European Journal of Clinical Pharmacy
Print ISSN: 2385-409X, **Online ISSN**: 3105-0409
Website: https://farmclin.com/

Oral Hygiene Knowledge, Attitudes, and Practices among Pregnant Women – A Cross-Sectional Study

Article History:

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Received: 22-04-2026
Revised: 29-04-2026
Accepted: 03-05-2026
Published: 07-05-2026

Abstract: Background: Poor oral hygiene during pregnancy is associated with gingivitis, dental caries, periodontal disease, and adverse pregnancy outcomes. Maintaining proper oral hygiene during pregnancy is essential for the well-being of both the mother and the developing fetus.**Objective:** To evaluate the knowledge, attitudes, and practices regarding oral health among pregnant women in Mysuru.**Methodology:** A cross-sectional questionnaire-based study was conducted among 107 pregnant women aged 18–40 years attending the Department of Gynecology and Obstetrics at JSS Hospital, Mysuru, Karnataka. Ethical approval was obtained, and informed consent was taken from all participants. Data were analyzed using SPSS software.**Results:** The overall knowledge accuracy rate was 65.13%, the positive attitude rate was 71.97%, and the good practice rate was 61.08%. Most participants demonstrated good oral hygiene practices; however, awareness regarding the effect of poor oral hygiene on fetal development was limited.**Conclusion:** Although pregnant women showed positive attitudes and acceptable oral hygiene practices, knowledge regarding the relationship between oral health and pregnancy outcomes remains inadequate. Increasing awareness and integrating oral health education into antenatal care is recommended.

Keywords: Pregnancy, Oral Health, Periodontal Health, Knowledge, Attitude, Practice, Maternal Oral Hygiene

How to Cite: Basavaraju, S., Muralidharan, R., Subbappa, A., & Mathews, C. A. (2023). Oral hygiene knowledge, attitudes, and practices among pregnant women – A cross-sectional study. *European Journal of Clinical Pharmacy*. 2026. 8(1) 3095-3101

INTRODUCTION

Oral health is closely associated with general health and quality of life. Maintaining good oral health during pregnancy is an important public health concern worldwide 1. Hormonal changes during pregnancy may increase susceptibility to gingivitis, periodontal disease, and dental caries 2. Previous studies have emphasized the importance of improving oral health awareness among pregnant women to prevent adverse maternal and fetal outcomes.

Pregnancy involves significant physiological and hormonal changes that can affect periodontal tissues 3. Elevated progesterone levels may increase gingival inflammation and bleeding when oral hygiene is inadequate. Therefore, understanding the level of oral health awareness among pregnant women is important for designing preventive strategies.

This study aimed to evaluate the knowledge, attitudes, and practices regarding oral hygiene among pregnant women attending a tertiary care hospital in Mysuru.

Materials and Methods

Study Design: A cross-sectional questionnaire-based study was conducted.

Study Setting: The study was conducted among pregnant women attending the Department of Gynecology and Obstetrics at JSS Hospital, Mysuru, Karnataka, between June and November 2022.

Participants: A total of 107 pregnant women aged between 18 and 40 years participated in the study. Mentally challenged individuals and those unwilling to provide consent were excluded.

Ethical Considerations: Ethical approval was obtained from the Institutional Ethics Committee of JSS Hospital. Participants were informed about the purpose of the study and confidentiality of data was ensured.

Data Collection: A structured questionnaire was used to assess knowledge, attitude, and practices regarding oral hygiene.

Statistical Analysis: Data were analyzed using SPSS software version 21. Descriptive statistics, such as frequencies and percentages, were calculated, and the chi-square test was used to assess associations between demographic variables and responses.

Results:

The demographic information was indicated in Table 1. The questionnaire assessing knowledge, attitude, and practice was divided into categories of good and bad practice, positive and negative attitude, and correct and wrong knowledge, respectively.

Distribution of Knowledge, attitude and practice in the population

This survey has offered valuable insights into the attitudes, habits, and knowledge of dental hygiene among the participants surveyed.

