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## Evaluating the knowledge, attitude, and behaviors of obstetricians and midwives regarding oral health in pregnant women

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### Original Article

#### Abstract

**BACKGROUND AND AIM:** Poor oral health is known as a risk factor for adverse pregnancy outcomes such as low birth weight (LBW) and preterm birth. Few studies have evaluated the knowledge and behaviors of healthcare professionals about oral health during pregnancy and the possible role of periodontal diseases in adverse pregnancy outcomes. The present study aimed to compare the knowledge and practice behaviors of obstetricians and midwives about oral health.

**METHODS:** In this cross-sectional study, a self-structured questionnaire was randomly distributed among 80 obstetricians and midwives in Yazd, Iran. For analyzing data, chi-square test, t-test, ANOVA, and Spearman correlation test were used.

**RESULTS:** 80 women with an average age of 47 years participated in the study. 70.0% of the subjects selected the reversible gingival inflammation as the definition of gingivitis and 43.8% of them considered dental plaque as the main cause of periodontal diseases. 58.8% of the subjects believed that gingivitis occurs during pregnancy. 90.0% considered the second trimester of pregnancy as the safest time for dental treatments. Only 38.8% of the participants explained to their patients about the importance of oral health. There was no relationship between age and the knowledge level and behavior, but the attitude about the oral health improved as the age increased ( $r = 0.294$ ). The relationship between the field of study and marital status with knowledge, attitude, and practice behavior was not significant. Academic sources were chosen as the first knowledge source (41.3%).

**CONCLUSION:** The level of knowledge and practice behaviors of participants were undesirable, but their attitude was acceptable. Updating the information of participants about oral health by inclusion of the oral health issues in their academic textbooks can improve their awareness and practice behaviors.

**KEYWORDS:** Gynecology; Midwives; Pregnancy; Oral Health; Awareness; Attitude; Behavior

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The level of sex hormones changes during the different periods of a woman's life such as puberty, menstruation, pregnancy, menopause, or oral contraceptive pills (OCP) usage.<sup>1</sup> Steroid sex hormones such as estrogen and progesterone, have potential effects on vascular system of periodontal tissues.<sup>2</sup> Hormonal changes can be associated with various oral manifestations such as

gingivitis and periodontitis, tooth mobility, burning mouth syndrome (BMS) as well as changes in sense of taste.<sup>3-6</sup> On the other hand, oral diseases especially periodontitis may lead to adverse pregnancy outcomes such as low birth weight (LBW), preterm labor, and preeclampsia (PE) (pregnancy blood pressure).<sup>7,8</sup> Periodontitis has an excellent prognosis if intercepted early<sup>9</sup> and it will be managed well if patients be referred

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in time. So it is essential for a gynecologist to be aware of oral problems' role as a risk factor which may jeopardize the infancy health and also to be able to diagnose oral complications during different periods of women's life and refer the patients to a dentist when it is needed.<sup>10-14</sup>

In general, few studies in this area evaluated the level of knowledge, attitude, or behavior of obstetricians and midwives about oral health according to the content of scientific literature.<sup>15,16</sup> For example, 34.0% of female gynecologists in Brazil were unaware of the potential role of periodontal disease in LBW.<sup>17</sup> 14.9% of female gynecologists in the city of Mangalore, India, stated that periodontal disease was not a risk factor for preterm LBW at all.<sup>18</sup>

Unfortunately, there are also few studies in Iran, assessing the knowledge of gynecologists and midwives as one of the most important health care providers during women's life, about the oral health; as far as the authors know and for sure, there is no similar study done in Yazd City, Iran, before. Therefore, this study was conducted to evaluate gynecologists and midwives' knowledge about some different issues in oral health area. In addition, their practice in encouraging their patients to improve their oral health and giving them oral hygiene instructions during specific hormonal changes such as pregnancy was assessed. It should be noted that women are more affected by hormonal changes during pregnancy than other periods and also the complications resulting from these changes are more critical for the health of mother and her baby; so, this study was designed with a greater emphasis on oral health during pregnancy than other periods.

### Methods

In this cross-sectional study, 40 gynecologists and 40 midwifery senior students in Yazd were selected. Then, a questionnaire which its reliability and validity were confirmed in a pilot study by using Cronbach's alpha test ( $\alpha = 0.7$ ) was provided to the participants and

was completed by all. This study was approved by Ethics Committee of Yazd University of Medical Sciences, Yazd City, and the ethical code was P/17/1/223635. This questionnaire consisted of personal demographic information including age, marital status, employment in the public or private sector, years of work experience, and some other questions about the knowledge, attitude, and practice of the subjects regarding oral health during periodic hormonal changes especially pregnancy. The sections related to knowledge, attitude, and practice in the questionnaire included 4, 7, and 10 questions, respectively. At the end, the main source of knowledge about the oral health was questioned by a separate part in the final section of the questionnaire.

