



**QUALITY IMPROVEMENT IN  
DENTAL AND MEDICAL  
KNOWLEDGE, RESEARCH, SKILLS  
AND ETHICS FACING GLOBAL  
CHALLENGES**

Edited by

Armelia Sari Widyarman, Muhammad Ihsan Rizal,  
Moehammad Orliando Roeslan & Carolina Damayanti Marpaung



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## QUALITY IMPROVEMENT IN DENTAL AND MEDICAL KNOWLEDGE, RESEARCH, SKILLS AND ETHICS FACING GLOBAL CHALLENGES

The proceedings of FORIL XIII 2022 Scientific Forum Usakti conjunction with International Conference on Technology of Dental and Medical Sciences (ICTDMS) include selected full papers that have been peer-reviewed and satisfy the conference's criteria. All studies on health, ethics, and social issues in the field of dentistry and medicine have been presented at the conference alongside clinical and technical presentations. The twelve primary themes that make up its framework include the following: behavioral epidemiologic, and health services, conservative dentistry, dental materials, dento-maxillofacial radiology, medical sciences and technology, oral and maxillofacial surgery, oral biology, oral medicine and pathology, orthodontics, pediatrics dentistry, periodontology, and prosthodontics. This proceeding will be beneficial in keeping dental and medical professionals apprised of the most recent scientific developments.



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# Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges

*Edited by*

Armelia Sari Widyarman, Muhammad Ihsan Rizal,  
Moehammad Orliando Roeslan and Carolina  
Damayanti Marpaung  
*Universitas Trisakti, Indonesia*



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## Preface

Faculty of Dentistry Universitas Trisakti (Usakti) presents FORIL XIII 2022 Scientific Forum Usakti conjunction with International Conference on Technology of Dental and Medical Sciences (ICTDMS) on December 8th–10th 2022. The theme of the conference is “Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges”.

The triennial conference has served as a meeting place for technical and clinical studies on health, ethical, and social issues in field medical and dentistry. It is organized around 12 major themes, including behavioral, epidemiologic, and health services, conservative dentistry, dental materials, dento-maxillofacial radiology, medical sciences and technology, oral and maxillofacial surgery, oral biology, oral medicine and pathology, orthodontics, pediatrics dentistry, periodontology, and prosthodontics.

The most recent findings in fundamental and clinical sciences related to medical and dental research will be presented in the conference that will be published as part of the conference proceeding. This proceeding will be useful for keeping dental and medical professionals up to date on the latest scientific developments.

Dr. Aryadi Subrata  
Chairman FORIL XIII conjunction with ICTDMS



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# Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

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**ABSTRACT:** Backgrounds: Hormonal changes occurring in women during pregnancy may have an impact on oral and dental health. Pregnant women are more susceptible to dental and oral health issues, which may have harmful effects like premature births and babies with low birth weight (LBW). Pregnant women should be well informed about the oral health education and the importance of maintaining oral health during pregnancy. Objective: To identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta. Methods: This cross-sectional study involved 194 pregnant women taken by purposive sampling. Self-administered questionnaire contained 15 questions has been tested for validity and reliability. Spearman's Correlation Test was conducted to assess the correlation between socio-demographic characteristics and pregnant women's knowledge. Results: Knowledge regarding dental and oral health maintenance was poor among pregnant women (46.9%). There was significant correlation between knowledge regarding dental and oral health maintenance and education level ( $p = 0.000$ ), occupational status ( $p = 0.001$ ) and number of pregnancies ( $p = 0.004$ ). Conclusions: Knowledge regarding dental and oral health care maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. More intensive dental and oral health education among pregnant women are still required.

## 1 BACKGROUNDS

The Special Capital Region of Jakarta is a city with high population density in Indonesia. Jakarta's population density may relate to several factors, such as the high number of marriages, that followed by the high number of pregnancies. Demographic data shows that there were 218,601 pregnant women recorded in Jakarta in 2021 (BPS-Statistics of DKI Jakarta Province 2021). Demographic research in 2022 shows that Jakarta is ranked seventh with the highest number of pregnant women in Indonesia (Kementerian Kesehatan Republik Indonesia 2022).

