CORRELATION OF PREGNANCY STAGE AND GINGIVA STATUS OF PREGNANT WOMAN WHO VISITED PUSKESMAS SIHEPENG MANDAILING NATAL

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ABSTRACT
Pregnancy causes hormonal changes that will affect the oral health of pregnant women. Hormonal changes cause the gingiva to become more sensitive to toxins or irritants which results in inflammation of the gums or gingivitis during pregnancy, namely pregnancy gingivitis. Gum disease in pregnant women begins in the second trimester of pregnancy. This gum disease condition reaches its most extreme stage in the third trimester of pregnancy at the age of eight months. Increasing gestational age has a significant effect on periodontal tissue damage.
This type of research was analytical research with a cross-sectional research design. The aim was to determine the relationship between gestational age and gingival status in 40 pregnant women visiting the Sihepeng Community Health Center, Mandailing Natal Regency. Examination of the oral hygiene of pregnant women is determined by examining the gingival status using the Gingival Index (GI).
The results of the analysis using cross-tabulation showed that the gestational age and gingival status of the respondents were the highest in the third trimester with severe gingival status, 13 respondents, and the lowest was in the first trimester, with moderate gingival status, 1 respondent. The results of the analysis using Pearson correlation showed the correlation between gestational age and gingival status in pregnant women with a significant value (p-value) of 0.000 and sig-a of 0.05, thus showing the p-value results are smaller than sig-a. So Ha (both variables have a significant relationship) or accepted, namely p-value (0.000) < sig-a (0.05),
There was a significant correlation between gestational age and gingival status in pregnant women at the Sihepeng Community Health Center, Mandailing Natal Regency.

***Keywords**: Pregnnat Women; Pregnancy Gingivitis; Gingival Status*

INTRODUCTION

Health efforts are every activity and series of activities conducted which are done as integratedand sustainable way to maintain and improve public health in the form of disease prevention, health promotion, disease treatment, and health restoration by government and society[1] . Maternal health quality is a part of the health effort. According to Regulation of the Minister of Health in the Republic of Indonesia No 43, 2016 about Minimum Service Standards of Health Sector on Article 2 Paragraph 2 that stated every pregnant woman gets antenatal services based on the standard[2] . Antenatal care is a health service by themedical worker for the

mother during her pregnancy,it is carried out with the standard of service which is specified in the standard of midwifery services[3] .

Pregnancy is a condition that occurs to women who have an embryo or fetus that is developing in their body, after the merge of ovum and spermatozoa. The period of pregnancy usually associated with many physiological changes that affect the endocrine system, cardiovascular and often followed by unusual behavior changes, mood or attitude. Some physical and physiological changes that occur during pregnancy affect every major system of the body and as the result it affects some localized physical changes in various parts of the body including the oral cavity[4] . The main factors that affecting periodontal disease in pregnancy are plaque and bacteria. Gingival changes that commonly happened are associated with poor oral hygiene and local irritation especially plaque bacterial flora. Plaque is a layer of organic material attached to the tooth surface along with bacterial colonies. Plaque will always be formed even shortly after dental cleansing. If someone let it be there in a long time, plaque can cause tartar and gingivitis[5] . Gingivitis is the most common periodontal disease during pregnancy. Gingivitis is reported to occur between 30% until 70% of all pregnant women[6] . The emergence of swelling gums and gum infections in pregnant women is 50-70% and pregnancy tumors is10% [7] . The prevalence of gingivitis in 42 pregnant women at Puskesmas Depok I Sleman was 83,3% [8] .

Significant difference between pregnancy age and the gingival condition with percentage in first trimester, the total number of pregnant women who suffer from gingivitis are 27,5%, in trimester 2 number of pregnant women suffering from gingivitis are 35%, trimester 3 number of pregnant women suffering from gingivitis are 37,5% [9] . Pregnancy gingivitis generally begins to appear in the second month of pregnancy and get worsens as the pregnancy progresses before reaching its peak in the eighth and ninth months[10] . The hormonal changes and vascular that accompany pregnancy often worsen the inflammatory response to that local irritant[10]. During pregnancy there is a change in the maintenance of oral hygiene which is usually caused by the emergence of nausea, vomiting, and the fear of brushing teeth because of the emergence of bleeding gums or mother is too tired with pregnancy so they are lazy to brush their teeth[11]. This situation by itself will increase the buildup of plaque that worsen the hygiene of the teeth and mouth of pregnant women.

Gum infections can cause early birth and low birth weight. Periodontitis in pregnant women is a risk factor for infants with low birth weight and premature birth. The status of maternal gingiva

of women who gave birth to babies with low birth weight (LBW) and Premature is worse than the mother who gave normal birth[12].

