

PERIODONTAL HEALTH AWARENESS AMONG PREGNANT WOMEN REGARDING BIDIRECTIONAL RELATIONSHIP BETWEEN GINGIVAL INFLAMMATION AND ADVERSE PREGNANCY OUTCOMES

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ABSTRACT

Objective: A cross-sectional questionnaire-based study was conducted among 350 pregnant women to assess the level of their knowledge and awareness about bidirectional relationship between gingival inflammation and adverse pregnancy outcomes.

Materials and Methods: A self-administered validated questionnaire was distributed to pregnant women visiting the tertiary care hospitals in Peshawar, Pakistan. The questionnaire included questions regarding their knowledge about bidirectional relationship between gingival inflammation (causes and treatment of the adverse effects of gingivitis on oral health of a woman and its preventive measures) and adverse pregnancy outcomes (preterm births and low birth weight babies). The data was entered into the Microsoft Excel sheet and applied to statistical analysis using SPSS (version 22). Descriptive analysis was used for comparison.

Results: Most pregnant women did not know about the development of pregnancy gingivitis during pregnancy, as well as causes, effects, treatments and precautions. Most subjects agreed that oral health education was essentially necessary before the onset of pregnancy.

Conclusion: Majority of pregnant women said that they were unaware about the development of pregnancy gingivitis during pregnancy, but few said they were aware of it. Therefore, efforts by general dentists, periodontists and medical professionals are needed to promote awareness among pregnant women about well-timed dental care to avoid any adverse pregnancy outcomes related to gingival inflammation.

Keywords: Pregnancy Gingivitis, Knowledge, Pregnancy Outcomes, Gingival Inflammation.

INTRODUCTION

A progression of physiological changes happen in both mother and child development during pregnancy.¹ These immunological modifications

because of mother's pregnancy increment exposure to numerous infections, including gingival infections (gingival enlargement, gingival inflammation, pyogenic granuloma).²⁻⁴ Also, gingival inflammation seems to increase the risk of unfavorable pregnancy results in some population groups. These antagonistic results incorporate untimely or potentially low birth weight babies, pre-eclampsia, gestational diabetes and fetal loss.⁵

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Pyogenic granuloma is an unknown inflammatory lesion of the skin and mucous membrane that can affect both males and females. However, it most usually happens during pregnancy in around 0.5–2.0% of pregnant women. At the point when gingival lesions are related with pregnancy, they might be alluded to as ‘pregnancy tumors’. Cross-sectional examinations have indicated that 100% of women develop gum disease within three to eight months of pregnancy which declines progressively after giving birth to the newborn. In some cases, gingival inflammation is incredibly severe and may include gingival tenderness and severe bleeding. Studies have indicated that during pregnancy the gingival inflammation likewise increments bringing about the coronal development of marginal gingiva. This increases the probing depths ascribed to the expanding of the gingiva.^{6,7} Systematic reviews of Bi-directional connection between pregnancy and periodontal diseases have demonstrated a moderate overall relationship between gingival inflammation and unfavorable pregnancy outcomes.^{8,9}

During pregnancy conscientious behavior of pregnant women made them unsure about dental treatment during or before pregnancy. Sometimes dentists and gynecologists are also not sure and lack knowledge and confidence in getting dental treatment during pregnancy. This conscientious behavior of the patient and lack of knowledge and confidence from the medical health providers adds to the negligence of pregnant women towards dental treatment.¹⁰ Promoting oral health education related to periodontal infections/gum diseases and their relationship with adverse pregnancy outcomes would familiarize pregnant women to attain timely treatment and preventive measures.

Hence, an investigational study was conducted in Peshawar Pakistan among pregnant women, to comprehend and evaluate the degree of information with respect to bi-directional connection among pregnancy and periodontal infections.

MATERIALS AND METHODS

A cross-sectional questionnaire based review was directed for pregnant women between the age of 18 and 40 years who visited the tertiary care hospitals of Peshawar, Pakistan. The ethical endorsement was acquired from the Ethical board of Khyber College of Dentistry Peshawar, Pakistan preceding the inves-

tigation. The study incorporated a total convenient sample of 350 pregnant women as indicated by WHO online sample size calculator. The inclusion criteria was all pregnant women aged between 18 to 40 years visiting Gynecology/obstetrician department of tertiary care hospitals of Peshawar Pakistan and consented to participate in the study while any of the participants who experienced any underlying systemic illness and refused to participate in the study were excluded.

