Oral Health Status of Pregnant Women in Brgy. Kumintang Ilaya, Batangas City

Jose Mari B. Hernandez, Mhar Karlo R. Pilares, Tracy Allyson A. Ropeta, Monarica G. Yuzon & Dr. Annalie D. Pateña
College of Dentistry, Lyceum of the Philippines University – Batangas
adpatena@lpubatangas.edu.ph

Abstract – There are changes that occur in a woman during pregnancy period. These changes may adversely affect her dentition and oral health. This research aimed to determine and assess the oral health status of pregnant women in terms of their oral health practices, habits, mouth, lips, gums, tongue, and palate, in relation to their age, highest educational attainment, period of gestation, and average monthly income. The subject of the study is 40 pregnant women in Brgy. Kumintang Ilaya, Batangas City. The researchers used a questionnaire to identify the oral health status of these pregnant women. After data gathering and analysis, it is found that the respondents rarely encounter problems on their oral health practices, lips, tongue, and teeth. They never experience problems in the gums and palate. The respondents have good oral health status. Based on the results, there is a significant difference on oral health status as to the gums, and it shows that those in their 1st trimester have a good oral health status in terms of their gums. Although some never experience oral health problems, there are still few individuals who encounter it. The researchers proposed an action plan to enhance the oral health status of these pregnant women.

Keywords – Oral Health, Pregnant Women, Health Status

INTRODUCTION

Pregnancy is one of the most emotional and special events in a woman's life. A woman's health is altered during pregnancy due to unique female anatomy and physiology. One of the most significant basic changes that occur is a change in the endocrine system. These changes are caused by a rise in maternal and placental hormone production, as well as changes in the activity of target end organs. Being an expectant woman causes an increase in hunger and desire for various foods. This results in a diet that may be imbalanced, sugary, or nutritionally deficient. These may result in a negative impact on the mother's health, leading to severe weight gain and problems in dental health [1].

The oral health of an individual is affected by nutrition. Without proper nutrition, it will be difficult for our mouth to resist infections. The function and integrity of the supporting oral tissues and the dentition is influenced by nutrition from conception to death [2] and this has a direct impact on overall health. Individuals must have a well-balanced diet to obtain the nutrients they require. Malnutrition occurs when the diet lacks the vitamins, minerals, and other elements required to maintain healthy tissues. Poor nutrition and harmful behavior influence the growth and integrity of the oral cavity and the evolution of different oral disorders. People can avoid oral pathologies related to nutritional insufficiency with proper nutrition and the avoidance of harmful habits.

According to the study of Silk, et al., [3] one of the important parts of prenatal care is oral health care, since poor oral health during pregnancy may lead to poor health outcomes for the mother and baby. Every pregnant woman should have good oral hygiene habits and good access to dental health care. The teeth, gums or gingiva, tongue, palate, and oral mucosa should be examined by a dentist. Patients should be advised to clean and floss their teeth regularly, avoid sugary snacks and drinks, and regularly see a dentist. According to Deghatipour, et al., [4] during pregnancy, a mother's oral health behaviors and habits will have a substantial impact on her oral health as well as her baby's.

Different strategies for improving pregnant women's oral health have been implemented in many developed countries. Included in these are the utilization of prenatal care providers that improve maternal oral health in the USA, and offering pregnant women free access to public dental services in Greece

and the UK. There is a lack of emphasis on prenatal oral health care in Australia rather; its focus is mainly on the postnatal period, especially on the early interventions of the dental health of children. This is a concern for women from low-income families, who, due to the limited access to dental services in the public, are prone to poor oral health since there is a high cost in seeking private sector dental care [5].

The researchers would like to spread awareness on the significance of oral health of each individual, most especially of pregnant women. There are increasing numbers of pregnancy cases nowadays but not all those women know the importance of their oral condition, as well as their future babies', about their general and overall health. Based on the Dental Health Program of the Department of Health (n.d.), oral diseases have always been a serious concern on public health in the Philippines. These diseases have been affecting almost every Filipino, even if it can be prevented and avoided, at a point in one's lifetime. There are a lot of studies about the status and care of one's oral health in other countries. However, in ours, there are only a few, and this just shows that oral health care is not of prior importance. The researchers chose to conduct this study due to the increasing number of cases of individuals with oral health problems, often which started during childhood due to poor oral hygiene practices. These would not happen if proper knowledge about oral health care were imparted on parents, especially on mothers during their pregnancy period. Pregnant women should always take extra care of their oral health, not just for their sake, but for their babies as well.

