PERIODONTOLOGY

OPEN ACCESS

ORIGINAL ARTICLE

ASSESSMENT OF THE ORAL HYGIENE PRACTICES IN PREGNANT FEMALES AND THEIR KNOWLEDGE REGARDING EFFECT OF PERIODONTITIS ON PREGNANCY

[1]HINA MAHMOOD, [2]UZMA SAEED, [3]AYESHA USMANI

ABSTRACT

Extensive literature has been presented linking various hormonal changes during pregnancy with increased inflammation of periodontium and higher prevalence of dental caries. Therefore, meticulous oral hygiene practice is of utmost importance during this period. Some local studies have highlighted the lack of oral health knowledge among pregnant females and scarcity of oral health assessments in prenatal care visits.

The aim of the study was to assess the oral health practice among pregnant women and their awareness of relation between periodontitis and adverse pregnancy outcomes

A cross-sectional study included 260 pregnant women after excluding incomplete questionnaires. The data was collected from two regional hospitals. And the questionnaire consisted of 13 questions. The information collected was then analyzed and presented as descriptive statistics in the form of tables and figures. The results showed that the percentage of women using paste with tooth brush increased from 74.6% to 79.4%. About 20% of participants were using miswak (wooden stick) as a teeth cleaning tool. More than half of the participants using tooth brush (52.9%) changed their brush once in three months and majority of the participants rinsed after eating. Only 1.5% of pregnant women were aware about relation of periodontitis with adverse pregnancy outcomes and 9.2% had awareness about fluoridated toothpaste.

The awareness regarding link of maternal oral hygiene with adverse pregnancy outcomes and use of fluoridated tooth pastes was limited. Enhancing and integrating education about oral health into Gynae/obstetrics curriculum will improve the oral health care of pregnant women in future.

Keywords: *Oral hygiene, Periodontitis, Pregnancy, Premature Birth.*

This article may be cited as: Mahmood H, Saeed U, Usmani A. Assessment of the oral hygiene practices in pregnant females and their knowledge regarding effect of periodontitis on pregnancy. Pak Oral Dent J 2022; 42(1):25-29.

INTRODUCTION

During pregnancy the human body is undergoing many physiological and hormonal changes, which can adversely affect oral health. Hormonal changes like elevated levels of circulating estrogen and progesterone combined with poor oral hygiene tends to increase the incidence of oral diseases like gingivitis and periodontitis.[1] In addition to this, there is increased incidence of dental erosion as a result of vomiting along with poor plaque control resulting in dental caries. Due to the scarce knowledge regarding oral hygiene practices and their significance during pregnancy, these factors are further exaggerated in pregnant women.[2]

It is evident from literature that periodontal diseases during pregnancy are linked with many complications such as preeclampsia, low birth weight and prolonged newborn hospitalization in the neonatal intensive care unit.[3] This important topic has received less than due attention despite the current evidences, and the known complications of periodontal and dental infections for mothers and their newborns.[4]

It has been observed in various studies that mother's negligence towards proper oral hygiene practices pose a greater risk of oral infection in their children by passing cariogenic bacteria through poor feeding practices.[5] Early childhood caries (ECC), comprising

[1] Dr Hina Mahmood, Associate Professor and Head of Department of Periodontology, Islamabad Medical and Dental College, Dental Section, Barahkahu, Islamabad, Email: Hina.Mahmood@iideas.edu.pk Tel: 051-2232045

[2] Dr Uzma Saeed, Post graduate Trainee periodontology department, Islamabad Dental Hospital Barahkahu, Islamabad Email: uzmasaeed@iideas.edu.pk 051-2232045, +923215363064 Res: House-82, Street-68, Sector G 9/3, Islamabad

[3] Ayesha Usmani, Bio-statistician, Islamabad Medical and Dental College, Dental Section, Islamabad Email: Ayesha.usmani@iideas.edu.pk 051-2232045

Received for Publication: Aug 15, 2021
Revised: Jan 18, 2022
Approved: Jan 19, 2022

of complex host–diet–microbe relationship, is an extremely complex disease.[6] Bottle feeding during day on demand, breastfeeding or nocturnal bottle-feeding for long from 12 months of age and use of dried fruit/fruit juices between meals have all been linked to early childhood caries.[7] There is evidence regarding cariostatic effect of fluoride suggesting that it is more effective by topical application rather than systemic ingestion.[8] It was later observed that the bacteriostatic effect of fluoride, when combined with good oral hygiene, might be even greater when practiced as regular tooth brushing with a fluoride toothpaste.[9]

