The Knowledge Level of Pregnant Women About Oral and Dental Health During Pregnancy

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Abstract

Pregnancy is a physiological process that causes changes in a woman's body followed by hormonal changes, which not only affect general health but also affect oral and dental health. The purpose of this study was to determine the level of knowledge of pregnant women about oral health during pregnancy. The method used is descriptive method with a total sample taken of 28 pregnant women. Data collection was carried out by giving questionnaires to respondents to answer the questions given. The level of knowledge of pregnant women in Tuak Daun Merah Village (TDM) includes good criteria (41%), moderate criteria (50%) and bad criteria (9%). The level of knowledge about how to brush the teeth of pregnant women in the TDM Village with good criteria (39%), moderate criteria (47%), bad criteria (14%) this is because there are still pregnant women who do not know the time, frequency and how to brush their teeth properly. good and right. The level of knowledge about the diet of pregnant women in TDM Village with good criteria (75%), moderate criteria (21%), bad criteria (4%). The highest knowledge is with good criteria, the reason is by watching television and reading on the internet so that respondents understand and answer questions about eating patterns correctly. The level of knowledge about dental health control for pregnant women in the TDM Village with good criteria (10%), moderate criteria (61%), bad criteria (29%) this is because respondents know the time of dental health control but have not routinely carried out dental health control to medical facility.

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Introduction

Pregnancy is a process of physiological change that occurs naturally as part of human reproduction, resulting in the development of a fetus within the mother's uterus, with its growth and size progressing according to gestational age (Harahap et al., 2022). Pregnancy is also a physiological condition that brings about various changes in a woman's body. These changes include anatomical, physiological, and psychological alterations accompanied by hormonal fluctuations, which not only affect overall health but also influence oral and dental health (Marliani et al., 2022). The period of pregnancy begins at conception and continues until the birth of the baby. The length of a normal pregnancy is approximately 280 days (40 weeks or 9 months and 7 days), calculated from the first day of the last menstrual period. Pregnancy is divided into three trimesters: the first trimester begins from conception to 3 months, the second trimester spans from the fourth to the sixth month, and the third trimester covers the seventh to the ninth month (Marliani et al., 2022). Hormonal changes during pregnancy often lead to various complaints such as nausea, vomiting, and dental or oral discomfort, which may arise due to poor oral hygiene practices. According to Riskesdas (2013), 25.9% of the Indonesian population experiences dental and oral health problems, such as caries and periodontal disease, some of which also affect pregnant women (Muthmainnah, 2016).

Pregnancy represents a complex physiological process characterized by significant changes in a woman's body as part of natural reproduction. It results in the development of a fetus within the maternal uterus, with fetal growth and size progressing in accordance with gestational age (Harahap et al., 2022). This period is marked not only by anatomical and physiological transformations but also by psychological adjustments driven largely by hormonal fluctuations. These hormonal changes play a central role in supporting fetal development; however, they may also influence various aspects of maternal health, including oral and dental health (Marliani et al., 2022). Pregnancy typically spans 280 days or approximately 40 weeks, calculated from the first day of the last menstrual period. This duration is divided into three trimesters, each marked by distinct developmental milestones: the first trimester from conception to three months, the second trimester from the fourth to the sixth month, and the third trimester from the seventh to the ninth month (Marliani et al., 2022). Throughout these stages, hormonal shifts—particularly increases in estrogen and progesterone—may trigger a variety of physical symptoms such as nausea, vomiting, and increased oral sensitivity.

Oral and dental discomfort frequently arise during pregnancy and are often linked to poor oral hygiene practices. According to Riskesdas (2013), approximately 25.9% of the Indonesian population experiences dental and oral health problems, including dental caries and periodontal disease. Pregnant women constitute one of the at-risk groups for such conditions (Muthmainnah, 2016). Nausea and vomiting, common during early pregnancy, can increase the acidity of the oral cavity, creating an environment that weakens enamel and contributes to the development of dental caries and gingivitis (Atiqoh et al., 2020). This phenomenon is further exacerbated by the hormonal increase that enhances blood flow to the oral mucosa, making the gums more prone to swelling, inflammation, and bleeding—conditions often referred to as pregnancy gingivitis (Forrest, 1995; Novita & Suprapto 2022). Without proper oral care, these symptoms can worsen and potentially lead to more serious periodontal disease.