OBJECTIVE OF THE STUDY

The main objective of the study is to determine the oral health status of pregnant women in Brgy. Kumintang Ilaya, Batangas City. More specifically, the study sought to describe the profiles of the pregnant women in terms of their age, highest educational attainment, period of gestation and average monthly income; assess their oral health status in terms of oral health practices, lips, gums, tongue, palate, and teeth; test the significant differences on oral health status when grouped according to profiles, and propose a plan of action to enhance the respondents' oral health.

MATERIALS AND METHODS

Research design

The researchers used a descriptive research design to describe the oral health status of pregnant women in Brgy. Kumintang Ilaya, Batangas City. A descriptive search design is a research method in which the characteristics of the population or phenomenon studied are described. Included in these are research questions, design of the study and analysis of data carried out on the topic or subject. It answers more to "what" instead of "why" on the research subject [6].

Respondents of the Study

The subject of the study concentrated on 40 pregnant women in Kumintang Ilaya, Batangas City. After identifying that there are 40 pregnant women in the area, the researchers used a convenience sampling technique to identify how many respondents were needed. The convenience sampling technique is non-probability, wherein certain practical criteria such as easy accessibility, geographic proximity, availability and willingness to participate, are met by the members of a target population, and they are included for the study [7].

Data Instrument

The questionnaire is adapted from the questionnaire of George, et al. [5] which concerns the oral health, knowledge and practices of pregnant women in South Western Sydney. The questionnaire for the subjects is divided into two parts.

The first consists of participants' demographic profiles, including their age, period of gestation, educational attainment, and socio-economic status. The second part consists of questions that determine the respondents' oral health status.

Data Gathering Procedure

The research topic was suggested by the college dean, after having failed attempts on the first chosen study, Antibacterial Activity of Selected Medicinal Plants Against Mutans Streptococcus. The researchers agreed to have a study in the research topic suggested, and it was approved by the research adviser.

The researchers used a questionnaire to identify pregnant women's oral health status. Before data gathering, letters of permission to conduct a study were addressed to the College of Dentistry, which was approved by the college dean and research adviser. The researchers asked for permission in the form of a formal letter addressed to the head of the City Health Office, approved by the dean and research adviser, to conduct the study in Brgy. Kumintang Ilaya, Batangas City, and get the necessary information. Because of the COVID-19 pandemic, physical and social interaction was minimized so communication was done online. Contact

information about the subject of the study was taken and they were called by researchers to inform them of the said study and to ask for their consent to participate. The online questionnaires were sent to the participants and they filled out the necessary information. After data gathering, the researchers analyzed the data collected. Respondents were assured that their responses were treated with confidentiality and anonymity, and the data gathered were used only for the sole purpose of the study.

Data Analysis

The needed data will be tallied, encoded, and interpreted using mean, standard deviation and Analysis of Variance using the Tukey method. These tools will be used based on the objectives of the study. In addition, all data will be treated using statistical software known as PASW version 18 to further interpret the results of the study.

Ethical Consideration

The respondents who are involved in this study voluntarily participated and are fully informed about the evaluation conducted. They are not subjected to harm in any way, the protection of their privacy is ensured, and respect for their dignity is prioritized. The confidentiality of research data is ensured. All the information gathered from other researchers is well cited.

RESULTS AND DISCUSSION

Table 1
Percentage Distribution of the Respondents' Profile

Age	Frequency	Percentage (%)
20 and below	25	71.40
21-35	7	20.00
36 and above	3	8.60
Highest educational attainment		
Primary level	15	42.90
Secondary level	18	51.40
Tertiary level	1	2.90
No response	1	2.90
Period of gestation		
1st trimester	15	42.90
2nd trimester	12	34.30
3rd trimester	8	22.90
Average family income		
Less than ₱10000	13	37.10
₱10000-₱20000	2	5.70
₱31000-₱40000	3	8.60
₱41000-₱50000	3	8.60
More than ₱50000	14	40.00