Good oral hygiene practice during the period of pregnancy not only improves the quality of life of the pregnant mother but also potentially limits complications during pregnancy and the risk to her child in the future due to periodontal infections.[10] Traditionally, manual or powered tooth brushing and flossing have been considered the standard for routine plaque removal and gingivitis reduction.[11] The appropriate use of toothbrushes with fluoride tooth pastes can prevent periodontal disease and dental caries respectively and help maintain a good oral hygiene.[2]

Despite of the well-accepted associations between poor oral health and adverse maternal and infant health outcomes, it has been observed that use of oral health care during pregnancy is very low.[12] A research conducted in Virginia observed that the dental visit prevalence varied widely by socioeconomic characteristics and oral health knowledge. It was also observed in the same study that oral health awareness by health care providers had a significant impact on dental care during pregnancy. Women who reported getting oral health care awareness were 12.4 times better in oral care practice during pregnancy compared with those who did not receive it, supporting health care provider's significant role in influencing oral health visits among pregnant women.[13]

General oral health promotion should be encouraged during pregnancy due to its detrimental effects on health of the mother and neonate. Hence, the objective of the present study was to assess the current oral hygiene practices of pregnant females and their knowledge regarding impact of poor oral hygiene on pregnancy outcomes. This will identify the disparities in their oral hygiene practice and knowledge and therefore, help in modifying community educational programs for pregnant females accordingly.

MATERIALS AND METHODS

This cross-sectional study on oral hygiene practice of pregnant females was conducted at two local regional hospitals after approval from institutional review board of Islamabad Medical and Dental College. The permission was also taken from Gynae/Obstetrics departments of Pakistan Institute of Medical Sciences and Akbar Niazi Teaching Hospital Islamabad, for data collection. The sample size of 237 patients was estimated by WHO calculator at a confidence level of 95%, margin of error 5% and anticipated proportion of regular brushing to be 81.61%.[14] By considering the margin of incomplete questionnaires 260 patients were included for final analysis. Data was collected using consecutive sampling technique over a period of three weeks in June 2021 from the outpatient department of the concerned hospitals. Females not willing to participate and women of <20 or >50 years of age were excluded from the study. After taking verbal consent and assuring confidentiality questionnaire was explained in the local language by the researchers to all pregnant females. The questionnaire consisted of 10 questions regarding oral hygiene practices of the respondents before and during pregnancy, two regarding the knowledge of the link of poor oral hygiene with adverse pregnancy outcomes and one about awareness of fluoridated toothpastes. A dichotomization as (Yes) or absence (No) was done for the respondent's response to specific oral hygiene practices. The questions regarding oral hygiene practices included cleaning of teeth, the type of tool used, frequency of cleaning teeth, use of dental aid, use of mouthwash, cleaning of tongue, and type of toothpaste being used. This data was entered in statistical package for social sciences (SPSS) software version 22 for calculating percentages and frequencies for each question.

RESULTS

Mean age of the study sample was 28.6 ± 5.4. The detailed percentage data of oral hygiene practices for 260 women is shown in table 1. All participants affirmed regular tooth brushing before and during pregnancy but frequency of tooth brushing differed among individuals. The results indicate no significant differences in the variables assessed before and during pregnancy.

About 83.3% (30/36) of the women with no formal education were cleaning their teeth once daily, 5.6% (2/36) were cleaning twice daily, 11.1% (4/36) cleaned their teeth rarely and out of these 33.3% (12/36) were using toothbrush with paste for cleaning. Among educated pregnant women 75% (168/224) were cleaning their teeth once daily and 21.4% (48/224) were cleaning twice daily, 2.2% (3/224) cleaned their teeth rarely and out of all these 83.9% (188/224) were using toothbrush with paste for keeping their teeth clean. Teeth cleaning tools were being used by approximately 40.7% (106/260) of the respondents during pregnancy. Out of 260 respondents, only 12 respondents (4.6%) were using more than one tool for cleaning during pregnancy. Women with no formal education did not use dental floss while

