

## Oral health promotion during pregnancy: a literature review

### Promoção de saúde bucal na gestação: uma revisão da literatura

Luiz Adalberto Farias dos Santos Filho <sup>1</sup>, Alana Milena Honorato Silva <sup>2</sup>, Nathalia Matias de Freitas <sup>3\*</sup>, Wanessa de França Silva <sup>3</sup>, Talita Ribeiro Tenório de França <sup>1</sup>

<sup>1</sup>Maurício de Nassau University Center – UNINASSAU, Recife, PE, Brazil.

<sup>2</sup>Facol University Center – UNIFACOL, Vitória de Santo Antão, PE, Brazil.

<sup>3</sup>University of Pernambuco, Recife, PE, Brazil.

\*nathaliam100@hotmail.com

#### ABSTRACT

Health promotion is a strategy that can be used in prenatal care and these actions favor the pregnant woman's knowledge about her baby's oral health. This work consists of presenting the care related to the oral health of the mother-baby binomial, according to the literature and consists of an integrative review of the literature in which the databases used were: LILACS, Pubmed and SciELO. As a search strategy, the following keywords were used: "Dental Care", "Prenatal Education", "Pregnant Women" and "Health Promotion". Among the inclusion criteria, studies published in Portuguese and English were chosen, selected between the years 2004 to 2021. The exclusion criteria were: articles that did not present relevant information on the proposed topic and works that contained outdated information on the topic. A total of 71 articles were found, 24 of which were excluded, and 47 studies were selected as the basis for this review. The gestational period shows several systemic changes and each woman goes through this experience differently. Thus, dental care during pregnancy is a very questionable topic, especially in accordance with the myths and beliefs created without any scientific evidence. The introduction of actions in oral health programs, aimed at the prenatal period, is essential for the health of the mother and baby. The dentist has the function of promoting oral health in the family environment.

**Keywords:** Dental Care. Health Promotion. Pregnant Women. Prenatal Education.

#### RESUMO

A promoção da saúde é uma estratégia que pode ser utilizada no pré-natal e essas ações favorecem o conhecimento da gestante sobre a saúde bucal do seu bebê. Este trabalho consiste em apresentar os cuidados relativos à saúde bucal do binômio mãe-bebê, de acordo com a literatura e consiste em uma revisão integrativa da literatura na qual as bases de dados utilizadas foram: LILACS, Pubmed e SciELO. Como estratégia de busca foram usadas as seguintes palavras-chave: "Atenção Odontológica", "Educação Pré-Natal", "Gestantes" e "Promoção da Saúde". Entre os critérios de inclusão, foram escolhidos estudos publicados em língua portuguesa e inglesa, selecionados entre os anos de 2004 a 2021. Os critérios de exclusão foram: artigos que não apresentaram informações relevantes sobre o tema proposto e trabalhos que continham informações desatualizadas sobre o tema. Foram encontrados 71 artigos, dentre eles foram excluídos 24, sendo selecionados 47 estudos como base para esta revisão. O período gestacional evidencia diversas alterações sistêmicas e cada mulher passa por essa experiência de forma distinta. Com isso, o atendimento odontológico na gestação é uma temática muito questionável, especialmente em conformidade com os mitos e crenças criados sem qualquer comprovação científica. A introdução das ações nos programas de saúde bucal, direcionadas ao período do pré-natal, é fundamental para a saúde da mãe e do bebê. O cirurgião-dentista tem a função de promover a saúde bucal no meio familiar.

**Palavras-chave:** Atenção Odontológica. Educação Pré-Natal. Gestantes. Promoção da Saúde.

## INTRODUCTION

Health presents several concepts, however, in all of these, health represents the quality of life in all aspects of the daily lives of individuals but relies on various conditions such as physical, personal, and social of each citizen. With this, health promotion, in turn, also has several definitions, but its central ideology is to offer and maintain health for all with quality of life, understanding every singularity and the context of each individual and not limited to a specific action to combat a specific disease or the biological knowledge of a health professional (Reis et al., 2010; Kusma, S. T. Moysés & Moysés, 2012).