Maintaining good oral hygiene during pregnancy is therefore essential, as the mouth is not merely a gateway for food and drink but a vital component of overall health. The oral cavity serves numerous important functions, including mastication, digestion, communication, and defense against pathogens. It is also considered a reflection of an individual's general health status, meaning that disturbances within the mouth may indicate broader systemic problems (Marliani et al., 2022). For pregnant women, oral health takes on heightened importance because infections or inflammation in the oral cavity may contribute to adverse pregnancy outcomes. Poor oral hygiene has been associated with risks such as low birth weight, preterm birth, and worsening maternal discomfort.

Given these potential complications, it is critical for pregnant women to adopt and maintain consistent oral hygiene behaviors. This includes regular tooth brushing, flossing, and dental check-ups, even when fatigue, nausea, or vomiting make such routines more challenging (Mardelita, 2016). Behavioral discipline and self-awareness during pregnancy are necessary to protect both maternal and fetal health. Continuous education and support from healthcare professionals can help pregnant women understand the importance of maintaining oral hygiene and adopting preventive behaviors that reduce the risk of dental and oral diseases.

Knowledge, as a cognitive component, plays a fundamental role in shaping an individual's health behaviors. Knowledge is developed through sensory processes—primarily through visual and auditory channels—and varies in depth and intensity among individuals (Kristianingsih et al., 2019). In the context of pregnancy, adequate knowledge about oral health enables women to make informed decisions regarding daily hygiene practices and encourages adherence to preventive measures recommended by health professionals. Therefore, strengthening oral health knowledge among pregnant women is a crucial step in promoting healthier behaviors and reducing the prevalence of pregnancy-related oral health problems.

Method

Study Design

This study employed a descriptive research design with a quantitative approach. The design was selected because the primary objective was to describe the level of knowledge of pregnant women regarding oral and dental health during pregnancy without implementing interventions or examining relationships between variables. The descriptive approach allows the systematic and objective presentation of respondents' knowledge based on field data.

Study Location and Period

The study was conducted in Tuak Daun Merah Village, Kupang City. The location was chosen based on accessibility, availability of respondents, and its relevance to the research focus. Data collection took place from May 26 to June 3, 2023. This period ensured the availability of pregnant women who were accessing health services and were able to participate.

Population and Sample

The study population consisted of all pregnant women residing in Tuak Daun Merah Village during the study period. The sample was determined using a total sampling technique, in which all pregnant women who met the inclusion criteria were included as respondents. A total of 28 pregnant women participated. Total sampling was applied to obtain a representative description of knowledge levels in the study population.

Inclusion criteria included pregnant women who resided in the study area, agreed to participate, and were able to complete the questionnaire independently or with assistance from the researcher. Exclusion criteria included pregnant women who were unavailable during data collection or who did not complete the questionnaire.

Research Variable

The single variable examined in this study was the level of knowledge of pregnant women regarding oral and dental health during pregnancy. This variable was assessed across three main aspects: knowledge of toothbrushing techniques, knowledge of dietary patterns related to oral health, and knowledge of dental and oral health check ups during pregnancy.

Research Instrument

Data were collected using a structured questionnaire. The questionnaire was developed based on concepts of oral and dental health knowledge among pregnant women as cited in the references

used in this study. It consisted of closed ended questions covering three aspects: toothbrushing techniques, dietary patterns, and dental and oral health examinations.

Each correct answer was scored one, while incorrect answers were scored zero. The total score was calculated to determine the respondent's level of knowledge. The same questionnaire was administered to all respondents to ensure measurement consistency.

Data Collection Procedure

Data collection was carried out directly by the researcher by visiting respondents in the study area. Prior to completing the questionnaire, respondents received an explanation of the study objectives, procedures, and confidentiality assurances. Respondents who agreed to participate were then asked to complete the questionnaire according to their understanding.

During completion, the researcher provided assistance to ensure that questions were clearly understood, without influencing responses. After completion, questionnaires were checked for completeness to prevent missing data.

