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Original Article

Conditions and Perceptions of Oral Health in Brazilian Pregnant Women

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Abstract

Objective: To identify the prevalence of caries and periodontal diseases, and factors associated with caries and perceptions of dental care by pregnant women, before and after the educational intervention. **Material and Methods:** 121 pregnant women from the municipality of Matozinhos (Minas Gerais State, Brazil) participated in this study. Caries and periodontal diseases, sociodemographic characteristics, and access to dental service were evaluated. Perceptions were analyzed before and after the action of operative groups. In addition to descriptive statistical analysis, the DMFT index, dichotomized by the median value, was associated with family income and perceptions of treatment need and health, using the Pearson's and linear trend chi-square tests. The McNemar's chi-square test was used for comparisons before and after educational interventions. A significance level of $p<0.05$ was used. **Results:** The DMFT was equal to 12.00 (±6.33), with 52.2% of carious teeth. Most of the pregnant women showed some level of periodontal disease or dental calculus. Caries was neither associated with family income ($p=0.469$) and need for dental treatment ($p=0.161$) nor with health perception ($p=0.506$). There was an improvement regarding the perception of dental care during pregnancy after educational intervention ($p<0.001$). **Conclusion:** The conditions of oral health and oral health care in pregnant women are worrisome. Educational interventions improved the perceptions of dental care, and they pointed out the need dentists have as effective members of the prenatal team.

Keywords: Pregnant Women; Dental Care; Oral Health.

Introduction

The conception of oral health care in prenatal is diversified between health professionals and managers, as well as among pregnant women making difficult the development of action strategies in this group. Moreover, the provision of this service seems it still occurs in an incipient manner. The popular beliefs contraries to the treatment, low perception of need, fear of feeling pain and causing damage to the baby, difficulties to access the health care services have been considered barriers to dental care in pregnancy [1]. In this context, it is important these actions occur universally according to criteria rigorous tested, well understood, accepted, and disseminated among professionals and patients.

The oral health care of pregnant women involves levels of care from the promotion, reception, and prevention to the standardized clinical interventions. The assistance actions have been backed by the fact the good oral health conditions are a requirement for improving the quality of life of pregnant women [2-6], and in this group, the benefit may still transcend the mother and be brought to her son [7]. The reception must have the sensitivity to capture from these women, besides objective clinical information, their concerns [8]. Preventive activities must also enable to people not only the clear access to technical information [9], but they should incorporate subjective demands to be the most personalized activities and to represent resignification for pregnant women.

With regards to the barriers to dental care in pregnant women, the education is one of the main resources for the expansion of health care [9]. However, an integrative literature review did not identify any study regarding the oral health education, especially among pregnant women [10], whereas another study on maternal and child oral health did not identify any study on the effectiveness of operative groups, addressing the oral health subject [11]. Clinical care has been established and it is possible to find several consensus in the literature on reliable indications for mothers in national [12] and international contexts [9,13].

Given the need for expansion of dental care to pregnant women, the understanding of the profile of oral diseases and the senses they represent for patients, are the first step in any planning. The prevalence of caries and periodontal diseases in pregnant women has been analyzed and the results have shown variability over the various social classes, with a higher prevalence in populations with lower literacy rates [14]. In addition to descriptive and analytical studies of these diseases in pregnant women, the evaluation (concomitant or not) of their perceptions has been common. Perceptions indicate the value that these women give for their health and can provide effective stimulus means to co-participation in the proposed therapy, including different instruments for understanding the health behavior [15].

We may also notice that Brazilian policies and technical subsidies have been created in the drive to improve women's assistance during this period of their lives, qualifying the care and even proposing the inclusion of oral health practices; although, in practice, it seems its implementation was not consolidated yet. Among these policies and technical materials, we can highlight the National Humanization Program in Prenatal and Birth (PNHPN), which is a segment of the

National Humanization Policy (PNH) [16]. This program, although it has enabled a national registry with data entry performed at the municipal level (Monitoring System of the Humanization Program in Prenatal and Birth – SISPRENATAL), it does not mention the prenatal dental care; however, we should consider the possibilities that the program provides proposing the creation and adoption of new measures and procedures considered beneficial for prenatal care, childbirth and postpartum.

