

## Correlation of knowledge and attitude of pregnant women towards their oral health practice

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### ABSTRACT

**Introduction:** During pregnancy, hormonal changes can increase susceptibility to oral diseases. Oral disease can pose a risk for the baby's oral health and pregnancy outcomes. Oral problems and their complications during pregnancy can be prevented by maintaining oral health behaviours that include knowledge, attitude, and practice. This study was aimed to analyse the correlation of knowledge and attitude pregnant women toward their oral health practice. **Methods:** An analytic research with a cross-sectional method was conducted towards 65 pregnant women at Sukajadi Community Health Centre (Puskesmas), Bandung, taken as a sample through purposive sampling technique. Data collection was carried out using a questionnaire. The statistical test used in this study was the Spearman correlation test. **Results:** The study showed that 66.2% of pregnant women had good knowledge of oral health care, 27.7% had adequate knowledge, and 6.2% had poor knowledge. Oral health care attitude found that 56.9% of pregnant women had a good attitude, 43.1% had a fair attitude, and none were in the poor category. Oral health care practice of pregnant women resulted from 15.4% was in a good category, 60.0% in the fair category and 24.6% was in the poor category. The statistical analysis results between the attitude and the practice of oral health care showed a weak correlation with the correlation coefficient ( $r_s$ ) 0.124 and a significance value (p-value) was higher than 0.05 (0.325), indicating that there was no significant relationship between attitudes and the practice of oral health care. **Conclusion:** There is weak correlation between knowledge and attitude of pregnant women toward their oral health practice.

**Keywords:** pregnant women; oral health care; knowledge; attitude; practice.

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### INTRODUCTION

Oral health is an essential component of general health and well-being.<sup>1</sup> Pregnancy is a unique condition for a woman. Lots of physiological,

emotional, and physical changes occur during this period. These changes are associated with an increase in the secretion of estrogen and progesterone during pregnancy.<sup>2</sup> These changes can increase susceptibility to oral diseases.<sup>3</sup>

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Periodontal disease is a disease of the oral cavity that is often found in pregnant women, such as gingivitis and periodontitis. In a very severe condition can form a pregnancy tumour called *epulis gravidarum*.<sup>4</sup> The incidence of gingivitis and periodontitis in pregnant women is reported to be 36-100%.<sup>5</sup> This condition may occur due to the gingival response to plaque bacteria increased by hormonal changes. Pregnancy also often causes various complaints, such as nausea and vomiting, predisposed to tooth erosion.<sup>3</sup> Also, pregnancy is reported to increase caries risk.<sup>6</sup> Apart from hormonal changes, dietary factors and oral hygiene also play an essential role in developing oral diseases.<sup>7</sup>

Many studies have shown that maternal oral health plays a role in birth outcomes and infant oral health.<sup>5</sup> It has been shown that mothers with poor oral health can increase their infant's caries risk by transmitting cariogenic bacteria through improper feeding. Several studies have also shown an association between periodontal health and pregnancy outcome. Periodontal disease during pregnancy can cause babies with low birth weight (LBW) and preterm birth.<sup>8,9</sup> Good nutrition and a healthy lifestyle including good measures in maintaining oral hygiene play an essential role in the general welfare of pregnant women.<sup>10</sup> Oral health problems and its complications during pregnancy can be prevented by maintaining oral health behaviours that include knowledge, attitude, and practice.<sup>11</sup>

Regardless of the risk of oral and dental disease during pregnancy for both mother and child, only a few women visit a dentist while pregnant, even when they have oral health problems.<sup>12</sup> Recent data shows about 50% of pregnant women do not visit a dentist even when they feel the need for oral care.<sup>13</sup> The results of other recent studies revealed that despite the pain caused by oral health problems, pregnant women's utilisation of oral health services is still low.<sup>14</sup> A study conducted on pregnant women reported that 21.7% of pregnant women knew how to maintain their oral health and 48.3% of pregnant women already have a good attitude. However, only 3.3% of pregnant women can be categorised as having good oral health care measures. Research on other pregnant women shows that most of them agree that women should have

their teeth checked during pregnancy. However, only 55.9% practice it.<sup>11</sup> There are many reasons for this, including the widespread misconception that women should not receive oral care while pregnant because of concerns about the baby's safety. Other reasons, namely high cost and lack of awareness regarding the importance of oral health care during pregnancy.<sup>12</sup>