TABLE 1: FREQUENCY DISTRIBUTION OF 260 RESPONDENTS ACCORDING TO ORAL HYGIENE HABITS

Characteristics	After Pregnancy (%)	Before Pregnancy (%)
Do you clean your teeth		
Yes	100%	100%
No	0%	0%
Means of cleaning teeth		
Miswak	20%	21.2%
Neem-stick	4.2%	4.6%
Toothbrush-Tooth Powder	2.3%	4.2%
Tooth brush-Tooth Paste	76.9%	74.6 %
Finger-toothpowder	0.4%	0%
Other	0.7%	0%
Frequency of changing toothbrush		
When bristles lose alignment	35.4%	
Every 3 months	52.7%	
Every 6 months	10%	
Every year	1.2%	
Do you rinse after meals		
Yes	64.6%	62.7%
No	35.4%	37.3%

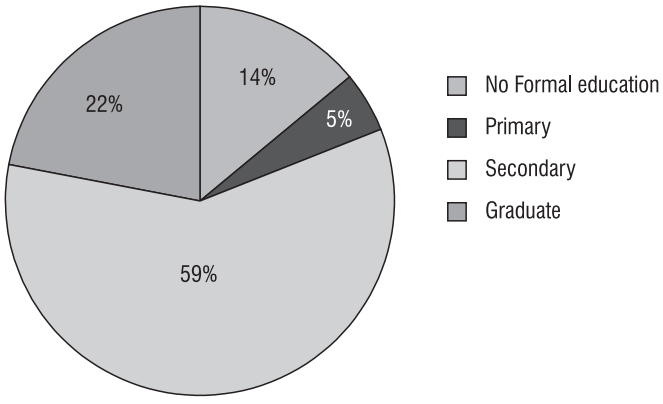

Fig 1: Showing the percentage distribution of the respondents according to their education status.

only 1.3% (3/224) of the educated women used dental floss for interdental cleansing. Only 31.2% (81/260) had visited dentist before, out of which 95% (77/81) went to see dentist in case of problem.

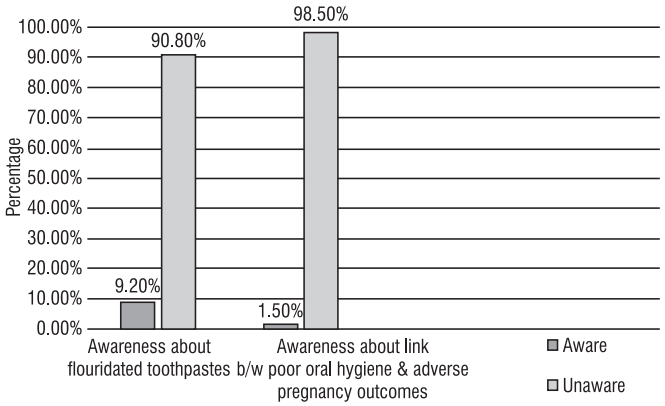

Fig 2: A bar chart showing the awareness of pregnant women about significance of fluoridated pastes and knowledge of the association of poor oral hygiene with pregnancy related outcomes.

The variables of socio-demographic characters included age, education and week of pregnancy. The percentages of education level are elaborated in figure 1.

Assessment regarding awareness of link between poor oral health and adverse pregnancy outcomes in pregnant females and their awareness about fluoridated toothpastes has been tabulated in figure 2 in percentages respectively.

A total of 9.2% (24/260) respondents were aware of the fluoridated toothpastes. And Only 1.5% (4/260), were aware of the fact that there is some relationship between poor oral hygiene and complications in pregnancy and baby growth.

DISCUSSION

One can't deny the fact that good oral health during pregnancy is important especially in view of the suggestions that unfavorable pregnancy outcomes may result due to poor oral health. This holds great importance in Pakistan because of the high neonatal mortality rates.[15] The most prevalent disease during pregnancy (i.e., periodontal disease) is preventable by the incorporation of simple measures such as regular tooth-brushing and flossing in the daily routine.[16] Despite the need of more evidence that improves clinical strategies to address periodontal disease in women during pregnancy, conventional periodontal therapy is reportedly associated with the improvement of maternal oral health during pregnancy.[17]

Majority of the respondents in this study had quite satisfactory tooth brushing habits (brushing at least once a day and rinsing after every meal) which coincide with the results of Hashim.[18] Among educated pregnant women 21.4% (48/224) women were brushing twice daily which is consistent with the results observed in a study done in India.[19] It is evident from table 1 that

there was no significant change before and during pregnancy in oral hygiene habits which highlights the fact that no added knowledge about improving oral hygiene had been conveyed to the women after they conceived. There were limited studies found nationally or internationally comparing the oral hygiene habits before and during pregnancy.

