

# Determinants Factors to Increase Dental Care During Pregnancy: A Systematic Review

*by Restika Anindya*

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# Determinants Factors to Increase Dental Care During Pregnancy: A Systematic Review

Restika Anindya Pinasti, Lita Agustia

Department of Dental Public Health, Dentistry Faculty, Universitas Hang Tuah, Surabaya, Indonesia.

Corresponding Author: restika.pinasti@hangtuah.ac.id

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ORCID : Pinasti RA (0009-0000-6788-8583); Agustia L (0009-0002-4460-2575)  
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## ABSTRACT

**Background:** Many pregnant women know less about maintaining healthy teeth and mouth. Pregnancy is a physiological process that causes changes in a woman's body, physical and psychological. In order to uphold optimal oral health, it is imperative that dental treatment not be withheld. The dental management of pregnant patients necessitates the incorporation of specific considerations. **Objective:** This research aims to describe the factors which improve dental and oral health services for antenatal care. **Materials and Methods:** The analysis method used in this systematic review is descriptive. The strategy used to search for articles using PICO and literature search was conducted in June 2022. The data used in this research were tertiary obtained from previous researchers' study results. The source of tertiary data obtained in the article of the journal International Reputable. The literature search in this systematic review uses the following databases: Scopus, Science Direct, PubMed, and Google Scholar. Searching articles or journals use keywords and boolean operators (AND, OR, and NOT). The evaluation of the systematic review uses the PRISMA checklist to determine whether the studies have been reaching out and are similar to the purpose of a systematic review. The total number of studies was eight articles. **Result:** Pregnancy should not be considered an absolute reason to defer required dental care. Perceived need, knowledge, awareness, and socioeconomic were identified as factors that could increase visits and dental oral health services for pregnant women. Well-designed studies with reliable outcomes are required to confirm the findings described in this review. **Conclusion:** promoting dental care during pregnancy requires a multi-faceted approach that involves raising maternal awareness, garnering support from healthcare providers, addressing socioeconomic disparities, and dispelling misconceptions. By integrating oral health into antenatal care and implementing targeted educational programs, healthcare systems can improve dental care utilization among pregnant women, ultimately leading to better maternal and infant oral health outcomes.

**Keywords:** Antenatal care, Dental care, Oral health, Pregnancy, Perceived need.

## ABSTRAK

**Latar Belakang:** Banyak ibu hamil yang kurang mengetahui tentang pentingnya menjaga kesehatan gigi dan mulut. Kehamilan merupakan proses fisiologis yang menyebabkan perubahan fisik dan psikis tubuh. Untuk menjaga kesehatan mulut yang optimal, perawatan gigi tidak boleh ditunda. Manajemen gigi pasien hamil memerlukan penggabungan pertimbangan khusus. **Tujuan:** Penelitian ini bertujuan untuk mendeskripsikan faktor-faktor yang meningkatkan pelayanan kesehatan gigi dan mulut untuk antenatal care. **Materi dan Metode:** Metode analisis yang digunakan dalam tinjauan sistematis adalah deskriptif. Strategi pencarian artikel menggunakan PICO dan pencarian literatur dilakukan pada bulan Juni 2022. Data yang digunakan dalam penelitian ini merupakan data tersier yang diperoleh dari hasil penelitian peneliti sebelumnya. Sumber data tersier diperoleh dari artikel jurnal International Reputable. Pencarian literatur dalam tinjauan sistematis ini menggunakan database berikut: Scopus, Science Direct, PubMed, dan Google Scholar. Pencarian artikel atau jurnal menggunakan kata kunci dan operator boolean (AND, OR, dan NOT). Evaluasi tinjauan sistematis menggunakan daftar periksa PRISMA untuk menentukan apakah studi telah menjangkau dan serupa dengan tujuan tinjauan sistematis. Jumlah total penelitian adalah delapan artikel. **Hasil:** Kehamilan tidak boleh dianggap sebagai alasan mutlak untuk menunda perawatan gigi yang diperlukan. Persepsi kebutuhan, pengetahuan, kesadaran, dan sosial ekonomi teridentifikasi sebagai faktor yang dapat meningkatkan kunjungan dan pelayanan kesehatan gigi dan mulut ibu hamil. Studi yang dirancang dengan baik dengan hasil yang dapat diandalkan diperlukan untuk mengkonfirmasi temuan yang dijelaskan dalam ulasan ini. **Kesimpulan:** mempromosikan perawatan gigi selama kehamilan membutuhkan pendekatan multi-aspek yang melibatkan peningkatan kesadaran ibu, menggalang dukungan dari penyedia layanan kesehatan, mengatasi kesenjangan sosial ekonomi, dan menghilangkan kesalahpahaman. Dengan mengintegrasikan kesehatan mulut ke dalam perawatan prenatal dan menerapkan program pendidikan yang ditargetkan, sistem perawatan kesehatan dapat meningkatkan pemanfaatan perawatan gigi di kalangan wanita hamil, yang pada akhirnya mengarah pada hasil kesehatan mulut ibu dan bayi yang lebih baik.