Previous research stated that oral health behaviour does not depend on knowledge but rather on attitude.<sup>15</sup> A positive attitude and adherence to good oral hygiene behaviour will result in better oral health.<sup>15</sup> This is following several studies that conclude that good practice does not always follow good knowledge, but several factors influence education level, work, and resi-dence.<sup>16,17,18</sup>

The Community Health Centre (*Puskesmas*) is a first-level health service facility that prioritises promotional and preventive efforts.<sup>19</sup> Promotional efforts of Sukajadi Community Health Centre, including several programs, including Integrated Health Service (*Posyandu*), School Dental Care (UKGS), and Village Midwife Clinic (*Polindes*).<sup>20</sup> According to the Sukajadi Community Health Centre Monthly Report in 2016, pulp disease and periapical tissues occupy the third of the ten most common diseases. Meanwhile, gingival disease, periodontal tissue, and alveolar bone were in the tenth place.<sup>21</sup> These reports indicate that the society around Sukajadi Community Health Centre's working area has their teeth examined only in an emergency.

The situation analysis conducted at the Sukajadi Community Health Centre (*Puskesmas*) found that most patients did not have good behaviour in maintaining oral health. Also, oral health screening for pregnant women in the Sukajadi Community Health Centre's working area has not been reached. Since 2017, Sukajadi Community Health Centre has implemented the "*Pantengin Bumil*" program (Integrated Healthcare Centre (*Posyandu*) Cadres Training on Oral Health for Pregnant Women), which is an oral health promotion program in the form of counselling for pregnant women through Integrated Healthcare Centre cadres in each region. After implementing this program, it is hoped that there will be an increase in oral health care behaviour for pregnant women in a better direction.

Women should always maintain oral health during their life and pregnancy.<sup>5</sup> Knowledge of oral health's role in pregnancy outcome is needed for pregnant women to increase awareness and behaviour to maintain oral hygiene during pregnancy.<sup>8</sup> This will improve the mother's and infants' oral health and minimise the risk of disease transmission from mother to baby.<sup>1</sup>

The formulation of the problem based on the background description above is the level of knowledge, attitudes, and practice of pregnant women at Sukajadi Community Health Centre, Bandung, regarding oral health care. Therefore, This study was aimed to analyse the correlation of knowledge and attitude pregnant women towards their oral health practice.

## **METHODS**

This research was descriptive-analytic, conducted through a survey with a cross-sectional approach, to collect data at one point in time.<sup>22</sup> The data collection was carried out using a questionnaire. The questionnaire used in this study was a new questionnaire that has passed the validity and reliability tests.

The questionnaire consists of four parts. The first part contained the respondents' sociodemographic data, namely, age, residence, educational status, and occupation. The second part contained questions regarding knowledge of oral health care. This section was aimed to determine the extent of knowledge the respondent already has. Respondents will answer ten multiple-choice questions.

The knowledge was measured using the Guttman scale. Respondents were given a score of 1 if they answer correctly and a score of 0 if they answer incorrectly. The third part contained questions regarding the attitude of oral health care. This section was aimed to determine the respondents' perceptions of oral health care, which consisted of 11 statements with either agree or disagree answers. The attitude was measured using the Likert scale. Respondents were given a score of 1 if the answer was 'disagree' and a score of 2 if the answer was 'agree'.

The fourth part contained questions regarding the practice of oral health care. This section was aimed to determine what actions the

respondent has taken, consisted of 10 statements with the answer "yes" if they did or "no" if they did not. The practice was measured using the Guttman scale. Respondents were given a score of 1 if they answered "yes" and 0 if they answered "no".

Before the research was conducted, the researcher first tested the validity and reliability of the questionnaire. The validity and reliability tests were carried out to determine whether the questionnaire was suitable for a research instrument. Validity and reliability tests in this study were used to test the knowledge and attitude questionnaire. The questionnaire test was conducted by distributing questionnaires to 30 samples outside the population who had the same characteristics as the study population. The number of samples for this questionnaire test was following experts who suggested that the number of samples used in the instrument trial was 30 people.<sup>23</sup> The results of the data obtained were then analysed statistically.

