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The Effect of Oral and Dental Health Literacy on Quality of Life in Pregnant Women

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Abstract : *This study was conducted to determine the effect of oral health literacy on the quality of life of pregnant women. The sample of this descriptive study consisted of 212 pregnant women. The data collection form consisted of Descriptive Information Form, Comprehensive Oral and Dental Health Knowledge Measurement Tool, Multidimensional Oral Health Locus of Control Scale and Oral Health Related Quality of Life Scale. The data were collected at the pregnancy school by face-to-face interview method. SPSS software was used for statistical analysis of the data and descriptive tests and nonparametric statistical tests were used. The mean age of the participants was 27.58±4.94 and 76.9% of them resided in the city centre. It was found that there was a statistically significant difference between the scores of the participants according to variables such as income status and giving importance to oral health ($p<0.05$). The total mean scores of the scales used in the study were found to be moderate. It was observed that oral and dental health literacy of pregnant women did not have any effect on quality of life.*

Keywords: *Oral health, Oral and Dental Health Literacy, Oral health during pregnancy, Oral and dental health Quality of life Pregnancy, Quality of life*

I. INTRODUCTION

Health problems and oral and dental health problems interact with each other. General health problems cause deterioration in oral and dental health. The evidence presented in the World Oral Health Report (2003) explains the relationship between oral problems and general health (1).

Pregnancy is a period when the risk of oral and dental health problems increases due to physiological changes. Increased estrogen and progesterone levels during pregnancy cause changes in oral flora. Since the number of some microorganisms in the mouth increases with the effect of steroid hormones increasing during pregnancy, the tendency of the gingiva to bleed increases and low plaque levels can cause serious inflammation (2). Thus, women become more prone to problems related to oral and dental health during pregnancy (3). Problems related to oral and dental health during pregnancy also affect the pregnancy process. Studies showing a positive relationship between oral and dental health problems and adverse pregnancy outcomes (preterm birth, low birth weight, preeclampsia, etc.) indicate that oral and dental health problems negatively affect both maternal and infant health (4-7).

In addition to hormones, diet and lack of attention to oral hygiene also worsen the oral and dental health of pregnant women. Morning sickness during pregnancy also increases the risk of dental caries by disrupting the acidic environment in the mouth. This situation may impair the quality of life of pregnant women by causing physical complaints such as toothache (6,8).

It is recommended that a thorough dental examination and cleaning should be performed in early pregnancy, and treatment should be planned after the first trimester as the foetal organs develop and morning sickness disappears or is minimal. The second trimester is the safest time for dental treatment in pregnancy, as the pressure on the vena cava is reduced while lying in the dental unit chair (6).

Pregnant women should be informed about antenatal care and all women of reproductive age should be informed about oral and dental health within the scope of preconceptional care. In the "Preconception Care Management Guide" of the Ministry of Health (2018), oral and dental health is also included under counselling topics (9,10).

Oral and dental health literacy is defined as "the knowledge, motivation and competence of individuals to access, understand, evaluate and use oral and dental health information in order to make the right decisions and judgements about their oral and dental health" (11). Quality of life related to oral and dental health is a multidimensional concept that includes variables affecting individuals' nutrition, sleep, communication with other individuals and self-confidence, and their satisfaction with their oral and dental health (12). While pregnancy increases susceptibility to oral and dental health problems, oral and dental health problems negatively affect the quality of life of pregnant women (13).

Early evaluation of the effect of oral and dental health literacy on oral health-related quality of life in pregnant women will contribute to improving the general health status of pregnant women and preventing complications that may develop during pregnancy and delivery. In the literature, no study was found in which the effect of oral and dental health literacy on quality of life in pregnant women was examined. In the light of this information, the aim of this study was to determine the effect of oral health literacy on quality of life in pregnant women.

