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Original Research Article

Evaluation of Oral Health Status in Pregnant Women Referred to the School of Dentistry and Al-Zahra Hospital in Tabriz in the First Half of 2019

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Abstract: The oral health of pregnant mothers is one of the important factors affecting their health and their fetus health. Due to the poor oral hygiene of pregnant women and the requirement of appropriate solutions for this issue, gathering sufficient information on the oral health of the target population is essential. Therefore, this study was conducted to evaluate the oral health status of pregnant mothers referring to the educational centers Al-Zahra and Tabriz Dental School. ***Method and material****:* This descriptive cross-sectional study was performed on 60 pregnant mothers during the first half of 2019. They had referred to Al-Zahra Medical Training Center and Tabriz Dental School. For each case, a checklist includes demographic information and oral examination. Oral examinations include a Simplified Oral Health Index (OHI-S), Gingival Index (GI), and Plaque Index (PI). Finally, linear and logistic regression models were used to evaluate the relationship between studied variables. ***Results:*** 60 pregnant mothers were studied, 25% of them did not visit a dentist and 10% did not brush their teeth. OHI-S (0-3.33) was 1.08, PI (0-3) was 1, and GI was 0.90 ± 1.98. Also, 80% of the studied population was diagnosed with gingivitis. A significant relationship was observed between PI and the location of residency of pregnant mothers. 88.3% of pregnant mothers brushed their teeth, 26.7% of them used salt water, 18.3% used floss, and 5% of them used mouthwash. There was a significant relationship between education and oral hygiene routine. Also, pregnant mothers who used saltwater had a better GI. ***Conclusion*****:** The result of our study indicated poor oral and dental hygiene of pregnant mothers and this is more evident among mothers who had lower socioeconomic status and lower level of education.

Keywords: Dental plaque, Oral hygiene, Periodontal Index, Pregnancy.

INTRODUCTION

Pregnant women consist important percentage of the population. Emotional and physical changes during pregnancy make pregnant mothers highly prone to various health problems especially oral health issues. During pregnancy, the level of progesterone and estrogen will change and cause alteration of immune reaction and inflammatory mediators that will cause sensitivity and gum inflammation (gingivitis). Therefore, paying attention to oral hygiene is a fundamental factor during this period of time [1-3].

Although it is widely believed that pregnancy can be harmful to teeth; however, the effects of pregnancy on initiation and progression of developing caries are not obvious. The alteration in dietary habits during pregnancy may increase the number of cariogenic microorganisms with a decrease in salivary pH that changes the buffer effect. As a result, due to poor oral hygiene, the rate of caries may increase. Pregnancy-related changes in the oral environment cause some temporary or permanent effects on oral health. Most of these effects could be controlled by good oral hygiene [4, 5].

Several studies have reported a significant relationship between mother's oral health statuses with their children's oral health. Recent studies showed a meaningful relationship between periodontal infections in pregnant women and prenatal risks including

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preeclampsia, low birth weight, preterm labor, fetal and increasing the time of hospitalization of the infant in the Neonatal Intensive Care Unit [6-8]. All of these findings indicate that periodontal disease must be viewed from a whole new perspective.

Meyer et al were conducted a study that showed oral health care in pregnant women has a positive impact on the health of their three-year-old children, children at the age of six, and fourteen-year-old teenagers. These data illustrate that early oral care which is starting during pregnancy may improve the oral health of children [9].

Several studies showed that pregnant women do not seek for dental advice and treatments during pregnancy [10]. Only 44.7% of pregnant women consult with a dentist while pregnant even if they have an oral problem. Thoams *et al*., indicated in their study that more than 50% of Australian pregnant women did not visit a dentist during their recent pregnancy [11]. HajiKazemi *et al*., conducted a study in Iran and reported 5.6% of pregnant mothers had high awareness about oral hygiene, 34.4% of them had a good performance of oral and dental care; however, 70% had a negative attitude toward dental care [12].

Gaffield et al in the United States have reported other factors associated with limited access to dental services during pregnancy including not efficient insurance [13].

Bahramian *et al*., in a study with 20320 participants showed that low socioeconomic status and mental disorders decreased dental services utilization. Reducing financial difficulties and providing oral hygiene education on the importance of preventive measures may increase dental regular visits in developing countries [14].

