

Research Report

## Behavior of pregnant women to improve oral health knowledge during pregnancy according to Lawrence Green theory in Pakis Public Health Service Area

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### ABSTRACT

**Background:** Pregnancy involves conception, fetal development, and labor. The health of pregnant women needs to pay attention to aspects of oral health because it affects fetal development. The prevalence of periodontal disease in pregnant women reached 35%-100%. Lawrence Green categorizes behavioral influence factors into two, namely behavior and non-behavior, with three main factors: predisposing, reinforcing, and enabling. **Purpose:** To determine the relationship between the behavior of pregnant women in increasing knowledge about oral health during pregnancy. **Methods:** This study used qualitative research methods, and information retrieval using in-depth interviews with research samples, who were pregnant women at Pakis public health service area on September 14-30, 2020. **Results:** There are main findings found such as, there are still pregnant women who do not know how to maintain oral health during pregnancy, pregnant women still do not try to find out information related to oral health during pregnancy, and it was also found that the information provided at services related to oral health during pregnancy was felt to be lacking by some informants. **Conclusion:** In terms of knowledge and attitudes (predisposing factors), as well as access to services (enabling factors), informants did not experience any obstacles. In terms of support (reinforcing factors), most informants highlighted the importance of support from husbands, family, relatives, and friends for the oral health of pregnant women.

**Keywords:** Pregnant; behavior; dental hygiene; oral hygiene; Lawrence Green theory; medicine

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### INTRODUCTION

Pregnancy is the initial stage of life for the next generation, which involves physiological, anatomical, and hormonal changes. Hormonal changes during pregnancy affect almost all organ systems, including the oral cavity. Pregnant women are more susceptible to oral disorders due to these hormonal changes. Oral health in pregnancy plays an important role. Pregnant women should consider oral health important, especially before and during pregnancy.<sup>1</sup> The health of pregnant women is influenced by pregnancy care behaviors, including self-care, immunization, pregnancy exercises, pregnancy checks, and nutrition for fetal development.<sup>2</sup>

The formation of oral health care behavior during pregnancy is influenced by internal factors, economic status, and knowledge about the relationship between pregnancy and oral health. Pregnant women's awareness of the importance of oral health care has a significant impact,

and low levels of self-awareness and knowledge can be an obstacle. The prevalence of periodontal disease in pregnant women reached 35%–100%.<sup>3</sup>

In Surabaya, a study conducted at eight health centers showed that 73% of pregnant women had gingivitis and 36% of pregnant women had periodontitis. The majority of pregnant women do not have oral complaints during pregnancy, which can also be caused by their lack of attention to the early signs of oral problems.<sup>4</sup> Based on this background, this study aims to understand the behavior of pregnant women and increase their knowledge about oral health during pregnancy in the Pakis public health service area.

Lawrence Green categorizes behavioral influence factors into two categories, namely behavior and non-behavior, with three main factors: predisposing, reinforcing, and enabling. The formulation of the problem asks questions about the relationship between the behavior of pregnant women and their knowledge of oral health during pregnancy. The general

objective of this study is to determine the relationship, while the specific objectives include understanding the predisposing, supporting, and driving factors that influence the behavior of pregnant women. The benefits of this study are expected to provide a theoretical contribution as a reference for improving pregnant women’s knowledge of oral health in the Pakis public health service area and provide a practical basis for planning and development in the area.

**MATERIALS AND METHODS**

This research adopted a phenomenological study approach to explore the structure and meaning of pregnant women’s experiences related to oral health aspects. This study has been approved by the Ethics Committee, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia (Number: 1164/HRECC.FODM/X/2023). The method used was qualitative research, prioritizing the use of words, and applying thematic analysis. This approach allows for holistic data collection and interpretation, enabling researchers to understand the context and experiences of pregnant women in depth.

Data were collected through in-depth interviews, focus group discussions, and observation. The research location covered the Pakis public health service area, and the research period lasted from September 14 to 30, 2023. The in-depth interview method was chosen to explore the in-depth understanding of informants. Before the interview, the researcher prepared topics and questions, ensuring that the data obtained was relevant to the research objectives.