Pregnancy is a dynamic condition resulting several physical, behavioral, and hormonal changes that influence the oral cavity. The alteration of estrogen and progesterone may cause pregnant women become more susceptible to dental health problems (Wu et al. 2015). Oral health problems commonly occurred during pregnancy are periodontal diseases, such as gingivitis and periodontitis. American Dental Association (ADA) stated that 60% to 75%

of pregnant women had experience gingivitis during pregnancy (Silva de Araujo Figueiredo et al. 2017). Pregnancy gingivitis occurred as the inflammatory response to bacterial plaque that is attributed to increased levels of progesterone and estrogen (Thakur et al. 2020). The relationship between periodontal health and post-pregnancy conditions has been investigated in a number of studies (Andayani et al. 2019; Gesase et al. 2018). Periodontal disease during pregnancy may result in complications like premature birth and babies with low birth weight (LBW) (Gallagher-Cobos et al. 2022; Haresh Dave et al. 2021).

Along with nutrition changes and poor oral hygiene, pregnancy may cause a number of physiological changes, such as nausea, tiredness, and vomiting, which may have an impact on oral health. Pregnant women often pay less attention to the cleanliness of their oral cavities (Kim et al. 2021). They tend to focus more on the health of their fetus, as well as ignoring their dental and oral health (Azizah et al. 2021). Most pregnant women only visit the dentist if oral health problems already occurred, and require treatments (Tasyakuranti et al. 2019).

Knowledge of maintaining dental and oral health is essential during pregnancy. Good knowledge may improve the awareness and behavior of maintaining proper dental and oral health (Bushehab et al. 2022; Schröter et al. 2022). Information about proper toothbrushing time, method, and frequency, may assist to decrease the risk of dental and oral health diseases, though other predictors should also be controlled. This study aims to identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta.

## 2 RESEARCH METHOD

This Cross-Sectional study was conducted at the Palmerah Community Health Center, West Jakarta from September to November 2022. Palmerah Community Health Center consists of six sub-districts working area, providing affordable health services for society with various characteristics. Women who visited the antenatal clinic while pregnant made up the study's population. A questionnaire with 15 items about maintaining dental and oral health was given to a sample of 194 pregnant women. Sociodemographic data including age, education level, occupational status, gestational age, and number of pregnancies were also taken.

All pregnant women willing to fill out the questionnaire as well as the informed consent were included. The distribution of the sociodemographic characteristics and knowledge of dental and oral health maintenance was evaluated. The Spearman Correlation test was used to measure correlation among variables and statistical significance between each variable, where the level of significance was established at  $p < 0,05$ . This study was approved by the Ethics Committee of Faculty of Dentistry, Trisakti University, No. 545/S1/KEPK/FKG/7/ 2022.

## 3 RESULTS

Among 194 pregnant women were included in this study, 91 pregnant women (46.9%) had poor of knowledge about the maintenance of oral health. Table 1 shows that the majority of pregnant women in this study were aged between 26–35 years (68%), had medium level of education (52.1%), unemployed (59.8%), undergoing the third trimester of pregnancy (54.6%), and having their second pregnancy (46.9%).

Table 2 shows that the majority of pregnant women are capable to identify signs of healthy gums (77.8%), risk factors of gingivitis during pregnancy (81.4%), cause of nausea and vomiting during pregnancy (88.1%), and proper food should be consumed (85.5%). More than half pregnant women knows that they should brush they're twice a day (53%)

Table 1. Characteristics of pregnant women at the Palmerah Community Health Center, West Jakarta.

Variables	N	%
<b>Age (years)</b>		
17 – 25	49	25.3
26 – 35	132	68
36 – 45	13	6.7
<b>Education level</b>		
Under high school	30	15.5
High school	101	52.1
Diploma or higher	64	32.5
<b>Occupational status</b>		
Employed	78	40.2
Unemployed	116	59.8
<b>Gestational age</b>		
1st Trimester	39	20.1
2nd Trimester	49	25.3
3rd Trimester	106	54.6
<b>Number of pregnancies</b>		
1	57	29.4
2	91	46.9
3	35	18
4	11	5.7
<b>Knowledge level</b>		
Good	29	14.9
Moderate	74	38.1
Poor	91	46.9

Table 2. Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Center, West Jakarta.