The entire community demonstrated good dental hygiene practices, with a significant number of 107 individuals (94.40%) regularly cleaning their teeth. Positive practices were also observed in other areas, such as employing proper toothbrush techniques (94.40%), regularly replacing toothbrushes (74.80%), and using correct brushing methods (64.50%) (Table 2). A substantial majority (86%) of the population showed awareness that inadequate dental care can lead to gum bleeding, and an overwhelming majority (96.30%) recognized the importance of maintaining optimal oral hygiene during pregnancy. However, a significant proportion (86.90%) lacked knowledge regarding the impact of insufficient dental care on fetal development (Table 2).

85% of the respondents expressed a positive view regarding the importance of maintaining dental hygiene throughout pregnancy. Additionally, a significant portion (77.60%) demonstrated a proactive approach by expressing willingness

to seek dental treatment during pregnancy. However, a notable 22.40% held negative views, particularly regarding regular dental check-ups during this period (Table 2).

The overall correct knowledge among the population was 65.13%, with positive attitudes measured at 71.97% and good practices at 61.08% (Graph 1).

The study was conducted to explore the relationship between age groups, education level, and occupation with responses to a questionnaire assessing knowledge, attitudes, and practices related to oral hygiene. The findings indicated that participants across different age groups, education levels, and occupations generally exhibited similar levels of knowledge, attitudes, and practices ($p > 0.05$). There was a statistically significant difference ($p = 0.025$*) in the use of mouthwash across different age groups, with older individuals reporting higher usage. This suggests that mouthwash utilization varies significantly among age groups. Specifically, outstanding practices were more prevalent among older age groups (71.40%) compared to younger ones (14.30%) (see Table 3).

Table 1: Descriptive statistics (Demographic details)

		Frequency	Percentage
Age groups	Below 20 years	7	6.50%
	21-30 years	86	80.40%
	Above 30 years	14	13.10%
Education	Middle school certificate	1	1.10%
	Intermediate or post high school diploma	20	22.50%
	Graduate or Post graduate	67	75.30%
	Profession or honors	1	1.10%
Occupation	Unemployed	76	85.40%
	Skilled worker	9	10.10%
	Profession	4	4.50%

Table 2: Distribution of Knowledge, attitude and practice in the population

			Frequency
Practice	**1. do you brush your teeth daily**	**Good Practice**	**107**
	if yes, how many times	**Poor Practice**	**70**
		Good Practice	**37**
	2. what do you use to brush your teeth	**Poor Practice**	**6**
		Good Practice	**101**
	3. how often do u change your tooth brush	**Poor Practice**	**27**
		Good Practice	**80**
	4. what type of strokes do you use while brushing your teeth. brushing technique	**Poor Practice**	**38**
		Good Practice	**69**
	5.do you use mouth wash	**Poor Practice**	**62**
		Good Practice	**45**
	if yes		**63**
		Poor Practice	**24**
		Good Practice	**20**
	6.do you use interdental aids	**Poor Practice**	**64**
		Good Practice	**43**

	if yes		66
		Good Practice	41
	7.have you undergone dental treatment before	Poor Practice	71
		Good Practice	36
	if yes	Poor Practice	16
		Good Practice	18
	8. what kind of dental treatment are you undergoing	Good Practice	107
	9.For any reason have you stopped tooth brushing during pregnancy?	Good Practice	107
Knowledge	10.Do you know that bleeding gums is caused by poor oral hygiene?	Poor knowledge	15
		Good knowledge	92
	11. do you agree that maintqing oral hygiene is importnt during preganacy	Poor knowledge	4
		Good knowledge	103
	12. Do you know that poor oral hygiene affects the growth of baby in the womb?	Poor knowledge	93
		Good knowledge	14
Attitude	13.Do you agree that oral hygiene maintenance is important for pregnancy??	Negative attitude	16
		Positive attitude	91
	14.Do you know routine dental check-ups are necessary for pregnant women?	Negative attitude	50
		Positive attitude	57
	15.Will you agree to get dental treatment done during pregnancy?	Negative attitude	24
		Positive attitude	83
	if No why?		83
		Negative attitude	24