Table 1 presents the percentage distribution of the profiles of respondents. Among the total respondents investigated in this study, the majority is pregnant women ages 20 and below, having 25 in frequency and 71.40% while the respondents who are 36 and above have 3 in frequency and 8.60%. In the highest educational attainment the highest is secondary level having a frequency of 18 and 51.40% and the lowest are tertiary level and no response having a frequency of 1 and 2.90%. The period of gestation the highest is on 1st trimester having a frequency of 15 and 42.90 and the lowest is the 3rd trimester with a frequency of 8 and 22.90%. The average family income majority is more than ₱50000 having a frequency of 14 and the percentage is 40 and the lowest is ₱10000-₱20000 having a frequency of 2 and a percentage of 5.70.

Evidence show that when the family has a low income, it is associated with a poorer perception of one's oral condition, and the lower the income, the lower the proportion of people who have access to necessary dental services. In the study of Barbieri, et al., [8], it was mentioned that several factors including poor income distribution, unemployment, low schooling, and inadequate dental services affect oral health conditions.

Table 2.1
Oral Health Status of Pregnant Women with Regard to Oral Health Practices

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Go to the dentist	1.89	Rarely	6
2. Use mouthwash	2.74	Sometimes	2
3. Use dental floss	2.06	Rarely	3.5
4. Experience pain while chewing	1.66	Rarely	8
5. Feel conscious or embarrassed because of oral health problem	1.74	Rarely	7
6. Experience facial pain	1.31	Never	10
7. Eat a lot of sugary products	3.11	Sometimes	1
8. Smoke	1.09	Never	12
9. Drink alcohol	1.11	Never	11
10. Have bad breath	2.06	Rarely	3.5
11. Dry mouth	2.03	Rarely	5
12. Difficulty in swallowing or chewing	1.46	Never	9
Composite Mean	**1.85**	**Rarely**	

Legend: 4.50 – 5.00 = Always; 3.50 – 4.49 = Often; 2.50 – 3.49 = Sometimes; 1.50 – 2.49 = Rarely; 1.00 – 1.49 = Never

Table 2.1 presents the oral health status about oral health practices. A composite mean of 1.85 indicates that respondents rarely experience the above indicators. Of all the items cited, pregnant women sometimes tend to eat a lot of sugary products (3.11) and use mouthwash (2.74). The use of dental floss, bad breath and dry mouth, were rarely encountered by pregnant women in the area. According to the study of Deghatipour, et.al [4], an expectant mom's behavior in oral health, such as those mentioned above, all have significant effects on their oral health as well as their children's. They must be counseled regarding the performance of routine oral hygiene and be encouraged to consult a dentist during the pregnancy period.

However, they never experienced difficulty in swallowing or chewing, experienced facial pain, drank alcohol and smoked. According to the study of Deghatipour, et. al, ([4], not having enough care on oral health on the gestation period may have negative outcomes for the mother and child. It shows that the respondents have the knowledge and responsibilities for their health and their children. Even though during this period, the amount of hormones continuously changed, the respondents did not experience any difficulty in swallowing or chewing and facial pain.

Table 2.2
Oral Health Status of Pregnant Women with Regard to Lips

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Have dry lips	2.46	Rarely	1
2. Have cracks on lips	2.03	Rarely	2
3. Have sores on lips and corners of mouth	1.69	Rarely	4
4. Experience discomfort in your lips	1.71	Rarely	3
5. Experience bleeding of lips	1.57	Rarely	5
6. Notice or palpate abnormal lumps in your lips	1.09	Never	7.5
7. Have infection in your lips	1.09	Never	7.5
8. Notice red or dark spots or areas in your lips	1.29	Never	6
Composite Mean	**1.61**	**Rarely**	

Legend: 4.50 – 5.00 = Always; 3.50 – 4.49 = Often; 2.50 – 3.49 = Sometimes; 1.50 – 2.49 = Rarely; 1.00 – 1.49 = Never

Table 2.2 presents the oral health status of pregnant women with regard to lips. The composite mean of 1.61 does indicate that respondents rarely experience above indicators. Among the items, the pregnant women rarely have dry lips (2.46) and cracks

on lips (2.03). In the study of Muzaffar, et. al, [9] the changes that occur during pregnancy are usually physiologic and are normal changes due to hormones. Having dry and cracked lips may be experienced by pregnant women due to these hormonal changes, or some other factors.

