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Relationship Between Knowledge and Attitude of Pregnant Women with Dental Caries at the Bendo Magetan Health Center

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ABSTRACT

During pregnancy, increased secretion of the hormones esterogen and progresterone can lower the pH of the mouth, which in turn triggers bacteria that cause dental caries. Therefore, the knowledge and attitudes of pregnant women regarding oral health are crucial aspects as a preventive effort for dental caries. The purpose of this study was to determine the relationship between knowledge and attitudes of pregnant women with the incidence of dental caries at the Bendo Magetan Health Center. This research method uses quantitative research with correlative analytic research type with cross-sectional design involving 36 pregnant women who visited the dental clinic during July 2024. Data were collected through questionnaires measuring the knowledge and attitudes of pregnant women regarding dental health, as well as clinical examination to detect the presence of caries. The results showed that the level of knowledge regarding dental caries was mostly in the moderate category (41.7%), most pregnant women showed a positive attitude regarding dental caries (58.3%), and the incidence of dental caries in the moderate category in pregnant women (41.7%). Statistical analysis using the Spearman test showed a significant relationship between the knowledge and attitudes of pregnant women and the incidence of dental caries (p value <0.05). In conclusion, there is a relationship between knowledge and attitudes of pregnant women with the incidence of dental caries at the Bendo Magetan Health Center.

INTRODUCTION

Dental caries is one of the most common oral health problems, especially during pregnancy, because it affects both the mother and the developing fetus (Lei et al., 2019) . Dental caries is a disease that results in damage to the hard tissues of the teeth, starting with softening of the enamel, eventually leading to the formation of cavities (Tarigan, 2017). If not treated immediately, caries will expand and trigger pain, abscesses, and tooth loss. In

pregnant women, this can result in malnutrition due to feeding difficulties, potentially leading to low birth weight (LBW) babies (Angraini, Mahirawati, & Hadi, 2023) .

The 2018 Basic Health Research (Riskesdas) report shows that 45.3% of the population has damaged or decayed teeth, with a significant proportion also suffering from gum infections. Despite this, only 10.2% of the population sought treatment from a dental professional, and only 2.8% practiced proper brushing habits. Among pregnant women, caries affects 24.3%, which impacts maternal nutrition and potentially leads to complications such as low birth weight (Indonesian Ministry of Health, 2019). Data for 2022 from the East Java Health Office also reported 308 cases of low birth weight babies (4.3%) and 213 premature births (2.9%) out of 7,284 births (Dinas Kesehatan Provinsi Jawa Timur, 2023) .

Research conducted Lei et al. (2019) showed that on average pregnant women experienced 4 carious teeth including the moderate category. Dental caries, especially in pregnant women, is caused by hormonal changes that lower the pH of the mouth, poor oral hygiene, and increased consumption of cariogenic foods. Nausea and vomiting can worsen this condition because acids from vomit remain in the mouth, which contribute to demineralization of the enamel (Dewi et al., 2023).

In line with research conducted Obi (2019) states that hormonal changes are often accompanied by changes in attitudes and behavior during pregnancy such as the occurrence of *pregnancy* gingivitis which causes the gingiva to turn red, swollen, and bleed easily will affect pregnant women afraid to brush their teeth. Some factors that affect dental caries in pregnant women include knowledge, attitudes, economic factors of these pregnant women (Liariana et al., 2020) . This study aims to understand the relationship between knowledge and attitudes of pregnant women with the incidence of dental caries at the Bendo Health Center, Magetan Regency.

METHOD

This research method uses quantitative research with cross-sectional research type. The study was conducted at the Bendo Health Center located at Jalan Raya Bendo No.116, Bendo District, Magetan Regency, East Java, Indonesia. Sampling using accidental sampling technique by selecting participants based on availability during the study period from July 1-31, 2024, which amounted to 36 pregnant women. Data collection in this study used a questionnaire sheet to assess knowledge and attitudes, as well as clinical observation to measure the occurrence of dental caries in participants.

Data were analyzed using non-parametric statistical tests, namely the Spearman Correlation Test. The test was used to measure the relationship between knowledge and attitude (independent variable) and the incidence of dental caries (dependent variable). The significance level used was $\alpha = 0.05$. This study has also received ethical approval with ethical review number No.EA/2867/KEPK-Poltekkes_Sby/V/2024.

RESULTS AND DISCUSSION

The characteristics of respondents in this study were pregnant women aged 21-30 years, with the highest level of education being high school 24 respondents (66.7%), and the most work as housewives as many as 27 respondents (75%).

