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Research Report

Pregnant women's knowledge about pregnancy gingivitis and oral health related to quality of life at Bagor Health Center

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ABSTRACT

Background: The formation of biofilm in plaque at the gingival border and the inflammatory reaction to bacteria create gingivitis, an inflammatory reaction of the gingiva. Due to increases in the hormones progesterone and estrogen, pregnancy is a physiological process that might result in physical or psychological changes. Many oral and dental health issues have an impact on pregnant women's quality of life. **Purpose:** The study's goal was to ascertain how pregnant women's quality of life was impacted by their awareness and knowledge about pregnancy gingivitis and dental health maintenance. **Methods:** An analytical observational study was used. Total sampling is the method used for sampling. Utilize a questionnaire to assess understanding, and use the Modified Gingival Index (MGI) to assess the gingivitis score. Multiple linear regression was utilized after the Spearman test in data analysis. **Results:** The findings indicated a relationship between pregnant women's quality of life and their level of awareness regarding maintaining oral health and pregnancy gingivitis. Inside has a detrimental coefficient value of -1.202, which means that pregnant women's knowledge increases with decreasing quality-of-life scores, which reflect a good quality of life. A positive coefficient (2.717) is substantially influenced by gingival state, indicating that a lower level of inflammation corresponds to a higher quality of life. **Conclusion:** Pregnant women's quality of life is influenced by their level of awareness and knowledge about pregnancy gingivitis and maintaining their oral health. Pregnant women's quality of life is directly correlated with their ability to maintain oral health.

Keywords: gingivitis; pregnancy; modified gingival index (MGI); OHIP-14; medicine

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INTRODUCTION

Dental and oral health is an inseparable part of body health. Dental and oral hygiene and poor diet can affect dental and oral health, including occurrence of periodontal disease.[1] One of the dental and oral problems that has a reasonably high prevalence in Indonesian is gingivitis. The results of a World Health Organization (WHO) survey stated that almost 90% of the world's population suffers from gingivitis. The prevalence of gingivitis in Indonesia in 2018 was 96.58%, with the proportion of dental and oral problems in Indonesia amounting to 57.6% who received services from medical dental personnel, amounting to 10.2%. East Java Province has a proportion of dental and oral problems of 54.22%.[2] According to the 2021 Nganjuk Regency Health Profile, it is stated that the Bagor Community Health Center is the community health center with 531 visits from pregnant women in 2021. According to data on the ten most common diseases in the Bagor Health Center dental and oral health in 2021, gingivitis is included in the top 10 most common disease cases, namely at number 4 with a total of 183 cases.

An inflammatory reaction to bacteria and biofilm deposition in the plaque surrounding the gingival border induces gingivitis, an inflammation of the gingiva. Color changes, shape changes, consistency changes, texture changes, and bleeding of the gingiva characterize clinical symptoms of gingivitis. Pregnancy gingivitis, sometimes referred to as excessively inflammatory gingival reaction to dental plaque and the hormonal changes that typically take place during pregnancy, can be made worse by pregnancy. Clinical symptoms of gingivitis in pregnant women appear in the second month and reach their peak in the eighth month. Pregnant women who experience chronic or severe toothache and suffer from periodontal infections are at risk of giving birth to low birth weight (LBW) babies and may also experience miscarriage.[3]

Pregnant women often neglect oral hygiene, which will cause plaque to build up on the teeth and gingival

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edges, which can cause gingivitis.[4] Periodontal disease can affect fetal health and pregnancy conditions, including births accompanied by LBW, which will carry the risk of death, impaired growth and development of the child, and the risk of the child becoming stunted if not handled properly.[5] Dental and oral hygiene behavior of pregnant women is a factor that determines gingivitis in pregnant women, which will increase the risk of developing gingiva inflammation during pregnancy, namely pregnancy gingivitis. Knowledge of pregnant women's dental and oral health is essential because not maintaining dental and oral health will have an impact, which is bad for pregnant women.[6] Pregnant women's quality of life is negatively impacted by the prevalence of dental and oral health issues. Quality of life is each individual's perception regarding physical health, psychological state, functional abilities, social relationships, and relevant relationships with the environment. Negative impacts that often occur in pregnant women include pain, feeling uncomfortable when eating, and feeling embarrassed with their low oral and dental health.[7] The study's goal was to ascertain how pregnant women's quality of life was impacted by their awareness and knowledge about pregnancy gingivitis and dental health maintenance.

MATERIALS AND METHODS

The research was conducted after obtaining ethical clearance from the Health Research Ethics Commission of the Health Polytechnic Ministry of Health, Malang (No.071/III/KEPK POLKESMA 2023) and a research letter permit. Researchers explained information in the form of objectives, benefits, risks, and research procedures to pregnant female respondents. If the respondent agrees to participate in this research, the respondent is asked to fill in personal data and sign a written informed consent.