Research Questions

What are the participant characteristics of pregnant women?
What is the oral and dental health literacy level of pregnant women?
What is the level of quality of life of pregnant women regarding oral and dental health?
Is there any relationship between oral and dental health literacy levels of pregnant women and oral and dental health quality of life?

II. MATERIALS AND METHODS

Type of Research

It is a descriptive type research.

Population and Sample

The population of the study consisted of pregnant women who applied to the Pregnancy School of a Training and Research Hospital in a province in Turkey. In the last 6 months, 494 pregnant women applied to the Pregnancy School of the relevant hospital. The sample of the study was calculated according to the sampling formula used in cases where the population was known and it was found that 210 pregnant women should be included in the study and 212 pregnant women were reached as a result of the study. The power of the study was calculated as 95% using the statistical programme G Power 3.0.1. The data of the study were collected in July-August 2023.

$$Nt^2pq \qquad (494).(1.96)^2.(0.5).(0.5)$$

$$= \mathbf{210}$$

$$n = \frac{}{D^2(N-1)+t^2pq} = \frac{}{(0.05)^2.(493)+(1.96)^2.(0.5).(0.5)}$$

N = Number of individuals in the research population = 494

p = Frequency of the event examined = 0.5

q = (1-p) frequency of non-occurrence of the event examined = 0.5

d = Effect size = 0.05

t = t value for error margin at 95% confidence level, which is the theoretical value in the table t at a certain degree of free domand at the determined error level:1.96

Pregnant women aged 18 years and over, who were literate and willing to participate in the study voluntarily were included in the study.

Data Collection Forms

Descriptive Characteristics Form: The first part of this form includes descriptive information such as age and income status. The second part includes information about tooth brushing, oral care product use, and oral and dental health, and there are 23 questions in total in these two parts.

Comprehensive Oral and Dental Health Knowledge Measurement Tool (Turkish Conceptual Measure of Oral Health Knowledge T-CMOHK): The scale was developed as CMOHK in 2010 by Mark et al. The T-CMOHK measurement tool, whose Turkish validity and reliability study was conducted by Ekmekçi Güner and Çilingiroğlu (2021), was designed to determine comprehensive and conceptual oral and dental health literacy in adults aged 18 years and over. The item order in the T-CMOHK measurement tool is different from the item order in the original measurement tool. There are no reverse items in the measurement tool. The scale consists of 23 items and each correctly answered question is recorded as one (1) point. As the score increases, the level of oral and dental health literacy increases. The original measurement tool is applied by reading the items to the participant by the interviewer and recording the option answered by the participant by the interviewer (11).

Multidimensional Oral Health Locus of Control Scale (MOCASC): The scale is a tool used in determining health-promoting behaviours, determining the health values of individuals and measuring how they perceive the power of control over health. The health promotion behaviours scale was developed by Peker (2005) and its validity and reliability were studied. The scale is a Likert-type 4-point scale and consists of 26 items and 5 subscales. There are no negatively evaluated items in the scale. The responses to the items are evaluated as strongly disagree (1 point), somewhat agree (2 points), agree (3 points), strongly agree (4 points). The score range of the scale is between 26-104 (14).

Oral Health Related Quality of Life- United Kingdom (OHRQoL-UK): It was developed by McGrath and Bedi (2000) in the UK. It consists of 16 questions in four different categories that evaluate the effects of oral and dental health on quality of life in positive and negative areas. These categories are symptom (2 questions), physical status (5 questions), psychological status (5 questions), social status (4 questions). The validity and reliability of the Turkish form of the scale was conducted by Mumcu et al. It was thought that the negative effects of diseases related to the oral-dental region on quality of life prevented individuals from recognising the positive effects of healthy conditions in daily life. The low score obtained in the OHRQoL-UK scale, which makes both positive and negative evaluations, indicates that the quality of life related to oral and dental health is low. In the OHRQoL-UK questionnaire, the questions scored according to the Likert scale are given a value between 1-5. When the scores of 16 questions are totalled, there is a value between 16-80 (15,16).

