Original Research

Assessing The Knowledge And Performance Of Obstetrician-Gynecologist And Midwifery Experts Regarding Oral Hygiene Of Pregnant Women

Firouz Amani[1], Ulduz Zamaniahari[2*], Masoumeh Valilou[3]

1. Departmet of Biostatistics, school of medicine, Ardabil University of Medical Sciences, Ardabil, Iran.
2. Department of oral medicine, School of Dentistry, Ardabil University of Medical Sciences, Ardabil, Iran.
3. Professional Doctor of Dentistry, Ardabil University of Medical Sciences.

***Corresponding Author: Ulduz Zamaniahari**, Artment of oral medicine, School of Dentistry, Ardabil University of Medical Sciences, Ardabil, Iran. Email: uzamaniahari@yahoo.com. Orcid: 0000-0002-2735-7486

Abstract:
This study examines the knowledge and performance of obstetrician-gynecologist (OB-GYN) and midwifery experts regarding the oral hygiene of pregnant women in Ardabil in 2021. The present study is a descriptive cross-sectional study that includes all gynecologists (38 individuals), and midwifery experts (138 individuals) from Ardabil, in 2021. The samples were selected randomly and based on Morgan's table. In this study, a self-administered questionnaire (SAQ) was used to record personal information, and questions related to the knowledge and performance of the participants regarding the oral hygiene of women during pregnancy were evaluated. The data were analyzed using SPSS version 25 and two statistics of the Mann-Whitney U test, and Spearman's rank correlation coefficient. A P-value less than 0.05 were considered statistically significant. Analyses revealed that there was a significant correlation between the knowledge and performance of OB-GYN and midwifery experts regarding the oral hygiene of pregnant women. The results from the Mann-Whitney U test showed that there was no significant difference between the knowledge of the specialists and midwifery experts. Moreover, it was observed that the difference between the performance of specialists and midwifery experts was not significant. Based on the achieved data, it is suggested to investigate and identify the barriers to improving the knowledge and performance of OB-GYN and midwifery experts regarding oral hygiene during pregnancy in future studies.

Keywords: Knowledge, Performance, Obstetrician-Gynecologists, Midwifery, Pregnant Women, Oral Hygiene

Submitted: 20 November 2022, Revised: 3 Deceember 2022 , Accepted: 13 Deceember 2022

[Downloaded from intjmi.com on 2026-11-17]

Introduction

According to the report of the World Health Organization (WHO), oral hygiene is a very crucial part of public health, so poor oral hygiene can affect the quality of life deeply. Besides, many chronic diseases such as diabetes, and cardiovascular disease (CVD) are associated with oral hygiene. So, this issue is one of the serious challenges of the WHO in promoting health and preventing chronic diseases (1). In 1996, Offenbach first reported that pregnant women with periodontitis were 7.5 times more likely to have a low birth weight infant than healthy women (2). Following this preliminary analysis, extensive research has investigated periodontal diseases in pregnant women (3). In the last decade, the importance of oral hygiene during pregnancy has attracted the attention of policymakers and organizations providing health care to pregnant women and young children. Oral hygiene is a vital part of preventive healthcare for pregnant women and their babies (4).

Pregnancy is a temporary physiological state that begins after fertilization and lasts for about nine months. Moreover, due to the progressive cycle of hormonal changes during this period, pregnancy has many effects on the general health status of pregnant women (5). The increment of hormonal secretions during this period may lead to different signs and symptoms that affect women's overall health. These hormonal changes cause systemic changes in a woman's body, including cardiovascular, hematological, respiratory, renal, digestive, endocrine, and genitourinary systems (6).

In addition to the above-mentioned, numerous concentrated effects have also been observed during pregnancy that involves the oral cavity. In this regard, periodontal disease is one of the most crucial aspects of oral health that must be considered in a pregnant woman. About 60 to 75 % of pregnant women suffer from gingivitis. Pregnancy-associated gingivitis is usually seen in the marginal gingiva and in the interdental papilla. Besides, the increment of capillary permeability during pregnancy as a result of increased estrogen levels is a predisposing factor for the worsening gingivitis during pregnancy. Bleeding, edema, and tenderness usually occur from the second trimester onwards, the highest amount of which is observed around the eighth month of pregnancy (4).