This research design is analytical survey research if the researcher wants to analyze certain situations or conditions that occur using a cross-sectional approach. The population in this study was pregnant women who came for routine monthly pregnancy monitoring (antenatal care activities) at the first visit (K1) at the *Kesehatan Ibu dan Anak* (KIA) polyclinic at the Bagor Community Health Center, Nganjuk. Sampling uses total sampling based on specific considerations made by the researcher himself, based on previously known characteristics or properties of the population. The inclusion criteria for this study were 1) pregnant women with a gestational age in the first trimester, second trimester, and third trimester (aged 20–35 years) who visited the Bagor Community Health Center area, Nganjuk. 2) Pregnant women who are physically and mentally healthy. 3) Pregnant women who are willing to sign written informed consent. 4) Pregnant women who are cooperative during data collection. The exclusion criteria for this study are 1) pregnant women wearing partial, complete dentures, either removable or fixed. 2) Pregnant women who have a history of systemic diseases such as diabetes mellitus.

The tools used include sterilizers, mouth glass no. 4, melanin trays, knowledge questionnaires for pregnant women about dental and oral health and questionnaires for the quality of life of pregnant women, Modified Gingival Index (MGI) examination forms, written informed consent, trash cans, and scents. Meanwhile, the materials used are gloves, masks, 70% alcohol, tissue, or cotton. The operational definition of this research is knowledge of pregnant women about maintaining oral health, pregnancy gingivitis, and the quality of life of pregnant women. Knowledge about dental and oral health is everything the respondent knows and mentions relating to maintaining dental and oral health, which consists of brushing habits, including choosing a toothbrush and brushing your teeth. The instrument used is a questionnaire. To obtain data regarding respondents' knowledge, a questionnaire was used to measure ten questions, where there were two answer options, right or wrong, and respondents only chose one of them, provided that if the answer were correct, they would be given a score of 1, and if the answer were wrong, they would be given a score of 0. The scores would be added and changed into percentage form with a formula.

This study was measured using the MGI by examining four parts of the gingiva per tooth (two marginals and two papillae) using a non-invasive method (without probing). MGI decided to eliminate probing, which could disrupt plaque and irritate the gingiva. In addition, the developers wanted an index that could be more sensitive than previously possible, with more subtle changes in gingival inflammation. Four gingival sites per tooth (two marginals, two papillae) were assessed with GI. It can be done to examine all or part of the oral cavity. The individual mean value can be calculated by summing the gingival unit values and dividing by the number of gingival units examined. Oral quality of life for pregnant women is a measurement of oral health related to the quality of life based on individual assessment based on the condition of their teeth and mouth. The instrument used in assessing quality of life is the OHIP-14 questionnaire, and is a modification of the OHIP-49 based on an adaptation of the WHO classification. OHIP-14 consists of seven dimensions: functional limitations, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. The questionnaire consists of 14 questions with 0 = never, 1 = rarely, 2 = sometimes, 3 = often, and 4 = very often. The assessment scores are categorized into good (score 0-18), moderate (score 19-37), and poor (score 38-56).[8,9]

RESULTS

The results of the study on 32 pregnant women came for routine monthly pregnancy monitoring (antenatal care) at the Bagor Community Health Center KIA polyclinic on March 25, 2023, providing information on the characteristics of respondents, which were analyzed descriptively through the following frequency distribution shown in Table 1. The characteristics of respondents in this study, that the majority

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of pregnant women who were subjects in this study were aged between 21 and 30 years, most of them in the second trimester. Based on educational background, it is known that most are junior high school graduates and unemployed.

Spearman correlation results between knowledge about maintaining oral health and the quality of life of pregnant women obtained showing a significant relationship (p:0.01; p<0.05) with strong and positive direction (r: 0.658). This means that the better knowledge pregnant women have about maintaining oral health, the better their quality of life will be. Vice versa, the lower the ability of pregnant women to maintain oral health, the worse their quality of life will be. Spearman correlation results between knowledge about gingival status and quality of life of pregnant women obtained shown a significant relationship (p:0.01; p<0.05) with strong and positive direction (r: 0.7). This means that the milder the inflammation experienced by pregnant women, the higher the quality of life. Conversely, the more severe the inflammation experienced, the more the quality of life related to oral health decreased.