Data Collection

Pregnant women who applied to the pregnancy school were informed about the research by the researchers. Data were collected by face-to-face interview method with the participants who accepted the research.

Ethical Aspect of the Research

Ethics committee permission was obtained from the Non-Interventional Ethics Committee of the relevant university (Date: 13.04.2023, No: 124989) and written permission was obtained from the relevant hospital (Date: 21.06.2023, No: 2/2). Both verbal and written informed consent were obtained from the pregnant women for participation in the study.

III. RESULTS

Table 1. Descriptive characteristics of participants (n=212)

Variable	Number	%
Age:27.58±4.94 Min: 19 Max:45		
Gestational week: 25.7±11.53		
Number of pregnancy		
1	112	52.8
2	56	26.4
3 and more	44	20.8
Number of living children		
0	127	59.9
1	53	25.0
2 and more	32	15.1
Residence status		
District	49	23.1
Province Centre	163	76.9
Education status		
Primary School	15	7.1
Middle School	53	25.0
High School	59	27.8
Licence	85	40.1
Occupation		
Housewife	114	53.7
Officer	55	25.9
Self-employment	43	20.4
Income status		
Income less than expenditure	25	11.8
Income and expenditure equal	156	73.6
Income more than expenditure	31	14.6
Smoking status		8.0
Yes	17	92.0
No	195	
Alcohol use status		
Yes	3	1.4
No	209	98.6
Chronic disease status		
Yes	24	11.3
No	188	88.7
Thinking that they attach importance to oral health		
Yes	162	76.4
No	19	8.9
Undecided	32	14.7

Self-assessment in terms of knowledge and skills related to oral health		
Very good	19	9.0
Good	81	38.2
Average	103	48.6
Less	9	4.2
Nothing	0	0
State of brushing teeth		
Yes	198	93.3
No	14	6.7
Frequency of tooth brushing		
3 times a day	20	9.4
2 times a day	63	29.7
1 time a day	110	51.9
A couple of times a week	19	9.0
Use of any product other than a toothbrush to protect oral health		
Yes (dental floss, miswak)	38	17.9
No	174	82.1
Visiting the dentist when there is an important problem with their teeth		
Yes	134	64.7
No	49	23.7
Undecided	29	11.6
Visiting the dentist for control purposes even if there is no problem		
Yes	44	20.7
No	168	79.3
The most important reason for not visiting the dentist		
Fear/Shyness	62	29.2
No possibility to go	34	16.0
Financial difficulties	48	22.6
Having the thought of postponement	68	32.2
Having an existing problem related to oral health		
Yes	58	27.4
No	154	72.6
Visiting a dentist due to an oral and dental health problem experienced during pregnancy		
Yes	44	20.8
No	168	79.2
Receiving information about the importance of oral and dental health before or during pregnancy		
Yes	52	24.5
No	160	75.5

The mean age of the participants was 27.58±4.94 and 76.9% of them resided in the city centre. Half of the participants (53.7%) were housewives and 73.6% of them had equal income and expenses. It was observed that most of the participants (76.4%) thought that oral health was important (Table 1).

Table 2. Multidimensional Oral Health Locus of Control Scale (MOCASC) score distributions, minimum and maximum values

Scale	Mean±SD	Min.	Max.
Multidimensional Oral Health Locus of Control Scale (MOCASC)	61.25±10.85	36.00	89.00

Mean: Average, SD: Standard deviation, Min: minimum, Max: maximum

The mean total score of the participants from the Multidimensional Oral Health Locus of Control Scale was 61.25±10.85 (Table 2).

Table 3. Oral Health Related Quality of Life Scale score distributions, minimum and maximum values

Scale	Mean±SD	Min.	Max.
Oral Health Related Quality of Life Scare-United Kingdom) (OHRQoL-UK)	49.57±13.40	16.00	80.00

Mean: Average, SD: Standard deviation, Min: minimum, Max: maximum

The mean total score of the participants in the Oral Health Related Quality of Life Scale was 49.57±13.40 (Table 3).