A questionnaire survey based on close-ended questions was drawn up and its reliability was tested by directing a pilot study on 20 pregnant women who were not part of the final sample of the investigation. The questions were tested on these participants to encourage comprehension and clarity by repeating the study on similar members. The appropriate responses were checked for reliability utilizing Kappa statistics that got satisfactory outcomes (0.81).

In our study the main questionnaire depended upon two segments. The first segment of the questionnaire was about the demographic data of the participants, for example, the age and educational level though the subsequent segment documented the degree of mindfulness and information about bi-directional relationship between gingival inflammation and adverse pregnancy outcomes such as about pregnancy gingivitis, its prevention and treatment measures and successive visits to a dental specialist during pregnancy. Furthermore, the survey recorded the subject’s information in regard with the impact of poor oral hygiene on pregnancy results, for example, preterm birth and low birth weight babies.

A questionnaire based on 07 questions both in English and Urdu dialects was used. The purpose behind the survey was described to the subjects and informed verbal consent was taken. The individuals who were willing to take an interest in the investigation were questioned verbally by the researcher with the goal that any trouble and uncertainty in understanding the questions could be clarified by the researcher. Information was first entered into Microsoft Excel and then measurably examined by utilizing SPSS (version 22). Descriptive analysis method was used for comparison of the data.

RESULTS

In the current study, the participant’s age ranged between 19 to 40 years with mean age of 29.5 years. Majority (46%) of the pregnant women were of the opinion that they don’t know about any relationship between pregnancy and gingival inflammation whereas 36% of them said that there in ‘No’ relationship between pregnancy and gingival inflammation while only a few participants (16%) agreed that pregnancy has a relationship with gingival inflammation Table 1.

Majority of women (58%) did not go for a dental visit during pregnancy even after many of them 26%, 25% and 24% had complaint of swollen gums, bleeding gums and bad breath respectively Table 2 and 3.

Thirty nine percent of the pregnant women were unaware about the cause of pregnancy gingivitis [Table 4] whereas 42% of the participants reported that daily tooth brush would prevent any kind of gingival inflammation Table 5.

Most pregnant women (66%) were not aware of the adverse consequences of pregnancy associated with gingival inflammation Table 6.

When evaluated on the basis of educational qualification, there was a noteworthy statistically significant contrast in all the inquiries replied ($p \leq 0.05$). Majority of the participants showed a desire to get

education on oral health and its relationship to their pregnancy figure 1.

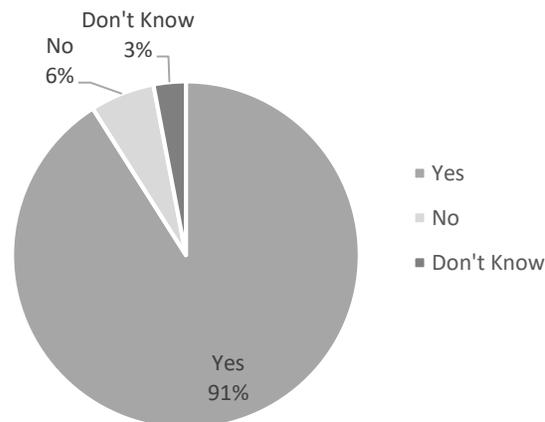


Fig 1: Frequency distribution of participants regarding their view about having dental education at the start of pregnancy

DISCUSSION

The periodontal diseases are particularly predominant worldwide and can influence up to 90% of the total population of the world. Gum diseases specifically gingivitis, a mildest type of periodontal infection, is brought about by dental plaque that accumulate around the teeth adjoining the gingiva. In any case, gum disease doesn’t influence the fundamental supporting structures of the teeth and can be reversed

Table: 1 Frequency distribution of “Awareness about developing pregnancy gingivitis during pregnancy” according to education level of the participants

Awareness about Pregnancy gingivitis during pregnancy	Total no. of Participants (%age)	Uneducated Women	Education up to Primary Level	Education up to High School (Metric)	Education up to Intermediate	Education up to Bachelors	Education up to Master or Higher
Yes	58 (16%)	01 (1%)	02 (3%)	03 (5%)	06 (9%)	08 (12.3%)	38 (65%)
No	129 (36%)	32 (25%)	17 (13%)	28 (22%)	20 (15%)	22 (17.05%)	10 (8%)
Don’t know	163 (46%)	33 (20%)	26 (16%)	35 (21%)	30 (18%)	29 (17.7%)	10 (6%)

Table: 2 Frequency distribution of “Dental visit during pregnancy” according to education level of the participants