By considering the important role of oral health of pregnant mothers on public health and newborns' health, it is necessary to evaluate the oral health status of pregnant mothers in different populations and the factors affecting to determine appropriate prevention and treatment programs. Therefore, the aim of the present survey was to investigate the oral health status of pregnant women referred to the School of Dentistry and Al-Zahra Hospital in Tabriz.

METHOD AND MATERIAL

This descriptive cross-sectional study was conducted among pregnant women referring to the Tabriz School of Dentistry and Al-Zahra Hospital in the first half of year 2019. Patients were selected by consecutive sampling likewise once a week 2 to 3 women were randomly included in the study. This study included of 60 pregnant women. The duration of this study was six months, from March to September of 2019. After the approval of the ethics committee of Tabriz Medical University and considering the entering and leaving criteria to the study, 60 pregnant mothers had referred and entered the study.

After providing the necessary explanations regarding the study and obtaining informed consent from the eligible pregnant mothers. A checklist includes a demographic information section and an oral examination section for each pregnant mother. The demographic section includes information about age, level of education, occupation, week of pregnancy, economic status, location, and status of maternal health insurance coverage. This section is completed by pregnant mothers and in case of reluctance on the part of the individual to complete the questionnaire, questions and options were read to the individual, and answers were recorded .

After completing the demographic information section of the checklist, oral examinations include Simplified Oral Hygiene Index (S-OHI), Gingival index (GI), and Plaque index (PI). GI and PI indicators to evaluate the oral health of pregnant women. Also, in the absence of any teeth, the adjacent teeth were examined. If there were no adjacent teeth, the score for that tooth was considered zero.

For each person, an intraoral examination was done with a probe, dental mirror to see inaccessible areas, and natural light to illuminate the examination area. The results were recorded in the oral examination section of the checklist.

The present study is based on two indicators; Calculus Index (CI) and Debris Index (DI).

Each indicator is based on 12 factors that determine the amount of debris and calculus on buccal and lingual surfaces of permanent teeth of three segments. The segment starts from the mesial surface of the right first premolar to the end of the arch, the second segment starts from the mesial surface of the first premolar left side, and the third segment starts from the mesial surface of the left first premolar to the end of the same arch [15].

For the Calculus Index (CI) Table 1, and Debri Index (DI) Table 2 were used respectively. In each sequence after the examination, the highest number was recorded in the individual’s checklist. Then, the sum of obtained numbers of DI and CI of each six sequent (12 numbers) divided by 6 (sequent number) to reach Debri number and Calculus number. Finally, Debri number and calculus number were considered as OHI-S Index (Table 3).

Table 1: Criteria for determining the amount of calculus based on CI

Criteria	Score
No calculus present	0
Supragingival calculus covering not more than third of the exposed tooth surface.	1
Supragingival calculus covering more than one third but not more than two thirds of the exposed tooth surface, or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth or both.	2
Supragingival calculus covering more than two third of the exposed tooth surface, or a continuos heavy band of subgingival calculus around the cervical portion of the tooth or both.	3

Table 2: Criteria for Determining the Amount of Debris Based On Di

Criteria	score
No debris or stain present	0
Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stain without other debris regardless of surface area covered.	1
Soft debris covering more than one third but not more than two third of the exposed tooth surface.	2
Soft debris covering more than two third of the exposed tooth surface.	3

Table 3: Criteria For Determining The Simplified Oral Health Index (Ohi-S)

Criteria	score
Good	DI+CI: 0-1.2
Fair	DI+CI: 1.3-3
poor	DI+CI: 3.1-6

Gingival Index; for each patient gums were examined according to the criteria presented in Table 4 to determine GI and the person's gingival index score was recorded [16]. Periodontal Bleeding Index indicated the incidence of gingivitis in pregnant women.

Plaque Index (PI) criteria is presented in Table 5. For each pregnant woman central, lateral, and first molar were examined in three areas mesiobuccal, mid buccal, and distobuccal and according to Table 5 each section's score was recorded. Finally, the highest number was considered as PI [16].

Table 4: Gingival index

Criteria	score
Natural coral pink gingival with no inflammation.	0
Slight change in color, slight edema. No bleeding on probing.	1
Redness, edema and glazing. Bleeding on probing.	2
Marked redness and edema, ulceration, tendency to bleed spontaneously.	3

Table 5: Plaque index

Criteria	score
No plaque.	0
Thin plaque layer at the gingival margin, only detectable by scraping with a probe.	1
Moderate layer of plaque along the gingival margin, interdental spaces free, but plaque is visible to the naked eye.	2
Abundant plaque along the gingival margin, interdental spaces filled with plaque.	3

Finally, after collecting the information, the data were entered into statistical analysis software SPSS versions 22 and statistically analyzed.