Present study also showed that the number of females using mouthwash and interdental aids was quite low, which is in accordance with the results obtained in the research done in Pakistan[20] and another study done in Sudan.[21] Only 1.3% (3/224) of the females reported using dental floss unlike a study done in Australia in which more than half of the women used dental floss weekly or more because they were aware that dental problems can be serious and can lead to oral health problems.[22] Similarly, the study conducted in Spain[23] showed 41% of the pregnant females using inter-dental aid due to a better level of knowledge and oral self-care among pregnant women, which is considerably higher than both the Pakistani and the Sudanese females. This reflects that the participants in the current study had insufficient knowledge on interdental space cleaning and were limited to toothbrushes as cleaning aids.

The percentage for cleaning of tongue was also low. Only 26.5% (69/260) of the Pakistani pregnant females cleansed their tongue which is a major source of halitosis and plaque accumulation. Conflicting results were observed in a study conducted in Muslim Thai pregnant females, which reported that approximately 50% of the participants cleansed their tongue regularly because of the concern regarding bad breath during pregnancy.[14]

One of the important findings in the present study was that majority of pregnant women 98.4% (256/260) had no knowledge about the influence of oral health on pregnancy outcomes or had been educated by their gynecologists regarding this aspect. These findings are in accordance with a study done in India which reported that 96% of pregnant women were unaware about the impact of oral health on adverse consequences of pregnancy as they had not been educated by their doctors.[19] Similar results were seen in a study by Gunay et al., who found that 71% had received no information regarding oral hygiene during pregnancy.[24]

Another important finding in current study was inadequate education regarding fluoridated toothpastes among pregnant women. About 90.7% (236/260) were not aware of the significance of fluoridated toothpastes. There is evidence to show that prevention of early childhood caries is best initiated during pregnancy.[25]

The results of this study must be viewed in the light of certain limitations. One limitation is its reliance on self-reported data, which is often subject to biases inherent to questions being asked such as recall bias. Nonetheless, the results would serve as an authentic tool for designing and specifying appropriate oral health education message(s) for pregnant women receiving antenatal care.

Considering the results obtained, it would be desirable to implement proper oral hygiene practices during pregnancy. In order to promote health, it is necessary for the would-be-mothers to be aware of disease symptoms and to be encouraged to adopt healthy oral habits and practices. These activities should be promoted by all healthcare professionals and community health care workers involved in antenatal care of pregnant females.

CONCLUSION

Adequate oral hygiene practice was observed in this study for pregnant females but there was paucity in the tongue cleaning and flossing habits. Majority of the females were unaware about oral health impact on adverse pregnancy outcomes. Therefore, it is required for dental practitioners and gynecologists to create awareness among pregnant females regarding importance of oral health during pregnancy and its adverse effects on fetal health.

REFERENCES

1 Khalaf SA, Osman SR, Abbas AM, Ismail AM. Knowledge, attitude and practice of oral healthcare among pregnant women in Assiut, Egypt. Int J Community Med Public Health. 2018;5(3):890-900.

2 Siddiqui TM, Akram S, Wali A, Mahmood P, Rais S. Dental caries and gingivitis amongst pregnant women: A sample from urban and rural areas of Karachi. Pak Oral Dent J. 2018;38(1):88-89.

3 Ghazal M, Zaidi SJ, Riaz S, Farooqi WA. Influence of socio-cultural variables on periodontal conditions in pregnant Women. Pak Oral Dent J. 2017;37(2):294-301.

4 Bahri N, Tohidinik HR, Bahri N, Iliati HR, Moshki M, Darabi F. Educational intervention to improve oral health beliefs and behaviors during pregnancy: a randomized-controlled trial. J Egypt Public Health Assoc. 2015;90(2):41-45.

5 Singh S, Dagrus K, Kariya P, Singh S, Darmina J, Hase P. Oral periodontal health knowledge and awareness among Pregnant Females in Bangalore, India. Int J Dent Med Res. 2015;1(6):7-10.