Data were analyzed with SPSS software (version 18, SPSS Inc., Chicago, IL, USA) using t-test, Spearman's correlation coefficient, and one-way ANOVA. Statistical significance was set at  $P < 0.050$ .

The quantitative impact method was used to determine the formal validity of the questionnaire.

The knowledge and performance of the subjects under study was considered as inadequate if their score was less than 50% of the maximum gained score and was acceptable if their score was between 50%-70% of the maximum score.

Chi-square test, t-test, and ANOVA were used for statistical analysis. Mann-Whitney U test was used for evaluation of relationship between the knowledge of participants and field of study.

### Results

In this research, 80 women with an average age of 47 years participated (40 gynecologists and 40 midwifery senior students). 42 persons (52.5%) were married. The relationships between marital status of the subjects and their knowledge ( $P = 0.584$ ), attitude ( $P = 0.151$ ), and behavior ( $P = 0.025$ )

were not statistically significant.

There was no relationship between age of the subjects and their knowledge and behavior, but their attitude was related to the age ( $r = 0.294$ ) ( $P < 0.050$ ). It was not possible to measure the relationship between years of work experience and employment in the private or public sector with knowledge, attitude, and practice of individuals due to insufficiency of collected data in this field. The knowledge and performance of the individuals were inadequate, but their attitude was acceptable.

These findings showed that the relationship between the field of study (occupational field) of the subjects and their knowledge ( $P = 0.532$ ), attitude ( $P = 0.011$ ), and behavior ( $P = 0.020$ ) were not statistically significant, meaning that there was no difference between midwifery students and gynecologists' scores. 70.0% of the subjects selected the reversible gingival inflammation as the definition of gingivitis and 43.8% of them considered dental plaque as the main cause of periodontal diseases (Table 1).

**Table 1.** Distribution of absolute and relative abundance in awareness of the correct definition of gingivitis and periodontal diseases

Answered questions	n (%)
Dental caries	1 (1.3)
Reversible gingivitis*	56 (70.0)
Removal of gum adhesion to the teeth	7 (8.8)
I do not know	16 (20.0)
Dental caries	34 (42.5)
Plaque*	35 (43.8)
Pregnancy	1 (1.3)
I do not know	10 (12.5)

Correct answer

The distribution of participants' answers to designated questions about the oral health during periodic hormonal changes especially pregnancy was shown in tables 2-5. 38.8% of the subjects most often explain to their patients the important sources of the oral health and specific issues related to it during pregnancy. 35.0% of the participants most often provide their patients with the nutritional and health advices to improve

their oral health.

**Table 2.** Distribution of absolute and relative abundance in awareness of events occurring during pregnancy in the oral cavity

Answered questions	n (%)
Increased dental caries	29 (36.3)
Gingivitis*	47 (58.8)
Gingival bleeding*	30 (37.5)
Increased dental mobility*	6 (7.5)
Removing calcium from the teeth and weakening their structure	23 (28.8)
I do not know	2 (2.5)

36.3% of the subjects rarely allocated a special time for oral examinations of their patients, and 20.0% never allocated any time for this purpose.

**Table 3.** Distribution of absolute and relative frequencies in awareness of the safest time for dental therapy in pregnant women

Answered questions	n (%)
The first trimester of pregnancy	3 (3.8)
Second trimester of pregnancy*	72 (90.0)
Third trimester of pregnancy	1 (1.3)
It is better not to treat dentistry during pregnancy	4 (5.0)

\*Correct answer

55.0% of the subjects referred their patients to a dentist as a routine manner before pregnancy (Table 6). Academic textbooks were mentioned by 41.3% of the subjects as the first main source of knowledge about oral health, and other sources important in knowledge improvement of participants were indicated in table 7.

**Table 4.** Distribution of absolute and relative frequency in awareness of the consequences of periodontal disease in pregnant mothers

Answered questions	n (%)
LBW or premature baby birth*	47 (58.5)
Preterm delivery*	66 (82.5)
PE*	4 (5.0)
Sialorrhea (drooling)	9 (11.3)
There is no particular complication	2 (2.5)

\*Correct answer

LBW: Low birth weight; PE: Preeclampsia

**Table 5.** Distributions of answers of participants to selected questions about oral health

Row	Questions	Yes [n (%)]	No [n (%)]	I don't know [n (%)]
6	Do periodontal treatments, such as scaling and root planning, have adverse effects on teeth during pregnancy?	8 (10.0)	58 (72.5)	14 (17.5)
7	Is gingivitis more severe than periodontitis?	15 (18.5)	27 (33.8)	38 (47.5)
8	Does the use of fluoride before baby's birth affect its dental evolution?	14 (17.5)	41 (51.3)	25 (31.3)
9	Which one is more effective in preventing dental caries in pregnancy period: using the toothpaste containing fluoride or how to brush?	12 (15.0)	52 (65.0)	16 (20.0)
10	Which one is more effective in preventing dental caries in pregnancy period: the times of using sugar or the amount of consumed sugar each day?	69 (86.3)	7 (8.8)	4 (5.0)