The purpose of this study is to find out the age of pregnancy and gingival status in pregnant women who visit the Puskesmas Sihepeng Mandailing Natal. It is found that there is correlation between pregnancy age and gingival status in pregnant women who visited Puskesmas Sihepeng Mandailing Natal. The benefits of this study are expected to contribute scientific insights about dental health which specifically related to the correlation of pregnancy age with gingival status in pregnant women. Also, as reference materials in campus Poltekkes Kemenkes Medan, Lastly, to provide information for medical workers to provide information to pregnant women, so that they understand the importance of taking care of oral and dental health during pregnancy.

METHOD

This research used Analytical Survey approach with Cross Sectional data[14]. The independent variable in this study is pregnant mother's age and the dependent variable in this study is gingival status. The population in this study were all pregnant women who visited Puskesmas Sihepeng Mandailing Natal. The sampling technique used is Accidental Sampling Technique, which the samples are 40 pregnant women. Operational Definition in this study is the age of pregnancy and Gingival Status. The pregnancy age is divided into 3 trimester, which aretrimester 1 (0-3 months gestational age) trimester 2 (4-6 months gestational age) and trimester 3 (7-9 months gestational age) with interval scale used. Pregnancy gingivitis is an inflammation that occurs in the gum tissue of pregnant women. To measure the severity of gum inflammation, it used gingiva index (GI)[15]. The value or score of the gingival index can be divided into 4, they are: Score 0 (normal Gingiva), Score 1 (Light Inflammation), Score 2 (Medium Inflammation) Score 3 (Scale Heavy) with interval scale used. The instrument used in this study is a form of examination of gingival status. The examination form of gingival status is used to see the value of gingival inflammation of pregnant women. Based on data of normality test using Kolmogorov, it is found that the significance value is 0,200. Because P = 0,200> 0,05, it means the data used is in normal distribution. Data analysis in this study used Pearson correlation parametric test which is the analysis used to calculate the relationship of two variables. The data used in this test should be quantitative or parametric scale in interval or ratio[16]

RESULTS AND DISCUSSION (12pt)

Table 1. Table of distribution based on maternal age

Age of respondent (Years)	Frequency (n)	Persentage (%)
17-26	14	35,0
27-36	16	40,0
37-44	10	25,0
Total	40	100

Table 1 shows that most respondents aged between 27-36 years were 16 respondents (40,0%). The fewest respondents were between 37-44 years old as many as 10 respondents (25,0%).

Table 2. Table of distribution by gestational age per month

Age of pregnancy (Month)	Frequency (n)	Persentage (%)
1	2	5,0
2	4	10,0
3	5	12,5
4	4	10,0
5	3	7,5
6	1	2,5
7	7	17,5
8	10	25,0
9	4	10,0
Total	40	100

Table 2 shows that most of the respondents are in 8 months of pregnancy which are 10 respondents (25,0%). The least respondents were respondents in 6 months preganancy as many as 1 respondents (2,5%).

Table 3. Table of distribution by gestational age per Trisemester

Pregnancy Age (Trisemester)	Frequency (n)	Persentage (%)
Trimester I	11	27,5
Trimester II	8	20,0
Trimester III	21	52,5
Total	40	100

Table 3 shosws the most of the respondent is in 3rd trisemester which are 21 respondent (52,5%).

Table 4. Table of distribution of respondent based on Respondent's Gingiva status

Gingiva index status (Criteria)	Frequency (n)	Persentage (%)
Mild Inflamation	8	20,0
Medium Inflamation	18	45,5
Severe Inflamation	14	35,0
Total	40	100

Table 4 shows that the gingiva index of respondent with mild inflammation have 8 respondents with percentage20,0%, in medium inflammatory criteria there are 18 people with percentage 45,5%, and severe inflammatory criteria there are 14 respondents with percentage35,0%.

Table 5. Results of Cross Tabulation Between Pregnancy Age and Gingival Status of Pregnant Women

Age of Pregnancy	Gingiva Status			Jumlah
	Mild	Medium	Severe	
	n	n	n	n
Trimester I	8	2	1	11
Trimester II	0	8	0	8
Trimester III	0	8	13	21
Total	8	18	14	40

Based on table 5 of cross tabulation result, it can be seen that most respondents are respondent with pregnancy age of 3rd trimester who have gingiva status with severe criterion equal to 13 respondent (21%) with severe gingiva status.

Table 6. Results of data normality test with Kolmonogorov-Smirnov

	Kolmogorov-Smirnov		
	stat	Df	Sig.
Gingival Index	,111	40	,200

Table 6 shows that the p value of 0.200> 0.05. Therefore, the data used in this study is normally distributed. Because the data is normally distributed, the data is analyzed using Pearson correlation parametric test. The results of this study were tested using Pearson correlation parametric test that is the correlation analysis used to calculate the value of correlation between two different variables.