Table 1. Distribution of Pregnant Women's Knowledge about Dental Caries

Knowledge Criteria	n	%
Good	9	25.0%
Medium	15	41.7%
Bad	12	33.3%
Total	36	100%

Table 1 shows that 41.7% of pregnant women have a sufficient level of knowledge about dental caries, while 25% have good knowledge and 33.3% have low knowledge.

Table 2. Distribution of Attitudes Toward Dental Caries in Pregnant Women

Attitude Criteria	n	%
Positive	21	58.3%
Negative	15	41.7%
Total	36	100%

Table 2 shows that 58.3% of the participants had a positive attitude towards dental caries, while 41.7% had a negative attitude.

Table 3. Distribution of Dental Caries in Pregnant Women

Caries Criteria	n	%
Bad	12	33.3%
Medium	15	41.7%
Good	9	25.0%
Total	36	100%

Table 3 shows that 41.7% of pregnant women have a moderate level of dental caries, 33.3% have a high level of dental caries, and 25% have a low level of caries.

Table 4. Cross Tabulation Analysis of the Relationship Between Knowledge and the Incidence of Dental Caries in Pregnant Women

Knowledge Criteria	Bad	Medium	Good	Total	p-value
Bad	6	4	2	12	0.006
Medium	3	7	5	15	
Good	3	4	2	9	
Total	12	15	9	36	

Table 4 shows that the Spearman correlation test produces a p-value of 0.006, meaning that there is a significant relationship between the knowledge of pregnant women and the incidence of dental caries ($p < 0.05$). Pregnant women with higher levels of knowledge tend not to suffer from severe dental caries, while pregnant women with lower knowledge are more susceptible.

Table 5. Cross Tabulation Analysis of the Relationship Between Attitude and the Incidence of Dental Caries in Pregnant Women

Attitude Criteria	Bad	Medium	Good	Total	p-value
Negative	6	6	3	15	0.029
Positive	6	9	6	21	
Total	12	15	9	36	

Table 5 shows a p-value of 0.029 which means that there is a significant relationship between the attitude of pregnant women and the severity of dental caries ($p < 0.05$). Pregnant women who have a positive attitude tend to have a lower caries rate, while those who have a negative attitude experience a higher caries rate.

DISCUSSION

Relationship between Knowledge and Dental Caries Incidence

Based on the research data conducted at the Bendo Magetan Health Center, the p-value was 0.006. These results are in line with the research of Nisa, Larasati, & Putri, (2023) in Lamongan Regency, obtained a p-value of 0.023 which means that there is a relationship between knowledge and the incidence of dental caries.

Dental caries is a multifactorial disease with 4 main factors: host (saliva and teeth, microorganisms, substrate, and time (Lei et al., 2019). Pregnancy does not directly cause dental caries. Pregnant women are at higher risk of developing caries due to hormonal changes and the potential for neglecting oral hygiene during pregnancy (Abdat & Ismail, 2019).

The cause of the disease is due to the consumption of sweet and sticky foods or even not checking teeth during pregnancy. In line with research Ariyanti, Arman, & Sundari, (2023)

shows that many women have inadequate knowledge and negative attitudes about oral. The consequences of untreated dental caries can be severe, potentially leading to pain, infection, and pregnancy outcomes such as low birth weight (Kurniawati & Ediningtyas, 2021). The moderate to high incidence of dental caries suggests that current preventive measures are insufficient.

Research by Gudipaneni et al., (2022) found that increased knowledge about oral health significantly reduced the incidence of dental problems among pregnant women. Low knowledge of dental caries can lead to inadequate oral hygiene practices, thus increasing the risk of caries during pregnancy (Kurniawati & Ediningtyas, 2021) . Pregnancy itself increases susceptibility to oral health problems due to hormonal instability, which lowers oral pH and increases bacterial growth (Pasaribu, 2022) . The lack of knowledge highlights the critical need for better education on oral health in pregnant women. Programs targeting pregnant women should focus on improving understanding of dental health, especially given the risks to maternal and fetal health.

Knowledge plays an important role in preventive health behaviors (Adventus, Jaya, & Mahendra, 2019) . Pregnant women who understand the importance of dental care, the causes of caries, and how to prevent it are more likely to take proactive steps to maintain oral hygiene (Zahra, Mahirawatie, & Hadi, 2022). However, poor knowledge leads to neglect of these practices, which contributes to the high incidence of caries. Pregnant women with lower levels of knowledge experienced a higher incidence of dental caries, suggesting that inadequate understanding of oral health may contribute to a greater risk of dental caries. Therefore, improving both education and accessibility to dental services is essential to reduce the incidence of caries.