The respondents never experienced an infection and abnormal lumps in their lips. According to Burfeind [10], lips say a lot about people. Having full and smooth lips will showcase one's inner systemic health, just as having chapped lips, cracked, or sore, could be signs of a more serious problem. Some of lip lesions are caused by trauma, systemic diseases or manifestations of some diseases.

Table 2. 3
Oral Health Status of Pregnant Women with Regard to Gums

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Experience discomfort in your gums	1.43	Never	3
2. Experience gum bleeding	1.57	Rarely	2
3. Experience gum swelling	1.34	Never	5
4. Experience gum recession	1.14	Never	9
5. Notice white, red or dark spots in your gums	1.40	Never	4
6. Notice and palpate abnormal lumps in your gums	1.20	Never	7
7. Have gum infection	1.11	Never	10
8. Have gums that seem to be loose and pull away from teeth	1.17	Never	8
9. Notice darkened areas at gum line	1.34	Never	5
10. Experience pain in gums	1.63	Rarely	1
Composite Mean	**1.33**	**Never**	

Legend: 4.50 – 5.00 = Always; 3.50 – 4.49 = Often; 2.50 – 3.49 = Sometimes; 1.50 – 2.49 = Rarely; 1.00 – 1.49 = Never

Table 2.3 presents the oral health status of pregnant women about gums. The composite mean 1.33 indicates that the above indicators were never experienced by the respondents. Among the items cited, pain in the gums, which has a weighted mean of 1.63, and gum bleeding, having a weighted mean of 1.57, were rarely encountered. They never experienced gum infection and gums that seem to be loose and pull away from teeth. According to the Department of Health and Human Services, the body's response to

plaque during pregnancy is affected by the increased hormones, resulting in gum problems. Pregnant women are more prone to periodontal diseases. Based on the results, the respondents have a positive attitude toward their pregnancy, and pay good attention to their oral health, having fewer oral conditions.

Table 2. 4
Oral Health Status of Pregnant Women with Regard to Tongue

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Experience discomfort in your tongue and floor of mouth	1.40	Never	4.5
2. Think that your tongue is too small or too large	1.09	Never	9
3. Include your tongue during tooth brushing	4.09	Often	1
4. Notice that your tongue is hairy	1.11	Never	8
5. Notice white, red or dark marks, areas or spots on your tongue and floor of mouth	1.51	Rarely	3
6. Notice or palpate abnormal lumps in your tongue and floor of mouth	1.17	Never	6
7. Have sores in your tongue and floor of mouth	1.60	Rarely	2
8. Have experience pain in your tongue and floor of mouth	1.40	Never	4.5
9. Have infection in your tongue and floor of mouth	1.14	Never	7
Composite Mean	**1.61**	**Rarely**	

Legend: 4.50 – 5.00 = Always; 3.50 – 4.49 = Often; 2.50 – 3.49 = Sometimes; 1.50 – 2.49 = Rarely; 1.00 – 1.49 = Never

Table 2.4 presents the oral health status of pregnant women about the tongue. Its composite mean of 1.61 indicates that the above indicators were rarely experienced by the respondents. Among the items cited, pregnant women often include the tongue during tooth brushing (4.09). It was followed by having sores in the tongue and floor of mouth (1.60) and noticing white, red or dark marks, areas or spots on the tongue and floor of mouth (1.51) which are rarely experienced. They never experienced discomfort in the tongue and floor of the mouth, thought that the tongue was too small or too large, noticed that the tongue was hairy, noticed or palpated abnormal lumps in the floor of the

mouth, and tongue, experience pain in the tongue and floor of the mouth, and have infection in the tongue or floor of the mouth.

This is in line with the study of Bordas, et al., [11] which is about the different tongue cleaning methods' impact on the bacterial load of the tongue's dorsum. This announces that tongue brushing resulted in significant reductions of bacteria on the tongue. The study can be concluded that regular tongue cleaning reduces bacteria that may cause discomfort to the tongue. The tongue is coated with a biofilm consisting of several types of bacteria that can cause infection, bad breath, and discomfort. Daily cleaning by tongue brushing significantly reduces these bacteria resulting in less risk of problems arising.