**Kata kunci:** Perawatan antenatal, Perawatan gigi, Kesehatan gigi dan mulut, Kehamilan, Persepsi.

## 1. Introduction

The implementation of free carriers The year 2030 in Indonesia is anticipated to present many challenges due to the country's escalating prevalence of dental and oral health issues. According to

the Basic Health Research (Riskesdas) data from 2013, there was an increase in dental and oral health issues from 25.9% to 57.6% in 2018.<sup>1</sup> Pregnant women were found to be particularly vulnerable to these problems. This phenomenon can be attributed to the elevation of hormone levels during pregnancy, which leads to behavioral changes in pregnant women, such as experiencing frequent episodes of nausea and vomiting, often resulting in neglect of oral hygiene practices.<sup>2</sup> Many pregnant women are unaware of the significance of maintaining optimal oral health and hygiene. Regarding dental and oral health, it is essential to note that a correlation exists between pregnant women's oral health and their offspring's subsequent oral health.<sup>3</sup>

The utilization of dental services poses a significant challenge in global public health, as it has been identified as a critical predictor of oral health outcomes.<sup>4</sup> Numerous studies have been conducted to identify the factors influencing the utilization of dental services among adults globally. Several factors influencing oral health include age, dental care expenses, health insurance coverage, dental anxiety levels, hygiene practices, oral health education, health beliefs, self-reported oral health issues, and oral health requirements.<sup>5</sup> Pregnancy is a physiological process that induces changes in a woman's body's physical and psychological aspects. Hormonal fluctuations during pregnancy can render the gingiva more susceptible to the effects of toxins and irritants, including plaque and calculus, leading to gingival inflammation.<sup>6</sup> Additionally, dietary changes and inadequate oral hygiene practices among specific pregnant individuals can heighten the likelihood of developing gingivitis, potentially impacting the pregnancy's overall state.<sup>7</sup>