Dental visit during pregnancy	Total no. of Participants (%age)	Uneducated Women	Education up to Primary Level	Education up to High School (Metric)	Education up to Intermediate	Education up to Bachelors	Education up to Master or Higher
Yes	92 (26%)	08 (09%)	09 (10%)	16 (17%)	16 (17%)	21 (23%)	22 (24%)
No	203 (58%)	49 (24%)	30 (15%)	40 (20%)	37 (18%)	21 (10%)	26 (13%)
Due to dental condition	55 (16%)	04 (07%)	07 (13%)	12 (22%)	12 (22%)	09 (16%)	11 (20%)

Table: 3 Frequency distribution of “Have you experienced any of the following signs of pregnancy gingivitis” according to education level of the participants

Have you experienced any of the following signs of pregnancy gingivitis	Total no. of Participants (%age)	Uneducated Women	Education up to Primary Level	Education up to High School (Matric)	Education up to Intermediate	Education up to Bachelors	Education up to Master or Higher
Swollen Gums	92 (26%)	22 (24%)	12 (13%)	18 (19%)	14 (15%)	16 (17%)	10(11%)
Bleeding Gums	89 (25%)	23 (26%)	21 (23%)	12 (13%)	13 (15%)	11 (12%)	09 (10%)
Bad Breath	85 (24%)	19 (22%)	16 (19%)	12 (14%)	14 (16%)	11 (13%)	13 (15%)
Pregnancy Epulis	25 (7%)	7 (28%)	5 (20%)	8 (32%)	5 (20%)	0 (0%)	0 (0%)
None	59 (17%)	5 (8%)	5 (8%)	8 (13%)	12 (20%)	14 (24%)	15 (25%)

Table: 4 Frequency distribution of “Causes of pregnancy gingivitis” according to education level of the participants

Causes of pregnancy gingivitis	Total no. of Participants (%age)	Uneducated Women	Education up to Primary Level	Education up to High School (Matric)	Education up to Intermediate	Education up to Bachelors	Education up to Master or Higher
Hormonal changes	94 (27%)	6 (6%)	5 (5%)	18 (19%)	16 (17%)	23 (24%)	26 (28%)
Poor oral hygiene	61 (17%)	5 (8%)	3 (5%)	9 (15%)	11 (18%)	18 (29%)	15 (24%)
Both hormonal changes and poor oral hygiene	58 (16%)	8 (14%)	4 (7%)	11 (19%)	8 (19%)	13 (22%)	14 (24%)
Don't know	137 (39%)	31 (23%)	22 (16%)	28 (20%)	23 (17%)	16 (12%)	17 (12%)

Table: 5 Frequency distribution of “Measures you think can prevent pregnancy gingivitis” according to education level of the participants

Measures you think can prevent pregnancy gingivitis	Total no. of Participants (%age)	Uneducated Women	Education up to Primary Level	Education up to High School (Matric)	Education up to Intermediate	Education up to Bachelors	Education up to Master or Higher
Daily Tooth brush	148 (42%)	25 (17%)	21 (14%)	25 (17%)	21 (14%)	26 (18%)	28 (20%)
Dental checkups	88 (25%)	09 (10%)	12 (14%)	17 (19%)	14 (16%)	19 (21%)	17 (19%)
Balanced diet	45 (13%)	09 (20%)	03 (07%)	10 (22%)	06 (13%)	9 (20%)	08 (18%)
Don't know	69 (20%)	15 (22%)	15 (22%)	13 (19%)	11 (16%)	06 (09%)	09 (13%)

Table: 6 Frequency distribution of “Periodontal infections and adverse pregnancy outcomes” according to education level of the participants

Periodontal infections and adverse pregnancy outcomes	Total no. of Participants (%age)	Uneducated Women	Education up to Primary Level	Education up to High School (Matric)	Education up to Intermediate	Education up to Bachelors	Education up to Master or Higher
PTB/LBW	44 (12%)	02 (05%)	02 (05%)	03 (07%)	08 (18%)	10 (23%)	19 (43%)
No effect	75 (21%)	19 (25%)	12 (16%)	17 (23%)	11 (15%)	09 (12%)	07 (09%)
Don't know	231 (66%)	53 (23%)	34 (15%)	49 (21%)	32 (14%)	35 (15%)	28 (12%)

