Original Article

Evaluation of Oral Health Status Among Pregnant Women Using Oral Hygiene Index-Simplified (OHI-S) Score

Sabrina Farida Chowdhury[1], Md. Nazrul Islam[2], Sadia Akther Sony[3]

Abstract

Background: Oral health of women is often neglected during pregnancy. We need to address this issue in a developing country's perspective,as oral healthcare is not an integral part of antenatal protocols. ***Objective:*** To evaluate the oral health status of pregnant women using Oral Hygiene Index-Simplified (OHI-S) Score as well as explore oral hygiene practice by them and conduct a mini-assessment of their knowledge of oral health. ***Methods:*** This cross-sectional, descriptive study was conducted using data by using a semi-structured questionnaire among 170 pregnant women attending an antenatal center in Dhaka city, Bangladesh,from March to August of 2018. A pre-tested semi structured questionnaire containing OHI-S indexwas used for data collection. Dental mirror and probe were used for oral hygiene assessment. ***Results:*** The mean age of the participants was 24.22±5.07 years. 140(82.4%) were found to use toothbrushes as a tooth-cleaning aid and 146(85.9%) used toothpaste as a tooth cleaning material. Among them, 132(94.3%) were found to brush at least once a day. The predominant health problems identified by clinical examination among those pregnant women were gum bleeding, mild to severe periodontitis, halitosis (bad breath) and loose teeth. The majority didnot know the safe period of dental treatment and the consequences of having poor oral health during pregnancy. The overall oral hygiene status of the maximum pregnant women was 'Fair' (50.6%) (OHI-S score 0-1.2), while 39.4% had 'Poor' oral hygiene status (OHI-S score 1.3-3.0) and only 10% had 'Good' oral hygiene status (OHI-S score 3.1-6.9). ***Conclusion:*** Pregnant women in Bangladesh suffer from various oral health issues during pregnancy; however, they exhibit that they do not address this issue due to lack of awareness and other factors. Hence, it is crucial to plan and implement effective oral health programmes for pregnant women all over the country.

Keywords: Oral health status, Oral Hygiene Index-Simplified (OHI-S) Score, pregnant women

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Introduction

Pregnancy affects nearly every aspect of a woman's life including her oral health. A good health of a pregnant woman is required for the wellness of herself and for her future child. Hence, it is very important to practice and maintain healthy lifestyles during pregnancy. There are number of factors that may negatively influence wellbeing of a pregnant woman. Hormonal changes, being unaware about necessity of oral health maintenance, negative oral health experience, and often improper oral

1. Department of Public Health, Leading University, Ragib Nagar, South Surma, Sylhet-3112, Bangladesh.
2. Department of Public Health,American International University-Bangladesh (AIUB), Dhaka-1229, Bangladesh.
3. Department of Public Health and Informatics, Bangabandhu Sheikh Mujib Medical University, Dhaka-1000, Bangladesh.

Correspondence to: Dr. Sabrina Farida Chowdhury, Lecturer, Department of Public Health, Faculty of Modern Science, Leading University,Ragib Nagar, South Surma, Sylhet-3112, Bangladesh. Email: dr.sabrinachowdhury@lus.ac.bd

health practices during pregnancy particularly can worsen oral health conditions and may lead to oral health problems in pregnant mothers.[1-3] Oral health problems in pregnant women come in different pattern and varying intensity. The milder and earlier form of periodontal disease can be simply gingivitis which can later progress to gingival enlargement, severe periodontitis, tooth mobility and even tooth loss.[4]Report suggests that the prevalence of gingivitis in pregnant women ranges from 30% to 100%.[1,4]Often, pre-existing gingivitis in women may become severe in the first two months of pregnancy.[5]Women with pregnancy gingivitis may sometimes develop localized gingival enlargements. The pregnancy induced vomiting canresult in dental erosion in pregnant women.[6,7]Dental caries are also common during pregnancy.[4]The occurrence of dental caries may results from cravings for dietary items that are rich in sugar, increased acidity in the oral cavity, and limited attention to oral health during pregnancy.[8]Untreated carious lesions may increase the incidence of abscess and lead to cellulitis in pregnant women.[9]Prevalence of pregnancy tumour is 5% of all pregnancies and usually benign in nature. The favourable site for pregnancy tumor is gingiva and usually starts to appear after first trimester. It is harmless and resolves after delivery; however, sometimes, it requires excision.[10]Another common problem is loose tooth,which is commonly associated with progressive periodontal disease at advanced stage among pregnant women. In absence of any gum problem, the increased levels of progesterone and estrogen can affect the periodontal structure and lead to loose teeth.[11]The significance of good oral health of pregnant mother lies in its impact on herself and her baby. Poor oral health comes with negative consequences There are evidence from various studies that suggests that poor maternal oral health is associated with adverse pregnancy outcome and poor oral health of the offspring. This includes adverse outcomes like prematurity, low-birth weightinfants, and early dental caries in the infant.[12-14]

As poor maternal oral health brings negative outcome for both mother and child, special attention should be given on increasing oral health awareness among pregnant women.American College of Obstetricians and Gynecologists recognizes oral health is an integral part of preventive healthcare for pregnant women and their newborns.[15]Unfortunately, in our country, oral healthcare is not an integral part of antenatal protocols. We lack guidelines, proper infrastructure at both rural and urban level hospitals as well as in private practice, and awareness among people. Hence, we proposed to assess pregnant women's oral health status and knowledge related to oral health and look at oral hygiene practices of the pregnant women as well. The findings of the present study are expected to create awareness and address the issues related to oral healthcare during pregnancy.