Health promotion actions promote a power in the defense of Health in all its extensions, through a broad and effective dialogue with society, with its community organizations, its productive sectors and with its media aiming at health care (Brasil, 2002).

Health promotion must be present in all life cycles of the individual and it is essential that it is present in the prenatal monitoring of the pregnant woman. The mother during the prenatal period is more sensitive to information about health care, aiming at her and the baby's well-being. Therefore, it integrates a class that can and should receive greater dedication to benefit from health education (Moimaz, Zina, Serra, Garbin & Saliba, 2010).

During gestation, a woman undergoes complex physiological changes, including changes in the oral cavity. Such transformations make this pregnant woman in need of being accompanied by a dentist through a dental prenatal. Nonetheless, there are myths that dental care can be harmful and inappropriate during pregnancy, and it may cause harm to the development of the fetus (Codato, Nakama & Melchior, 2008). Thus, due to these legends and popular myths, several mothers during pregnancy show a certain reluctance to this care and end up avoiding or abandoning dental treatment (Pomini et al., 2017).

According to the literature, the limited knowledge of pregnant women and some professionals about the relevance of oral health in pregnancy favors the propagation of these popular beliefs. Also, the deficient training of some dental professionals on the clinical approach in women in the prenatal period is one of the factors that contribute to the lack of knowledge and uncertainties regarding the care of this group, thus providing an unsatisfactory service by the dental surgeon (Pomini et al., 2017). Meanwhile, behaviors that tend to break these myths, such as health promotion activities, become a tool of paramount importance for the beginning, progress and completion of dental prenatal care, thus improving the confidence and motivation of pregnant women with care (Mattos & Devoglio, 2015).

In addition, health promotion actions during pregnancy favor the pregnant woman's knowledge about her baby's oral health. According to research conducted by Garbin, Sumida, Santos, Chehoud and Moimaz (2011), most mothers did not have any knowledge about how to act to preserve the oral health of their babies after birth and few were the mothers who demonstrated the least understanding. The role of odontology is to share with parents the knowledge about the child's oral health, highlighting clarifications about oral hygiene and eating habits. Care should be instituted during pregnancy and continue after delivery (Fernandes, Klein, Lippert, Medeiros & Oliveira, 2010).

Oral health care during pregnancy should not be restricted to treatment, but also to health promotion. Therefore, it is important to identify the need for oral health and plan the best conduct in the dental treatment of the population in question (Garbin et al., 2011). Oral health education in pregnancy can mitigate most of the pathologies in pregnant women, motivate them to seek the dentist and start treatment if necessary and empower them in relation to their baby's first oral health care, always seeking prevention through effective oral health promotion at this stage of the woman's life (Moimaz et al., 2010).

Based on the relevant role of Health Promotion in pregnancy, this work consists of presenting the care related to oral health of the mother-baby binomial, according to the literature, observing the main oral changes that can happen, highlighting dental care during this period.

## MATERIAL AND METHODS

This work consists of an integrative literature review in which a selection of articles on the promotion of oral health in pregnancy was carried out, having as a guiding hypothesis: What types of care are necessary for the oral health of the mother-baby binomial? The databases used for the preparation of this review were: Scientific and technical literature of Latin America and the Caribbean (LILACS), Pubmed and Scientific Electronic Library Online (SciELO). The following keywords were used as search strategy: "pregnant women", "Dental Care", "Health Promotion" and "prenatal education". Among the inclusion criteria, studies published in Portuguese and English were chosen, and selected between the years 2004 to 2021, those that presented the same focus on the study and the most pertinent regarding the desired information. The exclusion criteria were: articles that did not present relevant information on the proposed topic and papers that contained outdated information on the topic. 71 articles were found, among them 24 were excluded (22 were excluded because they did not present relevance to the theme in question and 02 were excluded because they presented inconclusive information and 47 studies were selected as the basis for this review. The articles included were critically analyzed so the data collected could be synthesized and used in this review.

## RESULTS AND DISCUSSION

In odontology, care for pregnant women has turned into an unquestionable reality, the gestational period is very important in the life of the mother and stands out for several systemic changes and for being a cycle that triggers some changes. Each woman goes through this experience differently, which can generate uncertainty, panic, insecurity and curiosity about what is happening to her body and with the baby (Moreira, Santin, Matos, Gravina & Faquim, 2015).