Table 2. 5
Oral Health Status of Pregnant Women about Palate

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Notice or palpate abnormal lumps in your palate	1.14	Never	3
2. Notice white, red or dark spots, marks or areas in your palate	1.11	Never	4
3. Experience pain of your palate	1.20	Never	2
4. Difficulty in swallowing because of palate	1.23	Never	1
5. Have infection of the palate	1.06	Never	5
Composite Mean	**1.15**	**Never**	

Table 2.5 presents the oral health status of pregnant women about the palate. The composite mean of 1.15 indicates that the above indicators were never experienced by the respondents. According to a case study of Mahabob [12] on palatal pyogenic granuloma, hormonal imbalance that coincides with pregnancy that results into lumps commonly affects the gingiva and only rarely affects the palate. Problems of the palate caused by pregnancy are extremely rare and the risk is reduced even more with good oral hygiene.

Table 2.6 presents the oral health status of pregnant women with teeth. Its composite mean of 1.92 indicates that respondents rarely experience the above indicators. Among the items that are cited, pregnant women often brush their teeth. It was followed by discomfort in smiling, experiencing a toothache, missing or broken a tooth, experiencing sensitivity and

having cavities bad breath and dry mouth were rarely encountered.

Table 2. 6
Oral Health Status of Pregnant Women with Regard to Teeth

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Have discomfort in smiling or speaking because of teeth that do not seem to look right	1.74	Rarely	5
2. Brush your teeth	4.34	Often	1
3. Experience toothache	1.89	Rarely	2
4. Have loose or mobile teeth	1.40	Never	10
5. Missed or broke a tooth	1.57	Rarely	7
6. Notice hardened dental plaque on teeth	1.74	Rarely	5
7. Experience teeth sensitivity to heat, cold, when eating or chewing	1.86	Rarely	3
8. Have defective tooth restorations	1.43	Never	9
9. Notice white or dark spots, lines or areas in your teeth	1.46	Never	8
10. Have dental cavities	1.77	Rarely	4
Composite Mean	**1.92**	**Rarely**	

Legend: 4.50 – 5.00 = Always; 3.50 – 4.49 = Often; 2.50 – 3.49 = Sometimes; 1.50 – 2.49 = Rarely; 1.00 – 1.49 = Never

In research by Hashim [13] up to 60% of pregnant women were unaware that they should have visit to a dentist during pregnancy, and up to 68% of women preferred to be visited after their pregnancy. The results of a study by Kandan, et al., revealed that up to 45% of pregnant women had the idea that no dental procedure should be carried out for them while pregnant, for it may give them a risk of having the experience. However, they never experienced defective restoration and noticed white or dark spots, lines, or areas in their teeth.

Table 3 presents the comparison or difference of responses on the oral health status of pregnant women when grouped according to their profiles. There was a significant difference on the oral health status as to the gums since the p-value 0.042 obtained is less than 0.05 alpha levels. This means that the responses vary significantly, and based from the conducted post hoc test, it was found out that those who are in the 1st trimester have a better oral health status as to their gums.

The gingiva undergoes certain changes during gestation period, called pregnancy gingivitis. Its appearance varies from an unchanged to a smooth, shiny, and deeply reddened marginal gingiva, with frequent focal enlargement and intense hyperemia of the interdental papilla. All of these may occur near the end of the first trimester and may regress or even completely disappear at the termination of the pregnancy [14].

Table 3
Difference of Responses on Oral Health Status of Pregnant Women When Grouped According to Profile

Age	F-value	p-value	Interpretation
Oral health practices	0.854	0.435	Not Significant
Lips	0.784	0.465	Not Significant
Gums	1.957	0.158	Not Significant
Tongue	1.732	0.193	Not Significant
Palate	0.066	0.937	Not Significant
Teeth	0.836	0.443	Not Significant
Highest educational attainment			
Oral health practices	1.202	0.325	Not Significant
Lips	0.497	0.687	Not Significant
Gums	0.921	0.442	Not Significant
Tongue	1.532	0.226	Not Significant
Palate	1.850	0.159	Not Significant
Teeth	2.209	0.107	Not Significant
Period of gestation			
Oral health practices	0.676	0.516	Not Significant
Lips	1.766	0.187	Not Significant
Gums	3.506	0.042	Significant
Tongue	0.760	0.476	Not Significant
Palate	3.120	0.058	Not Significant
Teeth	1.594	0.219	Not Significant
Average family income			
Oral health practices	0.191	0.941	Not Significant
Lips	1.104	0.373	Not Significant
Gums	1.193	0.334	Not Significant
Tongue	1.243	0.314	Not Significant
Palate	0.845	0.508	Not Significant
Teeth	0.812	0.527	Not Significant