The knowledge questionnaire with a score of 0 and 1 used the Biserial Point Correlation formula for validity testing and the Kuder-Richardson formula (KR-20) for reliability testing. The attitude questionnaire with a Likert scale used the Spearman correlation formula for validity testing and the Cronbach Alpha formula for reliability testing. A questionnaire is considered valid and reliable if the correlation coefficient value is higher than the  $r_{table}$  (0.361), result of validity test of knowledge were between 0.448-0.736, validity for attitude 0.393-0.769 and validity of practice was 0.395-0.771. The reliability coefficient value was higher than 0.6.<sup>24</sup> reliability tests of knowledge was 0.713, reliability of attitude was 0.811 and reliability of practice was 0.686. Results shows that all items on the knowledge and attitude questionnaire had correlation coefficient values higher than 0.361, and a reliability coefficient value higher than 0.6. This result shows that all questionnaire items were valid and reliable to be used as a research instrument.

The population in this study was pregnant women who visited the Sukajadi Community Health Centre, Bandung. The sampling method was purposive sampling technique by selecting subjects based on the researcher's considerations.<sup>15</sup> Purposive sampling was chosen in this study because

the researcher determined specific criteria that the sample must follow the research needs. The minimum number of samples that must be taken was calculated using the formula for determining the sample size, and the minimum sample results was 29 people.<sup>18</sup> Respondents obtained in this study have met the minimum sample size, (65 respondents) with inclusion criteria of being in the place during the study, can read and write, communicate well, speak Indonesian, and willing to fill out questionnaires.

The research variable was knowledge, attitude, and practice with item questions based on indicators from the World Health Organisation (WHO) Oral Health Surveys Method regarding oral health care, including knowledge regarding the tooth brushing frequency, the proper toothbrushing time, tooth cleaning instruments, fluoride toothpaste, routine dentist visit, and nutritional intake that affects oral health.

The research was conducted through researchers providing research information first to respondents, then respondents who were willing to participate in the study signed informed consent and filled out a questionnaire. The results obtained were then processed and presented in tabular form. Each variable was categorized into three categories, namely good, adequate/fair, and poor. The good category was obtained if the respondent's answer score was >75%; adequate/fair if the respondent's answer score was 60-75%; less if the respondent's answer score was <60%. Furthermore, statistical tests were carried out towards the knowledge and practice variables and the attitude and practice variables, to determine the correlation between knowledge and attitude with oral health care measures. The statistical test used in this study was the Spearman correlation test. Variables were declared to be correlated if the significance value obtained was <0.05.<sup>19</sup>

Prior to the research, an ethical clearance has been obtained from the Health Research Ethic Committee of Universitas Padjadjaran with the number of 1214/UN6.KEP/EC/2018.

## RESULTS

The results of this research were respondents' characteristic data; the respondents' answers to the questionnaire on knowledge, attitude,

and oral health care practice; categories of respondents' knowledge, attitudes, and practice; and the results of statistical analysis between the respondents' knowledge and attitude towards

Table 1. Respondents' characteristics

Variable		Frequency	Percentage
Age	17-25	23	35.4
	26-35	33	50.8
	36-45	9	13.8
Total		65	100.0
Education	Primary (Elementary - Junior High School)	20	30.8
	Secondary (Senior High/ Vocational High School)	38	58.5
	Tertiary (Diploma - Bachelor Degree)	7	10.8
	Total	65	100.0
Occupation	Employed	11	16.9
	Unemployed	54	83.1
Total		65	100.0

their oral health care practice. The respondents' characteristics are presented in Table 1.

Table 1 shows that the most respondents were in the age range of 26-35 years, (33 respondents, 50.8%) and the least number was the age range of 36-45 years (9 respondents, 13.8%). Based on their education, most respondents had a secondary education level (38 respondents, 58.5%), and only seven respondents had a tertiary education level (10.8%). Based on their occupation, only 11 respondents (16.9%) were employed, and 54 respondents (83.1%) were unemployed.

