



UNDERSTANDING THE IMPACT OF GUM DISEASE ON PREGNANCY: FACTORS INFLUENCING PERIODONTAL HEALTH AND EFFECTIVE STRATEGIES FOR PREGNANT WOMEN

Osama Ali Emhmed Esswaid

Elmergib university- libya

Abstract This research aims to determine what factors influence gum disease in pregnant women and strategies to enhance periodontal health in pregnant women. This study employs a qualitative methodology. A review of prior studies that were pertinent to this research issue was part of the literature study that was used to gather research data. The result showed that addressing gum disease in pregnant women requires a multifaceted approach that encompasses preventive care, patient education, interdisciplinary collaboration, cultural sensitivity, and accessibility considerations. By implementing these strategies, healthcare providers can support the oral health and overall well-being of expectant mothers and their infants, ultimately contributing to healthier pregnancies and improved oral health outcomes for all women.

Keywords: Gum disease, Periodontal Health, Pregnant Women

INTRODUCTION

According to Abu-Raya et al. (2020), pregnancy is a life-changing experience for women that is marked by physiological, hormonal, and immunological changes that can affect many facets of health, including dental health. Periodontal disease, another name for gum disease, is one of the most serious oral health issues that can develop during pregnancy. Periodontal disorders impact 20–50% of the world's population and are common in both industrialized and developing nations. Periodontal disease is a public health problem because of its high incidence in adults, elderly people, and adolescents (Nazir, 2017). Indonesia ranked fifth globally in 2010 with 675,700 preterm births, according to the World Health Organization. Intervention for periodontal diseases may be possible because of the distinct physiological changes that the mouth cavity experiences during pregnancy. Gingivitis and periodontitis are the most prevalent types of periodontal infections. Pregnant women frequently have these two types of infections: 5–20% for periodontitis and about 30% for gingivitis (Septira et al., 2019).

Numerous variables that contribute to the development and advancement of gum disease are involved in the intricate and diverse relationship between pregnancy and periodontal health. Gum disease is a broad term that includes a variety of illnesses, from milder types of periodontitis that cause inflammation of the gums to more severe kinds that cause damage to the tooth's supporting tissues. Studies show that a considerable percentage of pregnant women have some degree of periodontal inflammation, making gum disease among them a common condition. Given its possible effects on the health of the mother and fetus, it is essential to comprehend how gum disease affects pregnancy. According to research, pregnant women who have untreated periodontal disease may experience unfavorable pregnancy outcomes, such as preterm birth, low birth weight, and preeclampsia (Padilla-Cáceres et al., 2023).

In addition, the inflammatory mediators that are secreted in reaction to periodontal infection have the ability to pass through the placental barrier, which may impact fetal development and raise the possibility of problems. Pregnancy increases a person's risk of developing gum disease for a number of reasons. Pregnant women are more susceptible to gingival inflammation and periodontal tissue breakdown due to hormonal changes, namely variations in estrogen and progesterone levels, which might impact the oral microbiota and immune response (Gare et al., 2021). Furthermore, behavioral elements that affect periodontal health during pregnancy include food choices, access to dental care, and modifications in oral hygiene routines. Preventive measures and treatment interventions must be taken into account in a holistic strategy to address periodontal health during pregnancy. Combining patient education, professional dental treatment, and behavioral changes is an effective way to improve periodontal health in expectant mothers. In order to detect and treat any periodontal problems early on, routine dental exams and cleanings are advised as part of prenatal care (Surlari et al., 2023).

Additionally, encouraging good dental hygiene habits including consistent brushing, flossing, and use of antimicrobial mouthwashes might lessen the chance of developing gingivitis and the advancement of periodontal disease. In addition to therapeutic therapies, educating expectant mothers on the significance of dental health is essential to enabling them to take charge of their periodontal health. Promoting oral hygiene habits and easing access to dental treatments during pregnancy can be greatly aided by educational activities aimed at pregnant women, healthcare professionals, and prenatal care programs (Agili & Khalaf, 2023).