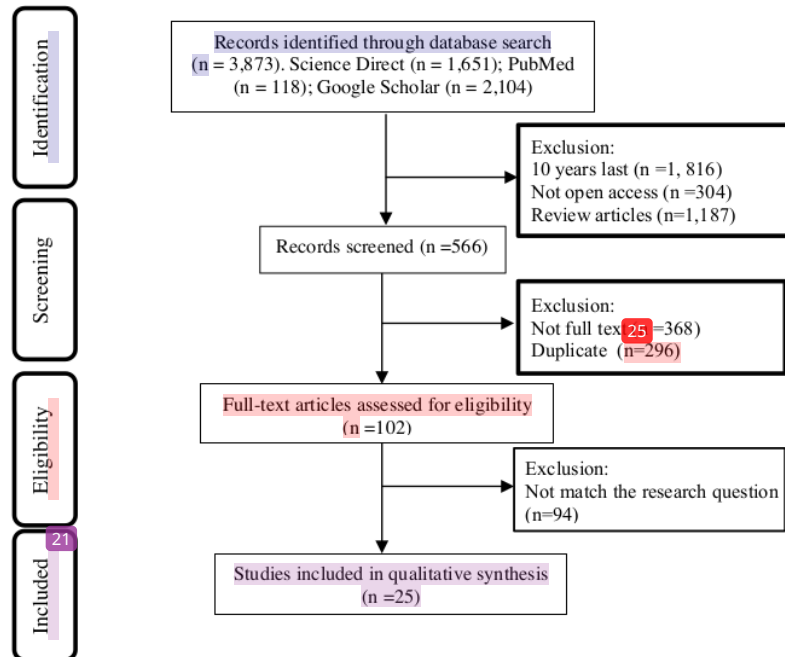
Like other bodily systems, the oral cavity undergoes various alterations during pregnancy, necessitating specific consideration from dental professionals. Dental health problems can arise in pregnant women.<sup>8</sup> Caries, also known as dental caries, is a pathological condition affecting the hard tissues of the teeth. The metabolic activity of microorganisms present in fermented carbohydrates primarily causes it.<sup>9</sup> Periodontal disease is a prevalent oral health condition characterized by inflammation and damage to the tissues surrounding the teeth, including the gums, periodontal ligament, and hormonal factors contributing to gingivitis development.<sup>10</sup> These conditions frequently arise due to a diminished immune response, hormonal fluctuations involving estrogen and progesterone, and normal oral cavity flora alterations. A dental condition characterized by teeth not firmly anchored in the jawbone.<sup>10</sup> Periodontal disease can be attributed to hormonal changes in the lamina dura and the subsequent disruption of the periodontal ligament attachment. This disruption ultimately affects the mobility of the teeth.<sup>11</sup> Additionally, tooth erosion is another consequence of this condition. One notable alteration observed in saliva is xerostomia, a condition characterized by a pronounced sensation of oral dryness. Pregnant women may experience a sensation of dryness in the mouth due to insufficient saliva production by the salivary glands, resulting in inadequate moistening of the oral cavity.<sup>12</sup> Limited functions can arise from dental and oral health conditions that are deemed unhealthy, leading to a decrease in activity levels among pregnant women.<sup>13</sup>

## 2. Material and Methods

A literature search was conducted in August 2022. The data utilized in this study is classified as tertiary data, as it has been derived from the findings of previous researchers. The acquisition of tertiary data from internationally recognized journal articles with a specific focus on factors that can enhance dental care for pregnant women. Literature searching involves utilizing databases of esteemed and reliable scientific journals, including Scopus, Science Direct, PubMed, and Google Scholar. Researchers commonly utilize databases to explore relevant literature for their studies, as they are accredited by journal publishers and frequently employed by other scholars. The article questions are organized using the PICO framework, which stands for Population/Patient/Problem, Intervention/Indicator, Comparison/Control, and Outcomes (Eriksen & Frandsen, 2018). The population of interest in this study comprises pregnant women, while the intervention and comparison components are not applicable. The outcome of interest is visits to dental services. The article employed various research methodologies, including observational studies such as cross-sectional, cohort, and case-control designs, as well as a Randomized Controlled Trial (RCT), to evaluate the utilization of dental services during pregnancy. The screening process included studies published between 2017 and 2022, written in Indonesian or English. The exclusion criteria for this study encompassed research employing qualitative designs, quantitative studies that solely utilized

univariate analysis or lacked statistical analysis altogether, and observational studies where dental usage was allocated as a secondary outcome.<sup>14</sup>

The process of locating articles or journals by utilizing keywords and boolean operators (specifically AND, OR, NOT, or AND NOT) is employed to broaden or refine the search. The literature search employed the following text terms: (("pregnant woman" OR "pregnant woman" OR "pregnancy")) AND (("dental health service" OR "dental care" OR "oral health" OR "dental visit")) AND (("maternal age" OR "education level")). In conducting a study selection, articles deemed unsuitable will be excluded, which will be documented in the selection strategy using PRISMA flowcharts. Subsequently, an analysis will be performed on the selected articles, adhering to the established protocol and eligibility criteria, to ascertain the study results. Prisma<sup>23</sup> flowchart shows the process of identifying and choosing eligible studies for the systematic review in Fig 1.