Symptoms of the disease are worsening due to poor oral hygiene. On the other hand, periodontitis can be controlled with effective oral hygiene practices. Likewise, the increment of circulating hormone levels during pregnancy worsens pre-existing periodontal diseases (7). Tooth mobility was also observed during pregnancy, which is related to the women's periodontal disease. It seems that the change in aerobic bacterial flora into to anaerobic stimulates inflammatory mediators, which causes a disruption in the lamina dura, and finally leading to tooth mobility (8). Another lesion that commonly occurs during pregnancy is a form of pyogenic granuloma known as gestational trophoblastic disease (GTD). GTD is a reactive tumor-like mass that develops in response to macrophage colony-stimulating factor (Local M-CSF) such as plaques. These lesions are created due to some hormonal effects that lead to an increase in angiogenesis. Besides, these lesions are usually observed during the first or second trimester of pregnancy and they may recede after delivery (9). Pregnant women are also at increased risk of tooth decay. Different factors such as increased appetite, frequent consumption of foods that cause decay and hormonal effects have been proposed to explain the increased probability of tooth decay in pregnant women (10). Besides, periodontal diseases in pregnant women have been reported to be associated with adverse pregnancy outcomes (APOs), including increased risk of premature delivery, low birthweight, and preeclampsia (11, 4).

[Downloaded from intjmi.com on 2026-11-17]

The prevalence of dental and oral diseases in pregnant women and association of these disorders with some adverse outcomes of pregnancy has attracted the attention of policymakers and health care providers to the importance of oral hygiene during pregnancy. The research performed in this field has often shown that, unfortunately, the knowledge, attitude, and performance of health care providers for pregnant women are worryingly less than optimal (12-13).

Despite conducting numerous studies in other parts of the world, the studies conducted in Iran have been limited (14) and no studies have been conducted in Ardabil province up to now in this regard. Unfortunately, there is a general lack of knowledge and performance in gynecology and obstetrics, and midwifery experts regarding the oral and dental health of pregnant women in the studied region. However, it should not be forgotten that physicians are the main providers of health care to pregnant women, so considering the association between oral and dental diseases with serious complications of pregnancy, their knowledge, and performance regarding oral hygiene of pregnant women can directly affect the overall health of pregnant women during pregnancy (4,11). Therefore, the present study is aimed to investigate the knowledge and performance of obstetricians and gynecologists, and midwifery experts regarding the oral hygiene of pregnant women in Ardabil, 2021. In addition to providing an initial picture of the level of knowledge and performance of obstetricians and gynecologists, and midwifery experts regarding oral hygiene during pregnancy, the findings of our study could be used in planning and revising educational policies and treatment protocols.

Research Questions and Hypotheses

According to the above, the hypotheses and questions of this research are as follows:

1- There is a relationship between the knowledge and performance of obstetricians and gynecologists regarding oral hygiene of pregnant women in Ardabil in 2021.

2- There is a relationship between the knowledge and performance of midwifery experts regarding oral hygiene of pregnant women in Ardabil in 2021.

3- What is the knowledge level of obstetricians and gynecologists about oral hygiene of pregnant women in Ardabil in 2021?

4- What is the level of knowledge of midwifery experts about the oral hygiene of pregnant women in Ardabil in 2021?

5- What is the performance of obstetricians and gynecologists regarding oral hygiene of pregnant women in Ardabil in 2021?

6- What is the performance of midwifery experts regarding oral hygiene of pregnant women in Ardabil in 2021?