Relationship between Attitude and Dental Caries Incidence

The results of the analysis of the relationship between attitudes and the incidence of caries showed a p-value of 0.029, which means that there is a relationship between knowledge and attitudes with the incidence of dental caries in pregnant women. The results of the study Putri, Hadi, & Hayati, (2023) also shows that 60% of pregnant women's attitudes towards dental caries are in the bad category.

Positive attitudes towards dental care often correlate with preventive behaviors such as regular brushing, flossing, and dental visits. Conversely, negative attitudes can lead to avoidance of these important behaviors, thereby increasing the risk of caries (Istiqamah, Hatta, & Wardani, 2024). This is in line with research Obi (2019) which states that 87.6% of pregnant women do not perform dental examinations during pregnancy. Improving knowledge and fostering positive attitudes towards oral health are critical in reducing caries rates and ensuring better maternal and fetal health outcomes. Comprehensive education and accessible dental care services should be prioritized to effectively address this public health issue (Nisa, Larasati, & Putri, 2023).

The results of this study are in line with existing health behavior theories, particularly the Health Belief Model (HBM), which states that knowledge and attitudes are very important in shaping health behavior. According to the HBM, individuals with greater knowledge about a health problem are more likely to take it seriously and take preventive action. In this case, pregnant women with better knowledge about dental caries were found to have a lower incidence of caries, which supports the framework of the model (Ardhiyanti & Nufus, 2022).

In addition, the Theory of Planned Behavior (TPB) can explain the significant relationship between attitudes and caries incidence. TPB emphasizes that positive attitudes towards health behaviors (such as dental care) increase the likelihood of taking preventive action, which is reflected in research findings where pregnant women with positive attitudes have lower caries incidence (Rachmawati, 2019). Due to hormonal fluctuations during pregnancy, pregnant women have a higher risk of experiencing various oral health problems (Kasmiati, 2023). Maintaining excellent oral hygiene by brushing twice a day, flossing, attending regular dental check-ups, and managing diet are essential to protect maternal and fetal health during this crucial period (Lei et al., 2019). Improving knowledge and attitudes among pregnant women

can significantly reduce the occurrence of dental caries. This highlights the need for increased educational programs and attitude-shaping interventions in maternal health care settings (Siwi & Saputro, 2020). These findings highlight the importance of fostering positive attitudes through targeted interventions, which may ultimately reduce the incidence of dental caries in pregnant women. Programs that promote the benefits of good oral health and its relationship to overall health and pregnancy outcomes may encourage more positive attitudes and behaviors (Salmawati et al., 2023).

The benefits of maintaining oral hygiene during pregnancy include preventing pregnancy gingivitis, reducing the risk of periodontitis, minimizing the risk of dental caries, preventing enamel erosion, reducing pregnancy tumors (Pyogenic Granuloma) (Rahmayanti, Suryanti, & Suwargiani, 2020). Good oral hygiene is not only important for the mother's health but also for the baby's health. Poor oral health during pregnancy is linked to poor pregnancy outcomes, including preterm birth and low birth weight (Azhari et al., 2021). Proper oral care can help prevent these complications and ensure a healthier pregnancy. Pregnant women with positive attitudes towards oral health are more likely to seek dental care and maintain better oral hygiene practices. This study shows that knowledge and attitude are important factors in the prevention of dental caries in pregnant women.

CONCLUSION

Based on the results of research conducted on the relationship between knowledge and attitudes of pregnant women with dental caries, the researcher concluded that most pregnant women at Puskesmas Bendo Magetan have sufficient knowledge related to dental caries, the attitude of pregnant women towards dental caries at Puskesmas Bendo Magetan is generally in the positive category, the incidence of dental caries in pregnant women at Puskesmas Bendo Magetan is in the moderate category, there is a relationship between the knowledge of pregnant women and the incidence of dental caries at Puskesmas Bendo Magetan, and there is a relationship between attitudes and the incidence of dental caries at Puskesmas Bendo Magetan.

It is suggested that future research needs to explore how attitudes can be changed effectively through targeted interventions. Research focusing on attitude change strategies, such as behavioral counseling, may provide insight into reducing the incidence of dental caries.

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