**Figure 1.** Illustrates the Prisma flowchart, which is utilized for conducting article analysis

According to the search of the literature, there are eight articles included that recognized research RCT (Randomized Control Trial) design with a cross-sectional research design with primary data, total sample (n = 5,560), and secondary data with total sample (n = 1,380), originating from China (1), Brazil (2), Indonesia (1), Saudi Arabia (1), Poland (1), Iran (1), and India (1). Several articles have explained the research objectives, sample randomization, and sample homogeneity from these studies, and can be applied to the local population.

### 3. Result and Discussion

The study's results explain that from eight articles conducted by the literature review, all studies reported that the factors that could increase dental and oral health visits and services for pregnant women were perceived need, knowledge, level of awareness, and socioeconomic.

Perceived need: of the eight journal articles studied, six declared pregnant women had dental and oral health problems, especially dental caries and periodontal disease. This causes pain, and they need to visit the dentist.<sup>4</sup> Knowledge: Most pregnant women completed oral health knowledge questionnaires in most articles. The results showed that pregnant women knew about dental and oral health. Pregnant women with knowledge about dental and oral health can better maintain their dental health and are more aware to visit the dentist regularly immediately.<sup>7</sup> Pregnant



women with a high level of dental and oral health knowledge visit the dentist more often than pregnant women without knowledge. Reception of dental health education was also significantly associated with the use of dental health services during pregnancy.<sup>15</sup>

Awareness: The Influence of Dental and Oral Health Maintenance Behavior on the Awareness of Pregnant Women Regarding Dental Visits. This is also close related to the psychological behavior of pregnant women not to be afraid to come to the dentist. Anxiety and awareness is an essential framework for oral health. Anxiety about dental treatment is a problem that often occurs in patients who will perform dental and oral care. Dental Anxiety is a complex, multidimensional phenomenon; no single variable is the leading cause.<sup>16</sup>

Socioeconomic: Income, education level, and health insurance are socioeconomic factors associated with the use of dental care during pregnancy. Income was a significant predictor of under-reporting dental service utilization in the previous 12 months or during pregnancy. Low-income pregnant women are less likely to have regular dental care than high-income earners. Two studies did not show a statistically significant relationship between dental service utilization during pregnancy and income. Education level was necessary for dental service utilization in the adjusted model. Women with at least 12 years of schooling have a much higher chance of receiving dental cleanings during pregnancy.<sup>17</sup>

Table 1. presents a comprehensive overview of the study and its corresponding results.

No	Author, Title, Year, Country	Research Objectives, Research Design, Total Samples	Study Results
1.	Oral Health Status and Literacy/ Knowledge Amongst Pregnant Women in Shanghai. (Hu et al., 2022). China	<ul style="list-style-type: none"> <li>Objective: Research the oral health status and pregnant woman's knowledge.</li> <li>Methods: a cross-sectional study, primary data</li> <li>Sample size: 224 pregnant woman</li> </ul>	The prevalence of periodontal disease in pregnant women was 76.9%, including 20.9% for gingivitis and 56.0% for periodontitis. Many pregnant women ignore dental services. Therefore, necessary to educate and promote dental and oral health for pregnant women earlier, increase awareness of dental and oral health, and socioeconomic status with education level.
2.	Use of Dental Care Among Pregnant Women in the Brazilian Unified Health System. (Fantinel et al., 2019). Brazil	<ul style="list-style-type: none"> <li>Objective: To evaluate the prevalence and factors related to dental services with the national health system basic by new others.</li> <li>Methods: a cross-sectional study, primary data</li> <li>Sample size: 302 pregnant women</li> </ul>	50% of the sample of pregnant women who use National Health Insurance for dental and oral health checks.
3.	Determinants Of Dental And Oral Disease In Pregnant Woman From A Sociodemographic Aspect (Putri et al., 2015). Indonesia	<ul style="list-style-type: none"> <li>Objective: To determine dental and oral disease in pregnant women in terms of sociodemographic aspects</li> <li>Methods: cross-sectional study, secondary data (2017-2020)</li> <li>Sample size: 3,833</li> </ul>	Periodontal disease is more suffered by pregnant women, pregnant women with low education have no good OHI-S status and pregnant women with secondary education have an excellent prevalence of OHI-S status (22.2%). Pregnant women with high education have a good OHI-S prevalence status (77.8%) and have a significant effect, and it was concluded that education status is very influential on oral hygiene. Therefore, it's a substantial relationship with sociodemographic aspects. Pregnant women over 30 years of age pregnancy by trimester are increasing, and education level is low, and low income as risk factors. It can be concluded that sociodemographic aspects (age, gestational age, education level, and income) are risk factors for the incidence of dental and oral disease in pregnant women.
4.	Oral Health Related Quality Of Life among Pregnant Women: a Randomized Controlled Trial (Liliana et al., 2017). Brazil	<ul style="list-style-type: none"> <li>Objective: To compare the harmful effects of oral condition to life quality-related Oral Health (OHRQoL) in pregnant</li> </ul>	The research results show that periodontal treatment promotes support improvements in periodontal parameters and the patient's perspective, affecting their daily life and wellness, which is very important during