No.	Knowledge	Correct	Incorrect
1	Characteristics of healthy gums.	151 (77.8%)	43 (22.2%)
2	Signs of gingivitis.	99 (51%)	95 (49%)
3	Risk factors of gingivitis among pregnant women.	158 (81.4%)	36 (18.6%)
4	Correct toothbrushing frequency	103 (53%)	91 (47%)
5	Fluoride as the content of toothpaste	112 (57.7%)	82 (42.3%)
6	The use of dental floss	68 (35%)	126 (65%)
7	Causes of stomatitis in pregnant women.	22 (11.3%)	172 (88.7%)
8	Common oral problems in pregnant women.	133 (68.5%)	61 (31.5%)
9	Causes of nausea and vomiting during pregnancy.	171 (88.1%)	23 (11.9%)
10	Hormones affecting oral health during pregnancy.	79 (40.7%)	115 (59.3%)
11	Problems occurred if cavities are left untreated.	97 (50%)	97 (50%)
12	Food that suitable for oral health	166 (85.5%)	28 (14.5%)
13	Thing to do after vomiting during pregnancy.	79 (40.7%)	115 (59.2%)
14	Adverse pregnancy outcomes related to oral health	90 (46.3%)	104 (53.6%)
15	Frequency of dental check-up to the dentist.	58 (29.8%)	136 (70.2%)

using toothpaste with fluoride (57.7%). Half of pregnant women does not know what may occurred if tooth cavities are left untreated (50%), and few of them knows about the recommended time for a dental check-up to the dentist (29.8%).



Table 3 shows significant correlation between education level ( $p = 0.000$ ), occupational status ( $p = 0.001$ ), and the number of pregnancies ( $p = 0.004$ ) with knowledge of dental and oral health maintenance. Pregnant women with middle level of education have larger proportion (52.1%) of poor knowledge regarding dental and oral health maintenance. Table 3 also shows that unemployed pregnant women had lower level of knowledge (33.5%) than the employed (12.9%). Pregnant women undergoing their third trimester had lower level of knowledge (26.3%) as well as pregnant women who were having their second pregnancies (20.6%)

Table 3. Sociodemographic characteristics and knowledge of pregnant women.

Variables	Knowledge level			P Value
	Good	Moderate	Poor	
<b>Age (years)</b>				
17 – 25	6 (3.1%)	17(8.8%)	26 (13.4%)	0.446
26 – 35	21 (10.8%)	54 (27.8%)	57 (29.4%)	
36 – 45	2 (1%)	4 (2.1%)	7 (3.6%)	
<b>Education level</b>				
Under high school	1 (0.5%)	7 (3.6%)	22 (11.3%)	0.000
High school	11 (5.7%)	35 (18%)	55 (28.4%)	
Diploma or higher	17 (8.8%)	33 (17%)	13 (6.7%)	
<b>Occupational status</b>				
Employed	17 (8.8%)	36 (18.6%)	25 (12.9%)	0.001
Unemployed	12 (6.2%)	39 (20.1%)	65 (33.5%)	
<b>Gestational age</b>				
1st Trimester	6 (3.1%)	13 (6.7%)	20 (10.3%)	0.570
2nd Trimester	11 (5.7%)	19 (9.8%)	19 (9.8%)	
3rd Trimester	12 (6.2%)	43 (22.2%)	51 (26.3%)	
<b>Number of pregnancies</b>				
1	10 (5.2%)	27 (13.9%)	20 (10.3%)	0.004
2	15 (7.7%)	36 (18.6%)	40 (20.6%)	
3	4 (2.1%)	9 (4.6%)	22 (11.3%)	
4	0 (0%)	3 (1.5%)	8 (4.1%)	

#### 4 DISCUSSION

In this study, most of pregnant women (46.9%) had poor knowledge regarding dental and oral health maintenance. Several other studies in Indonesia also found that most pregnant women still have a low level of knowledge regarding dental and oral health maintenance (Setyani & Widyaning 2021; Soegyanto et al. 2020). These results may occur due to lack of information related to dental and oral health during pregnancy, thus affecting their knowl-edge. Poor knowledge may affect the awareness of dental and oral health among pregnant women, as they become not conscious of their oral cavity condition or their needs for dental treatment. According to National Basic Survey (Riskesdas) data in 2018, 57.6% of Indonesia's population had dental and oral problems, but only 10.2% is disposed to seek treatment (Gofur et al. 2021). This study shows that more than half pregnant women were aged 26 to 35 years (68%).

