

Oral Health Status Among Pregnant Women Attending Gynaecology OPD of Tertiary Care Hospital in Rawalpindi

Samina Anjum¹, Naila Azam², Fatima Ali Raza Mughal³, Sadia Huma⁴, Wajeeha Jabeen⁵

^{1,4} Dental Surgeon, Armed Forces Postgraduate Medical Institute, Rawalpindi.

² HOD & Professor, Department of Community Medicine, Foundation University Medical College, Islamabad.

³ Resident, Department of Community Medicine, Foundation University Medical College, Islamabad.

⁵ HOD & Assistant Professor of Periodontology, HITEC-IMS Dental College, Taxila.

Author's Contribution

^{1,2} Conception of study

^{1,4} Experimentation/Study conduction

^{1,4} Analysis/Interpretation/Discussion

¹ Manuscript Writing

^{2,3,5} Critical Review

⁵ Facilitation and Material analysis

Corresponding Author

Dr. Fatima Ali Raza Mughal,

Resident,

Department of Community Medicine,
Foundation University Medical College,

Islamabad

Email: fatimaaliraza@fui.edu.pk

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Abstract

Objective: The objectives of this study were to determine the oral health status and treatment needs using DMFT & CPITN indices in pregnant women attending Gynaecology OPD of tertiary care Hospital in Rawalpindi.

Material and Methods: An analytical cross-sectional study was carried out to assess the oral health status and treatment needs among pregnant women at Tertiary Care Hospital, Rawalpindi from April 2020 to September 2020. Consecutive sampling was used to select the study participants. An adaptive version of the WHO questionnaire was used. Results were presented in the form of frequency tables. Chi-square test of statistics was applied to assess the association between categorical DMFT and CPITN with the sociodemographic characteristics of the participating females.

Results: The mean DMFT score for pregnant females was 2.41 + 2.30 and were belonged to a middle socioeconomic status of 43.8% (n=173). About 61.8% (n=244) of participants had a DMFT total score of 1-7. Whereas, the majority of the participants were reported bleeding gums on probing 30.6% (n=121) on an assessment by CPITN. The participating pregnant females also depicted the worsening of periodontal tissues (P=0.00) and dentition status (P=0.02). Socioeconomic status was not significantly associated with dentition (P=0.39) and periodontal status (P=0.69).

Conclusion: The study revealed that oral health status deteriorated during pregnancy. Education and gestational period were strong indicators for oral health status among pregnant women. Bleeding gums were reported in the majority of participants during the second trimester of pregnancy. Socioeconomic status was not significantly associated with oral health status by CPITN and DMFT score.

Keywords: Pregnancy, Oral Health, Dental Caries, Periodontitis, Gingivitis, Bleeding gums, CPITN, DMFT, Knowledge, Practices.

Introduction

A healthy oral cavity is of great significance for an individual's overall health and well-being. Further, it enables an individual to masticate, speak and socialize without any active discomfort or embarrassment.¹ The healthy gingiva is characterized pinkish color while the consistency is firm in nature. Interdentally, the healthy gingival tissues do not bleed on gentle probing.²

Pregnancy is a unique period during a woman's life and is characterized by complex physiological changes, which may adversely affect oral health. Preventive, diagnostic, and restorative dental treatment is safe throughout pregnancy and is effective in improving and maintaining oral health.³ The increase in circulating levels of female sex hormones in the 2nd month of pregnancy and continuous increase till 8th month of pregnancy is imitated an increase in inflammation of gums, causing capillary permeability and gingival exudates. Estrogen causes a change in keratinization of gingival epithelium while progesterone causes permeability of capillaries. The anaerobic flora increases during the 13th week and remains raised in the 3rd trimester. Apart from gingivitis, other dental manifestations of pregnancy are dental caries, periodontitis, and pregnancy epulis.⁴ Because oral health is an essential part of overall health, oral problems encountered in the pregnant patient must be promptly and properly addressed.⁵

According to Global Burden of Disease (2017), an estimated 3.5 billion people are affected by oral and dental diseases worldwide, most commonly affecting permanent teeth. Globally, an estimated 2.3 billion have decayed permanent teeth. World Health Organization (WHO) also states that the most common health condition is untreated permanent carious teeth.⁶ Globally, Severe periodontal disease is the 11th most prevalent disease in the world.⁷ A research study conducted by Talwar et al., in India (2015) documented that the mean Diseased Missing Filled Teeth (DMFT) score of the study population was 2.87. DMFT of the study subjects increased with increasing age. The mean number of decayed and missing teeth due to caries were 2.73 ± 1.03 and 0.628 ± 1.75 respectively and age was found to be statistically significant.⁸ whereas, the study was carried out in Sudan that shows that the DMFT score was 1.16 among women aged 16–19 years and 3.49 in ≥ 20 years of age.⁹ According to the Center for Disease Control, in the USA among 60-75% of pregnant