The results of the simultaneous test (F test) on the influence of knowledge of oral health maintenance and gingival status on the quality of life of pregnant women obtained significant results, meaning that both variables simultaneously influence the quality of life of pregnant women. To determine whether the two variables have a partial effect. The coefficient of determination (R^2) obtained from the two variables is 61.4% (Table 2), which means that the variable of pregnant women's knowledge about maintaining oral health and the gingival status variable in predicting quality of life is 61.4%, and the remaining 38.6% is from the variable others were not examined

Table 1. Characteristics of respondents

Characteristics	Frequency	Percentage
Trimester		
I	8	25%
II	13	40.6%
III	11	34.4%
Age, mean ± s.d	27.16 ± 4.29	
<20 years	1	3.1%
21-30 years old	20	62.5%
>30 years	11	34.4%
Education (%)		
Elementary school	8	25.0%
Junior high school	10	31.3%
High school	9	28.1%
3-year diploma	2	6.3%
Bachelor	3	9.4%
Work		
No	24	75%
Yes	8	25%

DISCUSSION

It was discovered that the Bagor Community Health Center's pregnant patients have good knowledge. This is consistent with a study on pregnant women's knowledge of gingivitis, which found that most respondents knew very little about the condition. Pregnant women's conduct in preserving dental health will be influenced by their growing knowledge about gingivitis.[1,3]

One major issue is a lack of knowledge about competence. This study also supports a previous study that found that pregnant women still lack adequate knowledge about maintaining good gingivitis status and that many pregnant women still have inadequate knowledge. Therefore, dental health education is still required to raise pregnant women's awareness of maintaining oral and dental hygiene, as is to be expected.[10]

At the Bagor Community Health Center, the moderate severity category for pregnant gingivitis is the most prevalent. This is due to the fact that pregnancy-related hormonal changes frequently result in nausea and vomiting. In addition to making pregnant women unwilling to brush their teeth, the practice of nibbling to quell nausea and vomiting contributes to a rise in plaque in pregnant women's mouths. Gingival inflammation can be brought on by an increase in the hormones progesterone and estrogen, and it can worsen if the teeth and gingiva have not previously had dental care.[1,3]

A lump between two teeth or irritation of the gingiva and epulis gravidarium are examples of anomalies in the oral cavity caused by the overreaction to local irritating factors (plaque) caused by the increase of the hormones estrogen and progesterone during pregnancy and vascularization. Pregnant women's gingiva disease status remains in the intermediate range because they just observe and understand the importance of maintaining good oral hygiene; they do not take any action to do so.[3] Simply knowing is insufficient; actions and sentiments of concern are required to keep the mouth and teeth healthy.

Estrogen and progesterone levels rise during pregnancy and reach their peak in the eighth month; elevated blood and salivary levels result in an overreaction of the tissues to plaque biofilm. Gingival inflammation can also be brought on by increased hormone levels, which likewise cause gingival crevicular fluid flow.[11–13] The OHIP-14 questionnaire was used to evaluate pregnant women's quality of life. According to the distribution of pregnant women's quality of life, 78.1% (25 pregnant women) have an adequate quality of life, while 21.9% (7 pregnant women) have an excellent quality of life.

Table 2. Regression analysis of knowledge and gingival status on the quality of life of pregnant women

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.679	0.178		3.815	0.001
Knowledge	0.256	0.091	0.437	2.814	0.009
Gingiva health status	0.221	0.081	0.420	2.706	0.011
F-calculated = 23.093; p-value = 0.000; R square= 0.614					

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Hormonal changes, dietary and behavioral changes, and a host of other problems, including cravings, nausea, and vomiting, all contribute to alterations in the mouth cavity during pregnancy. Because pregnant women often neglect their oral and dental hygiene, they are more vulnerable to periodontal and gingival diseases. Pregnant women's oral health quality of life may also be impacted by the high prevalence of oral disease.[14]

The quality of life of expectant mothers was strongly and favorably correlated with their knowledge of preserving dental health (r: 0.658). This implies that pregnant women's quality of life will improve the more they know about preserving dental health. Conversely, pregnant women's quality of life will suffer the less they are able to preserve dental health. Similarly, pregnant women's quality of life would suffer the less they are able to maintain dental health. Because they lack the knowledge necessary to promote dental and oral health during pregnancy due to changes in the body, pregnant women are among the groups most at risk for dental and oral disease.[15] Not all expectant mothers are aware of the importance of brushing their teeth and mouths on a regular basis.

Knowledge of gingival health and pregnant women's quality of life were significantly correlated in a positive and robust way. This implies that pregnant women's quality of life increases with the degree of inflammation they encounter. On the other hand, the quality of life associated with dental health declined more with the severity of the inflammation. On the other side, quality of life declines with increasing inflammation severity. Pregnant women's quality of life is negatively impacted by the prevalence of dental and oral health issues. There is an inverse association between gingivitis severity and quality of life. Gingivitis severity and pregnant women's quality of life in Surabaya are significantly correlated; the more severe the gingivitis, the lower the pregnant women's quality of life.[16]

Pregnant women's awareness and knowledge of pregnancy gingivitis and dental health maintenance have an impact on their quality of life. The capacity of expectant mothers to maintain dental health is closely tied to their quality of life.

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