Thus, pregnant women seek to find out about guidelines that ensure the baby's well-being, transforming this period into a huge field of opportunities to guide, educate and carry out oral health education and promotion activities, highlighting this as the important objective of dental prenatal care (Moreira et al., 2015).

### Main oral changes in pregnancy

In the period of pregnancy, several bodily, physiological and psychological transformations occur in women, assigned to preparation for childbirth and breastfeeding. Thus, such systemic modifications can cause a noticeable imbalance in the oral microbiota, and may influence the predisposition to diseases in the oral cavity of pregnant women (Aleixo, Moura, Almeida, Silva & Moreira, 2016).

The emergence of dental caries in pregnant women is often linked to changes in eating rhythm, as the pregnant woman decreases food consumption and increases the frequency of number of meals. All this associated with oversight of oral health and the valorization of cariogenic Foods, makes it develop caries more easily, as it promotes the imbalance of the demineralization and remineralization process (Martins, Borges, Segundo, Palma & Volpato, 2013).

The increase in the incidence of caries during pregnancy also develops due to reduced oral hygiene of pregnant women due to frequent motion sickness. In addition to caries, the difficulty in maintaining correct oral health in the first three months of pregnancy due to this nausea, along with frequent reflux and vomiting, causes the hydrochloric acid of gastric juice to come into contact with the oral cavity causing wear to the tooth enamel, resulting in the loss of superficial tooth structure, also known as dental erosion (Mameluke et al., 2008; Matsubara & Demetrio, 2017).

The symptoms of gingivitis may be more easily manifested during gestation; however, it is not only motivated by pregnancy. These factors are defined by redness, swelling, and bleeding and may be associated with changes in oral cleaning practices, food impacts on chewing, and gum sensitivity. Described by Souza et al. (2021) in a study with 100 pregnant women, almost 40% of

them presented changes in the oral cavity and the most predominant was gingivitis with a little more than 90% among the other diseases (Souza et al., 2021).

Another common manifestation during this period is granuloma gravidarum. It is characterized as a lobed, exophytic lesion, with a color that varies from pink to purple, and can be sessile or pedunculated and bleeding to any stimulus. It is known that hormonal changes are capable of elevating angiogenic factors causing the appearance of this condition. However, more research is needed to elucidate the pyogenic etiology during pregnancy (Figueiredo, Rosalem, Cantanhede, Thomaz & Cruz, 2017; Sarwal & Lapumnuaypol, 2020).

Changes in the levels of the sex hormones estrogen and progesterone during pregnancy can leave women more vulnerable to periodontal diseases, since the periodontium is more susceptible to inflammatory changes due to the biofilm and may also be associated with systemic causes, such as these hormonal variations (Miguel, Ferreira, Carli, Martins & Ribeiro, 2019; Souza et al., 2021).

Periodontal infections are caused by gram-negative anaerobic bacteria and they allow an increase in the amount of prostaglandin that is an important physiological driver of early labor. Thus, periodontal pathology can be a threat to the baby born prematurely or with low weight (Figueiredo et al., 2017).

Given the changes mentioned above, it is possible to elucidate that diseases caused by biofilm are motivated by several factors that include complicated interactivity of microbial biofilms with the innate and adaptive immune responses of the host. Systemic changes in pregnancy have intense results in the parasite-host actions seen in these pathologies (Figueiredo et al., 2017).

### Dental care in pregnancy

Dental care in pregnancy is a very questionable topic, especially in accordance with ancient myths and beliefs created without any scientific basis. This care has an abundance of particularities and cannot be underestimated by the dental surgeon, and should be reinforced and stimulated through oral health education actions, detailed Anamnesis, and the demystification of dental care during pregnancy (Vasconcelos et al., 2012; Martins, Pinheiro, Arantes, Nascimento & Santos, 2013; Oliveira, Lopes, Santos & Magalhães, 2014).