Graph 1: Overall percentage of Knowledge, attitude and practice responses

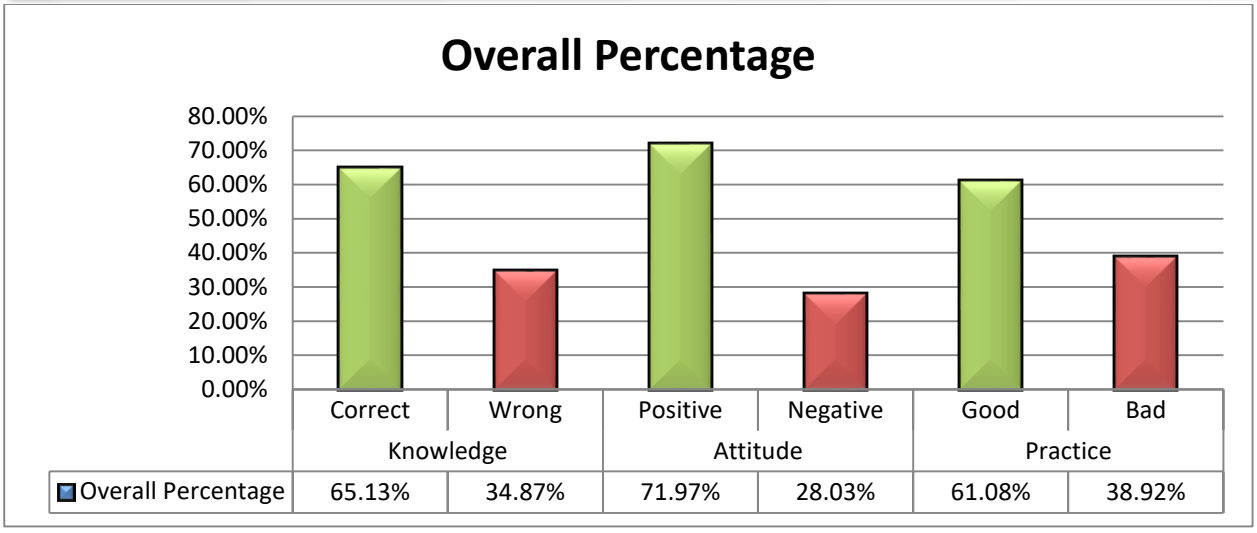

Table 3: Association of Age groups with use of mouthwash practice

	Age groups							P Value
	Below 20 years			21-30 years		Above 30 years		
Do you use mouth wash		N	%	N	%	N	%	
	Poor Practice.	6	85.70%	52	60.50%	4	28.60%	0.025*
	Good Practice	1	14.30%	34	39.50%	10	71.40%	

***Statistical significasnce set at 0.05; N: Number of samples**

DISCUSSION

The present study revealed the knowledge, attitude, and practice of maintenance of oral health during pregnancy among women residing in Mysore. The fluctuations in the hormone level that occurs in pregnancy, precisely the elevated amounts of progesterone in the bloodstream, along with inadequate dental hygiene practices, tend to raise the occurrence of oral conditions such as gingivitis and periodontitis. Ongoing research consistently demonstrates a correlation between periodontitis and adverse outcomes during pregnancy. Furthermore, research has demonstrated that mothers who do not practice basic dental hygiene may be more likely to transmit cariogenic bacteria to their children through inadequate feeding practices. (4,5).

Our study revealed that participants generally exhibited a commendable level of practice and attitude towards oral hygiene. However, a concerning knowledge gap was identified regarding the adverse effects of dental health on pregnancy.

Regarding the personal attributes of the pregnant women who took part, almost 80.4% were in the age range of 21-30. This finding aligns with the study of Gupta et al. in 2015, which revealed that 80% of pregnant women were between the ages of 20 and 29. (6) Amit et al. also found that most pregnant women were in the age range of 20-30 years. Similarly, Ramamurthy and Irfana (2016) revealed that three-fifths of the women studied were between 18 and 25. (7, 8)

No significant correlation was found between age and knowledge, attitude, and oral hygiene practice in the present study. However, it was observed that women over 30 had a considerable tendency to use mouthwash compared to their younger counterparts. The findings demonstrated a positive correlation between age and the frequency of mouthwash utilization. It could be associated with the growing challenge of cleaning teeth using alternative methods due to physical limitations. Nevertheless, a study revealed a decrease in the utilization of mouthwash as individuals grow older. This could be linked to a reduction in the total number of natural teeth that an individual has. (9)

Thomas et al. (10) and Llena et al. (11) identified a significant correlation between dental awareness and education levels, noting that individuals with lower educational attainment showed higher susceptibility

to compromised periodontal health compared to those with higher education. In our study, 30% of participants hold graduate or postgraduate degrees, yet 85.40% are currently unemployed, with no significant association found.