The study population was pregnant women in Pakis public health service area, Surabaya. Sampling was conducted using a purposive sampling technique based on certain criteria, such as willingness to be interviewed, conducting pregnancy checks at Pakis Public Health Center, and healthy physical and mental conditions. The number of samples will be determined by data saturation, which is when the data obtained has reached saturation of

information. The number of informants in this study was 25. This qualitative methodology conforms to inductive logic to identify patterns or theories that emerge during the research. The analysis used is generally thematic analysis, which has two main characteristics: reading and repeating the interview data as a whole, reflecting on the interview results as a whole, writing general notes, and identifying themes or concepts that emerge from the data.

**RESULTS**

This research was conducted using an in-depth interview with 25 informants. The informants who were interviewed were pregnant women who were in the Pakis public health service area. The characteristics of the informants can be seen in Table 1.

**Predisposing Factors**

Predisposing factors consist of knowledge, attitudes, cultural values, education level, occupation, perception, and age of an individual. Knowledge of oral health in pregnant women consists of several sub-themes, namely, calcium consumption behavior in pregnant women. The results stated that some informants were known to consume calcium when they were pregnant. This was reviewed by one of the informants, who stated that: *“Yes, it has something to do with maintaining oral health. For example, drinking calcium has to do with teething; it takes a long time if you don’t drink. Just drink calcium. Finally, the teeth grow fast.” -MRYI, 39 years old.*

In the psychological and emotional sub-themes, there is one informant who believes that poor oral health can affect people psychologically and emotionally. This can be seen from the statement of an informant: *“The advantage of taking care of my mouth is that if I have a toothache, it affects the fetus. People said that if I became stressed, then the baby was also stressed.” -TA, 27 years old.*

In the subtheme of the causes of toothache, some informants argued that toothache can be caused by many

**Table 1.** Characteristics of the informants

Characteristics of the Informants	Number of the Respondents (%)
Age of the Informants	
23-25 years old	4 (16%)
26-28 years old	7 (28%)
29-31 years old	4 (16%)
32-34 years old	2 (8%)
35-37 years old	2 (8%)
38-40 years old	6 (24%)
Informants’ level of Education	
Junior High School	4 (16%)
Senior High School or Vocational High School	17 (68%)
Bachelor’s degree (S1)	4 (16%)
Informants’ employment data	
Not working/a housewife	22 (88%)
Entrepreneur	2 (8%)
Contract employee	1 (4%)

factors, such as bacteria, late brushing teeth, and poor oral hygiene. This can be seen from the statement of one of the informants, who stated that: *"In my opinion, toothache during pregnancy is probably caused by late brushing of teeth. For example, last night I didn't brush my teeth, so the next morning it hurts quite a lot. Then, when I was pregnant, I was also afraid of taking drugs, so I followed what the doctor advised."* -NFZ, 29 years old.

In the sub-component of oral and dental diseases, there is one informant who stated that the treatment of cavities was delayed during pregnancy. This is reviewed in the informant's statement, which states that: *"Yes, it is important to maintain; what was the name at that time? I was told right; there should be no cavities; no treatment can be done if the others don't know."* ZS, 27 years old.

In predisposing factors with the subtheme of attitudes towards seeking information related to oral health, it states that some informants seek information through electronic media, ask experts such as dentists, informants are indifferent, and informants' attitudes towards preventing toothache during pregnancy. The reason informants seek information related to oral health through electronic media is because it is more practical. This is also supported by the statement of one of the informants: *"I browse first, meaning that if it's not bad, it's not because when I only brush my teeth, it's not always, just sometimes."* RY, 38 years old.

Some informants also feel skeptical or doubtful regarding information about oral health. This is supported by the statement of one informant, who stated that: *"Maybe I consulted the doctor or midwife at the health center first. The problem is that I don't have the courage to consume drugs other than those prescribed."* -AK, 27 years old.

Some informants also have an indifferent attitude regarding the search for oral health information during pregnancy. The underlying reason for this is that informants feel that there are no complaints, so they do not seek information related to oral health during pregnancy. One of the informants stated that: *"I never sought information on my own about oral health; I was afraid, and I also never had complaints; if there were complaints, I would just look for information."* MRYI is 39 years old.

Some informants also knew about the attitude toward preventing toothaches during pregnancy. The informant stated: *"Because maybe I think about oral health, I just brush my teeth regularly, three times a day. Or going to bed, I emphasize it."* -AK, 27 years old.

