
	MBBS	167	45.1

Amongst this category, 35.7 % of the sample said that they are not aware about pregnant women being more prone to gingivitis. Maximum percentage of 33% never advised routine dental check-up to their patients. Surprisingly 43% of the study never referred their patient for dental evaluation or care to a dentist. Another astonishing result was the fact that 59.5% of the population had no prior knowledge. An alarming 4.1% candidates revealed that gingival inflammation 'Always' leads to pre-term labour or low birth weight as shown in Table 3.

Out of the total 307 study sample, 61.4% of the candidates had prior knowledge about gingivitis and its aetiology whilst only 2.4% revealed about the background knowledge of inflammation of bone. 33.5% of the candidates depicted that loose teeth, gingival recession and bleeding gums, all contribute to the clinical manifestation of gingivitis as shown in Table 4. Total 41.4% associated increased gum inflammation during pregnancy with hormonal changes. 24.6% associated it with dental plaque. 22.2% linked it with oral hygiene being neglected. Surprisingly 34.3% recalled Second trimester as a safe period for dental treatment, 29.7 % stated first trimester as safe period as shown in Table 5. A strong association between medical and dental graduates/student's knowledge about pregnancy gingivitis & education of the study candidate was observed ***p*=0.0001**. However, a weak association was seen between gender & medical/dental student/graduate ***p*=0.076.**

Table 3: Prior knowledge of graduates about pregnant women developing gingival disease, dental check-up, care and low birth weight

Item	Always	Never	Often	Sometimes	Total
Are you aware that pregnant women are prone to develop gingival disease?	48 (13.0)	132 (35.7)	74 (20.0)	116 (31.4)	370 (100.0)
Is routine dental check-up advisable for pregnant women?	85 (23.0)	122 (33.0)	78 (21.1)	84 (22.7)	370 (100.0)
Do you refer your patient for evaluation or care?	65 (17.6)	159 (43.0)	54 (14.6)	90 (24.3)	370 (100.0)
Can gingival inflammation lead to pre-term labor and/or low birth weight?	15 (4.1)	220 (59.5)	53 (14.3)	81 (21.9)	370 (100.0)

Table 4: The knowledge about hormones responsible for initiating pregnancy gingivitis.

Item	Estrogen	Melatonin	Progesterone	Serotonin	Total
Which of the following hormone initiates pregnancy gingivitis?	117 (31.6)	44 (11.9)	131 (35.4)	75 (20.3)	370 (100.0)
Which hormones increases by 10% in pregnancy affecting gingival health?	117 (31.6)	44 (11.9)	116 (31.4)	91 (24.6)	370 (100.0)

Table 5: The knowledge of fresh graduate about the characteristics of pregnancy gingivitis, safe trimester for dental treatment and association of increased gingival inflammation with pregnancy

Item	Gingival Erythema	Gingival Hyperplasia	Increased bleeding	All of these	Total
What are the characteristics of pregnancy gingivitis?	87 (23.5)	62 (16.8)	65 (17.6)	155 (41.9)	370 (100.0)
Item	**First Trimester**	**Not Sure**	**Second Trimester**	**Third Trimester**	**Total**
Which trimester is safe for the dental treatment?	110 (29.7)	69 (18.6)	127 (34.3)	63 (17.0)	370 (100.0)
Item	**Dental Plaque**	**Hormonal changes**	**Inappropriate brushing**	**Neglecting oral hygiene**	**Total**
In pregnancy gingivitis which of the following is associated with increased gum inflammation?	91 (24.6)	153 (41.4)	41 (11.1)	82 (22.2)	370 (100.0)
Item	**strict diet regime**	**reduce weight**	**ultrasonic scaling**	**Vist every trimester**	**Total**
What do you advise to pregnant women who have or are at the risk of pregnancy gingivitis?	56 (15.1)	51 (13.8)	90 (24.3)	171 (46.2)	370 (100.0)

DISCUSSION

The inflammation of the gums is exaggerated during pregnancy.[9] This can be attributed towards the imbalance of hormones during pregnancy.[9,10] One study depicted that periodontitis (inflammation of the periodontium) in pregnant woman has been linked with various adverse pregnancy outcomes such as preterm births and low birth weight.[11,12] Increase in the hormonal levels of estrogen and progesterone can cause hyperaemia, oedema, and bleeding in periodontal tissues.[12] Moreover, these are considered as risk factors for bacterial infections.[13] Thus, the present was conducted on recently medical and dental graduates to assess the baseline knowledge on pregnancy gingivitis.

Pertaining to work, majority 52.4% mentioned that they were associated with public sector of hospital while private sector association was 47.6% respectively. Majority of the study sample fell into the 23–26-year age group category.[14]

When enquired about pregnant women being prone to gingivitis, 35.7% astonishingly mentioned that they are not aware of this fact, 31.4% replied they had slight idea about it however, 20% and 13%. This can be associated with two studies performed overseas.[14,15]

Surprisingly, being a medical or a dental graduate did not comple them to recommend pregnant women for a routine dental check-up. Lack of prior knowledge and common sense amongst graduates may be a strong reason for results.[15]

An alarming situation or fact that was prevalent amongst 59.5% graduate was that they had no knowledge or information pertaining to low birth rate or pre-term labour.[9,11] Another study yielded similar results however the difference was in the study population, medical/dental graduates versus normal population.[9,11] This truly is a sad situation for young doctors and dentists. About 41.4% of the respondents informed that gingival inflammation is linked with imbalance in hormones during pregnancy. A few studies have reported comparable information,[9-13] plaque accumulation and lack of oral hygiene are the two most common confounding factors.[12-15] Pertaining to the safest trimester for dental procedures, majority of the participants described second trimester as a safe period for dental treatment owing to less morning sickness/vomiting increased acidity in the stomach and relatively less craving for sugary items than first trimester.[16]

Prior research has predominately associated Progesterone and Estrogen hormones with pregnancy gingivitis. This phenomenon can be explained by increased blood flow to the gingiva and associated structures and plaque accumulation/neglected oral hygiene.[7,17]

CONCLUSION

Intensive oral health education during pregnancy leads to drastic improvement in knowledge and attitude. Practice, gingival health, and the number of filled teeth also improved to some extent.

LIMITATIONS

This was a cross-sectional Questionnarre based observational study which was restricted to only single institute.

SUGGESTIONS / RECOMMENDATIONS

Our study's sample size was medium. As a result, more research with bigger sample size should be conducted in different regions of Pakistan.

CONFLICT OF INTEREST / DISCLOSURE

None.

ACKNOWLEDGEMENTS

Special thanks to all group members for their cooperation.

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