Ethical Considerations; this study was conducted after the approval of the ethics committee of Tabriz University of Medical Sciences. Consent forms were obtained from pregnant mothers and all personal information as confidential. Study data after obtaining the consent of pregnant mothers and completing written consent for each was collected. All mothers' personal information is confidential.

Their information was not mentioned in the data, and all the information of the mothers was without mentioning the details, and in a code form.

In this study, several characteristics were including demographic information of maternal age, education, occupation, week of pregnancy, economic status, location of residency, and status of insurance coverage, and details of their oral health status. Oral health status was evaluated by a simplified health index Oral (S-OHI), gingival index (GI), and plaque index (PI).

STATISTICAL ANALYSIS

The statistical program used was TMSPSS version 22. In the beginning, the normal distribution of data evaluated by Kolmogorov-Smirnov software. Qualitative data in abundance (percentage) and data quantitative deviations if normal, mean standard deviation were considered. If not normal Medium (smallest data-largest data) reported in the form of related graphs. To investigate the relationship between the studied variables, several linear regression models variables for quantitative dependent variables, and from the logistic regression model for dependent variables qualitatively used. In all cases studied, the results P >0.05 considered being statistically meaningful.

RESULTS

60 pregnant women were in this study, (48.4%) 29 persons were in the third trimester of pregnancy, (33.3%) 20 persons of pregnant women were in the first trimester of pregnancy, and (18.3%) of the studied population was in the second trimester of pregnancy (Figure 1).

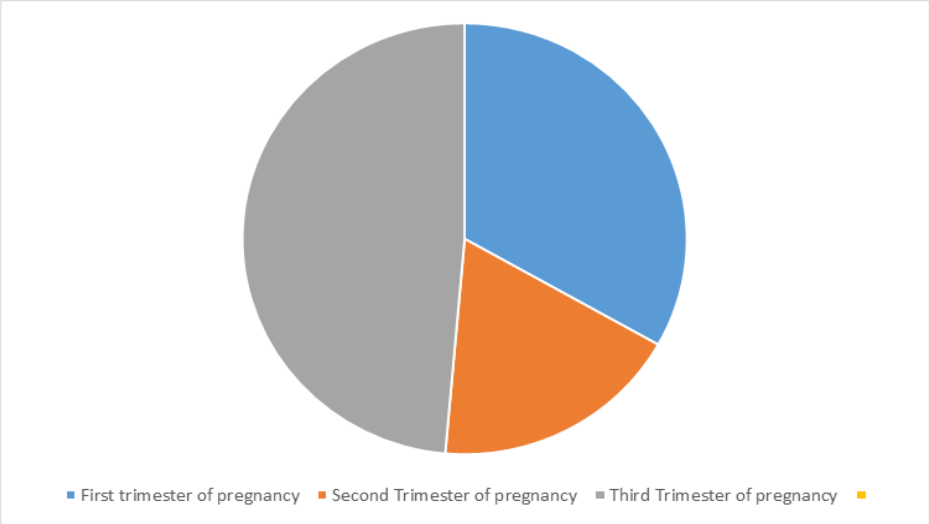

Figure 1: Pragnancy Trimesters

Regarding dental check-up with dentists, (25%) 15 pregnant women reported that they did not visit the dentist, of (68.3%) 41.3 cases stated that they went to the dental office when they needed care, and only (6.7%) 4 of people visited the dentist regularly (Figure 2).