Methodology

This is a cross-sectional study in which the data were collected through a descriptive correlation design. Based on the statistics obtained from medical council of the Islamic Republic of Iran, the statistical population studied in this research includes all obstetrician-gynecologists (38 people) and midwifery experts (138 people) in Ardabil, who were working in the year 2021. The sampling was done by random and based on Morgan's table, based on which 137 individuals participated in ourstudy (35 obstetrician-gynecologist and 102 midwifery experts). Based on the method used in this study, data collection was done using questionnaire. The used questionnaire was created and validated by the researcher to assess the knowledge and performance of obstetricians and obstetricians and midwifery experts regarding the oral hygiene of pregnant women. To check the validity of the questionnaire, first, the questions were given to 10 oral and maxillofacial specialists and their comments were assessed

[Downloaded from intjmi.com on 2026-11-17]

and applied to improve the content and appearance of the questionnaire. Then, after removing the questions with a low validity, 20 questionnaires were distributed among 20 members of the target groups twice in a time interval of 10 days. Finally, after specifying the reliability of the questionnaire with Cronbach's alpha coefficient of 0.9, the final questionnaire was distributed among the target groups.

Results

The results of the statistical analysis revealed that 21.6% (22 individuals) of midwifery experts with 5 to 10 years' experience and 48.6% (17 individuals) of highly experienced obstetricians and obstetricians had the most experience in medicine and counseling in their field of expertise. It was also observed that the statistical samples in two independent groups of midwifery experts and obstetricians and obstetricians have a normal distribution regarding the studied variables of the knowledge and performance.

Research Questions and Hypotheses

First hypothesis:

There is a relationship between the knowledge and performance of obstetricians and obstetricians regarding oral hygiene of pregnant women in Ardabil in 2021.(Table 1)

Based on the statistical analyzes related to table (1) and considering that the significance level of the test (0.002) is less than 0.05, it can be claimed that the research hypothesis is confirmed. So, there is a correlation between the knowledge and performance of obstetricians and gynecologists regarding the oral hygiene of pregnant women.

The second hypothesis

There is a correlation between the knowledge and performance of midwifery experts regarding oral hygiene of pregnant women in Ardabil in 2021.

Based on the findings of statistical analysis presented in table (2), the significance level of the test was P = 0.000, which is lower than the defined significance level (P<0.05). According to these findings and considering the value of the correlation coefficient, it can be claimed that the second hypothesis of the research is confirmed and there is a significant association between the knowledge and performance of midwifery experts regarding the oral hygiene of pregnant women.

The first question of the research

What is the difference between the level of knowledge of obstetricians and gynecologists and midwifery experts regarding the oral hygiene of pregnant women in Ardabil?

Based on the data presented in table (3), the level of knowledge of obstetricians and gynecologists, and midwifery experts with ratios of 77.1% and 74.5% was average, respectively. Besides, because the distribution of the data was not normal and also due to the non-uniformity of variance, to survey this question in this study Mann-Whitney U test was used. The results achieved from this test revealed that there is not a significant difference between the knowledge and performance of midwifery experts (P>0.05).

The third research question

What is the difference between the level of performance of obstetrics and gynecology and midwifery experts regarding the oral hygiene of pregnant women in Ardabil?

Based on the findings achieved from the statistical analysis presented in table (4), the performance level of most obstetricians and gynecologists, and midwifery experts with ratios of 51.4% and 70.6% is at a good level, respectively. Besides, because the distribution of the data was not normal and also due to the non-uniformity of variance, to survey this question in this study Mann-Whitney U test was used. The results achieved from this test

[Downloaded from intjmi.com on 2026-11-17]

showed that there is a significant difference between the performance of obstetricians and gynecologists and midwifery experts (P<0.05). So, the performance of midwifery experts (7.42±2.12) is higher compared with that of obstetricians and gynecologists (6.57±1.97).

Discussion and Conclusion

This study was conducted aimed to investigate the knowledge and performance of obstetrician-gynecologists and midwifery experts regarding oral hygiene in pregnant women in Ardabil in 2021. The results of the statistical analysis showed that the level of knowledge of experts regarding the oral hygiene of pregnant women was (7.71±1.7) out of 14. It should be noted that the knowledge level of 8.6% was considered as good, 77.1% as average, and 14.3% as low. The level of knowledge of midwifery experts regarding the oral hygiene of pregnant women was (7.84±2.23) out of 14. It should be noted that the knowledge level of 9.8% was reported as good, 74.5% as average, and 15.7% as low. Based on the achieved data, there was not a significant difference between the two studied groups in terms of their knowledge (p>0.05). In line with the data of the present study, Malek Mohammadi et al showed that the knowledge of midwifery experts and obstetricians and gynecologists regarding oral hygiene was average and also there was no significant difference between them (P>0.05) (14). Besides, in their study Alizadeh et al (2019) reported that more than 84% of the participants, which included midwifery experts and obstetricians and gynecologists, had average knowledge about the oral hygiene of pregnant women (15).