Predisposing factors in the cultural values sub-chapter are divided into two components, namely, myths and customs. There are several informants who still believe in myths related to the long relationship between the growth of children's teeth, such as one informant with the initials RTW, who is 40 years old, has a last high school education, and works as a housewife. Until now, RTW still believes and applies the myths that occurred during pregnancy. The following is a statement from the informant: *"My parents also said that if you plant the placenta, don't go too deep; it will make the teeth grow for a long time. My son is 10, or 7 years old, and his teeth have all come*

*out because I did not plant the placenta too deeply."* -RTW, 40 years old.

In the sub-theme of customs, there were several informants who claimed to get information from generation to generation related to toothache during pregnancy given salt. This was reviewed based on the statement of one informant: *"In the past, I heard from my parents that toothache was just given salt. For example, if it's a hole, just give it salt, and the pain will go away. Or rinse your mouth with salt water. Then the pain will subside."* -NFZ, 29 years old.

In predisposing factors with the perception sub-chapter, it can be divided into beliefs, motivations, and perceptions of maintaining oral health. In the belief sub-chapter, one informant argued that oral health conditions were innate to the baby. This is reviewed in the informant's statement: *"I think the toothache might be congenital from the baby. But after birth, it doesn't hurt. It's all gone."* -RTW, 40 years old.

Some informants also have the motivation to find out about oral health. This can be seen from the statement of the informant: *"I am a curious person, so if, for example, things are sometimes beyond reason, it means that I just can't think of them, but I still find out what the benefits are."* -AK, 27 years old.

There are also several informants who have the perception of maintaining oral health during pregnancy. This was reviewed based on the statement of one informant: *"The first thing is probably yes; I'm afraid of what's going on. The problem is that before, I already had swollen gums, and then, when brushing my teeth, maybe a little blood came out. Well, maybe for the future it is important for me."* -AK, 27 years old.

### Enabling factors

Enabling factors facilitate individuals in shaping their behavior. In this study, an example of an enabling factor is the facilities and infrastructure of health facilities at Pakis Health Center, which contribute to helping create the behavior of pregnant women by increasing knowledge about oral health during pregnancy.

In this study, the results showed that the facilities and infrastructure of health facilities at the public health center were considered adequate, but the provision of information and education regarding oral health during pregnancy tended to be lacking. The results showed the formation of two behaviors: there were pregnant women who felt sufficient only with the information provided by the public health center, and there were also pregnant women who wanted to find out more information about oral and dental health during pregnancy through electronic media in the form of the internet. This is shown by 24 informants who said that the availability of health services as well as the accessibility and ease of health services at Pakis Health Center, which include distance, cost, and social factors, are sufficient and do not experience obstacles. This is shown by the statement of an informant, stated as follows: *"Yes, the service was sufficient; I was also examined. I was also given*

information when I first checked. I was given information about health.” -NFZ, 29 years old.

However, there was 1 informant with the initials ZS, 27 years old, who felt that information and education about oral health at Pakis Health Center were still lacking. This was followed by the following statement: *“Less, because the service at the public health center is not given, it’s just checked and then asked whether there are holes or not. That’s it”* ZS, 27 years old.

Through this statement, ZS prefers to have her oral health checked at a dental clinic outside the public health center.

### Reinforcing factors

Reinforcing factors are also referred to as supporting factors, where this factor will act as a factor that encourages or reinforces the occurrence of a behavior. In this study, reinforcing factors are reviewed based on the opinions found in the social environment around pregnant women, such as the opinions of family, relatives, friends, and neighbors. The results showed that reinforcing factors in pregnant women in the Pakis area were still found to be very limited. This was shown by the fact that 25 informants of pregnant women who were interviewed only found as many as 2 informants of pregnant women who mentioned that there were some opinions they obtained from their surroundings regarding oral health care during pregnancy.

The results of interviews conducted with informants with the initials EKS, aged 39 years, mentioned that when she suffered from toothache, the informant was encouraged to seek treatment at the dental clinic. This action was formed because of the encouragement of the informant’s husband and mother to make her take oral and dental treatment at the public health center; this is indicated by the informant’s statement as follows: *“There is a husband and mother who said yes, take you there; you are pregnant; what do you want?”* -EKS, 39 years old.