### Discussion

No relationship was observed between age of the subjects and their knowledge and behavior, but their attitude was significantly related with age ( $P < 0.050$ ). Shah et al. also indicated that there was no statistically significant relationship between age and knowledge of participants about oral health.<sup>19</sup> In the study of Golkari et al., the knowledge of gynecologists was generally better compared to the midwifery group.<sup>20</sup> In our study, participants' fields of study did not have any significant effect on their knowledge score. The findings of this study showed that most of the subjects (70.0%) considered reversible gingival inflammation to be a proper definition of gingivitis, which is supported by the findings of Golkari et al.<sup>20</sup> and some other studies.<sup>21,22</sup> 43.8% of the participants in this study considered plaque and calculus as the main cause of periodontal disease which is consistent with the results of Bhalla and

Anuradha,<sup>13</sup> Wilder et al.,<sup>21</sup> and Rahman et al.<sup>23</sup> studies in which the participants considered oral bacteria in dental plaque as the main cause of periodontal disease.

Most of the participants in the study selected gingivitis (58.8%) and gingival bleeding (37.5%) as events occurring in the oral cavity during pregnancy. In all of the studies by Bhalla and Anuradha,<sup>13</sup> Laslowski et al.,<sup>17</sup> Wilder et al.,<sup>21</sup> Suri et al.,<sup>24</sup> and Hashim and Akbar,<sup>25</sup> subjects believed that gingival inflammation and bleeding occurs during pregnancy.

The results of the study indicated that most of the subjects (90.0%) considered the second trimester of pregnancy as the safest time to perform dental treatments which is confirmed by the study of Hashim and Akbar.<sup>25</sup> In the present study, most of the participants considered preterm delivery (82.5%) and LBW or preterm infants (58.5%) as the consequences of periodontal disease in pregnant women.

**Table 6.** Absolute and relative frequency response to performance measurement questions

Row	Questions	Always [n (%)]	Mostly [n (%)]	Sometimes [n (%)]	Rarely [n (%)]	Never [n (%)]
1	Do you explain to your patients the importance of oral and dental health and the specific issues associated with it during pregnancy?	21 (26.3)	31 (38.8)	14 (17.5)	10 (12.5)	4 (5.0)
2	Do you provide your patients with nutritional and health advices to improve their oral and dental health?	16 (20.0)	28 (35.0)	22 (27.5)	10 (12.5)	4 (5.0)
3	Do you allocate any time to do oral examinations for your patients?	5 (6.3)	11 (13.8)	19 (23.8)	29 (36.3)	16 (20.0)

**Table 7.** Distribution of absolute and relative frequency in relation to the source of knowledge of the subjects regarding oral health

Source of knowledge	n (%)
Academic resources	33 (41.3)
Post-graduate resources	19 (23.8)
Scientific journals	14 (17.5)
National media (radio-television)	10 (12.5)
Partners	20 (25.0)
Clinical experiences	19 (23.8)

This finding coincided with the results of Laslowski et al.,<sup>17</sup> Shah et al.,<sup>19</sup> Cohen et al.,<sup>22</sup> Suri et al.,<sup>24</sup> Hashim and Akbar,<sup>25</sup> and Patil et al.<sup>26</sup> studies and is inconsistent with the study of Wagner and Heinrich-Weltzien<sup>27</sup> in which a very small percentage of the subjects selected these events as the consequences of maternal periodontal disease. One third of the participants in this study (33.8%) considered periodontitis more severe than gingivitis (Table 6), which was supported by the results of the study of Wilder et al. in which most participants considered periodontitis as a more serious clinical condition comparing to gingivitis.<sup>21</sup>

Less than half of the subjects reported time allocation to oral examinations of their patients, which is not consistent with Shah et al.<sup>19</sup> study in which most of the participants had dedicated a time to this type of examinations. Moreover, more than half of the respondents (55.0%) explained that they referred their patients routinely to a dentist before pregnancy that is very close to the

study conducted by Golkari et al.,<sup>20</sup> but the result of this part of the present study is inconsistent with the results of studies by Wilder et al.<sup>21</sup> and Patil et al.<sup>26</sup> in which they referred their patients to dentist periodically or rarely, respectively.

The main limitation of this study was that only gynecologists and midwifery students in one geographical location were surveyed.

### Conclusion

The knowledge of participants was inadequate and needed to be promoted, but their attitude was acceptable. Obviously, updating the information of the target group of this study (gynecologists and midwives) by inclusion of oral health issues in their specialized academic text books can increase their awareness and improve the performance of this group of health providers. However, the level of the effectiveness of these educational interventions requires further studies in the future.

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### Conflict of Interests

Authors have no conflict of interest.

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