INTERNATIONAL ANNALS OF HEALTH SCIENCES (IAHS)

Original Study

Open Access

Level Of Perception Regarding Dental Health Among Pregnant Women In Private Dental OPDs, Cross-Sectional Study In Karachi

T. Ahmed[1], U. Zareef[2], A. Faizan[3], A. Haque[4], M. Abid[5], R. Khero[6], I. Ali[7]

[1]Dental Executive Surgery II
[2]University of Karachi
[3]Fakhr-e-Ghazi
[4]Alkhidmat Foundation
[5,6,7]University Of Karachi

Abstract:

Introduction:

A woman experiences both happiness and anxiety during her pregnancy, which is characterized by notable physiological changes in her body caused by the female sex hormones in circulation. Because progesterone and estrogen levels fluctuate throughout pregnancy, pregnant women are more likely than the general population to develop oral health issues. During pregnancy, a number of oral changes are unavoidable. Immunological, dietary, and behavioral factors associated with pregnancy are believed to be involved.

Objective:

To determine the level of perception regarding dental health among pregnant women visiting private dental Out-Patient Departments (OPDs) in Karachi.

Methodology:

In this study, pregnant women who visited the dentistry outpatient department at Darul Sehat Hospital participated in a cross-sectional survey. Participants in the study gave their informed permission. The method of convenience sampling was employed to choose the participants.The estimated sample size was 155 patients after incorporating the prevalence of 78.7% with a 6.5% margin of error

Results:

Among 155 pregnant women the age distribution of participants indicates that the majority fall within the 23–26 years age group (41.9%), followed by those aged 27–30 years (31.6%). Around 20% combined twice-daily brushing with the use of mouthwash, indicating a relatively small group practicing more comprehensive oral hygiene. When asked about flossing habits, a significant majority (74.2%) reported not using dental floss, with only 25.8% indicating its use. This reflects limited adoption of interdental cleaning methods.

Conclusion:

Oral health counseling should be a fundamental part of prenatal care, and antenatal programs should stress the value of regular dental checkups. Women who do not work and those who do not frequently interface with dental services should receive special attention because they are among the groups most at risk of having insufficient information about oral health.

Keywords:

Pregnancy, oral hygiene, dental plaque, antenatal programs, preterm birth

Introduction:

A large proportion of population are affected by oral disorders such dental caries and periodontitis, which have been called a silent epidemic because they frequently go undetected, undiagnosed, and untreated(1). Periodontal disease affects around 90% of persons worldwide and is prevalent in both Developed and developing countries (2,3). Dental plaque is the main causative agent of periodontal disease (4). However, smoking, hormone problems, inadequate tooth hygiene, and a lack of education are among the risk factors for periodontal disease (5). A woman experiences both happiness and anxiety during her pregnancy, which is characterized by notable physiological changes in her body caused by the female sex hormones in circulation (6).

Because progesterone and estrogen levels fluctuate throughout pregnancy, pregnant women are more likely than the general population to develop oral health issues. During pregnancy, a number of oral

changes are unavoidable. Immunological, dietary, and behavioral factors associated with pregnancy are believed to be involved. Pregnant women are especially vulnerable to gingival and periodontal diseases (6). Estimates of the prevalence of gingivitis during pregnancy have varied from 30% to 100%. The earliest clinical signs of gingival inflammatory changes appear in the second month of pregnancy and continue until the eighth month, according to preliminary studies by Loe and Silness. Furthermore, recurrent episodes of gingivitis during pregnancy may exacerbate the illness (7).

Pregnancy-related dietary modifications may also increase the risk of dental decay. Pregnant women who have high caries rates may create an oral environment that increases the baby's chance of developing caries. Therefore, two specialized tissues that are crucial to the oral cavities of pregnant women are teeth and periodontal structures. Additionally, they could not show symptoms until the disease is more advanced, unintentionally increasing the risk of birth problems. The risks include premature birth, low birth weight babies, pre-eclampsia, gingival tissue ulcers, pregnant granuloma, and tooth erosion (7).

Women are more vulnerable if they smoke, have dietary deficiencies, or see a dentist less regularly. Recent studies linking periodontitis to the risk of adverse delivery outcomes have increased awareness of the topic of oral health during pregnancy. More focus has been placed on low birth weight, preterm birth, and maternal periodontitis. Numerous studies have confirmed the association after controlling for confounding variables. Although some pregnant women face challenges with dental care, many are unaware of the need of maintaining good oral hygiene (6).