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LITERATURE REVIEW

Periodontal Health

An inflammatory condition of the tooth-supporting tissue, periodontitis is brought on by a particular kind of bacterium and is typified by destruction to the gingiva, periodontal ligament, cementum, and alveolar bone. The clinical symptoms of periodontitis, an inflammatory disease of the periodontal tissue brought on by plaque bacteria, include red gum color, edema, loss of gingival attachment, tooth mobility, an increase in the amount of inflammatory exudate, and a change in gingiva consistency that makes it soft and prone to bleeding when touched with a probe. Subgingival biofilm and the human immune-inflammatory response, which arises in the gingiva and periodontal tissues in reaction to bacteria, combine intricately to cause periodontal disease. The clinical term for tissue destruction brought on by the immune-inflammatory response is periodontitis. Gingivitis is a prerequisite for periodontitis, albeit not all instances of gingivitis progress to periodontitis. While the inflammatory lesion in periodontitis affects the alveolar bone and the periodontal ligament, leading to a clinical loss of attachment with alveolar bone resorption, the inflammatory lesion in gingivitis is restricted to the gingiva (Martínez-García & Hernández-Lemus, 2021).

Three factors contribute to the development of periodontitis: collagen loss, degradation, and inflammation. The body's reaction to germs causes the inflammatory stage, which leads to subgingival plaque. Neutrophils, macrophages, and lymphocytes are brought into the gingival sulcus by the immune response in order to guard the tissue and restrict bacterial development. Periodontal tissue damage will result if the tissue's natural healing process is unable to eliminate germs. In addition to prostaglandin E2, which works as an osteoclast stimulant during reabsorption, macrophages are stimulated to create matrix metalloproteinase (MMPs) cytokines, which operate as mediators of the breakdown of cellular gingival matrix, collagen fibers, and periodontal ligament. alveolar bone. The junctional epithelium deteriorates due to collagen loss, changing the epithelial connection to a more apical position. The gingival sulcus will widen and become a periodontal pocket, while the tissue will become disunified and separate from the tooth surface. Plaque formation and the adhesion of surplus bacteria are the first signs of periodontal disease. An buildup of plaque will result in inflammation. According to Könönen et al. (2019), gingival inflammation is a pathological alteration in the gingiva linked to the existence of bacteria in the gingival sulcus.

Plaque buildup will cause vascular alterations, such as capillary dilatation and increased blood flow, during the first lesion stage. Leukocytes' microbial activation response triggers these early inflammatory alterations, which are subsequently followed by endothelial cell stimulation. Seven days following plaque buildup, the early lesion stage might persist for a very long period. Bleeding on probing is seen at this point. A confirmed lesion takes two to three weeks to heal. Plasma cells appear to predominate under the microscope. Both the quantity of macrophages and lymphocytes increased. Advanced lesion stage: the biofilm keeps growing apically at this stage, which is marked by a growing pocket depth. More apically, inflammatory cell infiltration penetrates the connective tissue. There are a lot of plasma cells (Celik & Kantarci, 2021).

Primary factors and local factors are the two causes of periodontitis (Bhuyan et al., 2022).

1. Principal elements. The main cause of periodontitis is irritation by germs.
2. Regional elements. Among the local variables are:
 - a. Improper restoration.
 - b. A carious cavity.
 - c. Poorly built removable partial dentures.
 - d. An irregular tooth arrangement.

Gum Disease

Of the major periodontal tissue disorders, gingivitis is the oral condition with the highest frequency. Almost usually present in all kinds of gingival problems is gingivitis, a supporting tissue condition. Inflammation of the gums brought on by bacteria is known as gingivitis, and clinical symptoms include swollen gums, bleeding when pressure is applied, and redder-than-normal color changes. Gum discomfort is typically not experienced by sufferers. Gingivitis is reversible, meaning that with regular toothbrush use to eliminate plaque, gum tissue can return to normal. The gum disease known as gingivitis is brought on by plaque, a sticky film made up of bacteria, saliva, and food particles. According to Murakami et al. (2018), gingivitis is etiologically derived from the terms gingiva, which means gum, and itis, which means inflammation. As a result, gingivitis may be understood as gum inflammation.