if treated in time. Periodontitis brings about the loss of underlying supporting structures and can prompt tooth loss.¹¹ Gum disease that is overstated because of hormonal changes during pregnancy is known as 'pregnancy gingivitis'. Literature has revealed a measurably noteworthy connection between gingival inflammation and antagonistic pregnancy results.¹²⁻¹⁴ Thus there is a desperate need to know the knowledge of pregnant women about their understanding on connection between oral wellbeing and pregnancy with the goal that legitimate measures can be taken during as well as before antenatal period to evade any unwanted conditions. Along these lines, this study was led to comprehend and evaluate the degree of information with respect to bi-directional relationship between pregnancy and periodontal diseases. In light of the questions concerning about awareness regarding pregnancy gingivitis during the time of pregnancy, larger part (46%) of the pregnant women were of the opinion that they don't know about any relationship between pregnancy and gingival inflammation whereas 36% of them said that there is 'No' relationship between pregnancy and gingival inflammation while only a few participants (16%) agreed that pregnancy has a relationship with gingival inflammation. Majority of the graduates/Masters or higher level qualified pregnant women were aware about gingival inflammation during pregnancy as compared to those of primary level qualified and uneducated pregnant women showing a statistically significant difference. These outcomes are in correlation with the examination led by Bamanikar et al showing that education has an impact on oral health awareness during pregnancy.¹⁵ In our study fifty eight percent (58%) of the participants reported that they had not had a dental treatment during and/or before pregnancy and it was in accordance with the previous studies where a reduced number of dental visits during pregnancy have been already reported.¹⁶⁻¹⁸

During antenatal period pregnant women should be encouraged by their gynecologists for proper dental visits and treatment so that their oral health could be evaluated and proper measurements could be taken in time to avoid any harmful situation.¹⁹ Misconceptions about fetal harm brought about by dental visits and dental treatments make pregnant women hesitant to visit dental specialists during pregnancy and in this way could prompt awful oral conditions like pregnancy gingivitis and unfriendly

pregnancy results as preterm or low birth weight babies.²⁰

Gingival inflammation could be present in any of the form or as a whole including bleeding gums, swelling, and enlargement of the gingiva with oral malodor. In this study 25% of the participants reported that their gums bleed, 26% complained about gum swelling, 24% said that they feel bad breath, yet a few 7% reported with pregnancy Epulis/tumor, whereas only 17% were symptom free. These findings were in accordance with the previous studies where symptoms of pregnancy gingivitis including gingival inflammation, redness of the gingiva, bleeding gums and swelling among pregnant women were found.^{21,22}

Greater part (39%) of the participants in our study were unaware about the causal relationship between pregnancy and gingivitis while 27% asserted that it is because of the hormonal changes during pregnancy whereas 17% reports that it is because of poor oral hygiene. During pregnancy, estrogen and progesterone are the principle sex hormones that can impact the periodontium and has been accounted for in previous studies.^{23,24} These sex hormones (estrogen and progesterone) apply immediate and aberrant impact on cell expansion, separation and development in gingiva just as other objective tissues in the body. The gingiva loses its capacity to repair and thus undergoes deterioration.

In this study, 42% of the participants believed that proper oral hygiene i-e daily tooth brushing could prevent pregnancy gingivitis. 25% participants attributed proper dental visits during or before pregnancy as a preventive measure against pregnancy gingivitis whereas 13% were of the opinion that proper diet could prevent them from pregnancy gingivitis. 20% of the participants responded that they don't know about any of the preventive measures. All these factors including proper oral hygiene, regular dental visits during/before pregnancy and proper balanced diet during pregnancy could prevent pregnancy gingivitis and have been reported in the literature.²⁵⁻²⁷

With respect to gingival inflammation and adverse pregnancy outcomes, most (66%) of the participants were unaware about this relationship and 21% stated that there is no connection between gingival inflammation and adverse pregnancy outcomes, though just 12% of the participants were

of the feeling that there is a connection between gingival inflammation and unfavorable pregnancy results. These discoveries were in relationship with the investigation conveyed by Togoo and Rafi et al.²⁸ Various investigations in the literature have additionally detailed the connection between gingival inflammation and antagonistic pregnancy results.²⁹⁻³¹ It is prudent to keep up legitimate oral wellbeing during pregnancy to stay away from any bothersome circumstance as measurably huge relationship between gingival inflammation and antagonistic pregnancy results has been accounted for in the literature.

CONCLUSION

In this study, it was presumed that absence of information and conscientious behavior of the pregnant women during pregnancy could prompt unfavorable pregnancy results.

RECOMMENDATIONS

1. Awareness should be provided to these pregnant women so that misconceptions regarding dental visits/dental treatments during pregnancy should be dealt with.
2. Dentists and medical health professionals (especially gynecologists) should be trained enough to educate their patient about oral health care during antenatal period.
3. As part of antenatal consideration, women ought to be alluded to dental specialists for appropriate dental exams and in time treatment.

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