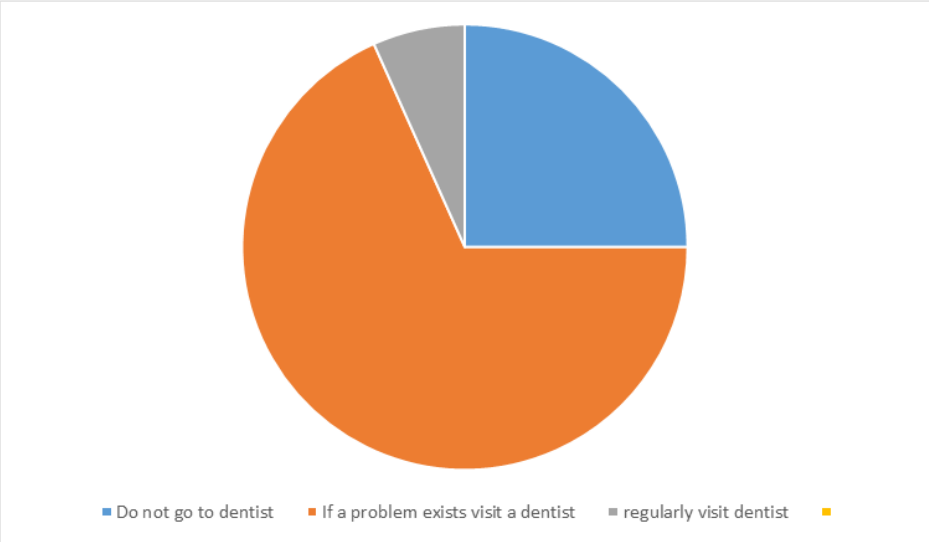

Figure 2: Dental checkup during preganancy

In this study 29 pregnant women (48.3%) brushed their teeth once a day, 15 of them (25%) brushed twice a day, 10 mothers (17.7%) brushed their teeth once a week, and 6 persons (10%) did not brush their teeth (Figure 3).

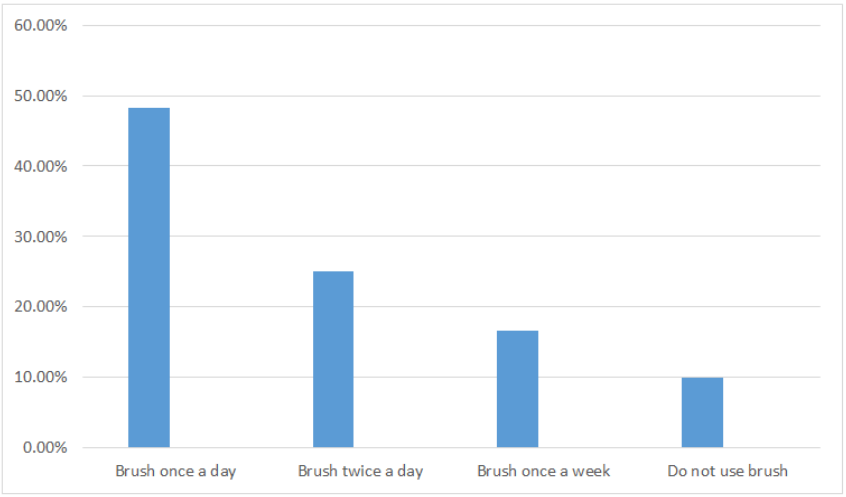

Figure 3: Brushing during pregnancy

In 60 pregnant mothers in this study Calculus Index (0-2) is 0.16 and Debri Index (0-3) is 1. Therefore, Simplified Oral Health Index (0-3.33) is 1.08 (Figure 4).

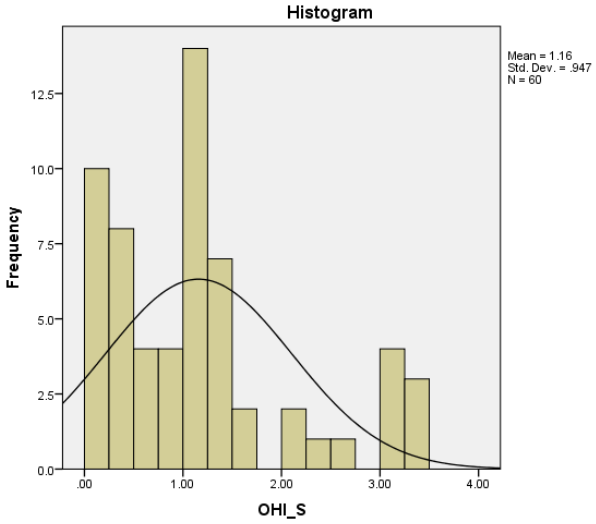

Figure 4: OHI-S

Gingival Index in 60 cases of pregnant women in this study is 1.98 ± 0.90.