The findings of the analysis of statistical performance of studied samples showed that the performance of obstetrician-gynecologists in the oral hygiene of pregnant women was (6.57±1.97) out of ten, which the performance score of 51.4% was considered as good, 40% as average, and 8.6% was considered as low. Besides, the performance of midwifery experts regarding the oral hygiene of pregnant women was (7.42±2.12) out of 10, which a performance score of 70.6% was reported as good, 24.5% was reported as average, and a performance score of 4.9% was reported as low. According to the aforementioned data of the previous studies and also the data obtained from this study, it was concluded that the performance of midwifery experts is significantly higher than obstetrician-gynecologists (p<0.05). The findings of this study, is in line with the results reported in a study by Nadafipour et al (2018). The significant difference observed in the findings associated with the different performance of the two studied groups can be justified by holding of further retraining courses in the midwifery experts group than the obstetrician-gynecologists in our study. Additionally, this issue can be justified by the fact that more pregnant women with poor oral hygiene refer to the midwifery experts than the obstetrician-gynecologists in our study.

Investigations related to the hypotheses of this research revealed that there is a significant correlation between the knowledge and performance of midwifery experts and obstetrician-gynecologists (p<0.05), which is in line with the findings of a study by George et al (2016). So that they the declared that there was a significant association between the knowledge of healthcare workers and their performance (16). Moreover, in their study, Suri et al (2014) investigated the relationship between the knowledge of obstetrician-gynecologists about oral hygiene and their performance and concluded this association was significant (13). This finding shows that as the level of the knowledge of midwifery experts and obstetrician-gynecologists increases, the possibility of increment of their performance to pregnant women will also increase. Every research has its own

[Downloaded from intjmi.com on 2026-11-17]

limitations, and this research is no exception. One of these limitations was the ability to access the study group and their participation rate, so that sometimes made it difficult to complete the questionnaire due to their lack of time in the work environment. Another limitation to our study was the difference in the data collection tools that made it difficult to generalize the results and compare them with other studies.