In order to encourage patients to maintain good dental health and to put the necessary preventive measures in place, preventive programs for pregnant women should be created based on a comprehensive interview that includes an educational session on the particular dangers at this time (9).A woman's understanding of and conduct about her own oral health has a significant impact on the oral health of her children (8).Poor dental health in mothers is known to increase the incidence of early children caries (10).

Mothers are the main source of cariogenic bacteria that can infect children because Streptococcus mutans from mothers and children have been shown to share phenotypic and genotypic traits. Children whose mothers have poor oral health are five times more likely to develop oral health problems than children whose mothers have good oral health (8). Preventive dental treatment, including education, is therefore thought to be essential during and after pregnancy (11-14).

Moreover, they play a crucial role in educating the next generation and have significant influence over family members' conduct due to their important position in the family. Enhancing pregnant women's dental health will benefit their unborn children's oral health as well (8). As a result, teaching pregnant women about oral health can be a useful means of educating the general population about dental health, first at the individual level, then at the family level, and lastly at the community level (8). Therefore the aim of this study is to evaluate pregnant women's perceptions of dental health maintenance.

Oral health is fundamentally linked to maternal and fetal well-being, yet pregnant women often overlook dental care due to perception gaps. Assessing these current awareness levels is crucial to identify specific knowledge deficits and develop targeted public health strategies for better oral and systemic health outcomes within Karachi's private healthcare settings.

Corresponding Author:

Name: Dr. Maryam Abid

Affiliation: University of Karachi

Email: Maryam.abid63@yahoo.com

Date of Receiving: July 16, 2025

Date of Revision: October 17, 2025

Date of Acceptance: October 18, 2025

DOI: **https://doi.org/10.69491/i2v2jfyq**

Objective:

To determine the level of perception regarding dental health among pregnant women visiting private dental Out-Patient Departments (OPDs) in Karachi.

Method & Materials:

In this study, pregnant women who visited the dentistry outpatient department at Darul Sehat Hospital, private OPDs participated in a cross-sectional survey. Participants in the study gave their informed permission. **Inclusion Criteria:** Must be currently pregnant women, visiting the Dentistry Outpatient Department (OPD) of Darul Sehat Hospital or any other participating private dental OPDs in Karachi. Must provide informed consent to participate in the study. **Exclusion Criteria:** Non-pregnant women or women who have recently delivered, Individuals who refuse to give informed consent or choose to withdraw during the study, Women who participated in the initial pilot testing of the questionnaire. The method of convenience sampling was employed to choose the participants. The estimated sample size was 155 patients after incorporating the prevalence of 78.7% with a 6.5% margin of error. The sample size was calculated using data from open source. Every pregnant woman's demographic information, including her socioeconomic status (SES) and dental hygiene habits, was documented.

A close-ended questionnaire containing 14 questions was used. The questions were based on knowledge and practices related to pregnancy and oral health, gingival conditions, oral hygiene, utilization of dental health services, habits and use of medications. The questionnaire was pilot tested among fifteen individuals and assessed for validity. Cronbach's alpha value was 0.73. The questionnaire was distributed to pregnant women and asked to complete in front of the investigator. For those who were illiterate the questionnaire was explained and answers elicited. The data were analyzed using SPSS version 26. employing descriptive statistics (frequency and percentage) and Chi-square test for association between categorical variables. A p-value <0.05 was considered statistically significant.

Results:

Among 155 pregnant women the age distribution of participants indicates that the majority fall within the 23–26 years age group (41.9%), followed by those aged 27–30 years (31.6%). This suggests a predominantly young adult population, with a strong representation in the mid-20s.

Regarding educational status, 27.7% of participants have completed matriculation, making it the most common level of education. Illiteracy (19.3%), primary education (18%), and intermediate education (18%) were also reported at notable levels. Only 16.7% had attained a bachelor's degree. Socioeconomic status (SES) shows that over half of the participants (54.8%) belong to the middle-lower class, indicating a modest economic background for the majority. The upper class and lower class represented 18% and 16.1% of the sample, respectively.

Around 20% combined twice-daily brushing with the use of mouthwash, indicating a relatively small group practicing more comprehensive oral hygiene.When asked about flossing habits, a significant majority (74.2%) reported not using dental floss, with only 25.8% indicating its use. This reflects limited adoption of interdental cleaning methods.

Dental visit patterns further reinforce limited oral healthcare engagement, with 77.4% of participants having never visited a dentist during their pregnancy. Only 16.1% had visited once, and regular visits were rare—just 2.5% visited every two months and 3.8% every six months. These findings suggest substantial gaps in preventive dental care utilization.