The Ministry of Health (MOH) suggests that at the beginning of the gestational period, the pregnant woman needs to be directed to a routine dental consultation to undergo guidelines on Oral Health, clinical examinations of teeth and soft tissues, guidelines on eating habits in pregnancy and oral hygiene and have the reference on follow-up during pregnancy (Botelho, Lima, Barros & Almeida, 2019).

Several professionals demonstrate dedication to demystifying these popular beliefs that pregnant women cannot receive dental care. There are still remnants that some dental surgeons share this concept and refuse to provide dental care to patients during pregnancy, based on insufficient knowledge about the oral health care of these pregnant women (Oliveira, Botta & Rosell, 2014).

The second gestational trimester is considered the optimal and most reliable moment for dental interventions. Despite this, cases that require urgent treatment should be welcomed and solved according to the dental protocols proposed for pregnant women at any time during the gestational period. Following some precautions such as planning short sessions, avoid morning appointments, this shift in which the pregnant woman suffers more nausea (Moreira et al., 2015). The appropriateness of the position of the chair should also be taken into consideration, since some pregnant women may develop hypotensive syndrome, which consists in the fact that the pregnant uterus compresses the inferior vena cava and the aorta. As a result, changes and complications such as increased heart rate and blood pressure, hypotension, bradycardia, syncope, dizziness, nausea, decreased oxygen blood pressure, and gastroesophageal reflux dyspepsia can occur. Therefore, it is pivotal that this specific position of the pregnant woman in the dental chair, being the left lateral decubitus position appropriate, the dental professional should leave the back of the chair slightly

elevated and ask the pregnant woman to turn on her left arm, and thus avoid these possible complications (Silk, Douglass, Douglass & Silk, 2008).

During dental care for pregnant women, it is necessary to monitor vital signs, such as heart rate (HR), blood pressure (BP) and body temperature. The blood glucose level has also to be evaluated by the risk of the pregnant woman having gestational diabetes (Rosa & Babinski, 2020).

The anesthetic of choice for dental treatment during pregnancy is 2% Lidocaine associated with epinephrine (1:100,000), since the choice of this anesthetic salt with this vasoconstrictor provides a longer duration of anesthesia, as well as reduced toxicity for mother and baby. It is worth noting that a correct anesthetic technique should be performed, limiting itself to the maximum use of two tubes per session, performing a slow injection and with prior aspiration in order to establish a safe anesthetic effect (Amadei, Carmo, Pereira, Silveira & Rocha, 2011; Vasconcelos et al., 2012).

In relation to radiology in odontology in pregnant women, there is a great controversy regarding possible radiation damage to the fetus, so both pregnant women and health professionals are more cautious to perform this procedure, and may even not perform it (Cruz, Beda, Castilho & Moraes, 2002).

The radiation dose used in dental radiographs is considerably low compared to the threshold dose and to which the fetus undergoes is even lower. A dental X-ray exposes the patient to less ionizing radiation than the cosmic radiation obtained daily. For this reason, diagnosis with the help of dental radiographs can be used during pregnancy, but still, most pregnant women reveal fear regarding exposure to X-rays in the dental office (Nascimento, Andrade, Costa & Terra, 2012).

### Role of health promotion for the oral health of mother and baby

Care for pregnant women cannot be limited to treatment needs, but also in order to promote health. Therefore, it is relevant to understand the true need of the population in question in order to introduce educational actions in oral health programs. These actions should be directed to pregnant women in the prenatal period, emphasizing the importance of their health and the baby. In addition, these educational programs have been actively dedicated to carrying out preventive actions, in order to promote the dissemination of healthy attitudes in the family environment (Garbin et al., 2011).

In the early years of life, oral health care is indispensable, and should begin from birth, and being evaluated throughout the care if the oral health condition is favorable or if there is a need to perform an invasive treatment, which can often lead to premature tooth loss. Early dental follow-up would be able to control oral diseases at this stage (Oliveira et al., 2010; Souza, Batista & Pessoa, 2013).

The mother's understanding and knowledge about healthy practices, as well as the maternal commitment to educational and preventive actions, represent healthy behaviors for the oral health of her child. Health promotion is the basis of Dentistry for newborns, corresponding to parental awareness as a fundamental tool for children's oral health (Souza et al., 2013).