Prioritization of dental care for pregnant women, with periodontal evaluation in prenatal care in the public health system in the state of Minas Gerais, is supported by law [17]. Also, in this state, there is the provision of additional financial incentives to municipalities that can increase the registration of pregnant women in the information system [18], although with no specific mention regarding dental care. Another national proposal, the National Program for Improving Access and Quality of Primary Care (PMAQ-AB) [19], has the dental care of pregnant women as one of its indicators. Health protocols have also been established to pregnant women care in Minas Gerais [12] and at the federal level [20,21]. In this sense, it is essential that the municipalities can recognize their responsibilities for the health of pregnant women to enable the completion, within their spheres of government, health care policies, including the oral health care, according to their specific demands, simultaneously complementing the state and national guidelines.

Based on these considerations, this study aimed to identify the prevalence of caries and periodontal diseases and factors associated with caries experience, as well as evaluate the perceptions of oral health care by pregnant women before and after the educational intervention performed by operative groups in a Brazilian municipality.

Material and Methods

The study activities were evaluated and approved by the Ethics Committee of the Federal University of Minas Gerais (No. ETIC 568/08).

The study was conducted in the municipality of Matozinhos (Minas Gerais State, Brazil), which has a population of 36,031 inhabitants [22]. The pregnant women in this municipality are monitored by the Monitoring System of the Humanization Program in Prenatal and Birth (SISPRENATAL) since 2004, by ten family health teams with routinely collected registration and subsequent consultations with doctors and nurses [16].

As oral health teams are not inserted into the ten family health units, and considering there is only one clinic downtown with a significantly reduced demand, it was proposed the involvement of nurses, the unit managers, so that they could contribute to the multi-professional process of work within the pattern of public policies [12,21] for the establishment of a connection [16,20].

The study was conducted with a convenience sample composed of 191 pregnant women registered in the SISPRENATAL; who were seen in the public health system of the municipality in 2010, and in routinely prenatal consultations with nurses or doctors, they were informed and consented to participate in the study.

Educational interventions, type "before" and "after", in operative groups [23] were developed by the researchers in the ten family health units, using a structured script, created for this activity, with the following questions: "Are you afraid of going to the dentist while pregnant?" and "Can pregnancy cause problems in oral health?". The answers were recorded as "yes" or "no". In each one of the ten health units, the groups meet at two times separated by a one-month interval, totaling 20 meetings. For analysis purposes, as such groups were not simultaneous, the first ones were grouped and denominated as "First time" and the second ones were named as "Second time". At the first time, the doubts and concerns of the pregnant women were surveyed and considered as issues of the scripts used by the groups. Besides clarifying the doubts and concerns, at the first time, other relevant issues were discussed. At the second time, thirty days after the first one, in each unit, the pregnant women participated in the operative groups again so that the addressed subjects could follow the same script of the previous meeting. Ninety-three pregnant women attended the first time, whereas ninety-eight pregnant women participated in the second time. By the attendance lists, it was observed that seventy pregnant women simultaneously participated in the two events, these women were intended for comparative evaluation of the operative group.

In these group meetings in the ten family health units, the pregnant women were invited to receive assistance at the oral health center of the municipality. Those who consented were referred for dental care, regardless of the gestational period, respecting the protocol of Guideline for Oral Health of the Health Department of Minas Gerais [12].