The first stage of periodontal disease is called gingivitis. Periodontitis typically develops after gingivitis. It's crucial to understand that not every case of gingivitis progresses to periodontitis. while plaque bacteria accumulates in the early stages of gingivitis, the gums become inflamed (red and swollen) and frequently bleed readily while cleaning your teeth. The following symptoms are often present with gingivitis (Deng et al., 2021):

1. The vasodilation of blood vessels that results in an increased blood flow to the inflammatory tissue is the reason why gums are often pink, dark red, or purple.
2. When you clean your teeth, bleeding gums around your teeth often cause blood stains to form on the brush's bristles.
3. Swelling-related alterations in the gums' form.
4. There is an unpleasant breath odor.
5. Puppies form around the teeth and gums in cases of more severe gum inflammation.

The following outcomes are possible if gingivitis is not treated right away (Broomhead et al., 2022).

1. Because of gum swelling, the gum pockets are not deeper than usual.
2. Gum can flow readily.

3. The gingiva is scarlet.
4. Odor.
5. Missing teeth.

METHODS

This study employs a qualitative methodology. The qualitative research approach was selected because it can allow for a thorough investigation of pregnant women's experiences and perspectives on their gum and dental health issues. A review of prior studies that were pertinent to this research issue was part of the literature study that was used to gather research data. Finding and choosing literature that fits the study objectives, reading and critically analyzing pertinent texts, and synthesizing the data are the processes in the data gathering process that enable the development of research results and conclusions. Using academic databases, scientific journals, textbooks, research papers, and other trustworthy sources of information, the literature study procedure is conducted methodically (Fakheran et al., 2020).

To guarantee the inclusion of pertinent and high-quality sources, pertinent keywords like "periodontal health during pregnancy," "gum disease in pregnancy," "factors influencing oral health in pregnant women," and similar ones were included in the literature search. The previously developed conceptual framework for the research was taken into consideration when conducting the data analysis. When interpreting the data, the pertinent theoretical framework will be taken into account, and a connection will be made between it and the study questions and objectives (Luft et al., 2022).

RESULTS AND DISCUSSION

Factors Influence Gum Disease In Pregnant Women

Periodontal disease, also referred to as gum disease, is a common oral health issue that pregnant women face and may have serious consequences for both the mother and the fetus. It is imperative to comprehend the variables that impact the onset and advancement of gum disease in expectant mothers in order to execute efficacious preventative and therapeutic measures. In this talk, we'll look at some of the main causes of gum disease in expectant mothers, such as immune responses, oral hygiene habits, and availability to dental treatment. Hormonal variations, namely in the levels of progesterone and estrogen, are a major contributing cause to gum disease in pregnant women. Pregnant women are more likely to have gingival inflammation and periodontal tissue breakdown due to the increased inflammatory response to oral bacteria caused by heightened levels of these hormones. Particularly estrogen can increase the gingival tissues' vascular permeability, increasing their susceptibility to inflammation and infection. Conversely, progesterone may encourage the growth of some harmful bacteria linked to gum disease. These changes in hormones foster an environment where gum disease can flourish, particularly in women who already have gingival inflammation (Starzyńska et al., 2022).