Table 4. Comprehensive Oral and Dental Health Knowledge Measurement Tool of score distributions, minimum and maximum values

Scale	Mean±SD	Min.	Max.
Comprehensive Oral and Dental Health Knowledge Measurement Tool (CODHKMT)	12.74±5.45	4.00	22.00

Mean: Average, SD: Standard deviation, Min: minimum, Max: maximum

The mean total score of the Comprehensive Oral and Dental Health Knowledge Measurement Tool was found to be 12.74±5.45 (Table 4).

Table 5. Comparison of scale scores with some characteristics of participants

Variable	MOCASC	OHRQoL	CODHKMT
Residence status			
District	100.10	115.00	95.53
Province Centre	107.78	103.94	106.29
U	3680.00	3577.00	3213.500
Z	-,774	-1.124	-1.059
p	.439	.261	.289
Education status			
Primary School	106.07	99.57	56.03
Middle School	103.02	125.98	91.81
High School	119.02	103.26	106.14
Licence	98.78	97.82	118.20
KW	4.017	7.648	16.633
p	.260	.051	.001

Income status			
Income less than expenditure		96.48	96.80
Income and expenditure equal	91.86	103.91	107.30
Income more than	99.71	127.60	93.73
expenditure	148.85	4.765	1.742
KW	18.358	.092	.419
p	.000		
Chronic disease status			
Yes	88.46	113.00	110.52
No	108.25	105.67	103.14
U	1823.00	2100.00	2039.500
Z	-1.499	-.560	-.569
p	.134	.575	.569
Thinking that they attach importance to oral health			
Yes			
No.	**112.72**	110.12	**134.76**
Undecided	**84.63**	96.00	**91.83**
KW	**85.09**	94.53	**102.61**
p	**8.060**	2.413	**6.370**
	.018	.299	**.041**
Use of any product other than a toothbrush to protect oral health			
Yes			
No	93.24	106.16	98.69
U	106.78	104.77	103.29
Z	2633.50	3004.50	2824.00
p	-1.217	-.126	-.421
	.224	.900	.674
Use of any product other than a toothbrush to protect oral health			
Yes	100.10	**86.81**	**93.64**
No	103.99	**109.14**	**123.22**
U	3827.00	**3136.00**	**2664.00**
Z	-.410	**-2.377**	**-3.125**
p	.682	**.017**	**.002**

U: Mann Whitney U test KW: Kruskal Wallis test

The total score of pregnant women with high income status was found to be higher than those with low and equal income status ($p<0.05$). It was found that pregnant women who thought that they gave importance to oral health had a higher score on the CWASCQ and CDSAS than those who thought that they did not give importance or were undecided ($p<0.05$). Pregnant women who did not have any problems related to oral health had higher scores on OHRQoL and CDSS compared to pregnant women who had problems ($p<0.05$). It was found that there was a statistically significant difference between the total mean scores of the participants on the CDSSQ ($p<0.05$). It was found that the mean total score of pregnant women with bachelor's degree was higher.

Table 6. The relationship between the scale scores of the participants

	1. MOCASC	**2.OHRQLoL**	**3. CODHKMT**
1. MOCASC		r=-.014	
2.OHRQLoL			r=.010
3. CODHKMT	r=-.025		

r= Coefficient of collinearity

It was determined that there was a very weak relationship or no correlation between the total mean scores of the scales (Table 6).

IV. DISCUSSION

Individuals should have a perception of health control for oral and dental health in order to care for and maintain behaviours that improve oral and dental health. The perception of control is an important factor in maintaining health, benefiting from health services and engaging in health protective behaviours. Especially during pregnancy, women's perception, values and attitudes about health affect their health status. Women with high health perception are expected to show more health-protective and health-promoting behaviours during pregnancy for both their own health and the health of their babies (17). In the study, it was observed that the perception score of pregnant women regarding oral dental health was at a moderate level. In studies conducted with different sample groups in the literature, it was determined that the perception scores regarding oral dental health were at a moderate level (17,18,19). Pregnant women's perceptions of oral and dental health were affected by the importance they attach to oral health and their income status. In a study conducted by Topuz et al. (2021) with pregnant women, it was determined that working women had a higher frequency of daily tooth brushing and more regular visits to the dentist than non-working women (20).