Many studies declared that the ideal age for healthy reproduction is between 20 and 35 years (Rahman et al. 2022). Pregnant women who were aged 26–35 years (29.4%) had lower level of knowledge compared to younger group (13.4%) and older group (3.6%). Various pre-dictors, including occupation, education, and environment may influence an individual level

of knowledge towards dental and oral health. Increasing age is not always related with the enhancement of knowledge, though it may affect the paradigm or experiences of someone (Barbieri et al. 2018).

Based on selected variables, there were significant correlation between education level and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.000$ ). Poor knowledge was found in pregnant women who graduated from high school (28.4%) or even lower (11.3%). This is similar with other study in Indonesia that found 66.6% of pregnant women with primary levels of education had lower level of knowledge related to dental and oral health (Raiyanti et al. 2021). Pregnant women with higher education may expressed better knowledge as they had broader mindset and better perspective that lead to increases in knowledge (Wassihun et al. 2022). Significant association between dental health knowledge and practice with education level and socioeconomic status also found in developed country as common result (Thomas et al. 2008). Education will affect knowledge by forming atti-tudes and behavior of someone to create a better healthy life (Selvaraj et al. 2021). Better knowledge will encourage better practice in applying dental and oral health favorably (Bamanikar & Kee 2013). Individual with higher education may learn recent knowledge and has more access to appropriate information (Mochlisin Fatkur Rohman 2021). Though the access to information is lesser, individual with low level education can still have sufficient knowledge due to opportunity to gain it. Formal education is not the only element that can influence level of knowledge (Sunarsih et al. n.d.).

Significant correlation also found between occupational status and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.001$ ). Unemployed pregnant women (33.5%) had lower level of knowledge compared to employed pregnant women (12.9%). This is similar to other study stated that employment may influence individual to acquire better knowledge (Irie et al. 2022). Employed pregnant women have more knowl-edge due to better social communication and information access.

Significant correlation was found between number of pregnancies and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.004$ ). The majority of pregnant women in this study was having their second pregnancies (46.9%). This fact is interesting since pregnant women with higher number of pregnancies should obtain more health information due to previous experience. Experience is one of way to acquire knowl-edge and learning experiences will develop decision-making skills and sorting out informa-tion (Kusumawati 2011). The more experience, the more knowledge will be obtained. This study found that most of pregnant women who was having their second pregnancies had lower level of knowledge (20.6%) compared to other groups. Pregnancy trimester and level of knowledge did not significantly correlate ( $p = 0.570$ ).

Pregnant women in the third trimester have the highest percentage of poor knowledge (26.3%) compared to pregnant women in the first and second trimesters. Pregnant women at higher gestational age should have received more information about general and oral health due to higher frequency of visiting health facility. This study shows that the addition of gestational age is not correlated with better oral health knowledge. More intensive oral and dental health education is still needed in every trimester of pregnancy, in order to achieve better knowledge.

## 5 CONCLUSION

Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. To provide improved oral health care, pregnant women and the medical community need to be coun-seled on oral health issues. The foundations of preventative education and oral health care for pregnant women must be established through collaboration between health professionals and community organizations.

## ACKNOWLEDGMENT

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# Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

*by* Abdul Gani Soulissa

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## Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

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**ABSTRACT:** Backgrounds: Hormonal changes occurring in women during pregnancy may have an impact on oral and dental health. Pregnant women are more susceptible to dental and oral health issues, which may have harmful effects like premature births and babies with low birth weight (LBW). Pregnant women should be well informed about the oral health education and the importance of maintaining oral health during pregnancy. Objective: To identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta. Methods: This cross-sectional study involved 194 pregnant women taken by purposive sampling. Self-administered questionnaire contained 15 questions has been tested for validity and reliability. Spearman's Correlation Test was conducted to assess the correlation between socio-demographic characteristics and pregnant women's knowledge. Results: Knowledge regarding dental and oral health maintenance was poor among pregnant women (46.9%). There was significant correlation between knowledge regarding dental and oral health maintenance and education level ( $p = 0.000$ ), occupational status ( $p = 0.001$ ) and number of pregnancies ( $p = 0.004$ ). Conclusions: Knowledge regarding dental and oral health care maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. More intensive dental and oral health education among pregnant women are still required.