Gupta et al. (6) reported that less than 50% of pregnant women have completed secondary education. Ramamurthy and Irfana (8) found that a significant proportion of pregnant women, specifically three-thirds, had university education. Amit et al. (7) noted that less than two-thirds of participants were illiterate. Shabbir et al. (12) observed that over 50% of pregnant women had received primary education.

The lack of adequate knowledge and awareness often results in improper oral hygiene practices. This observation may explain the lack of statistical significance observed regarding occupation and education in our study.

Our study revealed that knowledge was not influenced by education levels and occupation, which aligns with the findings of Habashneh et al. (13, 14). However, this is in contrast to the reports of Bamanikar S et al. and Thomas NJ et al., who found a correlation between education levels and occupation (Socioeconomic status), ethnic background, and knowledge among their participants. (10, 15) .

During the evaluation of oral hygiene practices of the participants, it was noted that most of them brushed their teeth once a day using a toothbrush and toothpaste and replaced their toothbrush every three months. The rationale for brushing only once may stem from the increased familial obligations and the notion that a single daily brushing is adequate for maintaining dental cleanliness. No significant association was found. Nevertheless, our individuals had limited utilization of mouthwash compared to the findings of Hullah et al., who observed a higher level of mouthwash usage. (16)

The present study indicates a significant worry regarding pregnant women's dental care-seeking behavior and knowledge. Ensuring proper dental hygiene is crucial during pregnancy, as it has been scientifically proven advantageous for both the mother and the developing fetus. Studies have reported that maintaining good oral health might enhance overall quality of life. (1) This study clearly demonstrates that as obstetrics healthcare providers, we are not adequately informing pregnant women about oral hygiene, particularly the adverse effects of poor oral hygiene on the health of both the mother and the fetus. A study conducted in Lagos, Nigeria, found that antenatal oral health education is required for pregnant women to enhance their oral health condition. (17) Furthermore, we recommend deploying dental personnel to antenatal clinics to assume responsibility for oral health education. This can significantly enhance the subpar oral health indicators among women.

There is no formal dental policy for prenatal care patients, and guidelines and practices for dental management are not readily available at clinics. As a result, pregnant women and their caregivers can make dental decisions at their discretion rather than following established norms and recommendations.

Limitations:

The current study, which utilized a questionnaire, faced limitations in accurately determining oral health status, as it did not involve clinical examinations or access to dental health records. Although this study did not explicitly investigate clinical and prenatal issues linked to inadequate oral hygiene, prior research has identified complications such as gingivitis, periodontal disease, dental caries, and tooth decay in various settings (18). Further research is necessary to verify whether similar outcomes would be observed in this context.

Additionally, the study's reliance on self-reported data and its cross-sectional design constrained the ability to monitor adverse dental pregnancy outcomes over time. This limitation affects the generalizability of the findings to the broader population. Nevertheless, the results of this study can be instrumental in developing appropriate dental health initiatives for pregnant women.

CONCLUSION

As stated in works of literature, poor oral hygiene serves as a risk factor for adverse
pregnancy outcomes, which mandate the importance of maintaining good oral health,
especially during pregnancy.
In context to the Mysore population, the awareness about the adverse effects of detrimental
oral health on pregnancy outcomes is a concerning statement. Moreover, any periodontal
treatment during pregnancy can be too late to attain satisfactory results. Therefore, a
more preventive approach should be taken to help prevent adverse pregnancy outcomes.
In developed countries, there are strict guidelines following oral health and pregnancy,
especially antenatal care. Despite having well-organized antenatal dental care, our country
lacks a proper implementation of such protocols in every health sector. Thus, the need for the
hour is a proper reinforcement among medical professionals as well as community healthcare
workers to educate and adequately counsel pregnant women and expecting couples, either
through the standard protocols of oral hygiene or a

general referral to a dental team.

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