All pregnant women were subjected to dental crown caries and periodontal tests [21] by a single calibrated examiner, a public servant, and researcher, who performed the data collection within her work routine, aiming to approximate the research to the reality of her job. On the eve of exams, the Cohen Kappa intra-rater coefficients were 0.94, 0.75 and 0.65 for dental crown caries, Community Periodontal Index (CPI), and Periodontal Attachment Loss Index (PALI), respectively. At the oral health center, we used the forms regarding the crown caries and periodontal conditions, health self-perception, access to services, and socioeconomic variables from the SB Brasil 2000 survey [24], thus aligning the study to the proposal national research without public oral health, in vigor at the time of data collection.

In this study, it is noteworthy the use of two terms typed in two different ways to represent the perception of women. The "perceptions" of pregnant women, recorded through answers in the structured questionnaire in operative groups in the health units, were analyzed to evaluate the effects of the groups. Whereas the "self-perception", recorded through standardized questionnaires of the SB Brasil Program, at the oral health center, was associated with dental caries. In the present study, the socioeconomic variables of schooling (years of study), type of housing (own, own in acquisition, rented, donated, others), and family income (in minimum wages) were evaluated. The question asked to record the oral health self-perception was: "How do you rate your oral health?" (Do not know / no answer, terrible, bad, regular, good, excellent). The access questions were: "Have you ever gone to

the dentist at least once in life?" (yes or no); At where? (Location of dental care: I have never been to the dentist, public service, private/liberal service, private/plans service, and medical insurance).

The statistical analysis consisted of calculation of proportion and measures of central tendency and variability. The Kolmogorov-Smirnov test was used to test the normality of quantitative variables. The decayed, missing and filled teeth index (DMFT), dichotomized by the median value (DMFT≤12 and DMFT>12) was associated with family income (in minimum wages), the perception of treatment need and with the perception of health through the Pearson's and linear trend chi-square tests, as indicated. The ratio of answers to questions "Are you afraid of going to the dentist while pregnant?" and "Can pregnancy cause problems in oral health?" were compared before and after the educational intervention, using the McNemar's chi-square test. The level of significance was $p<0.05$. All analysis was developed using the SPSS version 18.0 software.

Results

Most of the pregnant women (74.3%) had studied up to nine years, 54.5% were living in rented or donated residences, and the majority (92.5%) was living with a monthly income ranging from one to two minimum wages per family. Most of them (83.5%) had accessed dental service at some time in their lives, 73.5% in public service. More than half of the pregnant women had considered the service as good (Table 1). The average age was 26.25 years old, the minimum value of 15, the maximum of 43, and the median value of 25 years old.

Table 1. Distribution of sociodemographic characteristics and access to oral health services for pregnant women, in Matozinhos/MG in 2010.

Variables	N	%
Instruction		
Up to 9 years of schooling	90	74.3
10 to 12 years of schooling	25	20.7
Over 12 years of schooling	6	5.0
Habitation		
Own	18	14.9
Own in acquisition	37	30.6
Leased	55	45.4
Borrowed	11	9.1
Family Income		
One minimum wage	82	67.8
Two minimum wages	30	24.7
Two and a half minimum wages	2	1.7
Three minimum wages	7	5.8
"Did you have been treated by dentist at least once in life?"		
Yes	101	83.5
No	20	16.5
Local of the dental care		
Never went to dentist/No answer	20	16.5

Public service	89	73.5
Private / liberal service	2	1.7
Private service / health insurance	10	8.3
"How do you evaluate the service?"		
Never went to dentist/No answer	22	18.2
Bad	8	6.6
Regular	26	21.5
Good		53.7

It was observed that the carious component is the largest contributor to DMFT, representing more than half of the total value of the index, demonstrating the low access to oral health services. The values of DMFT and its components for the examined pregnant women are shown in Table 2.

Table 2. DMFT index in pregnant women, in Matozinhos/MG in 2010.