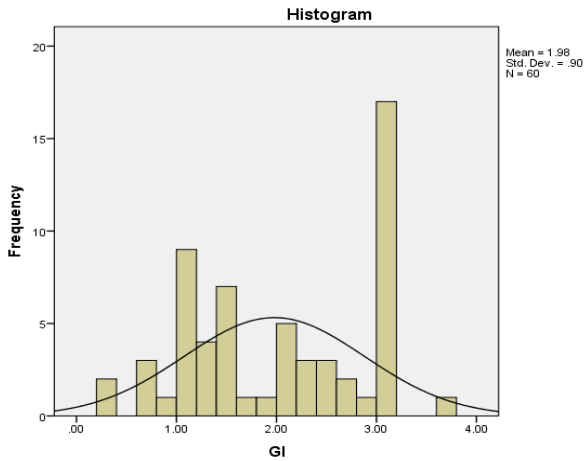

Figure 5: GI

According to Bleeding on Probing (BOP), 28 of the cases (80%) were diagnosed with gingivitis and only 12 pregnant women (20%) had normal gingiva (Figure 6).

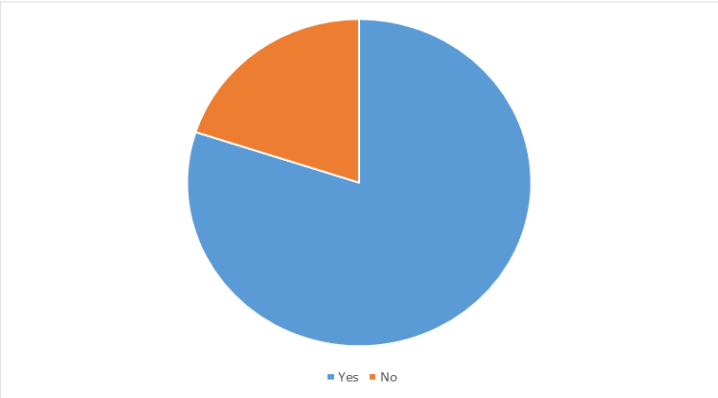

Figure 6: BOP

Overall of pregnant mothers in this study Plaque Index (0-3) is 1.

Determining the relationship between individual social indicators and Oral health status in pregnant women

Of 60 pregnant women in this study, 8 of them were under 20 years old age (13/3%), 29 cases were between 20 and 30 years old(48/8%), and 23 cases were 30 years old or more(38/3%). Also, all 60 cases in this study were married (100%) (Figure 7).

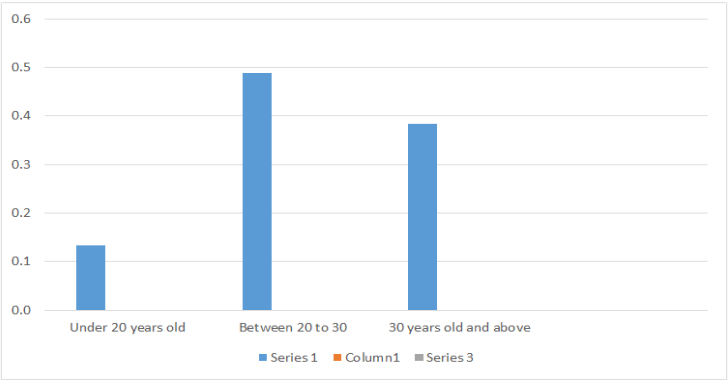

Figure 7: Maternal age

According to the findings presented in Table 6, the majority of pregnant mothers' education is until elementary school (76.7%), 78.3% were residents of Tabriz, and 94.9% were housewives. Also, the number of 43 cases (71/7%) were with basic insurance and only 1.7% of them had supplementary insurance. Most pregnant mothers of this Study (66.7%) had a moderate economic status.

By evaluating the relationship between S-OHI index and individual social status of pregnant mothers by Multiple linear regression (Table 7), there is no Significant relationship between S-OHI index and age (P = 0.244), job (p = 0.296), location of residency (p= 0.296), education (p= 0.166), economic status (p = 773.0), basic insurance status (p = 0.964) and supplementary insurance status (P = 0.795) was not observed in the studied pregnant mothers (Table 7).