References

1. Kheirollai H, Mazloomi S, Haerian Ardakani A, Ahmadieh M. Evaluation of knowledge and attitude of Yazd dental students toward oral hygiene. J Shaheed Sadoughi Univ Med Sci 1998; 6 (3): 78-83.
2. Offenbacher S. Periodontal diseases: pathogenesis. Ann Periodontol 1996; 1(1): 821-78.
3. Pockpa ZAD, Soueidan A, Koffi-Coulibaly NT, Limam A, Badran Z, Struillou X. Periodontal Diseases and Adverse Pregnancy Outcomes: Review of Two Decades of Clinical Research. Oral Health Prev Dent 2021; 19 (1): 77-83.
4. Hartnett E, Haber J, Krainovich-Miller B, Bella A, Vasilyeva A, Kessler JL. Oral health in pregnancy. J Obstet Gynecol Neonatal Nurs 2016; 45 (4): 565-73.
5. Moya J, Phillips L, Sanford J, Wooton M, Gregg A, Schuda L. A review of physiological and behavioral changes during pregnancy and lactation: potential exposure factors and data gaps. J Expo Sci Environ Epidemiol 2014; 24 (5): 449-58.
6. Motosko CC, Bieber AK, Pomeranz MK, Stein JA, MartiresKJ. Physiologic changes of pregnancy: A review of the literature. Int J Women's Dermatology 2017; 3 (4): 219-24.
7. Gupta R, Acharya AK. Oral health status and treatment needs among pregnant women of Raichur District, India: A populationbased cross-sectional study. Scientifica 2016; 2016.
8. Pirie M, Cooke I, Linden G, Irwin C. Dental manifestations of pregnancy. Obstet Gynecol 2007; 9 (1): 21-6.
9. Marla V, Srii R, Roy DK, Ajmera H. The Importance of Oral Health during Pregnancy: A review. Med Express 2018;5.
10. Rainchuso L. Improving oral health outcomes from pregnancy through infancy. Am Dent Hyg Assoc 2013; 87 (6): 330-5.
11. Han Y. Oral health and adverse pregnancy outcomes–what's next? J Dent Res 2011; 90 (3): 289-93.
12. Hashim R, Akbar M. Gynecologists' knowledge and attitudes regarding oral health and periodontal disease leading to adverse pregnancy outcomes. J Int Soc Prev Community Dent 2014; 4 (Suppl 3): S166.
13. Suri V, Rao N, Aggarwal N. A study of obstetricians' knowledge, attitudes and practices in oral health and pregnancy. Health Educ 2014; 27 (1): 51.
14. Malek Mohammadi T, Malek Mohammadi M. Knowledge, attitude and practice of gynecologists and midwifes toward oral health in pregnant women in Kerman (2016). Iran J Obstet Gynecol Infertil 2017; 20 (4): 9-18. doi: 10.22038/ijogi.2017.8976. [Persian]
15. Alizadeh, L., E. Allahyari, and F. Khazaei, An Evaluation of Knowledge, Attitude, and Practices of Obstetricians and MidwivesConcerning Oral Health of Pregnant Women in Birjand in 2019. Avicenna J Dent Res 2019; 11 (4): 125-130.
16. George A, Dahlen HG, Reath J, Ajwani S, Bhole S, Korda A, et al. What do antenatal care providers understand and do about oral health care during pregnancy: a cross-sectional survey in New South Wales, Australia? BMC pregnancy and childbirth 2016; 16 (1): 1-10.

[Downloaded from intjmi.com on 2026-11-17]

Tables

Table 1. Investigating the association between the knowledge and performance of obstetricians and gynecologists regarding oral hygiene of pregnant women in Ardabil in 2021.

Predictor variable	Criterion variable	Type of correlation coefficient	Number of samples	The value of the correlation coefficient	The significance level
Knowledge	Performance	Spearman's rank	35	0.36	0.002

Table 2. Investigating the association between the knowledge and performance of midwifery experts regarding oral hygiene of pregnant women in Ardabil in 2021.

Predictor variable	Criterion variable	Type of correlation coefficient	Number of samples	The value of the correlation coefficient	The significance level
Knowledge	Performance	Spearman's rank	102	0.379	0.000

Table 3. Mann-Whiteny U test to examine the difference between the level of knowledge of obstetricians and gynecologists and midwifery experts regarding oral hygiene of pregnant women

The studied group		Frequency	Percentage	Cumulative percentage	Average	Standard deviation	Significance level
Obstetricians and gynecologists	Low	5	14.3	14.3	7.7143	1.77518	0.701
	Medium	27	77.1	91.4			
	Good	3	8.6	100			
	Total	35	100	-			
Midwifery experts	Low	16	15.7	15.7	7.8431	2.23272	
	Medium	76	74.5	90.2			
	Good	20	9.8	100			
	Total	102	100	-			

[Downloaded from intjmi.com on 2026-11-17]

Table 4. Mann-Whitney U test to investigate the difference between the level of performance of obstetrics and gynecologists and midwifery experts regarding the oral hygiene of pregnant women.

The studied group		Frequency	Percentage	Cumulative percentage	Average	Standard deviation	Significance level
Obstetricians and gynecologists	Low	3	8.6	8.6	6.5714	1.97463	0.019
	Medium	14	40	48.6			
	Good	18	51.4	100			
	Total	35	100	-			
Midwifery experts	Low	5	4.9	4.9	7.4216	2.12219	
	Medium	25	24.5	29.4			
	Good	72	70.6	100			
	Total	102	100	-			

[Downloaded from intjmi.com on 2026-11-17]