Legend: Significant at p-value < 0.05

According to the research of Wandera et.al, [16] it was proved that there is a more severe gingival inflammation during pregnancy period than after delivery, although there are no significant changes that occur in the amount of plaque. Also, gingival bleeding during pregnancy is less influenced by the method of oral hygiene that is applied, and it is worse during the second compared to the third trimester of the pregnancy. Whereas some studies have reported that there is no association between parity and tooth loss, the other studies have confirmed that increased parity is related to having fewer numbers of teeth.

Table 4
Proposed Action to Enhance the Oral Health of Pregnant Women

Key Result Are	Strategies	Outcome
Pregnant women eat a lot of sugary products	Increasing their knowledge on the effects of sugary products on the oral health of individuals	Increase the awareness on the effects of sugary products on the oral health of individuals to encourage them to lessen their consumption of sugary product
The respondents experience dryness of the lips	Educate pregnant women on the correlation of dry lips and pregnancy. Encourage pregnant woman to use lip balm/ moisturizer and rehydrate to prevent dry lips	Know and understand the benefits of using lip balm and hydration for the prevention of dry lips
Pregnant women Experience pain in gums	Educate pregnant women that pregnancy causes hormonal changes, and it may lead to having gingivitis	They will have a better understanding of the oral conditions and implications to control and prevent gingivitis
Have sores in your tongue and floor of mouth	Educate pregnant women that pregnancy causes hormonal changes, and it may lead to having sores	They will have a better understanding of the oral conditions and implications to control and prevent sores
Difficulty in swallowing because of palate	Educate pregnant women that pregnancy causes hormonal changes, and it may lead to inflammation of the palate causing difficulty in swallowing	They will have a better understanding of the oral conditions and implications to control and prevent inflammation of the palate thus preventing any discomfort in swallowing
Respondents brush their teeth, but they still experience toothache	Increasing their knowledge on the proper way of tooth brushing and its effect	Know and understand the benefits of proper tooth brushing
The pregnant women of Brgy. Kumintang Ilaya rarely experience oral health problems	Oral health promotion through oral health education	Maintain and improve the oral health status and oral health knowledge of pregnant women of Brgy. Kumintang Ilaya

Table 4 presents the proposed action to enhance the oral health status of pregnant women. Strategies are in line with the key results of this study, and there are expected outcomes for each, as shown above. The strategies are more focused on oral health promotion and suggestions through increasing their knowledge on oral health education. In a study of Vasiliauskiene (2003), good oral health starts during pregnancy, by early prevention of tooth decay and periodontal diseases. People especially expectant mothers will always be interested if it is for the betterment of their child. To have successful plans and effective programs, we must first assess the situation on a certain area, and know the status of the pregnant women to be able to know what actions would be implemented and what should be given more attention.

CONCLUSION AND RECOMMENDATION

The majority of the pregnant women in Brgy. Kumintang Ilaya during this study are aged 20 and below, graduated secondary level of education, are in their 1st trimester of pregnancy, and with an average family monthly income of more than ₱50000. The respondents rarely experience problems on oral health practices, lips, tongue, and teeth. They never encountered problems on their gums and palate. The study revealed that there is no significant difference on their oral health status when grouped according to their profiles. It was found that only the gums have a significant difference when grouped according to period of gestation. The proposed plan of action is oral health promotion through oral health education programs to enhance their oral health status and knowledge since the respondents rarely experience oral health problems.

Pregnant women may be more aware of the significant benefits of dental visits during pregnancy. Pregnant women may know and value the importance of good oral practices. The barangay, particularly the health center may improve oral health promotion through increased oral health education programs. Dental health organizations may prioritize conducting proper oral health education and other oral health programs for the expectant mothers, for their benefit and the future generation. The proposed plan of action may be tabled for discussion and implementation. Future researchers may conduct similar study focusing on a larger scale and conduct clinical examinations.

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