women pregnancy-induced gingivitis was reported among pregnant women.¹⁰ According to an ADA report, about 60 -75% of pregnant women are suffering from pregnancy-induced gingivitis.¹¹ According to the WHO report, periodontal disease was prevalent constitute approximately 80% indicating that periodontal disease associated with calculus and gingivitis is endemic in Pakistan.¹² Another study conducted in Pakistan, poor dental hygiene was reported in approximately 52.4% of pregnant women while dental caries and gingivitis were reported in 39.7% and 84.1% of pregnant women respectively.¹³

Oral health is susceptible during pregnancy due to the acidic environment of the oral cavity and increased consumption of sugary diet; pregnant women are more prone to tooth decay. Hormonal changes and increased blood flow to gums cause the gums more sensitive, irritable and swollen so the correct approach to oral health can improve the situation drastically. Therefore, this study will gather the baseline data and current oral health status among pregnant females.

The objectives of this study were to determine the oral health status and treatment needs using DMFT & CPITN score in pregnant women attending Gynae OPD of tertiary care Hospital in Rawalpindi, to Determine the Association of Oral health status using DMFT and CPITN with sociodemographic variables, and to determine the oral health status of various trimesters of pregnancy

Materials and Methods

A Descriptive cross-sectional study was conducted on pregnant women reported at OPD of Tertiary Care Hospital in Rawalpindi. Given the prevalence of proper practices as 50%¹³ desired precision taken as 5% and Confidence level as 95% sample size was calculated to be 385 by using WHO sample size calculator with added 10% non-response rate, sample size came to be 423. The study participants were included by non-probability consecutive sampling technique. An adaptive version of a validated structured questionnaire (WHO oral health assessment) was administered. It was translated into Urdu for easy assimilation and was confirmed by a language expert. Oral health status was assessed according to WHO criteria.

The questionnaire had five domains:

- a) Sociodemographic details
 - Age
 - Place of Residence
 - Education level of participants

- Ethnicity
- Socioeconomic status (including education, occupation, and income of the head of a family)
 - b) Personal profile
- Presence of Comorbid
- Period of Gestation
- Parity
 - c) Assessment of Oral Health status by:
 - The community periodontal index of treatment needs was assessed by using the WHO graduated periodontal probe.
 - Individuals' DMFT score is the sum of Decayed teeth, missing and filled teeth in permanent dentition. Mean DMFT score was assessed by the sum of all decayed, missing, and filled teeth divided by the total number of all population. A sterilized basic dental examination set was used to assess dental caries' status.

Inclusion Criteria: All pregnant ladies of any trimester reporting at Gynae OPD.

Exclusion Criteria: Patients on medication like anti-convulsant, immunosuppressant drugs, calcium channel blockers, anti-depressants, anti-hypertensives, drugs for urinary incontinence, antihistamines, ACE inhibitors, and edentulous patients were excluded

Results

The mean age of 395 participating pregnant women was 28.38 ± 4.79 , the majority belonged to middle socioeconomic status 43.8% (n=173) as per Kuppaswami scale 2018. The urban-based participating pregnant women were 58.7% (n=232) while 41.3% (n=163) were belonged to rural areas. Most of the study participants have belonged to Punjabi ethnic background 70.6% (n=279). About 37.7% (n=149) of pregnant women were in the second trimester of their pregnancy. On average, the parity of these visiting females was 1.74 ± 1.40 children. The education of the household head in most of the females was graduate 25.6% (n=101). Most of the study participants were from a Punjabi 70.6% (n=279) ethnic background. The descriptive analysis of sociodemographic profile is shown in Table 1 below;

Table 1: Sociodemographic Characteristics

Characteristics	Frequency (N)	Proportion (%)
Participant Education		
Never went to school	47	11.9%
Primary schooling	66	16.7%
Secondary schooling	101	25.6%
Intermediate/Diploma	85	21.5%
Graduation and above	96	24.3%
Education of Head of Family		
Illiterate	24	6.1%
Primary	24	6.1%
Middle	38	9.6%
High school	92	23.3%
Intermediate/Diploma	87	22%
Graduate	101	25.6%
Professions/Honors	29	7.4%
Socioeconomic Status		
Upper	3	0.8%
Upper Middle	90	22.8%
Middle	173	43.8%
Lower Middle	127	32.2%
Lower/poor	2	0.5%
Period of Gestation		
1 st Trimester	108	27.3%
2 nd Trimester	149	37.7%
3 rd Trimester	138	34.9%
Area of Residence		
Urban	232	58.7%
Rural	163	41.3%
Ethnicity		
Punjab	279	70.6%
KPK	79	20%
Balochistan	3	0.8%
Sindh	4	1%
AJK	30	7.6%
Medication		
Yes	0	0%
No	395	100%