Table 2 presents the respondents' answers on the questionnaire regarding oral health care knowledge. There were six questions with the highest answering score, namely question number 5, which was answered by 64 respondents (98.5%), questions number 4, 8, and 9 respectively, which was answered by 60 respondents (92.3%), and questions number 3 and 7 in 59 respondents (90.8%). The question with the lowest score was question number 2, with only 16 respondents (24.6%) answered correctly.

Table 3 presents the respondents' answers

to the questionnaire regarding the oral health care attitude. “The time for toothbrushing in the evening is before bedtime” statement had the

highest results, where all respondents (100.0%) agree with this statement. The statement with the lowest result was “The time for toothbrushing

**Table 2. The results of the respondents' answers to the questionnaire on oral health care knowledge**

No	Statement	Answer			
		True		False	
		F	%	F	%
1	The proper frequency of toothbrushing is 2-times daily	39	60.0	26	40.0
2	The time for toothbrushing in the morning is after breakfast	16	24.6	49	75.4
3	The time for toothbrushing in the evening is before bedtime	59	90.8	6	9.2
4	Oral hygiene aids are dental floss and tongue brush	60	92.3	5	7.7
5	The function of the tongue scraper is to clean the tongue surface	64	98.5	1	1.5
6	A good toothpaste contains fluoride	44	67.7	21	32.3
7	Routine visits to the dentist are every six months	59	90.8	6	9.2
8	The goal of routine dental examinations is to get an early diagnosis of teeth anomalies and oral care	60	92.3	5	7.7
9	Right foods for oral health contain vitamins A, C, D, calcium, and fluorine	60	92.3	5	7.7
10	After experiencing vomiting, pregnant women should rinse their mouths immediately	55	84.6	10	15.4

**Table 3. The results of the respondents' answers to the questionnaire on oral health care attitude**

No	Statement	Answer			
		Agree		Disagree	
		F	%	F	%
1	Oral health problems during pregnancy affect the baby's health	55	84.6	10	15.4
2	The proper frequency of toothbrushing is 2-times daily	56	86.2	9	13.8
3	The time for toothbrushing in the morning is after breakfast	44	67.7	21	32.3
4	The time for toothbrushing in the evening is before bedtime	65	100.0	0	0.0
5	Using dental floss as an oral hygiene aid is important	54	83.1	11	16.9
6	Using a tongue scraper to clean the tooth surface is important	61	93.8	4	6.2
7	A good toothpaste contains fluoride	52	80.0	13	20.0
8	Routine oral health examinations are necessary during pregnancy	60	92.3	5	7.7
9	The nutritional intake of pregnant women affects the fetus' teeth growth	59	90.8	6	9.2
10	Foods contain vitamins and minerals are good for oral health	64	98.5	1	1.5
11	Sweet foods can cause tooth decay	58	89.2	7	10.8

**Table 4. The results of the respondents' answers to the questionnaire on oral health care practice**

No	Statement	Answer			
		Yes		No	
		F	%	F	%
1	Toothbrushing 2 times a day	58	89.2	7	10.8
2	Toothbrushing after morning breakfast	34	52.3	31	47.7
3	Toothbrushing before bedtime	59	90.8	6	9.2
4	Using dental floss	9	13.8	56	86.2
5	Using tongue scraper	24	36.9	41	63.1
6	Using fluoride toothpaste	57	87.7	8	12.3
7	Visit the dentist every six months	9	13.8	56	86.2
8	Eat a balanced diet during pregnancy	63	96.9	2	3.1
9	Confine sweet food consumption during pregnancy	36	55.4	29	44.6
10	Rinse the mouth after vomiting	61	93.8	4	6.2



in the morning is after breakfast”, where 21 respondents (32.3%) disagree with this statement.

Table 4 shows the results of the respondents' answers to the oral health care practice questionnaire. A total of 63 respondents (96.9%) had a balanced diet during pregnancy, followed by 61 respondents (93.8%) were rinse their mouth after vomiting, and 59 respondents (90.8%) were toothbrushing before bedtime. These three statements were the most frequent statement found from the respondents. The least oral health care practice performed by respondents were using dental floss and visit the dentist every

Table 5. Respondents' knowledge, attitude, and practice categories

Variables		Frequency	Percentage
Knowledge	Good	43	66.2
	Adequate	18	27.7
	Poor	4	6.2
	<b>Total</b>	<b>65</b>	<b>100.0</b>
Attitude	Good	37	56.9
	Fair	28	43.1
	Poor	0	0.0
	<b>Total</b>	<b>65</b>	<b>100.0</b>
Practice	Good	10	15.4
	Fair	39	60.0
	Poor	16	24.6
	<b>Total</b>	<b>65</b>	<b>100.0</b>

six months, which only answered 'yes' by nine respondents (13.8%).