Table 1: Demographic Characteristics of Respondents (n = 155)

Demographic Variables	**Category**	**n (%)**
Age (years)	19-22	26 (16.7)
	23-26	65 (41.9)
	27-30	49 (31.6)
	31-34	26 (16.7)
Educational Status	Illiterate	30 (19.3)
	Primary Education	28 (18)
	Metric	43 (27.7)
	Intermediate	28 (18)
	Bachelors	26 (16.7)
SES	Upper Class	28 (18)

	Middle Class	21 (13.5)
	Middle Lower	85 (54.8)
	Lower Class	25 (16.1)
OHP	Brushing once daily	64 (41.2)
	Brushing twice daily	60 (38.7)
	Twice daily +mouthwash	31 (20)
Dental floss	No	115 (74.2)
	yes	40 (25.8)
Visiting dentist	Never	120 (77.4)
	Once	25 (16.1)
	Every 2 months	04 (2.5)
	Every 6 months	06 (3.8)

Table 2. Oral Hygiene Practices among Pregnant Women

Practice	**Response**	**Frequency (n)**	**Percentage (%)**
Brushing Frequency	Once daily	64	41.2
	Twice daily	60	38.7
	Twice + Mouthwash	31	20.0
Use of Dental Floss	Yes	40	25.8
	No	115	74.2
Dental Visits During Pregnancy	Never	120	77.4
	Once	25	16.1
	Every 2 months	4	2.5
	Every 6 months	6	3.8

Table 3. Association between Demographic Factors and Oral Health Knowledge (Chi-square Test)

Demographic status	**Knowledge about oral health maintenance**		**p-value**
	No	**Yes**	
Working Status			
Housewife	50 (32.2)	35 (22.5)	0.051
Working women	16 (10.3)	54 (34.8)	
Educational Status			
Illiterate	25 (16.1)	5 (3.2)	0.045
Primary Education	20 (12.9)	8 (5.1)	
Metric	15 (9.6)	28 (18.1))	
Intermediate	8 (5.1)	20 (12.9)	
Bachelors	4 (2.5)	22(14.1)	
SES			
Upper Class	8 (5.1)	20 (12.9)	0.55
Middle Class	9 (5.8)	12 (7.7)	
Middle Lower	60 (38.7)	25 (16.1)	
Lower Class	20 (12.9)	5 (3.2)	
Visiting dentist			
Never	102 (65.8)	18 (11.6)	0.001
Once	21 (13.5)	4 (2.5)	
Every 2 months	0 (0)	04 (2.5)	
Every 6 months	0 (0)	06 (3.8)	

Table 4. Awareness of Pregnancy-Related Oral Health Conditions		
Question	**Yes n (%)**	**No n (%)**
Aware that pregnancy increases risk of gum disease	87 (56.1)	68 (43.9)
Believe oral health affects fetal outcomes	102 (65.8)	53 (34.2)
Received dental health advice during pregnancy	45 (29.0)	110 (71.0)
Believe dental treatment is safe in pregnancy	63 (40.6)	92 (59.4)

The data examines the relationship between demographic factors and knowledge about oral health maintenance. Among the respondents, working women showed higher levels of awareness compared to housewives, with 34.8% of working women having oral health knowledge versus only 22.5% of housewives. Although this difference is suggestive, the p-value of 0.051 indicates a borderline association that is not statistically significant but may still hold practical relevance.

Educational attainment was significantly associated with oral health knowledge among pregnant women ($p = 0.045$). Awareness increased progressively with higher education. Illiterate women had the lowest levels of knowledge (3.2%) and the highest proportion lacking awareness (16.1%). On the other hand, those with a bachelor's degree showed the greatest awareness (14.1%) and the lowest unawareness (2.5%). These findings highlight the vital role of maternal education in promoting informed health behavior during pregnancy, a period when oral health is particularly important due to hormonal changes that increase the risk of gingivitis and periodontal disease.

Socioeconomic status (SES), while often associated with health disparities, did not show a statistically significant link with oral health knowledge in this cohort ($p = 0.55$). Although women from upper socioeconomic groups demonstrated better awareness, the differences across SES levels were not statistically meaningful, possibly due to overlapping influences of education and access to care.

Dental visitation patterns showed the strongest and most statistically significant association with knowledge levels ($p = 0.001$). Pregnant women who had never visited a dentist comprised the largest group lacking oral health knowledge (65.8%), while those who attended regular dental checkups every two or six months had much higher awareness and no reported lack of knowledge. This emphasizes the crucial role dental professionals can play in educating pregnant patients about maintaining oral hygiene, which is linked to better maternal and fetal outcomes.