### 1 BACKGROUNDS

The Special Capital Region of Jakarta is a city with high population density in Indonesia. Jakarta's population density may relate to several factors, such as the high number of marriages, that followed by the high number of pregnancies. Demographic data shows that there were 218,601 pregnant women recorded in Jakarta in 2021 (BPS-Statistics of DKI Jakarta Province 2021). Demographic research in 2022 shows that Jakarta is ranked seventh with the highest number of pregnant women in Indonesia (Kementerian Kesehatan Republik Indonesia 2022).

Pregnancy is a dynamic condition resulting several physical, behavioral, and hormonal changes that influence the oral cavity. The alteration of estrogen and progesterone may cause pregnant women become more susceptible to dental health problems (Wu et al. 2015). Oral health problems commonly occurred during pregnancy are periodontal diseases, such as gingivitis and periodontitis. American Dental Association (ADA) stated that 60% to 75%

of pregnant women had experience gingivitis during pregnancy (Silva de Araujo Figueiredo et al. 2017). Pregnancy gingivitis occurred as the inflammatory response to bacterial plaque that is attributed to increased levels of progesterone and estrogen (Thakur et al. 2020). The relationship between periodontal health and post-pregnancy conditions has been investigated in a number of studies (Andayani et al. 2019; Gesase et al. 2018). Periodontal disease during pregnancy may result in complications like premature birth and babies with low birth weight (LBW) (Gallagher-Cobos et al. 2022; Haresh Dave et al. 2021).

Along with nutrition changes and poor oral hygiene, pregnancy may cause a number of physiological changes, such as nausea, tiredness, and vomiting, which may have an impact on oral health. Pregnant women often pay less attention to the cleanliness of their oral cavities (Kim et al. 2021). They tend to focus more on the health of their fetus, as well as ignoring their dental and oral health (Azizah et al. 2021). Most pregnant women only visit the dentist if oral health problems already occurred, and require treatments (Tasyakuranti et al. 2019).

Knowledge of maintaining dental and oral health is essential during pregnancy. Good knowledge may improve the awareness and behavior of maintaining proper dental and oral health (Bushehab et al. 2022; Schröter et al. 2022). Information about proper toothbrushing time, method, and frequency, may assist to decrease the risk of dental and oral health diseases, though other predictors should also be controlled. This study aims to identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta.

## 2 RESEARCH METHOD

This Cross-Sectional study was conducted at the Palmerah Community Health Center, West Jakarta from September to November 2022. Palmerah Community Health Center consists of six sub-districts working area, providing affordable health services for society with various characteristics. Women who visited the antenatal clinic while pregnant made up the study's population. A questionnaire with 15 items about maintaining dental and oral health was given to a sample of 194 pregnant women. Sociodemographic data including age, education level, occupational status, gestational age, and number of pregnancies were also taken.

All pregnant women willing to fill out the questionnaire as well as the informed consent were included. The distribution of the sociodemographic characteristics and knowledge of dental and oral health maintenance was evaluated. The Spearman Correlation test was used to measure correlation among variables and statistical significance between each variable, where the level of significance was established at  $p < 0,05$ . This study was approved by the Ethics Committee of Faculty of Dentistry, Trisakti University, No. 545/S1/KEPK/FKG/7/ 2022.

## 3 RESULTS

Among 194 pregnant women were included in this study, 91 pregnant women (46.9%) had poor of knowledge about the maintenance of oral health. Table 1 shows that the majority of pregnant women in this study were aged between 26–35 years (68%), had medium level of education (52.1%), unemployed (59.8%), undergoing the third trimester of pregnancy (54.6%), and having their second pregnancy (46.9%).

Table 2 shows that the majority of pregnant women are capable to identify signs of healthy gums (77.8%), risk factors of gingivitis during pregnancy (81.4%), cause of nausea and vomiting during pregnancy (88.1%), and proper food should be consumed (85.5%). More than half pregnant women knows that they should brush they're twice a day (53%)

Table 1. Characteristics of pregnant women at the Palmerah Community Health Center, West Jakarta.

Variables	N	%
<b>Age (years)</b>		
17 – 25	49	25.3
26 – 35	132	68
36 – 45	13	6.7
<b>Education level</b>		
Under high school	30	15.5
High school	101	52.1
Diploma or higher	64	32.5
<b>Occupational status</b>		
Employed	78	40.2
Unemployed	116	59.8
<b>Gestational age</b>		
1st Trimester	39	20.1
2nd Trimester	49	25.3
3rd Trimester	106	54.6
<b>Number of pregnancies</b>		
1	57	29.4
2	91	46.9
3	35	18
4	11	5.7
<b>Knowledge level</b>		
Good	29	14.9
Moderate	74	38.1
Poor	91	46.9

Table 2. Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Center, West Jakarta.