Methods

This cross-sectional, descriptive study was conducted between March and August of 2018 in randomly selected healthcare centers situated in Dhaka city, Bangladesh, where pregnant women have access to ANC services. The study population involved pregnant women aged between 16 and 45 years, who were interested to participate and able to understand the nature and purpose of the study. Thus, informed consent was obtained from participants. Privacy, anonymity, and confidentiality were strictly maintained. A total of 170 women were selected using convenience sampling technique.A pre-tested semi structured questionnaire containing OHI-S index[16]was used for data collection. Dental mirror and probe were used for oral hygiene assessment.Oral hygiene index-simplified (OHI-S) was calculated using debris index and calculus index; then OHI-S score was assigned to sum up oral hygiene status of the respondents. Three levels of oral hygiene have been obtained; these are: Good (OHI-S score 0-1.2), Fair (OHI-S score 1.3-3.0) and Poor (OHI-S score 3.1-6.9).[16]Collected data were analyzed by SPSS (Statistical Package for Social Sciences)version 16.0. After data collection data entry was done. Data analysis was summarized in form of proportion and frequency tables for categorical variables. Continuous variables were summarized using means and standard deviation.

Results

The mean age of the participants was 24.22±5.07 years. The majority (36.5%) of the pregnant mothers were in between 26 and 30 years. Among the respondents, 77.6 percent were literate and has obtained at least primary level (36.5%), secondary level (25.9%), higher secondary level (14.7%) or graduate level education (0.6%) (Table 1).Regarding oral hygiene practice, the

tooth cleaning aids were found toothbrush, finger, and tree twig (Miswak) among the respondents. 82.4% of the pregnant women reported to use toothbrush, whereas 11.8% cleaned their teeth by their finger and 5.9% of the respondents used tree twig (Miswak) as a tooth cleaning aid (Table-1). Regarding tooth cleaning material, 85.9% of the respondents used tooth paste to clean their teeth, where 2.4% used tooth powder and 11.7% used charcoal powder (Manjan/Coal ash) to clean their teeth.In response to query about pregnant women's frequency of teeth brushing practice among those who brushed their teeth with toothbrush (n=140), 94.3% respondents were found to brush at least once in a day (Once-18.6%, Twice or more-75.7%) (Table-1). Several oral health problems were found among the pregnant women. Among the respondents, 64.1% reported Halitosis (bad breath), 71.2% had gum bleeding, 43% had mild to severe periodontitis (shallow periodontal pocket in 35.9% and deep periodontal pocket in 7.1%) and 2.9% had one or more loose tooth (Table-2).Oral hygiene status of the respondents was categorized as 'Good', 'Fair' and 'Poor' using simplified oral hygiene index (OHI-S index). The oral hygiene status of most of the respondents (50.6%) was 'Fair' (OHI-S score 0-1.2), while 39.4% had 'Poor' oral hygiene status (OHI-S score 1.3-3.0) and only 10% had 'Good' oral hygiene status (OHI-S score 3.1-6.9) (Table-2). Pregnant women were asked three basic knowledge questions about oral health maintenance. Among them, 61.2% knew fluoride-based toothpaste can prevent tooth decay. Majority of the respondent did not know which trimester is safe for dental treatment during pregnancy (93.5%) and that poor oral health may negatively influence pregnancy outcome(97.1%) (Table 3).

Table1: Sociodemographic and behavioural characteristicsof pregnant women

Variables	Frequency (%)	Total number of respondents
Age group (in years)		
16 -20	51(30.0)	
21-25	44(25.9)	n=170
26-30	62(36.5)	
31-36	13(7.6)	
Mean±SD = 24.22±5.07		
Educational qualification		
Illiterate	38 (22.4)	n= 170
Literate[A]	132(77.6)	
Tooth Cleaning Aid		
Tooth Brush	140(82.4%)	
Finger	20(11.8%)	n=170
Tree Twig (Miswak)	10 (5.9%)	
Material used in tooth cleaning		
Tooth Paste	146(85.9)	
Tooth powder	4(2.4)	n=170
Charcoal powder (Manjan/ Ash)	20(11.7)	
Frequency of tooth brushing (in a day)		
Not regular	8(5.7)	
Once	26(18.6)	n=140[B]
Twice or more	106 (75.7)	

A = Literate: Respondents who have attained at least primary level/secondary level/higher secondary level/equivalent/ graduate/equivalent level study.