No	Author, Title, Year, Country	Research Objectives, Research Design, Total Samples	Study Results
		women receiving comprehensive periodontal treatment.	pregnancy. The majority of participants are middle socioeconomic class.
5.	<sup>17</sup> Dental Anxiety Amongst Pregnant Women: Relationship With Dental Attendance and Sociodemographic Factors (Alratroot et al., 2019). Saudi Arabia	<ul style="list-style-type: none"> <li>Methods: cross-sectional study and primary data.</li> <li>Sample size: 304 pregnant women.</li> <li>Objective: To predict Anxiety and its relation with dentist visits before and the sociodemographic of pregnant women.</li> <li>Methods: cross-sectional study and primary data.</li> <li>Sample size: 825 pregnant women.</li> </ul>	The increasing Anxiety about pain or discomfort tooth might occur as an effect of increased caries during pregnancy. Research has also shown increased Anxiety in participants without school education compared to those with education. Therefore, increased dental pain or discomfort and a low education level are important factors in developing Anxiety in pregnant women.
6.	<sup>6</sup> Dental Awareness and Oral Health Of Pregnant Women in Poland (Gaszynska et al., 2015). Polandia	<ul style="list-style-type: none"> <li>Objective: To evaluate acknowledged level oral dental which determines oral health, pregnant woman</li> <li>Methods: cross-sectional study and primary data.</li> <li>Sample size: 1,380 pregnant women.</li> </ul>	A positive correlation was found between sufficient knowledge and good awareness of pregnant women and their oral health – less targeting of the health care system as in Poland.
7.	<sup>10</sup> A qualitative exploration of barriers and facilitators of dental service utilization of pregnant women: A triangulation approach (Bahramian et al., 2018). Iran	<ul style="list-style-type: none"> <li>Objective: To improve barriers and facilitators which influence dental services pregnant women use.</li> <li>Methods: cross-sectional study, primary data.</li> <li>Sample size: 22 pregnant women.</li> </ul>	The various barriers to dental services used when pregnant are caused by less knowledge about safe dental care and pregnancy-related changes and fewer interprofessional, socioeconomic, and cultural relationships. They understand these barriers can provide basic information for planning and formulating appropriate oral health interventions and treatment for low-income pregnant women. The educational program is targeted at financial and legal support for establishing a fully integrated healthcare system that promotes high-quality coordination in providing the availability of dental services.
8.	<sup>1</sup> Effect of socioeconomic status on dental caries during pregnancy (Kamate et al., 2019). India	<ul style="list-style-type: none"> <li>Objective: To know the role of pregnant women's socio-economy status in oral and tooth health in evaluating risk factor tooth caries and index DMFT.</li> <li>Methods: cross-sectional study, primary data.</li> <li>Sample size: 50 pregnant women.</li> </ul>	Pregnant women have a higher risk for dental caries compared to nonpregnant women. The increasing caries risk factors were noted across all socioeconomic statuses with no particular class at risk increase. This conclusion may provide insight into the increased awareness of oral hygiene practices among pregnant women from all socioeconomic strata: low socioeconomic status and patient awareness of dental and oral health correlate.