By preventing bacterial invasion and regulating inflammation, the immune system is essential for preserving dental health. Nonetheless, immune system alterations brought on by pregnancy may have an effect on the oral microbiota and the host's defense against periodontal infections. According to research, changes in T-cell-mediated immunity during pregnancy may lead to an imbalance in the oral microbiota, which promotes the development of harmful bacteria linked to gum disease. Furthermore, in susceptible people, alterations in cytokine production, such as elevated levels of pro-inflammatory cytokines, may worsen gingival inflammation and tissue damage. Gum disease can be avoided with good oral hygiene, however pregnancy-related conditions might make it difficult to maintain ideal dental health. Pregnancy-related symptoms like nausea, vomiting, and exhaustion can make it harder to maintain good dental hygiene practices like brushing and flossing. Hormonal changes can also worsen gingival inflammation and bleeding, which deters pregnant women from practicing good dental hygiene. Pregnancy-related poor dental hygiene can increase the risk of periodontal disease formation and progression by causing plaque and calculus to accumulate (Kashetty et al., 2018).

Another important factor impacting gum disease in pregnant women is access to dental treatment. Regrettably, there are still differences in the use of dental care among expectant mothers, and socioeconomic status, insurance coverage, and geographic location all play important roles. Women who have limited access to dental care during pregnancy may not be able to get gum disease treatment and preventative care in a timely manner. Furthermore, some women may decide not to seek dental treatment at all due to misunderstandings regarding the safety of dental operations during pregnancy and worries about possible harm to the fetus. Consequently, untreated periodontal disease may worsen during pregnancy and cause long-term issues with dental health (Jahan et al., 2022).

The interaction of these variables emphasizes how complicated gum disease is in expectant mothers and emphasizes the necessity for all-encompassing prevention and treatment measures. Healthcare professionals are essential in teaching expectant mothers the value of practicing proper oral hygiene and scheduling frequent dental visits. To guarantee early gum disease identification and treatment, oral health exams and dental professional referrals should be incorporated into prenatal care programs. Furthermore, disparities in oral health outcomes among pregnant women can be addressed by public health initiatives that aim to lower barriers to dental care access, such as expanding Medicaid coverage for dental services and increasing the availability of affordable dental clinics (Northridge et al., 2020).

Strategies To Enhance Periodontal Health In Pregnant Women

Pregnancy-related maintenance of good periodontal health is essential for the growth of the fetus as well as the health of the mother. Because of changes in the immune system, hormones, and dental hygiene habits, pregnant women are more vulnerable to gum disease. In order to lower the risk of unfavorable pregnancy outcomes and to promote general oral health, it is imperative that pregnant women implement effective techniques to increase their periodontal health. In this talk, we'll look at a number of methods for controlling and preventing gum disease while pregnant, such as multidisciplinary teamwork, patient education, professional dental treatment, and behavioral changes. Preventive dental treatment for expectant mothers begins with routine dental cleanings and exams. Pregnancy-related oral health status monitoring and early periodontal disease identification and treatment are made possible by dental appointments. It is advised by the American Dental Association (ADA) and the American College of Obstetricians and Gynecologists (ACOG) that expectant mothers undergo basic dental care, including cleanings, exams, and any required treatments. According to Yennen and Ataçağ (2018), these guidelines stress the need of maintaining excellent oral health as part of prenatal treatment to reduce the risk of unfavorable pregnancy outcomes linked with untreated gum disease.

An important part of promoting periodontal health during pregnancy is educating expectant mothers about the importance of dental health and offering advice on good oral hygiene habits. Healthcare professionals who educate expecting moms about dental health, such as

dentists, midwives, and obstetricians, are essential. Patient education workshops may address topics such as the value of using fluoride toothpaste, the necessity of routinely brushing and flossing, dietary suggestions for maintaining oral health, and the significance of getting dental care while pregnant. Furthermore, dispelling myths and apprehensions regarding the safety of dental care during pregnancy can reduce anxiety and motivate women to give their oral health first priority. In order to avoid gum disease and promote periodontal health, it is imperative that pregnant women adopt and maintain good oral hygiene practices. Reinforcing the value of brushing teeth twice a day with fluoridated toothpaste, cleaning in between teeth with dental floss or interdental brushes, and rinsing with antimicrobial mouthwash to lessen the buildup of bacterial plaque are a few examples of behavioral adjustments. Additionally, depending on each patient's unique risk factors and oral health condition, healthcare professionals may offer individualized suggestions. For example, they might suggest more frequent dental cleanings for women who already have gum disease or advocate certain oral hygiene products suited to their needs. (Nair & Desai, 2023).