	Minimum value	Median	Maximum value	Mean (SD)
DMFT	2	12.00	26	12.00 (6.33)
Decayed teeth	0	6.00	15	6.26 (4.24)
Missed teeth	0	2.00	14	2.69 (3.12)
Filled teeth	0	2.00	20	2.99 (3.18)

A total of 68.6% of the evaluated pregnant women presented some level of periodontal disease or dental calculus (CPI>0). Bleeding on probing was identified in 41.3% cases, followed by dental calculus (20.7%) and periodontal pocket of 4 – 5 mm (6.6%) (Figure 1). The periodontal attachment loss was detected in 28.1% of the examined women, among them, 24.8% had periodontal attachment loss of 4 – 5 mm (Code 1) and 3.3% of 6 – 8 mm (Code 2).

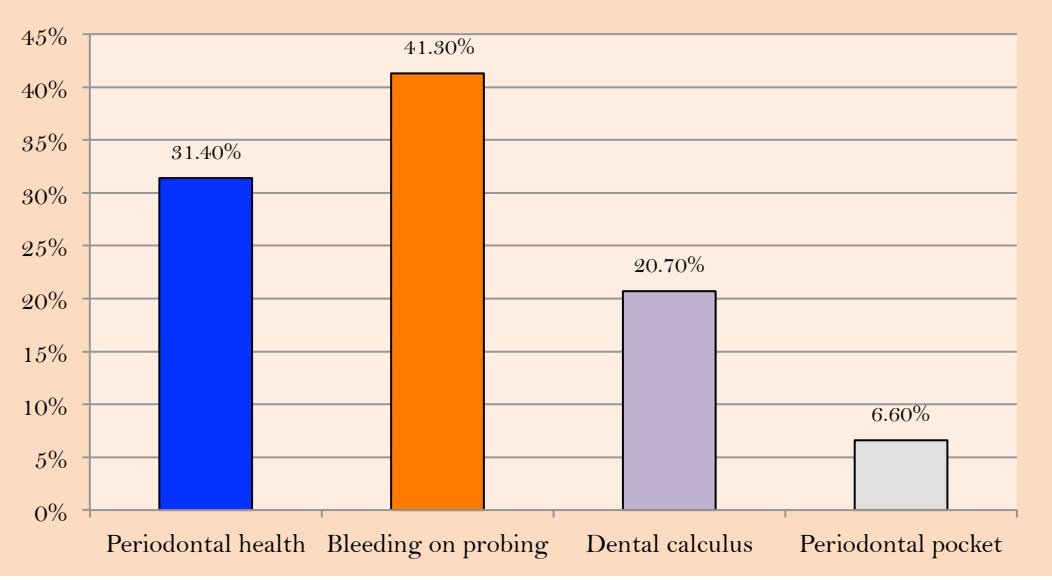

Figure 1. Distribution of periodontal conditions, measured by CPI, among pregnant women in Matozinhos (Minas Gerais, Brazil) in 2010.

The occurrence of caries dichotomized by the median DMFT was neither associated with family income (p=0.469) and perception of dental treatment need (p=0.161) nor with health perception (p=0.506) (Table 3).

Table 3. Association between caries experience and covariates in pregnant women, in Matozinhos/MG in 2010.

	DMFT		
Variables	Up to 12	Over 12	**P value**
Family Income			
One minimum wage	45	37	0.469*
Two minimum wages	18	12	
Two and a half minimum wages	1	1	
Three minimum wages	5	2	
"Do you consider that currently require dental treatment?"			
Yes	42	25	0.161**
No	27	27	
"How do you rate your oral health"			
Don't Know	12	4	0.506*
Very bad	16	16	
Bad	24	20	
Regular	17	12	

Regarding the questions "Are you afraid of going to the dentist while pregnant?" and "Can pregnancy cause problems in oral health?", there was an increase in the frequency of answers "No", at the second time after the operative group action (McNemar's chi-square test, p<0.001) (Table 4).

Table 4. Evaluation of the questionnaire answers collected in groups conducted with pregnant women before and after educational intervention (as percentage), in Matozinhos/MG in 2010.