The mean DMFT score of the 395 study participants was 2.41 ± 2.30 . While the frequencies of the Community Periodontal Index of Treatment Needs (CPITN) and DMFT scores are shown in Table 2;

Table 2: Frequency of Oral Health Assessment Scores

CPITN Score	Frequency (N)	Proportion (%)
Healthy Gums	114	28.9%
Bleeding Gingiva on gentle probing	121	30.6%
Presence of calculus	114	28.9%
Presence of pockets	46	11.6%
DMFT Total Score		
Healthy	145	36.7%
T-score 1-7	244	61.8%
T-score 8-14	6	1.5%
T-score 15-21	-	-
T-score 22-28	-	-

Chi-square test of significance was applied to generate P-value for identifying associations between categorical sociodemographic characteristics of participants and categorical CPITN and DMFT variables individually. Residence ($P=0.01$), income ($P=0.00$), and gestational period ($P=0.00$) were found to be statistically significant with CPITN while the education of participant, residence, and gestational period was statistically significant with DMFT P-value came out to be $P=0.00$, $P=0.01$, and $P=0.02$ respectively.

Discussion

The oral health status is of great importance for the overall health of pregnant females. Therefore, the current study attempted to collect baseline data of oral health status among pregnant women in the country. Oral diseases are of low priority in the country due to the high morbidity and mortality of Communicable and Non-communicable diseases. Oral disease levels are associated with cultural differences, low socioeconomic status, lower educational levels, inadequate oral health knowledge, improper oral hygiene, fewer dental visits, and a high cariogenic diet.¹

The mean age of the participating pregnant females was 28.38 ± 4.79 years while the study was conducted in Iran which showed that the mean age of pregnant females was 27.35^{14} showing the similarity with the study. A cross-sectional study conducted by Khalaf *et al* in Egypt reported that 34.2% of pregnant women had education up to secondary level and in this study, maximum study participants have secondary level education about 25.6%.¹⁵

The mean DMFT score of the 395 participating pregnant females was 2.41 ± 2.30 while Talwar *et al.* reported a nearly similar DMFT score in his study which was 2.87.⁸ but is comparatively higher than the mean DMFT 1.8 of the caries experiences of pregnant females of Andhra Pradesh.¹⁶

Due to hormonal changes during pregnancy, gingival inflammation is more likely to occur among pregnant women which are known as gingivitis.¹⁷ A periodontal changes caused by raised endogenous sex hormones i.e. estrogen and progesterone, is considered to be the main aetiologic factor which may reach up to 30 times higher by the end of the third trimester, affecting microcirculation which can leads to swelling of endothelial cells, platelets adherence on walls of vessels, microthrombi formation and potentially vascular permeability increases in gingival tissues causing inflammation of gums.¹⁸ Our study shows that 30.6% study population had bleeding on gentle probing whereas a prospective study conducted in India reported that bleeding gums were present in 47.5%⁸ of the pregnant women. Another study was carried out by Akram *et al.*, in Nishtar Institute of Dentistry, Multan documented that 40.6% of participants had bleeding gums.¹⁹

In this study socioeconomic status is found to be insignificant with dentition status and CPITN but the past study has documented that poor socioeconomic status is significantly associated with DMFT (P value=0.03) among Syrian children.²⁰

A major limitation is the self-reported data, which can be subject to recall bias, which may affect the results. As the study was hospital-based, therefore findings obtained from this research study may not be representative of the actual problem at the community level; hence generalizability is also a limitation.

Conclusion

When the mean DMFT and CPITN score were compared based on sociodemographic characteristics of participating pregnant females, education and Gestational period were statistically significant with oral health status. When compared the dentition and periodontal status with the socioeconomic status of the participants, no statistically significant association was found. Inadequate and improper brushing technique, calculus deposition is the key factor leading to bleeding gums. Oral health maintenance can be achieved during pregnancy by early screening and diagnosis and referring pregnant mothers to dental health care for early diagnosis and treatment to

compliment the overall health of the mother and subsequently the child. The majority of women had an issue of bleeding gums during the second trimester of pregnancy so there is a strong need to initiate oral health education among pregnant women. Maintenance of good oral hygiene before and during the time of pregnancy is very crucial for oral health. There is a strong need to improve the oral health care of pregnant women of Rawalpindi by making oral health care an integral part of antenatal (ANC) and primary health care to prevent oral diseases.

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