Data Processing and Analysis

Collected data underwent several processing stages, including editing, coding, and tabulation. Editing ensured completeness and consistency of responses. Coding involved assigning numerical codes to responses to facilitate analysis. Data were then tabulated into frequency distribution tables.

Data analysis was conducted descriptively. Total knowledge scores were classified into three categories: good, moderate, and poor. Categorization was based on the percentage of scores obtained relative to the maximum possible score. Results were presented in tables and narrative form to describe the distribution of knowledge levels across each assessed aspect.

Results and Discussion

Based on the research conducted from May 26 to June 3, 2023, in Tuak Daun Merah Village with the title "Pregnant Women's Knowledge Level About Oral and Dental Health During Pregnancy," this study was carried out to assess the level of knowledge regarding proper toothbrushing techniques, dietary patterns, and dental health check-ups among pregnant women.
The summary of the study findings is presented as follows:

Table 1. Distribution of Knowledge Levels Regarding Toothbrushing Techniques

No.	Kriteria	Total (n)	Persentase (%)
1	Good	44	39
2	Moderate	52	47
3	Poor	16	14
	Total	112	100

The table above shows that the highest percentage of respondents' knowledge regarding proper toothbrushing techniques falls into the moderate category at 47%, followed by the good category at 39%, and the poor category at 14%.

Table 2. Distribution of Pregnant Women's Knowledge Levels Regarding Dietary Habits

No	Kriteria	Total (n)	Persentase (%)
1	Good	84	75
2	Moderate	24	21
3	Poor	4	4
	Total	112	100

The table above shows that the highest proportion of respondents' knowledge related to dietary patterns falls into the good category at 75%, followed by the moderate category at 21%, and the poor category at 4%. These findings indicate that most pregnant women possess adequate understanding of appropriate dietary habits during pregnancy, likely influenced by their exposure to health-related information from various media such as television, online resources, and community health education.

Table 3. Distribution of Knowledge Levels of Pregnant Women Regarding Dental Health Check-Ups

No	Kriteria	Total (n)	Persentase (%)
1	Good	12	10
2	Moderate	68	61
3	Poor	32	29
	Total	112	100

The table above shows that the highest proportion of respondents' knowledge regarding dental health check-ups falls into the moderate category (61%), followed by the poor category (29%) and the good category (10%). Overall, the findings indicate that pregnant women's knowledge about oral health—which includes knowledge of toothbrushing techniques, dietary habits, and dental check-ups—is predominantly at a moderate level (50%). This means that the proportion of respondents with good knowledge remains lower than those with moderate knowledge. Specifically, the level of knowledge among pregnant women in Tuak Daun Merah (TDM) Village is categorized as good (41%), moderate (50%), and poor (4%). Limited understanding of proper toothbrushing practices can significantly influence oral and dental health. Pregnant women who are unaware of the correct timing, frequency, and techniques for brushing their teeth are more likely to experience plaque buildup, which can lead to halitosis, dental caries, and gingivitis. Therefore, maintaining oral hygiene through proper and regular toothbrushing is essential, not only to preserve the mother's oral health but also to prevent potential oral infections that may affect pregnancy outcomes and fetal well-being.

The level of knowledge regarding toothbrushing in TDM Village shows that 39% of pregnant women fall into the good category, 47% into the moderate category, and 14% into the poor category. This indicates that a portion of the respondents still lack understanding of the correct techniques, timing, and frequency of toothbrushing. Meanwhile, knowledge related to dietary patterns shows a higher distribution in the good category (75%), followed by the moderate (21%) and poor categories (4%). This higher level of knowledge is influenced by respondents' access to information through television and the internet, enabling them to better comprehend and correctly respond to questions related to healthy dietary habits during pregnancy. Conversely, knowledge regarding dental health check-ups shows a low percentage in the good category (10%), while the majority falls into the moderate category (61%) and nearly one-third into the poor category (29%). Although many respondents understand when dental check-ups should be conducted, they do not routinely visit dental care facilities, resulting in inadequate preventive oral health behavior.