Questions	First meet	Second meet	P value*
Are you afraid of going to the dentist while pregnant?			
Yes	75.2%	15.7	<0.001
No	24.8	84.3%	
Can pregnancy cause damage to your oral health?			
Yes	43.0%	17.4%	<0.001
No	57.0%	82.6%	

* McNemar's chi-square test.

Discussion

The conditions of caries and periodontal diseases verified in the pregnant women studied group were different from those observed in the epidemiological survey of SB 2010, for the age similar to the studied group age (35 – 44 years old), in municipalities of the Southeast of Brazil, with less prevalence of these diseases in Matozinhos. For the studied group, 41.3% of the pregnant women had bleeding on probing, 20.7% had dental calculus, and 6.6% had dental pocket with 4 – 5 mm, whereas regarding the national survey, for the municipalities in the Southeast region of Brazil, these values were 47.9%, 65.3%, and 29.3%, respectively. The DMFT value in the study group was 12.00,

whereas in the SB Brasil, for southern municipalities, it was 16.64. The significant contribution of the carious component to the DMFT in the studied group suggests that these women are neglected by the local dental service.

Although the SB 2010 [25] has incorporated methodological improvements over the years, it does not contemplate, specifically, the pregnant women, making it important to consider other studies for comparison purposes. A study carried out among women users in a School of Dentistry, for example, demonstrates a similar value of DMFT, but it identified a lower occurrence of carious component [26]. Another study performed in a municipality of Bahia state, Brazil, evidenced that the severity and treatment need for dental caries, in pregnant women users of SUS (Brazilian Unified Health System), were similar to those found in the present study [27]. Access to oral health services in that study involving users of the School of Dentistry [26] may explain the differences in DMFT components. Regarding family income, it should be considered the homogeneity of this variable in the studied population, given that because this social indicator is unfavorable for most of the pregnant women, there would not be, therefore, statistically significant associations between dental caries and the monthly family income variable. Regarding the periodontal conditions, the survey indicated that 31.40% of pregnant women did not have the disease. In comparison to some studies [28,29], gingivitis was the most prevalent periodontal changes in the studied group. In addition to gingivitis, the presence of periodontal pockets indicates that the evaluated pregnant women presented demands for periodontal treatment resolvable with low technological complexity actions, i.e., in primary care. In this sense, it should be considered the possibility of including auxiliary staff, such as oral health technician, who is still underused by the public services [30]. A more frequent participation of the oral health technician would be a possibility for contribution and execution of the national guideline which recommends the adoption of strategies to better use the dentist's clinical work time; who is a professional that still corresponds to a labor of low populational coverage in Brazil [21], economic since this professional requires more clinical time.

Comparing the subjective evaluations of pregnant women and normative, it is perceived an incompatibility between them, as in other studies [26,33], highlighting the importance of inclusion, in diagnostic mechanisms for attention to public oral health, both evaluations of perceptions of users and educational activities [8,9,12,13,21]. However, a study carried out in Brazil on pregnant women evidenced an association of oral health perception with the presence of caries [34]. The operative groups proved to be able to impact the perceptions of these people since these groups enabled the humanization of care through listening, becoming a valuable provider of information to the people who, then, become more prone to the multiplication of knowledge. However, mechanisms for monitoring these women after pregnancy, aiming to check the assimilation of knowledge and perceptions during longer time intervals, need to be created [35] within the local possibilities. Integrative literature review pointed out that the operative groups have good potential to learn about health [13], as identified in this study. However, this same review identified the need for methodological advances, besides descriptive studies to better assess the impact of operative groups

on health outcomes. This study stresses the improvement of perception assessment tools. Furthermore, any results of operative groups regarding oral health issue has been identified [13,14], so that the findings of this study are possible contributions to evaluate the technique. It is also noteworthy the need to create mechanisms to achieve the community autonomy and strengthening as recommended by national protocols [12,21] and international proposals [31] since the impact of promotional activities regarding oral health in pregnant women are not well known yet [32].