In order to successfully address the oral health requirements of pregnant women and provide complete treatment, collaboration between obstetricians, dentists, and other healthcare professionals is imperative. By integrating oral health into prenatal care protocols, interdisciplinary teamwork makes it possible to identify and treat periodontal disease early on. During prenatal appointments, obstetricians and midwives can check pregnant women for oral health issues and send them to dentists if necessary. In turn, dentists and obstetricians can work together to create customized treatment programs that emphasize the safety of both the mother and the fetus while attending to periodontal issues. When developing and putting into practice measures to improve pregnant women's periodontal health, cultural sensitivity and accessibility are essential factors to take into account. Acknowledging cultural norms and beliefs around oral health can assist healthcare professionals in creating educational resources and treatments that appeal to a variety of demographics. Ensuring that all pregnant women have access to timely and adequate oral health treatments also requires addressing barriers to dental care access, such as cost, transportation, language, and insurance coverage. Pregnant women in underprivileged areas may find it more difficult to get dental treatment if they don't have access to community-based outreach initiatives, mobile dentistry clinics, or telemedicine services (Jahan et al., 2022).

CONCLUSION

In conclusion, gum disease presents serious risks to a pregnant woman's oral health that may have an impact on the health of both the mother and the fetus. Oral hygiene habits, immune system modifications, hormonal changes, and availability to dental treatment are all important factors that impact the onset and course of periodontal disease during pregnancy. Comprehending these elements is crucial for putting into practice efficacious tactics to improve periodontal health in expectant mothers and alleviate the correlated hazards. Comprehensive methods to maintaining periodontal health in pregnant women include professional dental treatment, patient education, behavioral adjustments, multidisciplinary collaboration, cultural sensitivity, accessibility, research, and policy advocacy.

Prenatal care regimens that incorporate routine dental checkups, cleanings, and treatments can help prevent and control gum disease, lowering the risk of unfavorable pregnancy outcomes. Patient education programs might encourage expectant mothers to give their dental health first priority and develop good hygiene practices. Additional support for periodontal health during pregnancy might come from behavioral changes catered to individual requirements and risk factors. To offer complete treatment and successfully address the oral health requirements of pregnant women, obstetricians, dentists, and other healthcare professionals must collaborate together. Ensuring that all pregnant women have access to timely and adequate dental treatment requires careful consideration of cultural sensitivity and accessibility issues. Underserved populations may find it easier to get dental care with the support of community-based outreach initiatives, mobile dental clinics, and telemedicine services.

Recommendation

The following suggestions are put forth in light of the findings and debates that have been presented:

1. In order to guarantee early identification and treatment of gum disease in expectant mothers, healthcare practitioners should incorporate oral health exams and dental professional referrals into prenatal care procedures.
2. Patient education programs must be put in place to inform expectant mothers of the significance of practicing proper oral hygiene and scheduling routine dental visits. Pregnant women should be encouraged to adopt behavioral changes that are specific to their requirements and risk factors in order to improve periodontal health. These changes should emphasize the value of brushing, flossing, and using antimicrobial mouthwash.
3. To offer complete treatment and successfully address the oral health requirements of pregnant women, obstetricians, dentists, and other healthcare practitioners should collaborate together.
4. When developing and putting into practice measures to improve the periodontal health of expectant mothers, cultural sensitivity and accessibility should be given first priority. This will guarantee that all expectant mothers have access to prompt and appropriate dental treatment.
5. It is necessary to do more study to assess the efficacy of various methods for promoting periodontal health in expectant mothers and to find novel ways to incorporate dental health into prenatal care procedures.

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