Then there are informant answers related to calcium consumption during pregnancy obtained from 27-year-old informant ZS, who stated that she felt complaints about her teeth during pregnancy: *“There is, that’s from the husband he said; yes, the most is lack of calcium because from the past, the problem is lack of calcium, so the teeth are brittle, and my teeth have white spots like that, he said.”* ZS, 27 years old.

From the statement of informant ZS, information can be obtained that the informant feels encouraged to consume calcium because of the opinion of the informant’s husband regarding complaints experienced such as brittle teeth and white spots on the teeth due to a lack of calcium consumption during pregnancy.

## DISCUSSION

The results showed that the majority of informants did not know the relationship between oral health care behavior during pregnancy and the growth of fetal teeth, as well as the

lack of awareness of the relationship between oral diseases during pregnancy and fetal health. The level of education of individuals is considered to affect their ability to absorb health information and contribute to health development.<sup>5</sup>

Lawrence Green’s theory, which discusses changes in human behavior, was used as the theoretical basis for the analysis. Predisposing factors are factors that exist within a person and can be manifested in the form of knowledge, attitudes, beliefs, values, and so on. Enabling Factors: These factors are factors that are manifested in the physical environment, which can include whether or not health facilities are available, such as health centers, medicines, transportation, and so on. Reinforcing factors are factors that are realized and exist outside the individual. This factor can manifest in the form of attitudes and behaviors of health workers, reference groups, community leaders, religious leaders, or existing regulations or norms.<sup>6</sup>

Predisposing factors, such as knowledge and attitudes, have a correlation with the behavior of pregnant women in maintaining oral health. Lack of knowledge can contribute to poor dental health status, and knowledge is considered the basis for shaping behavior. Attitude also plays a role; here, pregnant women will seek information only if their condition is considered severe.<sup>7</sup>

Cultural values, including myths and customs, influence behavior. Some pregnant women avoid dental care based on myths, suggesting the need for counseling related to this cultural aspect. Perceptions of pregnant women also play a role in behavior, with low motivation to seek information about oral health during pregnancy.<sup>8</sup>

In the predisposing aspect, the perception of pregnant women has a significant correlation with the behavior of maintaining oral health during pregnancy. The research findings show that most informants tend to have low motivation to seek information related to oral health during pregnancy. This misperception may result in an inaccurate understanding of the causes of toothaches and oral problems during pregnancy. Individual perceptions play a crucial role in determining how a person selects, gathers, and gives meaning to events, thus influencing health behavior.<sup>9</sup> Moreover, health behaviors can be subjective, depending on individual perceptions of illness and disease, and influenced by past experiences and socio-cultural factors.<sup>10</sup>

Supporting factors in this study include service availability, accessibility of oral health information, ease of service, and health worker resources. Most informants stated that the availability of health services in the Pakis area was adequate, without significant obstacles to accessing information and services. The quality of health services is considered good if it meets individual expectations, and the majority of informants felt that there were no shortcomings or limitations in receiving information about oral health in the area.<sup>11</sup> Ease of access to health services, including in terms of distance and cost, was not a major issue for informants, in accordance with the findings of previous research, which noted that urban communities tend to have easier access to health services compared to rural communities.<sup>12</sup>

Reinforcing factors in this study involve opinions and support from family and close people. Views from the surrounding environment can influence pregnant women in seeking information about oral health as well as shaping health behaviors such as routine dental check-ups during pregnancy. Lack of family participation in seeking information can hinder the provision of advice or vital information related to care during pregnancy. Conversely, support and positive views from the family can be the main drivers for pregnant women to adopt health behaviors, such as going to the dental clinic and consuming calcium, based on encouragement from their husbands and family.<sup>13-15</sup>

## CONCLUSION

This study concluded that, in terms of predisposing factors, most informants stated that knowledge, attitudes, perceptions, and cultural values mutually influence the behavior of pregnant women in improving oral health during pregnancy. While, in terms of enabling factors, most informants stated that there were no obstacles to accessing the availability of health services and accessibility of information in terms of cost, distance, or social factors in improving oral health during pregnancy. However, in reinforcing factors, most informants stated that there were factors of encouragement or opinions from the surroundings obtained from husbands, family, closest relatives, and friends regarding the importance of improving oral health during pregnancy. Health programs need to be carried out to encourage the behavior of pregnant women and improve their knowledge about oral health during pregnancy.

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