Based on data presented in Table 5, 43 respondents (66.2%) already have a good knowledge regarding oral health care, and there were only four respondents (6.2%) who have the poor knowledge level. Thirty-seven respondents (56.9%) already had a good attitude on oral health care, and the remaining 28 respondents (43.1%) have a fair level of attitude, while regarding the oral health care practice, only ten respondents (15.4%) were in the category of good oral health practice, as many as 39 respondents (60.0%) only had the fair category of practice.

Table 6 shows the statistical analysis results of the variable between knowledge and attitudes compared with the practice of oral health care, the correlation coefficient ( $r_s$ ) was 0.054, which indicated a weak correlation, while the significance value (p-value) was > 0.05

(0.672), indicated that the relationship between the knowledge and the practice of oral health care. The statistical analysis results between the attitude and the practice of oral health care showed a weak correlation with the correlation coefficient ( $r_s$ ) 0.124 and a significance value (p-value) > 0.05 (0.325), indicating that there was

Table 6. Respondents' knowledge, attitude, and practice categories

Variables		Frequency	Percentage
Knowledge	Good	43	66.2
	Adequate	18	27.7
	Poor	4	6.2
	<b>Total</b>	<b>65</b>	<b>100.0</b>
Attitude	Good	37	56.9
	Fair	28	43.1
	Poor	0	0.0
	<b>Total</b>	<b>65</b>	<b>100.0</b>
Practice	Good	10	15.4
	Fair	39	60.0
	Poor	16	24.6
	<b>Total</b>	<b>65</b>	<b>100.0</b>

no significant relationship between attitudes and the practice of oral health care.

## DISCUSSION

This study shows that 50.8% of the respondents were in the group of 26-35 years, and 35.4% were in the group of 17-25 years. This respondents' characteristics was similar to the research conducted by Nogueira et al.<sup>20</sup>, which also had a predominantly young group of pregnant women as the research respondents. In that prior research, young mothers tend to learn more and be more aware of their children's health.<sup>20</sup>

The results showed that 66.2% of pregnant women at Sukajadi Community Health Centre, Bandung, had good knowledge regarding oral health care. Also, the respondents' answers to the questionnaire regarding the knowledge of oral health care showed good results. Nine out of the ten questions asked could be answered correctly by more than half of the respondents. This result might be caused by much information regarding pregnant women's oral health received, thus increasing their knowledge. This result was consistent with Gaffar et al.<sup>16</sup>, where most

respondents have good oral health knowledge. According to Gaffar et al.<sup>16</sup>, good knowledge is related to the many sources of information regarding pregnant women's oral health. Pregnant women who receive adequate oral health information will have better oral health knowledge.

However, this study was still found respondents with lack knowledge of oral health, which could be related to the respondents' education level, wherein this study, there were still 30.8% of respondents with low education level.<sup>16</sup> Education is needed to obtain information. Education is needed to obtain information. The higher the education level, the easier information will be received. Apart from education, occupation is also a knowledge-affecting factor. Employed women will have more knowledge than unemployed women because social communication among employed women increases their knowledge.<sup>22</sup> However, this statement was not supporting the present study's result because the majority of respondents in the present study were unemployed.

The results on oral health care attitude showed that the statement 'The time for toothbrushing in the morning is after breakfast' was the statement with the lowest result. 32.3% of pregnant women were disagree with this statement. According to Deghatipour et al.<sup>23</sup>, the proper frequency of daily toothbrushing is twice, namely in the morning after breakfast and at night before bedtime. The result of the present study shows that respondents have not received comprehensive information regarding oral health care. Information is also one of the factors that influence attitude. The existence of new information about specific matter provides a new cognitive foundation for responding attitude.<sup>24</sup>

The respondents' oral health care attitude indicated that 56.9% of pregnant women had good attitude and no pregnant women had attitudes in the poor category. This result was consistent with the research conducted by Chawla et al.<sup>17</sup>, who found that none of the respondents in their study had negative attitudes towards oral health care. Knowledge, thoughts, and emotions determine attitude formation. When a person thinks, the emotional and belief components will form a tendency to act. The intention to act

from a person will encourage that person to act according to his wishes.<sup>24</sup> The good attitude that the respondents have in this study were expected to cause the intention to act; thus, practice to maintaining good oral health will be formed.