6 Bencze Z, Mahrouseh N, Andrade CA, Kovács N, Varga O. The burden of early childhood caries in children under 5 years old in the European Union and associated risk factors: An ecological study. Nutrients. 2021;13(2):455-67.

7 Correia PN, Alkhatrash A, Williams CE, Briley A, Carter J, Poston L, et al. What do expectant mothers need to know about oral health? a cohort study from a London maternity unit. BDJ open. 2017;3(1):1-5.

8 Featherstone JD. Prevention and reversal of dental caries: role of low level fluoride. Community Dent. Oral Epidemiol. 1999;27(1):31-40.

9 Rolla G, Ogaard B, Cruz R de A. Clinical effect and mechanism of cariostatic action of fluoride-containing toothpastes: a review. Int. Dent. J. 1991;41(3):171-74.

10 Abelaziz N, Fawaz M, El-Sharkawy NB. Pregnant women beliefs on the Impact of oral dental health on pregnancy outcomes.

Med. J. Cairo Univ. 2017;85(7):2821-29.

11 Kabali TM, Mumghamba EG. Knowledge of periodontal diseases, oral hygiene practices, and self-reported periodontal problems among pregnant women and postnatal mothers attending reproductive and child health clinics in rural Zambia. Int. J. Dent. 2018; Article ID: 9782092:1-9.

12 Naavaal S, Claiborne DM. Oral health knowledge, practices and awareness of oral health guidelines and dental coverage policies among midwives. JMWH. 2021; 66(1):88-95.

13 Naavaal S, Brickhouse TH, Hafidh S, Smith K. Factors associated with preventive dental visits before and during pregnancy. J. Womens Health. 2019; 28(12):1670-78.

14 Naorungroj S, Hunsrisakhun J, Talungchit S. Oral hygiene status, self-reported oral malodor, oral hygiene practices, and oral health knowledge: a cross-sectional study in a group of Muslim Thai pregnant women. J. Int. Oral Health. 2018;10(5):229-36.

15 Khan S, Haider SI, Bakhsh R. Socio-economic and cultural determinants of maternal and neonatal mortality in Pakistan. Global Regional Review. 2020;5(1):1-7.

16 Shabbir S, Zahid M, Qazi A. Practices and knowledge of oral hygiene among pregnant women in a Pakistani tertiary care hospital. Biomedica. 2014;30(2):134-38.

17 Lida H. Oral health interventions during pregnancy. Dent. Clin. North Am. 2017;61(3):467–81.

18 Hashim R. Self-reported oral health, oral hygiene habits and dental service utilization among pregnant women in United Arab Emirates. Int. J. Dent. Hyg. 2012;10(2):142–46.

19 Gupta S, Jain A, Mohan S, Bhaskar N, Walia PK. Comparative evaluation of oral health knowledge, practices and attitude of pregnant and non-pregnant women, and their awareness regarding adverse pregnancy outcomes. J. Clin. Diagn Res. 2015;9(11):26-32.

20 Ishaq Z, Rasul F, Ahmaed A, Tanveer S. Knowledge attitude and practice of pregnant females regarding oral health. PJMHS. 2018;12(4):1556-59.

21 Ibrahim HM El-Mahdi, Mudawi A.M, Ghandour I.A. Oral health status, knowledge and practice among pregnant women attending Omdurman maternity hospital, Sudan. EMHJ. 2016; 22(11):802-09.

22 N. J. Thomas, P. F. Middleton, C. A. Crowther. Oral and dental health care practices in pregnant women in Australia: a postnatal survey. BMC Pregnancy Childbirth. 2008;8(1):1-6.

23 Llena C, Nakdali T, Sang JL, Fornex L. Oral health and among pregnant women attending to a primary care centre in Spain. Int. J. Environ. Res. Public Health. 2019;16(24):1-14.

24 Günay H, Goepel K, Stock KH, Schneller T. Position of health education knowledge concerning pregnancy. Oralprophylaxe. 1991;13(Spec No):4-7.

25 Gomez SS, Weber AA. Effectiveness of a caries preventive program in pregnant women and new mothers on their offsprings. Int. J. Paediatr. Dent. 2001;11(2):117–22.

CONTRIBUTIONS BY AUTHORS

1 Hina Mahmood:	Concept and design, revision, final approval and editing.
2 Uzma Saeed:	Drafting, data analysis, interpretation and article writing.
3 Ayesha Usmani:	Data Analysis, interpretation of results.