No.	Knowledge	Correct	Incorrect
1	Characteristics of healthy gums.	151 (77.8%)	43 (22.2%)
2	Signs of gingivitis.	99 (51%)	95 (49%)
3	Risk factors of gingivitis among pregnant women.	158 (81.4%)	36 (18.6%)
4	Correct toothbrushing frequency	103 (53%)	91 (47%)
5	Fluoride as the content of toothpaste	112 (57.7%)	82 (42.3%)
6	The use of dental floss	68 (35%)	126 (65%)
7	Causes of stomatitis in pregnant women.	22 (11.3%)	172 (88.7%)
8	Common oral problems in pregnant women.	133 (68.5%)	61 (31.5%)
9	Causes of nausea and vomiting during pregnancy.	171 (88.1%)	23 (11.9%)
10	Hormones affecting oral health during pregnancy.	79 (40.7%)	115 (59.3%)
11	Problems occurred if cavities are left untreated.	97 (50%)	97 (50%)
12	Food that suitable for oral health	166 (85.5%)	28 (14.5%)
13	Thing to do after vomiting during pregnancy.	79 (40.7%)	115 (59.2%)
14	Adverse pregnancy outcomes related to oral health	90 (46.3%)	104 (53.6%)
15	Frequency of dental check-up to the dentist.	58 (29.8%)	136 (70.2%)

using toothpaste with fluoride (57.7%). Half of pregnant women does not know what may occurred if tooth cavities are left untreated (50%), and few of them knows about the recommended time for a dental check-up to the dentist (29.8%).



Table 3 shows significant correlation between education level (p = 0.000), occupational status (p = 0.001), and the number of pregnancies (p = 0.004) with knowledge of dental and oral health maintenance. Pregnant women with middle level of education have larger proportion (52.1%) of poor knowledge regarding dental and oral health maintenance. Table 3 also shows that unemployed pregnant women had lower level of knowledge (33.5%) than the employed (12.9%). Pregnant women undergoing their third trimester had lower level of knowledge (26.3%) as well as pregnant women who were having their second pregnancies (20.6%)

Table 3. Sociodemographic characteristics and knowledge of pregnant women.

Variables	Knowledge level			P Value
	Good	Moderate	Poor	
<b>Age (years)</b>				
17 – 25	6 (3.1%)	17(8.8%)	26 (13.4%)	0.446
26 – 35	21 (10.8%)	54 (27.8%)	57 (29.4%)	
36 – 45	2 (1%)	4 (2.1%)	7 (3.6%)	
<b>Education level</b>				
Under high school	1 (0.5%)	7 (3.6%)	22 (11.3%)	0.000
High school	11 (5.7%)	35 (18%)	55 (28.4%)	
Diploma or higher	17 (8.8%)	33 (17%)	13 (6.7%)	
<b>Occupational status</b>				
Employed	17 (8.8%)	36 (18.6%)	25 (12.9%)	0.001
Unemployed	12 (6.2%)	39 (20.1%)	65 (33.5%)	
<b>Gestational age</b>				
1st Trimester	6 (3.1%)	13 (6.7%)	20 (10.3%)	0.570
2nd Trimester	11 (5.7%)	19 (9.8%)	19 (9.8%)	
3rd Trimester	12 (6.2%)	43 (22.2%)	51 (26.3%)	
<b>Number of pregnancies</b>				
1	10 (5.2%)	27 (13.9%)	20 (10.3%)	0.004
2	15 (7.7%)	36 (18.6%)	40 (20.6%)	
3	4 (2.1%)	9 (4.6%)	22 (11.3%)	
4	0 (0%)	3 (1.5%)	8 (4.1%)	

#### 4 DISCUSSION

In this study, most of pregnant women (46.9%) had poor knowledge regarding dental and oral health maintenance. Several other studies in Indonesia also found that most pregnant women still have a low level of knowledge regarding dental and oral health maintenance (Setyani & Widyaning 2021; Soegyanto et al. 2020). These results may occur due to lack of information related to dental and oral health during pregnancy, thus affecting their knowledge. Poor knowledge may affect the awareness of dental and oral health among pregnant women, as they become not conscious of their oral cavity condition or their needs for dental treatment. According to National Basic Survey (Riskesmas) data in 2018, 57.6% of Indonesia's population had dental and oral problems, but only 10.2% is disposed to seek treatment (Gofur et al. 2021). This study shows that more than half pregnant women were aged 26 to 35 years (68%).