Table 6: Relationship between individual social indicators and Oral health status in pregnant women

	Regression Linear	P-value
Age	0.042	0.244
Education	0.073	0.166
Location of residency	0.042	0.296
Job	-0.019	0.718
Economic status	-0.013	0.773
Basic insurance status	0.003	0.964
Supplementary insurance status	0.053	0.795

Table 7: Socioeconomic status of pregnant mothers

	Population	Percentage
Education		
Elementary	46	76.7
High School	12	20
College	2	3.3
Location of residency		
Tabriz	47	78.3
Cities around Tabriz	6	10
Other cities	7	11.7
Job		
Housekeeper	57	94.9
Part time	2	3.4
Full time	1	1.7
Basic insurance status		
Yes	43	71.7
No	17	28.3
Supplementary insurance status		
Yes	1	1.7
No	59	98.3
Socioeconomic status		
Extremely high	1	1.7
High	14	23.3
Medium	40	66.7
Low	5	8.3

Data has shown the relationship between GI index and individual social status of pregnant mothers by regression multiple linearity (Table 8). There is no significant relationship between GI index and age (p = 0.700), economic status (p=0.361), occupation (p=0.138), status of residency (p = 0.829), education (p = 0.846), basic insurance status (p = 0.868), and supplementary insurance status (p = 0.892) of pregnant women (Table 8).

Table 8: Relationship between GI index and individual social status of pregnant mothers by regression multiple linearity

	Regression linear	P-value
Age	-0.072	0.700
Education	-0.050	0.846
Residency location	-0.043	0.829
Occupation	0.394	0.138
Economic status	-0.199	0.361
Basic insurance status	0.048	0.868
Supplementary insurance status	-0.138	0.892

By evaluating the relationship between PI index and individual social status of pregnant mothers by regression multivariate linearity (Table 9). A significant relationship between PI index and location of residency of pregnant mothers. A significant relationship was observed (p <0.05).The average PI in pregnant women living in other areas (except for the city and county of Tabriz) the highest value (0-3) was 2.

The value (1-3) of pregnant women in cities around Tabriz (except Tabriz) was 1.05 and the value of pregnant mothers who were residents in Tabriz (0-3) was 1.

There was no relationship between age (P=0.549), education (P=0.288), occupation (P=0.063), economic status (P=0.644), basic insurance status (P=0.611), and supplementary insurance status (P=0.201) of pregnant mothers were observed.

Table 9: Relationship between PI index and individual social status of pregnant mothers by regression multivariate linearity

	Regression linear	P-value
Age	-0.023	0.549
Education	0.055	0.288
Location of residency	0.081	0.048
Occupation	-0.100	0.063
Economic status	-0.020	0.644
Basic insurance status	0.030	0.611
Supplementary insurance status	0.262	0.201

Determining the relationship between education level and type of choice oral hygiene device in pregnant women

Of the total number of pregnant mothers in this study, 53 of them (88.3%) used toothbrushes, 16 of them (26.7%) used saltwater, 11 of them (18.3%) used floss, and 3 of them (5%) used mouthwash.

Evaluating the relationship between the level of education and the type of oral hygiene choice in pregnant mothers by logistic regression (Table 10). A significant relationship between education and the use of toothbrushes was observed in this study ($p < 0.05$). 100% of pregnant women with a high school or university degree used a toothbrush, while this rate was 84.8% among pregnant women with primary education.

Also, there is a significant relationship between education and the use of mouthwash in women with higher education ($p < 0.05$). All pregnant women with secondary education had the highest rate of using mouthwash (8.3%) among the cases in this study.

Moreover, there isn't any significant relationship between the education of pregnant mothers with flossing (P=1.000) and using saltwater (P=1.000) (Table 10).

Table 10: Relationship between education level and type of choice oral hygiene device in pregnant women

	Regression linear	P-value
Brushing	20.223	0.000
Flossing	0.000	1.000
Using mouthwash	-20.026	0.000
Using salt water	0.000	1.000

Determining the relationship between the type of selected health oral method and oral health status in pregnant women

Evaluating the relationship between S-OHI index and the type of oral health tool of choice for pregnant mothers by multiple linear regression (Table 11). There is no significant relationship between the S-OHI index of pregnant women in this study and using a toothbrush (P= 0.097), flossing (P= 0.791), using mouthwash (P= 0.686), and using saltwater (P= 0.640) (Table 11).

Table 11: Relationship between the type of selected health oral method and oral health status in pregnant women

	Regression linear	P-value
Brushing	0.133	0.097
Flossing	0.018	0.791
Using mouthwash	-0.047	0.686
Using salt water	0.027	0.640

Relationship between GI index and the type of selected oral health device of pregnant mothers by multiple linear regression (Table 12) indicated that a significant relationship between the GI index of pregnant mothers of the study and using a toothbrush (P= 0.198) and flossing (P= 0.683) was not observed. While a significant relationship was observed between the GI index of the studied mothers and the use of mouthwash ($P < 0.05$), the average GI index in pregnant women who used mouthwash was 3 ± 0 and in mothers who did not use mouthwash was 1.9 ± 0.090.