This research aims to describe the factors which improve dental and oral health services for antenatal care. Eight journals will be reviewed<sup>11</sup>, and some studies have shown differences in factors that make pregnant women visit the dentist. Pregnancy has several adverse effects on the oral cavity environment, including immune suppression, cravings, hormonal fluctuations, salivary alterations, and other physiological changes that would be expected to affect the host's resistance to caries adversely.<sup>18</sup> It is advised to increase women's awareness of the normality of these changes and to encourage dental treatment before becoming pregnant to avoid these and other limitations in receiving care during pregnancy.<sup>19</sup> Therefore, dental visits before pregnancy are crucial to informing probable dental care needs and learning positive oral health behaviors for women of childbearing age.<sup>4</sup> A woman with perceived need is feeling extreme help and nervousness during dental treatment and may be subject to the lack of dental professional's understanding of the situation.<sup>20</sup>

Efforts to get good dental and oral health for children must be made from the children's newborn<sup>4</sup> because oral health in childhood reflects the condition of dental and oral health in the future.<sup>21</sup> It is well-defined that oral health should integrate health care for pregnant women and the newborns. This review identified the factors related to using dental services during pregnancy.<sup>22</sup> It is essential to increase knowledge about the determinants that predict dental service utilization during pregnancy; it could lead to policy strategies that go far beyond oral health education and help to improve women's access to adequate dental services.<sup>23</sup>

This review summarizes relevant information, all of the eight studies included, and 6 reached the highest level of knowledge. Most frequently mentioned information from a family doctor or a dentist, or a dental hygienist and from magazines or guidebooks for pregnant women and parents. Other sources of information included: television, radio, and the Internet, which are unreliable and may even discourage a mother from daily oral care. Two journals found a positive correlation between sufficient knowledge and good awareness of pregnant women and their oral health. Journal in Polandia explains that about 40% of pregnant women do not have the basic dental knowledge need<sup>18</sup> during pregnancy and to educate children at the early stages of their development.<sup>13</sup> Self-reported oral health conditions and dental visits between pregnant and nonpregnant women.

We summarized the results of the present review in a hierarchical framework by classifying the determinants of dental service utilization during pregnancy into four categories: perceived need, knowledge, awareness, and socioeconomic. Pregnant women have a higher risk for dental caries compared to nonpregnant women. The increasing caries risk factors were noted across all socioeconomic statuses with no particular class at risk increase.<sup>24</sup> Study results may provide insight into the increased awareness of oral hygiene practices among pregnant women from all socioeconomic strata: low socioeconomic status and patient awareness of dental and oral health correlate. Socioeconomic status is correlated with oral health.<sup>25</sup> It is generally agreed that people with low socioeconomic status have significantly worse oral and general health compared to people with higher socioeconomic status.<sup>26</sup> Pregnancy has several adverse effects on the oral cavity environment, which include immune suppression, cravings, hormonal fluctuations, salivary alterations, and other physiological changes that would be expected to affect hosts resistance to caries adversely.<sup>27</sup> Finally, we suggest that <sup>33</sup> ill-designed studies addressing psychosocial factors are still necessary to understand better the use of dental services by pregnant women.<sup>28</sup>

#### 4. Conclusion

The comprehensive review found factors that promote dental care during pregnancy. Comprehensive literat<sup>35</sup> research revealed several major conclusions. First, maternal awareness and understanding of oral health during pregnancy promote dental care use. Informed pregnant women were more likely to seek dental care and maintain good oral hygiene. Second, the uptake of pregnant women's dental care depended on healthcare provider recommendations and support. Pregnant women prioritized dental appointments and preventive measures when healthcare professionals promoted oral health as part of prenatal care. Thirdly, socioeconomic factors like money, education, and access to dental services affected pregnant dental care. Targeted initiatives are needed to overcome the inequities in dental care among low-income women. The review emphasizes the need to dispel dental treatment anxieties during pregnancy. Dispelling misunderstandings and reassuring pregnant women about the safety and benefits of dental treatment can remove barriers to oral health services.

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### Authors Contribution

Contribution	Pinasti RA	Agustia L
Concepts or ideas	√	√
Design	√	√
Definition of intellectual content	√	
Literature search	√	√
Experimental studies	√	
Data acquisition	√	√
Data analysis	√	
Statistical analysis		√
Manuscript preparation	√	√
Manuscript editing	√	√
Manuscript review	√	



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