The results regarding the oral health care practice showed unfavourable results. Only 13.8% of pregnant women used dental floss and visited their dentist every six months. This result was consistent with the research conducted by George et al.<sup>25</sup>, who found that most of the respondents have not used dental floss and visited the dentist for a dental examination. Respondents did not understand the importance of using dental floss due to the lack of information they got. The lack of visits by pregnant women to the dentist can be attributed to many factors, one of which is dental care costs. Pregnant women with higher household income are more likely to seek dental care than those with lower income. Also, time constraints can become another factor in the lack of visits by pregnant women to the dentist. It is better if health service providers provide more information to pregnant women about the importance of oral health care during pregnancy.<sup>26</sup>

The respondent's oral health care practice shows that only 15.4% of pregnant women had a good practice. This result shows that the knowledge and good attitude of the respondent did not become practice. The analysis results between knowledge and practice and between attitude and practice showed no significant relationship between knowledge and attitude with oral health care practice. The present study shows that knowledge and attitude did not influence the respondents' practice. This condition can be caused by particular factors or conditions, making it impossible for pregnant women to realise their actions, such as the respondents' lack of awareness of the importance of oral health during pregnancy, and also fear of dental care during pregnancy. Even though dental care during pregnancy is safe, due to lack of knowledge, cultural factors, and wrong beliefs, oral health for pregnant women will be neglected.<sup>22</sup>

A correlation test conducted on the knowledge and practice variables showed no significant relationship between knowledge and oral health care of pregnant women at Sukajadi Community Health Centre, Bandung. This result,

however, was not consistent with the previous research of Suri et al.<sup>22</sup>, which stated that there is a relationship between knowledge and behaviour of pregnant women in caring for oral health during pregnancy. However, this study was consistent with the research of Gaffar et al.<sup>16</sup>, who revealed that oral health care does not follow the basic oral knowledge that pregnant women in their research have.

The same results were obtained in the correlation test conducted on the attitude and practice variables. The results showed no significant relationship between attitudes and oral health care measures for pregnant women at Sukajadi Community Health Centre, Bandung. On the contrary, the research conducted by Suri et al.<sup>22</sup> suggested that there is a relationship between attitudes and behaviour in maintaining oral health. However, this study was consistent with Abiola et al.<sup>3</sup>, who stated that pregnant women's good knowledge and attitudes are not reflected in their practice.

Health care measures are assumed to be related to knowledge, and a good level of knowledge followed by adopting appropriate behaviour.<sup>6</sup> Attitude is a tendency to act, which can determine a person's entire behaviour.<sup>23</sup> This research shows that knowledge and attitudes do not influence the respondent's practice. This can happen because knowledge and attitude are not the only factors that determine practice. Several other factors influence the practice, including the level of education, occupation, socioeconomic status, and place of residence.<sup>17,18</sup>

Low levels of education and lack of awareness of the importance of oral hygiene lead to inappropriate practice. Social relations and meetings with other people at work can increase a person's concern for appearance, including oral hygiene.<sup>18</sup> Low socioeconomic status can lead to changes in practice due to lack of access to dental health care facilities from the place of residence, inaccessibility of care teeth, and socio-cultural factors.<sup>17</sup>

The current research also shows that knowledge and attitude are not the only factors that determine the practice. Several other factors influence the practice, including education, employment, socioeconomic status, and residential place.<sup>25,27</sup> The respondents' characteristics showed

that only 10.8% had tertiary education, 16.9% were employed, and most of their socioeconomic status was low to medium. All of these conditions can become a factor in the lack of oral health care practice. The limitation of this research was that using the self-filling method in filling out the questionnaire might be allowed the answers written by the respondents and time of research is limited time.

## CONCLUSION

There is weak correlation between knowledge and attitude of pregnant women toward their oral health practice.

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