Many studies declared that the ideal age for healthy reproduction is between 20 and 35 years (Rahman et al. 2022). Pregnant women who were aged 26–35 years (29.4%) had lower level of knowledge compared to younger group (13.4%) and older group (3.6%). Various pre-dictors, including occupation, education, and environment may influence an individual level

of knowledge towards dental and oral health. Increasing age is not always related with the enhancement of knowledge, though it may affect the paradigm or experiences of someone (Barbieri et al. 2018).

Based on selected variables, there were significant correlation between education level and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.000$ ). Poor knowledge was found in pregnant women who graduated from high school (28.4%) or even lower (11.3%). This is similar with other study in Indonesia that found 66.6% of pregnant women with primary levels of education had lower level of knowledge related to dental and oral health (Raiyanti et al. 2021). Pregnant women with higher education may expressed better knowledge as they had broader mindset and better perspective that lead to increases in knowledge (Wassihun et al. 2022). Significant association between dental health knowledge and practice with education level and socioeconomic status also found in developed country as common result (Thomas et al. 2008). Education will affect knowledge by forming atti-tudes and behavior of someone to create a better healthy life (Selvaraj et al. 2021). Better knowledge will encourage better practice in applying dental and oral health favorably (Bamanikar & Kee 2013). Individual with higher education may learn recent knowledge and has more access to appropriate information (Mochlisin Fatkur Rohman 2021). Though the access to information is lesser, individual with low level education can still have sufficient knowledge due to opportunity to gain it. Formal education is not the only element that can influence level of knowledge (Sunarsih et al. n.d.).

Significant correlation also found between occupational status and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.001$ ). Unemployed pregnant women (33.5%) had lower level of knowledge compared to employed pregnant women (12.9%). This is similar to other study stated that employment may influence individual to acquire better knowledge (Irie et al. 2022). Employed pregnant women have more knowl-edge due to better social communication and information access.

Significant correlation was found between number of pregnancies and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.004$ ). The majority of pregnant women in this study was having their second pregnancies (46.9%). This fact is interesting since pregnant women with higher number of pregnancies should obtain more health information due to previous experience. Experience is one of way to acquire knowl-edge and learning experiences will develop decision-making skills and sorting out informa-tion (Kusumawati 2011). The more experience, the more knowledge will be obtained. This study found that most of pregnant women who was having their second pregnancies had lower level of knowledge (20.6%) compared to other groups. Pregnancy trimester and level of knowledge did not significantly correlate ( $p = 0.570$ ).

Pregnant women in the third trimester have the highest percentage of poor knowledge (26.3%) compared to pregnant women in the first and second trimesters. Pregnant women at higher gestational age should have received more information about general and oral health due to higher frequency of visiting health facility. This study shows that the addition of gestational age is not correlated with better oral health knowledge. More intensive oral and dental health education is still needed in every trimester of pregnancy, in order to achieve better knowledge.

## 5 CONCLUSION

Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. To provide improved oral health care, pregnant women and the medical community need to be coun-seled on oral health issues. The foundations of preventative education and oral health care for pregnant women must be established through collaboration between health professionals and community organizations.

## ACKNOWLEDGMENT

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Lia Hapsari Andayani &lt;lia@trisakti.ac.id&gt;

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## Knowledge Regarding Dental and Oral Health Among Pregnant Women (Study at Palmerah Community Health Center, West Jakarta)

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Scientific Foril &lt;scientificforil@trisakti.ac.id&gt;

Mon, Jan 30, 2023 at 2:16 PM

To: Lia Hapsari Andayani &lt;lia@trisakti.ac.id&gt;

Terima kasih telah menghubungi panita Foril dan menyerahkan paper dengan judul : Knowledge Regarding Dental and Oral Health Among Pregnant Women (Study at Palmerah Community Health Center, West Jakarta)

Mohon menunggu informasi selanjutnya terkait proses review paper yang telah anda kirim.

Best Regards,  
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