These results indicate that regular interaction with dental professionals greatly enhances oral health awareness. Overall, the findings suggest that educational status and regular dental visits are key determinants of oral health knowledge. Socioeconomic status, while intuitively relevant, did not emerge as a statistically significant factor in this sample. Public health strategies should therefore focus on increasing access to dental services, integrating oral health education into routine dental visits, and targeting educational interventions toward less-educated and non-working populations to improve oral health awareness and outcomes.

Discussion:

The primary goal of dental care planning for pregnant patients is to create a healthy mouth environment. Pregnancy is a potentially dangerous situation, and many expectant mothers heed dental advice to ensure their unborn children develop Normally(6).

Pregnant women's awareness of oral health is evident from the results of this study. SES has no impact on the lack of knowledge. Similar findings were found in the study by Habashneh et al (15), which found that a homogeneous community with a comparatively high socioeconomic status had inadequate knowledge. Only a small number of previous studies have documented the influence of SES and ethnic origin on knowledge and practices (16,17). The percentage of women who brushed their teeth at least once a day was approximately 41.2%. During their pregnancy, over half of the women (58.3%) went to the dentist. Nine out of ten people in the Christensen et al. study regularly used the dental care system, and 96% of them brushed their teeth at least twice a day(18,19). The majority

of participants in the Hullah et al. study reported practicing good oral hygiene, including using mouthwash (51%), and brushing their teeth twice a day (73.7%). 17 41.2% of participants in the current study reported brushing once a day, while 38.7% reported brushing twice a day.

Just 20% of participants said they used mouthwash in addition to brushing twice a day, which is generally accepted as a more thorough oral hygiene regimen. Considering the strong evidence for the effectiveness of supplementary oral care products, this is troubling. In contrast to brushing alone, Gupta et al. (20) showed that using mouthwashes containing essential oils and chlorhexidine in addition to brushing greatly enhances plaque control and lowers gingival inflammation. Additionally, new guidelines from the European Federation of Periodontology (EFP) highlight the value of chemical plaque control, including mouthwashes, as a supplement to mechanical plaque removal, especially for people who are more susceptible to periodontal disorders (21).

The low incidence of flossing is even more alarming; only 25.8% of respondents said they used it, while the majority (74.2%) said they didn't. Considering how prone interdental areas are to irritation and plaque buildup, this low uptake of interdental cleaning is alarming. Regular interdental cleaning with floss or interdental brushes dramatically lowers interproximal inflammation and bleeding on probing, particularly in patients with early gingivitis, according to a 2024 study by Lee et al(22). Furthermore, a 2022 Cochrane study found that flossing, when done properly, offers further benefits for gum health and plaque reduction, but compliance is still a common obstacle (23).

These less-than-ideal behaviors could be caused by a number of things, such as a lack of enthusiasm, time constraints, perceived inconvenience, or inadequate oral health education. The significance of customized oral health promotion initiatives that take socioeconomic, educational, and cultural factors into account is emphasized by the World Health Organization (WHO)(24,25). Improving adherence to comprehensive oral hygiene practices may be greatly aided by community-based awareness campaigns and the incorporation of oral hygiene counseling within primary healthcare.

Conclusion:

It is critical that pregnant women's oral health promotion initiatives emphasize better educational outreach, especially to those with lower educational attainment. Oral health counseling should be a fundamental part of prenatal care, and antenatal programs should stress the value of regular dental checkups. Women who do not work and those who do not frequently interface with dental services should receive special attention because they are among the groups most at risk of having insufficient information about oral health. By filling in these gaps, medical professionals may help expectant mothers maintain the best possible oral hygiene, which will lower the risk of pregnancy-related oral health issues and improve the general health of both the mother and the fetus

Limitations of the Study:

1. The use of convenience sampling limits the generalizability of findings to all pregnant women in Karachi.
2. Responses may be subject to recall bias or social desirability bias.
3. The study captures only associations, not causal relationships.
4. Conducted only in private dental OPDs, excluding public healthcare settings.
5. Although statistically adequate, a larger multicenter sample would improve external validity.

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Conflict of interest: Author declares no conflict of interest.
Funding Disclosure: Nil

Author's Contribution:

Dr. Tauseef Ahmed: Title selection, supervision of project
Prof. Dr. Uzma Zareef: Initial data analysis, initial draft making
Dr. Afshan Faizan: Data collection, methodology
Dr. Arifa Haque: Interpretation of results
Dr. Maryam: Assisted in journal submission and data collection
Dr. Rabail Khero: Assisted in statistical analysis
Dr. Iqra Ali: Preparation of manuscript

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