Since this is a study aimed to access information on the oral health conditions of pregnant women for planning local actions, it is important to emphasize its limitation to the local context. However, analyzing the results considering the public policies and proposals, it is noticed there are no continuous monitoring mechanisms of the oral health conditions of pregnant women, and this is a worrisome situation since there is an association between periodontal disease and pregnancy complications [12,21], besides the negative impact caused by poor oral health on the quality of life of these women [2-6]. In this regard, a possible unified and continuous system for the dental data record, which could enable the combination of information such as the general health conditions of pregnant women, would be really important since it could contribute to the clarification of pregnancy complications related to dentistry. That dental care registration, proposed by the Ministry of Health [19], only points out the access of these women to the service, and it only covers the municipalities that joined the PMAQ-AB. Initiatives, such as legal furtherance for performing dental evaluation in pregnant women [21], should be valued and it is interesting to mention the existence, including installed and functional technical apparatus, all over the country, for registration in single information system, the SISPRENATAL [16], which only need the addition of a possible dental indicator. Even the dentist could be suggested as one of the professionals responsible for filling the prenatal form in the SISPRENATAL [16]; thus, the dentistry becomes another possible way to capture pregnant women. We also should consider the need to carry out new comparative studies between accession to dental prenatal and local medical prenatal to demonstrate how the dental team could contribute to capturing this public by the service, which is an important indicator of the National Program of Humanization.

There are thus, in the public ambit, proposals that sometimes seem to promote dental care as part of prenatal [12,17,19,21,36], but sometimes such proposals seem to neglect it [16,18,20,24,37]. The Ministry of Health, for example, in its manual "Guidelines of National Policy for Oral Health" [21] points out the attention to pregnant women mentioning the need of taking them to dental care. However, the Ministry of Health launched in 2006, within the proposal of care humanization, a manual containing recommendations for prenatal and postpartum period with no direct mention of the oral health care of these women [20]. In August 2005, the prioritization of the dental care of pregnant women, with periodontal evaluation in prenatal care in the public health system of Minas Gerais State, becomes supported by Law No. 15,677 [17]. A year later, also in Minas Gerais, health protocols were created, among them, the attention to oral health care of pregnant women became prominent in the Guideline of Oral Health [12], and it advanced with dedication of a generous space

in the Attention Guideline [36] to pregnant women from Minas Gerais: Attention to prenatal, childbirth and postpartum period (a part of the attention policy for women's health, the "Live Life"). Paradoxically, the proposal of Minas Gerais State for prenatal approach does not contemplate the oral health in materials of professional continuing education for public health [38]. None of these documents mentions the Law of 2005 in Minas Gerais. The lack of integrality in municipalities such as Matozinhos may occur by the physical and technical distance of the conventional oral health team in relation to the family health units; but it should be noted that, if the proper technical and legal guidelines proposed this integration in a consistent manner, actions such as those identified in this study could be seen more frequently.

Finally, it is necessary to consider the limitations of this study, among them; we can highlight the fact that the data have been extracted only in one municipality of Brazil. In this perspective, even if the objectives of a study should be close as possible to local realities [16] and, consequently, provide subsidies to local interventions, the inferences of this study to other realities, should be analyzed with caution. Furthermore, a control group was not used, so this is not a controlled experimental study; it is a study of real life. Thus, we cannot discuss efficacy from it, but it is possible to discuss its effectiveness.

Conclusion

Oral health and dental care conditions for the evaluated pregnant women proved to be worrisome according to the used criteria. Educational interventions improved the perceptions about dental care of the addressed public, and the operative group demonstrated to be a viable method for oral health education, even in municipalities where there are conventional oral health teams. The compliance of the pregnant women to the activities proposed in this study, suggests that the dentist is a professional who can be systematically involved in prenatal staff, contributing to improve the care quality, especially in oral health education, which is still a poorly studied field. However, the technical and legal apparatus, already existing, need to be improved and made effective to solidify the dental care in the routines of the regional public service, contributing to the improvement of prenatal care which is so desired by the macro-policies.

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