Also, there was a significant relationship between the GI index of pregnant mothers and using saltwater ($P<0.05$). The average GI index in pregnant mothers who used saltwater was 1.70 ± 0.85 and mothers who did not use salt water was 2.08 ± 0.90 (Table 12).

Table 12: Relationship between GI index and oral health method in pregnant mothers

	Regression linear	P-value
Brushing	0.478	0.198
Flossing	-0.127	0.683
Using mouthwash	-1.340	0.016
Using salt water	0.643	0.021

Evaluating the relationship between PI index and the type of selected oral health device of pregnant mothers by multiple linear regression (Table 13). Significant relationship between PI index of pregnant women and tooth brushing (p = 0.739), flossing (p = 0.491.) and using of mouthwash (p = 0.978), and using saltwater (p = 0.924) were not observed (Table 13).

Table 13: Relationship between PI index and the type of selected oral health device of pregnant mothers

	Regression linear	P-value
Brushing	0.027	0.739
Flossing	0.047	0.491
Using mouthwash	0.003	0.978
Using salt water	0.006	0.924

DISCUSSION

Extensive physiological changes have occurred in the mother's body during pregnancy. Due to these changes, pregnant mothers have an increased risk for oral and dental diseases. This oral health condition of the mother can affect the infants' health. There is a meaningful relationship between periodontal infection in pregnant mothers and adverse prenatal consequences including preeclampsia, preterm labor, low birth weight, fetal death, and increasing the time of admission in the NCIU after birth have been seen.

Moreover, mothers play an important role in educating their children on oral health. Therefore, mothers contribute to improving the oral health of the community. Although, it is stated that mothers from different parts of the world do not have suitable oral health [6, 17, 18].

Out of 60 pregnant mothers studied, 48.4% in the third trimester of pregnancy, 33.3% in the first trimester of pregnancy, and 18.3% in the second trimester of pregnancy. Regarding receiving dental care during pregnancy 25% of pregnant mothers reported not seeing a dentist, 68.3% of them stated that they go to the dentist when they needed care and only 6.7% visited the dentist regularly.

According to Pregnancy Risk Assessment Monitoring System (PRAMS) and the Centers for Disease Control and Prevention (CDC), only 23-43 % of pregnant women around the world use dental services during their pregnancy [17].

Boggess and et al indicated in the study in the United States that 599 pregnant women, 70% of them did not visit a dentist during their pregnancy due to the lack of knowledge of the importance of this issue [19]. In the study by Saddki *et al*., which was conducted in Malaysia, only 29% of women visited a dentist during their pregnancy. Reasons that they did not visit the dentist were they did not have enough information on oral and dental diseases, waiting time in dental clinics, and lack of receiving immediate dental care [20].

Also, Hulla *et al*., conducted a study on a group of immigrant women in London. Only 34% of pregnant mothers visited their dentist regularly [21].

In Iran, a study by Torabi *et al*., of 148 pregnant women in Kerman, 14.2% regularly, 35.8% did not brush occasionally and 50% did not brush at all (38) [22]. Bayat *et al*., conducted a study in Hamedan and showed that 50% of pregnant mothers have never visited a dentist during the pregnancy because of cost, stress during dental treatments [23].

Also in the present study, 48.3% of pregnant mothers brushed their teeth once a day, 25% of them used a toothbrush twice a day, and 16.7% once a week, While 10% did not use a toothbrush at all.

Mohebbi *et al*., conducted a study on the oral and dental health of pregnant women who were referred to health centers in Tehran. This study showed pregnant mothers did not have sufficient knowledge of oral and dental health care. Therefore, they do not perform dental care properly and 80% of them brushed once a day or less [18]. Bayat *et al*., had a similar result on a study on pregnant mothers in Hamedan that showed 70% of them brushed once before bedtime [23].

Practical skills training and Informing mothers about the importance of maintaining oral health during pregnancy and its potential effects on pregnancy outcomes are important.

In the present study, the CI (0-2) is 0.16, the DI (0-3) is 1, and OHI-S (0-3.33) is 1.08 that is showing the average OHI-S status on pregnant women in this study.