The relationship between pregnant women's knowledge and their oral health is crucial, as dental and oral diseases can affect individuals of all ages and tend to progress if left untreated. Despite their often slow progression and low mortality impact, these conditions are frequently underestimated, leading to neglect. Consequently, poor oral health remains a major public health concern in Indonesia, requiring serious attention from healthcare providers. During pregnancy, oral health becomes even more important, as poor oral hygiene can act as a source of infection—potentially affecting both maternal and fetal health. Pregnancy involves significant anatomical and hormonal changes, particularly increases in estrogen and progesterone levels, which alter blood flow in the oral cavity and increase susceptibility to gingival bleeding. Many pregnant women may not

realize that neglected oral hygiene during pregnancy can worsen oral conditions due to hormonal imbalances and local irritants within the oral cavity (Vamos et al., 20151).

Hormonal changes during pregnancy contribute to a variety of oral health issues, making regular dental check-ups essential. At minimum, dental examinations should be performed during the first and third trimesters. Visits during the first trimester are important due to nausea, vomiting, and excessive salivation, all of which affect oral cleanliness. Examinations during the third trimester help monitor potential effects of calcium mobilization for fetal development, ensuring that maternal oral health remains uncompromised. Frequent vomiting, experienced by approximately 70% of pregnant women, can contribute to caries development. Food debris adhering to tooth surfaces promotes acid formation and demineralization of dental hard tissues, which may lead to microbial invasion, pulpal damage, periapical infections, and pain (Matheus & Selfina. 2015)

Oral health care for pregnant women is an integral component of overall maternal health. Healthcare professionals play a critical role in encouraging pregnant women to seek routine dental evaluations, increasing awareness of the importance of oral hygiene, and correcting misconceptions—such as the belief that tooth loss or gum bleeding is "normal" during pregnancy. It is also essential to clarify that dental procedures, when indicated, can be safely performed during pregnancy and should not be postponed unnecessarily (Luqman et al., 2023).

A lack of knowledge regarding toothbrushing techniques, healthy dietary habits, and appropriate timing for dental check-ups can negatively impact overall oral health, including periodontal tissues. Recent studies indicate that periodontal disease, as a source of chronic subclinical infection, may trigger systemic inflammatory responses that increase the risk of adverse pregnancy outcomes such as low birth weight, preeclampsia, and others. Research by Bushehab et al. (2022) highlights that insufficient awareness of proper oral hygiene among pregnant women can contribute to periodontal disease and ultimately affect pregnancy outcomes. Although pregnant women in this study demonstrated basic understanding of toothbrushing, they lacked detailed knowledge regarding appropriate dental hygiene tools and techniques. Regular dental care remains a key determinant of good oral and general health. While evidence directly linking prenatal dental care to improved pregnancy outcomes is limited, substantial research confirms that oral health care during pregnancy is safe, beneficial, and should be encouraged to promote maternal well-being. Improved maternal oral hygiene can also reduce the transmission of cariogenic bacteria to infants, ultimately lowering the risk of early childhood caries.

Conclusion

Based on the results of the study on the level of knowledge among pregnant women regarding oral and dental health during pregnancy in Tuak Daun Merah Village, Kupang City, it can be concluded that the respondents' knowledge varies across the three assessed aspects. Knowledge related to toothbrushing techniques showed that most pregnant women were in the moderate category (47%), followed by the good category (39%) and the poor category (14%). This indicates that some pregnant women still lack understanding of the appropriate timing, frequency, and proper techniques for brushing their teeth. In the aspect of dietary patterns, the majority of respondents demonstrated good knowledge (75%), with 21% in the moderate category and 4% in the poor category. The high level of knowledge in this area is influenced by the respondents' access to information through television and the internet, enabling them to understand and correctly answer questions related to healthy eating patterns during pregnancy. Meanwhile, knowledge regarding dental health check-ups showed that most respondents fell into the moderate category (61%), with only 10% having good knowledge and 29% categorized as poor. Although some pregnant women were aware of the appropriate time for dental check-ups, they did not routinely visit health facilities for dental examinations. Overall, these findings indicate that although certain aspects of knowledge are relatively good, there is still a need

for enhanced education and guidance to ensure that pregnant women can apply optimal oral and dental health practices throughout their pregnancy.

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