Table 7. Result oh Pearson Correlation test of the correlation gingiva status

Variabel	n	Sig	A
Age of pregnancy and gingival status	40	0,000	0,05

Table 7 shows that the number of respondents (n) is 40 people. The level of significance is 0.000. The value of α is 0.05. So it can be said that the level of significance is smaller than α. Then Ha (Variable of influence in research related to affected variable).

Discussion

Based on the results of the research in table 1,the data of respondents characteristics which are the age of respondents and age of pregnancy.Most of the respondent age was between 27-36 years old which is 16 respondents (40,0%). Table 2 shows that the data of respondent based on age of pregnancy per month, and most of the respondents were in 8 months of pregnancy, there were 10 respondents (24,0%) and least respondent are 1 respondents those in 26 month of pregnancy (2,5 %). Table 3 shows most of the respondent based on their pregnancy age per trisemester is respondent in 3rd trimester which consist of 21 respondents (52,5%).

The results of the research showed in Table 4 shows that all respondents experienced gingival inflammation with different level. Gingivitis prevalence of pregnant women equal to 83,3%[17]. Gingival inflammation on them is caused by the increasing pregnancy hormone and gingival vascularization, so that the gingiva responds excessively to local irritant factors. Local irritation may be a soft stimulus of plaque and residual food[18]. Poor oral hygiene during pregnancy due to

the changes in maintenance of oral and mouth hygiene of pregnant women caused by the emergence of fear when brushing teeth because of the incidence of gum hemorrhage11. This is in line with the results of research conducted by Hidayati (2012) that pregnant women who have good dental hygiene is only 40% [19] .

Table 3 shows that severe inflammatory conditions were all found in respondents in their 3 rd trimester of pregnancy which consists of 21 respondents (52,5%) with percentage criteria (100%). Gingival inflammation get more severe in the third trimester due to gum conditions in the previous trimester was not receiving dental health care [10]. This happened because ofthe presence of gingival enlargement in early pregnancy leads to the formation of pockets which is an ideal place for accumulation of build up plaque[20]. Peak of plaque formation that occurs in the first trimester due to the feeling of nausea and vomiting that makes pregnant women feel lazy to brush their teeth[11].

From the result of cross tabulation shown in Table 4, it was found that pregnant women who are suffering from gingivitis increased as the increasing of the pregnancy age. In the first trimester, pregnant women often experience nausea and vomiting caused by hormonal changes in the body. This nausea and vomiting causes pregnant womenreluctant to brush their teeth and it get worsen with their snacking habits to reduce those nausea and vomiting. Those things trigger an increasing number of plaque[11] . While, in the second trimester, the process of egg fertilization and development of the placentaoccurs, resulting in increased production of progesterone and estrogen that can trigger gingival inflammation. In this second trimester the placenta also continues to increase female sex hormones resulting in increased susceptibility to gingival inflammation during the beginning of the second trimester to its peak in the third trimester[9] . Those can get worse if previously the teeth and gum conditions did not get dental health care [10] . As the increased of bleeding in the gums when brushing teeth, the gums become higher and more swollen[21] . Table 6 shows the results of data analysis using Pearson Correlation Test obtained value significance of 0.111, with the value of α is 0.05. The value of significance is greater than α, then Ha (Variable influence in research related to the affected variable) is rejected. This result shows that there is no correlation between trimester 1 gestational age and gingival status in pregnant women. Table 10 shows the results of data analysis using Pearson Correlation Test obtained value of significance of 0.891, with the value of α is 0.05. The value of significance is greater than α, then Ha (Variable influence in research related to the variables affected) is

rejected. Furthermore, table 7 shows the results of data analysis using SPSS with Pearson Correlation Parametric Test, obtained the significance value 0.000 with probability value at most error (α) 0,05. The value of significance is less than the probability value so it can be concluded that Ha accepted and Ho rejected. These results indicate an association of gestational age with maternal gingival status. The results of the study in tables 11 and 12 are similar to those inKusumawardhani (2016) in 40 pregnant women with a significance value of 0.011, those implies that there is a relationship between gestational age and gingivitis[22]. In line with the theory, during pregnancy there is an increasing number of hormones that increase as the pregnant age increases, so the older the pregnancy age is, then the gingiva inflammation vulnerability is higher too[10]

CONCLUSION

Based on the results of research and discussion about gestational age and gingival status in pregnant women with a total of 40 respondents, there is a relationship between gestational age and gingival status in pregnant women, where the SPSS analysis results show that the p-value (0.000) is smaller than sig-a 0.05. The significant value indicates that it is smaller than the probability value so it can be concluded that Ha is accepted and Ho is rejected.

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