B = Respondents who do not use toothbrush (n=30) as tooth cleaning aid were excluded.

Table2: Pattern of oral health problems and oral hygiene status of pregnant women (n=170)

Variables	Frequency (%)
Oral Health Problems	
Halitosis (Bad Breath)	109(64.1)
Gum Bleeding	121(71.2)
Periodontitis (Mild to severe)	73(43)
Periodontal pocket 4-5mm	61(35.9)
Periodontal pocket ≥6mm	12 (7.1)
Dental caries	53(31.2)
Mobility of one or more teeth	5(2.9)
Oral Hygiene Status*	
Good	17 (10.0)
Fair	86 (50.6)
Poor	67 (39.4)

*OHI-S score: Good (0-1.2), Fair (1.3-3.0) and Poor (3.1-6.9)

Table3: Knowledge related to oral hygiene status and oral hygiene practice among pregnant women (n=170)

Knowledge questions	Correct response Frequency (%)	Incorrect response Frequency (%)
Fluoride based toothpaste can prevent tooth decay.	105 (61.2)	65(38.8)
The safe period of dental treatment during pregnancy is second trimester.	11 (6.5)	159 (93.5)
Poor oral health can negatively affect pregnant mother's child.	5(2.9)	165(97.1)

Discussion

Oral health is an important determinant for the quality of life. Acknowledging the fact, the World Health Organization (WHO)'s Global Oral Health Policy also emphasizes the importance of oral healthcare.[17]Oral health problem is noticeably high among pregnant women across the globe, specifically in developing countries. If left untreated, oral health problems like gum disease and tooth decay of pregnant women may lead to adverse pregnancy outcomes and negatively influence her child.[15,17]

The findings related to teeth cleaning by pregnant women with toothbrush and fluoride-based toothpaste is also consistent with the findings of other studies done in Bangladesh, India and UAE.[2,18-21]Majority of the respondents either were found with irregular in teeth cleaning or cleaning once a day. This finding is consistent with the studies reported previously.[20-22]

Oral health changes during pregnancy are subject to physiological alterations and fluctuations in levels of oestrogen and progesterone due to pregnancy itself leads to increase sensitivity and irritation of gingiva.[15,23]Also, oral acidic condition, low literacy, low income, negligence and unawareness about oral health, poor oral hygiene practices, not visiting dentist etc. affects negatively oral health conditions of pregnant women.[10,23,24] With varying degree of occurrence, the oral changes during pregnancy includes gingivitis, periodontitis, loose tooth, pregnancy gingivitis, tooth erosion, dental caries, gingival hyperplasia, pyogenic granuloma etc.[18-25]Major problems that were found among the pregnant women in the current study were halitosis (Bad breath) (64.1%), gum bleeding (71.2%), mild to severe periodontitis (43%), dental Caries(31.2%) and loose tooth (2.9%). The burden of periodontal disease among pregnant women is comparatively high than other oral health problems.The present study reported dental caries among 31.2%pregnant women which is lower than thatof previous findingsin Bangladesh.[18,19]We also found 71.2% of the pregnant mothers had bleeding gum,which is much higher than study findings in India.[21,22]The overall oral hygiene status of the majority respondents (50.6%) was 'Fair' (OHI-S score 0-1.2). This is consistent with the findings of Kashetty et al., as they found that 55% of the pregnant women had "Fair" oral hygiene status in Karnataka, India.[20]

Adequate oral health knowledge is essential to develop appropriate oral health practices that prevent oral diseases.[15,17]Various literatures have reported positive association between oral health knowledge scores and oral health status.[26-28] Majority of the respondent did not know which trimester is safe for dental treatment during pregnancy (93.5%) and that poor oral health may negatively influence pregnancy outcome(97.1%). However, a relatively higher number of pregnant females (19.38%) of Central India were aware of the fact that poor oral health can negatively affect their baby.[22]We felt that health education programmes need to be designed to familiarize pregnant women with appropriate oral hygiene practices to preserve their oral health and prevent possible negative consequences of poor oral hygiene during pregnancy, which is also supported by the literature.[10,17,18-25]

Limitation of the study

This was a survey with a limited sample. Hence,the findings cannot be generalized. Hence, further large-scale study needs to be carried out. However, the study provides insights into the oral health status and oral health knowledge and practice among pregnant women in Dhaka city, which may contribute to literature and helps policy makers in formulating policy to promote oral healthcarefor the pregnant mothers.

Conclusion

Ensuring good oral healthcare during pregnancy not only improves the health of the pregnant mother, but also potentially the health of her future child. Most of the pregnant women remain unaware of the potential consequences of neglecting oral hygiene and often defer oralhealth consultation during pregnancy. We do hereby address the need of various oral health education and health promotional interventions during pregnancy period. Oral health assessment should be included in the prenatal checkup list at the antenatal clinics. Besides, the findings of this study will provide

an idea to formulate evidence based oral health reinforcement programmes to minimize the gap in knowledge and practices related to oral hygiene and oral health among general population, too.

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