In order for mothers to effectively care for their babies and accurately perform their function as a health promoter, it is necessary that they first be healthy people. Thus, pregnancy and puerperium are the ideal phases to sensitize women about oral health, biofilm control and an adequate diet, both for them and for the baby. In these phases, they are more likely to acquire such knowledge, aiming at their well-being as pregnant women and their babies, so that the acquisition of information about oral health can become permanently healthy practices (Finkler, Oleiniski & Ramos, 2004; Cardoso et al., 2021).

Dental prenatal care has as one of the functions to support the pregnant woman during the entire gestational period, as long as the woman has knowledge of the pregnancy until the birth of the baby and that ensures the well-being of the woman in pregnancy and puerperium. It is essential to identify women as an integral being and not only a generator of life, but a protagonist of their health and life. In this way, she will be able to conceive lives and keep them equally healthy (Finkler et al., 2004; Cardoso et al., 2021).

Dental care in the first phase of the child's life has great relevance in raising parents' awareness of their child's oral health, highlighting knowledge about oral hygiene and eating habits, as well as issues related to the development of the baby's dentition. Simple information is often not enough to ensure optimal health for this population and, therefore, it is interesting to make resources available through communication and reflection which sensitizes citizens to capture knowledge and perception in the choice of healthier habits. The acquisition of such knowledge is essential to create and reformulate educational programs, as they have an important role in complementing special attention related to children's oral health, also acting in the development of values, habits and behaviors (Martins & Jetelina, 2016).

It is of pivotal importance that dental professionals are ready to instruct pregnant women not only during pregnancy, but also after the birth of the baby, in order to prevent future diseases, inform about the importance of breastfeeding for the baby's general and oral health, guidelines on Oral hygiene, guidelines on non-nutritive sucking habits that can cause harm, and inform mothers about performing the tongue test and its importance (Ferreira & Santos, 2013; Fernandes, Dietrich, França & Caixeta, 2020).

Programs that are aimed at promoting children's health in early childhood have shown improvement in oral hygiene and in reducing caries. Within these programs there is also the stimulation of breastfeeding, with the aim of strengthening the bond between mother and baby, thus providing a better development of these children (Adário et al., 2013).

Instructing mothers regarding the baby's oral hygiene is important to remove food residues and keep the oral cavity healthy, in addition to encouraging the adoption of the habit of brushing when tooth eruption begins. Before eruption, mothers use gauze or cloth diapers with filtered water to remove milk residues (Napoleão, Alencar, Silva, Martins & Carneiro, 2018).

As soon as dental elements erupt there is a need to use fluorides. It is recommended brushing with fluoride toothpaste between 1000ppm and 1100ppm, being passed on to parents that the amount of paste to be used is equivalent to a grain of raw rice, with a frequency of twice a day, not forgetting the night. Fluorides can also be present in the fluoridation of water supplies, which favors the Prevention of caries (Oliveira et al., 2010; Reis et al., 2010; Giongo & Bavaresco, 2014).

The lingual frenulum evaluation protocol in infants, popularly known as the "tongue test" is an examination that provides an early diagnosis of tongue movement limitations, this limitation can impair some functions such as speaking, chewing, sucking, and swallowing, and may have consequences for newborns, such as difficulty breastfeeding, early weaning, slow weight gain and discomfort for mothers in breastfeeding. It should be remembered that early abandonment of breastfeeding can bring risks to the baby's life, arising from the loss of nutrients that breast milk provides. Therefore, the dentist should advise on the importance of the tongue test and, if diagnosed any changes in the lingual frenulum, treat early. This protocol should be done by a trained professional and performed primarily in the first month of life (Martinelli, Martinelli, Marchesan, Berretin-Felix, & Souza, 2017; Penha et al., 2019).

Breastfeeding has a direct link with mouth breathing, occlusion and swallowing. The stimulus produced by breastfeeding favors the correct craniofacial development of the child, avoiding future occlusion or breathing problems.

Regarding the harmful consequences of pacifier use, Martins and Jetelina (2016) refer that these will always depend on the time of duration, intensity and frequency. For this reason, it is important that you remove this habit until 3 to 4 years of age, avoiding changes in the child's chewing, breathing, speech and swallowing.