In the study, it was found that the quality of life of pregnant women towards oral and dental health was at a moderate level. In some of the studies conducted with pregnant women, it was found that the quality of life for oral and dental health was high (21,22,23), while in the study of Guimarães et al. (2023), the quality of life for oral and dental health was low (24). Our study findings differ from the literature. The difference between the region where our study was conducted and the sociodemographic characteristics of pregnant women or the use of different measurement tools may have led to this situation. It was found that pregnant women with oral dental health problems had worse oral dental health quality of life. In a study conducted with pregnant and non-pregnant women with gingivitis, it was observed that the presence of periodontal disease decreased the oral health quality of life of both groups. As a result of the study, it was recommended that in order to improve the quality of life related to oral health, regular checks should be performed before and during pregnancy and oral health should be improved with atraumatic, effective treatment when necessary (22). It is an expected and natural result of the study that pregnant women who do not have problems related to oral dental health have a higher oral dental health quality of life.

In a study conducted by Kaydırak et al. (2022) with 264 pregnant women, it was found that the knowledge of pregnant women about oral and dental hygiene habits was not sufficient. Topuz et al. (2021) also determined that women's oral dental health practices during pregnancy were not sufficient. In the study, it was observed that the oral dental health literacy of pregnant women was at a moderate level (20). Oral and dental health is an important part of general health and its importance increases even more during pregnancy (2). In addition, in the study, it was observed that the oral dental health literacy of pregnant women with a high level of education, who attach importance to oral health and who do not experience problems related to oral health is better. Baskaradoss (2018) found that individuals with low education level also had low oral dental health literacy, and those with high oral dental health literacy were faster in detecting oral diseases at an earlier stage and receiving the necessary treatment (25). In a different study by Baskaradoss (2016), it was found that those with poor oral dental health literacy were more likely to miss dental appointments (26). Ibrahim et al. (2016) determined that those with higher educational status had more oral health knowledge in their study with pregnant women. Our results are in parallel with the literature (27).

It was observed that oral and dental health literacy of pregnant women did not have any effect on oral health quality of life. However, as striking findings of the study, it was found that the majority of pregnant women did not use any tool other than a toothbrush, did not visit the dentist for control purposes, and did not receive information about the importance of oral and dental health during pregnancy or before pregnancy. Deterioration of oral and dental health during pregnancy leads to risky situations for both mother and baby. Informing pregnant women about the importance of oral hygiene and oral dental treatments is important to raise awareness and protect maternal and infant health (20,22,27). However, our study reveals the need for preventive

programmes, including oral health education during antenatal care, to increase oral dental health awareness and improve oral dental health practices among pregnant women.

V. CONCLUSION

As a result of the study, it was observed that pregnant women's perceptions of oral dental health, oral dental health literacy and oral dental health quality of life were at a moderate level. It was found that pregnant women's perceptions of oral dental health were influenced by the importance they attach to oral health and their income status, pregnant women with problems related to oral dental health had worse oral dental health quality of life, and pregnant women with higher education level, who attach importance to oral health and do not have problems related to oral health had better oral dental health literacy. It was determined that oral and dental health literacy of pregnant women had no effect on oral health quality of life. It may be recommended that health professionals should plan trainings to increase the awareness levels of pregnant women about oral and dental health, that care should be planned and regular, and that they should be included in primary health care services. It should not be forgotten that the protection and improvement of oral dental health during pregnancy is of vital importance not only for the pregnancy period but also for general health and the development of the newborn.

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