Shamsi *et al*., in a study in Arak reported a poor oral hygiene status in pregnant mothers in this city [24].

Studies show that the rate of PI in pregnant women in Tabriz is higher than in other cities in Iran.

In this study, GI in pregnant mothers was 1.98± 0.90. Safavi *et al*., reported 85.1% periodontal disease of pregnant women referred to Taleghani hospital and 29 Bahman hospital [25]. In the present study, 80% of pregnant mothers were diagnosed with gingivitis because of the BOP.

According to our study personal, social, and economic information of pregnant mothers, 48.4% of pregnant mothers were between 20 and 30 years old, 76.7% had primary education, 78.3% lived in Tabriz. 94.9% of them were housewives, and 66.7% had average economic status. Also, 71.7% had basic insurance, and only 1.7% had supplementary insurance. Research conducted by Rochelle-Lydon in the UK stated that more than 58% of pregnant mothers who did not receive oral health care during pregnancy have low insurance coverage and they were from low-income levels of society [26].

In the present study, a significant correlation was not observed between OHI-S and social status. However, a significant relationship between PI and location of residency was reported. The mean PI was highest in pregnant women residents in other locations (except Tabriz and the state of Tabriz). Mean PI in cases that were resident in Tabriz state was 1.05. This index was 1 in pregnant women who lived in Tabriz the location of residency can reflect the social status and income of individuals, the relationship between the oral health of pregnant mothers with the place of residency was also shown in the study of Mohebbi *et al*., [18].

From the total number of pregnant mothers studied, 88.3% of them used toothbrushes, 26.7% of them using salt water, 18.3% using floss, and 5% of them used mouthwash. According to several studies, there is a direct and strong relationship between oral health status and education was seen [19, 27, 28].

By evaluating the relationship between levels of education and type of oral hygiene choice in pregnant mothers, a significant relationship was reported between the level of education and use of toothbrushes. 100% of pregnant mothers with secondary and university education used toothbrushes. However, the use of toothbrushes in pregnant women with elementary education was 84.8%. Additionally, there is a relationship between education and the use of mouthwash was seen. Pregnant women with advanced education had a higher rate of using mouthwash (8.3%).

Although no significant relationship was observed between S-OHI and PI with the type of selected oral hygiene device selected, there is a significant relationship was reported between GI in pregnant women and using mouthwash and saltwater.

Mean GI in pregnant women who used mouthwash was 3±0 and among mothers who did not use mouthwash was 1.9 ± 0.90. However, the mean GI in cases that use saltwater 1.7 ± 0.85, and in studied cases who did not use saltwater was 2.08 ± 0.90. Therefore, GI in pregnant women who used saltwater was about twice less than mothers who used saltwater in this study.

There is a requirement of a prospective study with a larger sample size for more accurate results on oral health indicators in pregnant mothers and the factors affecting them.

CONCLUSION

In the present study to evaluate the oral health status of 60 pregnant mothers who referred to the School of Dentistry and Al-Zahra Hospital (Tabriz) during the first half of 2019, the results showed that 25% of pregnant mothers did not visit a dentist during pregnancy and 10% of them did not use a toothbrush at all.

OHI-S in pregnant women (0-3.33) in this study was 1.08 that resulted in the average status of samples. PI (0-3) was 1. Also, GI was 1.98 ± 0.90 and 80% of them were diagnosed with gingivitis. There is no relationship between S-OHI, GI, and social status in this study but we find a meaningful relationship between PI and location of residency.

From the total number of pregnant mothers in this study, 88.3% of them used toothbrushes, 26.7% of them used salt water, 18.3% used floss, and 5% used mouthwash.

There is a significant correlation between education and the type of oral hygiene method. Pregnant mothers with higher education used toothbrushes and mouthwash more than those with lower education.

While there is no relationship between OHI-S, PI, and type of oral health care method, pregnant mothers who used saltwater had a better GI.

Due to the importance of oral health status of pregnant mothers in general health, Individual health, and fetus/infant health, evaluating the oral health status of pregnant mothers for adoption proper prevention and treatment programs are essential. Thus conducting additional studies recommended in this regard.

Conflict of interest: The authors declare that they have no conflict of interest.

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Ethical Statements

This study has the approval code of the ethics committee of Tabriz Medical University (IR.TBZMED.REC.1398.335).

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