Health education is paramount among professionals and the population, not limited only to a formal orientation, but that together they can build knowledge and stimulate autonomy, creativity and even criticism so that individuals can feel capable of recognizing their real needs and be able to propose measures for their health care and their family. Thus, health education is very important in the continuous development of the individual, including the gestational period (Souza et al., 2013). Terreri et al. (2021) cite that it is important to insert health education in the daily practice of the

professional because it is the key point of promoting the oral health of pregnant women, as it is related as a condition that can lead pregnant women to changes in behaviors and habits.

In the study made by Alves et al. (2019) the project presented importance for the promotion of oral health of pregnant women, puerperal women and babies, for the early implementation of oral care in these people and, in particular, the instructions given to mothers so that they understand and take care of their children considering the habits related to oral health.

The dental care of pregnant women has always been portrayed with care and priority until the present day, but the educational need of pregnant women is a continuous reality, aiming to develop an awareness in the appreciation of prenatal consultations, so that they know the importance of promoting oral health of mother and baby. It is necessary that health professionals be qualified by continuing education so that they are able to develop actions of promotion and Prevention in oral health for pregnant women and children in early childhood. Thus, they will be able to provide information on the topic, in a humanized way, favoring Integral Care, in accordance with the principles and guidelines of SUS (De Sá, Almeida, Cândido, Vieira & Lopes, 2020).

One of the main factors that lead pregnant women not to seek dental treatment is the fear that treatment could harm the health of their baby. According to Andrade et., (2019) studies on dental prenatal care obtained a rate of 86.6% of pregnant women who were unaware of the topic addressed and stated that treatment in the gestational period was contraindicated. Therefore, the lack of information that pregnant women presented proves that there is a need to prioritize these pregnant women in dental care programs (Miguel et al., 2019).

In the study made by Tamanaha, Saliba, Garbin and Moimaz (2018), most pregnant women reported feeling sick during tooth brushing. However, they reported being able to brush their teeth twice a day. According to Bastiani et al. (2010) more than half of the pregnant women decreased the regularity of brushing their teeth in the morning due to nausea, those who remained with the same periodicity, reiterated that they brushed faster and without the same effectiveness.

Many pregnant women believe that their teeth will become weaker and proner to decay during pregnancy because they will lose calcium to the bones and to the baby's teeth that are developing. In fact, this is a myth, since the minerals presented in the teeth are in the form of crystals, so there can be no systemic circulation (Miguel et al., 2019). Thus, Andrade et al., (2019) report that pregnancy will not cause this problem, but bad habits cause oral problems, such as the intake of cariogenic foods, reducing the numbers of toothbrushes and poor oral hygiene.

A visit to the dentist is important for mothers to receive the instructions that are given regarding the promotion, directing the Prevention of oral diseases of your child. Therefore, the dentist has the function of presenting educational ways to promote oral health in the family environment (Souza, Lazzarin, Filipin & Schuarz, 2015). Therefore, Finkler, Oleiniski and Ramos (2004) state that parents should be informed of the importance of their educational role for the construction of their children's oral health and that this is a primary action for the implementation of oral hygiene habits in children.

According to Ferreira and Santos (2013), the reason for early weaning is the absence of educational programs that encourage breastfeeding, so mothers do not have a good preparation in the pre-and post-natal period. This emphasizes once again the importance of these educational actions to promote health in order to correctly guide pregnant and postpartum women.

## CONCLUSION

An adequate dental follow-up is indispensable during the gestational period, since the woman is more susceptible to changes that may affect the balance of the oral flora. Pregnancy is an important moment in a woman's life, so they are more accessible to new information, opening a window of opportunities for the dentist to educate, instruct and promote to the future mother knowledge that favors oral health for both her and her baby.

Henceforth, pregnant women should be assisted by an integrated, multidisciplinary team that adopts health promotion measures aimed at preventing oral diseases, instructing them how to maintain good oral hygiene and that this knowledge is continued and mirrored after the birth of their child, with the adoption of healthier oral habits.

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